検討経緯書

4 Contractor's Equipment

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4 請負者の機器 4.1 請負者の機器の一般的留意事項 4.1.1 一般事項 4.1.2 各作業の作業員への周知 4.1.3 機器の運転者、操作者、作業者 4.1.4 安全教育と指導 4.1.5 機器の作業環境 4.1.6 機器の点検・整備 4.1.7 機器の点検・整備作業時の安全措置 4.2 建設機械 4.2.1 建設機械の点検・整備 4.2.2 建設機械の作業環境 4.2.3 建設機械の運用時の安全措置 4.2.4 建設機械の用途外使用の制限 4.2.5 点検・整備作業時の安全措置 4.2.6 作業装置の装着等の作業時の安全措置 4.2.7 建設機械の搬送時の安全措置 4.2.8 リース建設機械の使用 4.3 建設設備 4.3.1 建設設備の点検・整備 4.3.2 建設設備の作業環境 4.3.3 建設設備の設置、組立、解体時の安全措置 4.3.4 建設設備の作業時の安全措置 4.3.5 点検・整備作業時の安全措置 4.4 定置機械 4.4.1 定置機械の点検・整備 4.4.2 大型の定置機械の設置、組立、解体時の安全措置 4.4.3 小型の定置機械の作業環境 4.4.4 定置機械の作業時の安全措置 4.5 電気機械器具 4.5.1 電気機械器具の点検・整備 4.5.2 電動機械器具の作業時の安全措置		**4 Contractor's Equipment** 4.1 General Requirements for Contractor's Equipment 4.1.1 General 4.1.2 Instruction for Contractor's Personnel 4.1.3 Operators and Drivers 4.1.4 Safety Instructions and Training 4.1.5 Work Environment 4.1.6 Inspection and Maintenance 4.1.7 Safety Measures at Inspection and Maintenance 4.2 Construction Equipment 4.2.1 Inspection and Maintenances of Construction Equipment 4.2.2 Work Environment for Construction Equipment 4.2.3 Safety Measures in Operation 4.2.4 Restriction to Operate Construction Equipment for Other Use 4.2.5 Safety Measures at Inspection and Maintenance 4.2.6 Safety Measures at Attaching and Removal of Work Devices 4.2.7 Safety Measures for Transportation of Construction Equipment 4.2.8 Use of Leased Construction Equipment 4.3 Construction Facilities 4.3.1 Inspection and Maintenance of Construction Facilities 4.3.2 Work Environment with Construction Facilities 4.3.3 Safety Measures for Installation, Assembly and Dismantling of Construction Facilities 4.3.4 Safety Measures for the Work with Construction Facilities 4.3.5 Safety Measures at Inspection and Maintenance 4.4 Stationary Equipment 4.4.1 Inspection and Maintenance of Stationary Equipment 4.4.2 Safety Measures for Installation, Assembly and Dismantling of Large Stationary Equipment 4.4.3 Work Environment for Small Stationary Equipment 4.4.4 Safety Measures for the Work with Stationary Equipment 4.5 Electric Power Equipment 4.5.1 Inspection and Maintenance of Electric Power Equipment 4.5.2 Safety Measures forWorks with Electric Power Equipment
4 請負者の機器 **4.1 請負者の機器の一般的留意事項** **4.1.1 一般事項** 本章では、請負者の機器のうち、以下の建設機械、建設設備、定置機械、電動機械器具、器具工具(以下、「機器」という。)を扱う。運搬機械、揚貨機械については、それぞれ本仕様書 5[運搬作業]、6[揚貨・玉掛け作業]で扱う。 (1) 用語の定義 本仕様書で使用する用語の定義は以下のとおりである。 (a) 建設機械とは、次の自走型建設機械をいう。 (i) ブルドーザー、トラクターショベル等の整地・運搬・積込み用機械 (ii) パワーショベル、クラムシェル等の掘削用機械 (iii) 杭打ち機、アースドリル等の基礎工事用機械 (iv) ローラー等の締め固め用機械 (v) コンクリートポンプ車等のコンクリート打設用機械 (vi) ブレーカー、コンクリート圧砕機、解体用つかみ機等の解体用機	**4 Contractor's Equipment** **4.1 General Requirements for Contractor's Equipment** **4.1.1 General** This Chapter specify the safety requirements for the following construction equipment, construction facilities, fixed equipment, electric power equipment, tools among the Contractor's Equipment. The transportation equipment and hoisting equipment are specified in JSSS 5[Transportation Works] and 6[Lifting and Sling Works]. (1) Definitions of Terms Definition of terms used in JSSS are as follows: (a) Construction heavy equipment means the following mobile equipment for construction: (i) Leveling, transporting and loading machines such as bulldozers and tractor excavators. (ii) Excavating machine such as power shovels and clamshells. (iii) Foundation construction machines such as pile drivers and earth drills.	**4 Contractor's Equipment** **4.1 General Requirements for Contractor's Equipment** **4.1.1 General** This Chapter specify the safety requirements for the following construction equipment, construction facilities, stationary equipment, electric power equipment, tools among the Contractor's Equipment. The transportation equipment and hoisting equipment are specified in JSSS 5[Transportation Works] and 6 [Lifting and Sling Works]. (1) Definitions of Terms Definition of terms used in JSSS are as follows: (a) Construction equipment means the following mobile equipment for construction: (i) Machine for leveling, loading, transporting such as bulldozers and tractor excavators; (ii) Excavating machine such as power shovels and clamshells; (iii) Foundation construction machine such as pilling machine, drilling rig machine and earth drill machine;

械 (b) 建設設備とは、次の建設用の設備をいう。 (i) コンクリート用の骨材を製造する砕石設備（crusher） (ii) コンクリート、アスファルトコンクリートを製造するコンクリート混合設備、アスファルトコンクリート混合設備(Concrete/asphalt concrete batching plant) (c) 定置機械とは、次に示す定置の機械をいう。 (i) 人又は資機材の運搬等を目的とした工事用エレベーター、建設用リフト等の大型の定置式の機械 (ii) 資材の切断・加工、コンクリート材料の混合、作業環境の維持等を目的とした鉄筋切断機、鉄筋加工機、木材加工機、グラインダー、ポータブルコンクリートミキサー、送風機等の小型の定置式の機械 (d) 電動機械器具とは、次の電動機を有する可搬式の機械又は器具をいう。 (i) ポンプ、小型のコンベヤ等の電動機械 (ii) ディスクグラインダー、ドリル、丸のこ、かんな等の電動器具 (e) 器具(equipment)及び工具(tool)とは、次のものをいう。 (i) ジャッキ、ウィンチ、レバーホイスト等の器具 (ii) 空気式ジャックハンマー、油圧式パイプ曲げ機、原動機付きチェーンソー等の動力工具 (iii) レンチ、ドリフトピン、のみ、手鋸、金槌等の手工具 請負者は、上記の(c)、(d)及び(e)の定置機械、器具及び工具について本節に規定のない事項は、OHSA Part 1926 Subpart N−Helicopters, Hoists, Elevators, and Conveyors、又は Subpart I−Tools−and and Power の規定に従わなければならない。	(iv) Roller and other compacting machines. (v) Concrete placement machines such as concrete pump trucks. (vi) Demolition machines such as breakers, concrete crushers, demolition grippers. (b) Construction facilities means the following facilities for construction. (i) Crushers manufacturing the aggregate for concrete (ii) Concrete/asphalt concrete batching plant (c) Stationary equipment means the following equipment. (i) Large stationary equipment such as elevators and lifts for transporting workers or equipment (ii) Small stationary equipment such as rebar cutting machines, rebar processing machines, wood processing machines, grinders, portable concrete mixers, blowers for cutting and processing materials, mixing concrete materials, and maintaining the work environment (d) Electric construction equipment means the following mobile equipment or tools with the electric motors. (i) Electric equipment such as pumps and small conveyors (ii) Electric tools such as disc grinders, drills, circular saws and planers (e) Equipment and tools mean the following items. (i) Equipment such as jacks, winches, lever hoists. (ii) Power tools such as pneumatic jack hammer, hydraulic pipe bending machine, prime mover chain saw (iii) Hand tools such as wrench, drift pin, chisel, hand saw, hammer. The Contractor shall comply with “OHSA Part1926 Subpart N-Helicopters, Hoists, Elevators, and Conveyors, and Subpart I-Tools-and and Power” for the equipment, tools and stationary equipment which are not specified in (c), (d) and (e).	(iv) Compaction machine such as smooth wheeled roller, pneumatic roller and vibration roller; (v) Concrete machine such as concrete mixer truck, concrete agitator truck, concrete pump truck; and (vi) Demolition machine such as breakers, concrete crushers and demolition grippers. (b) Construction facilities mean the following facilities for construction: (i) Aggregate production facilities for concrete, asphalt concrete and others such consisting of crushers, sand mill screen, etc., and (ii) Concrete/asphalt concrete batching plant. (c) Stationary equipment means the following equipment: (i) Large stationary equipment such as elevators and lifts for transporting workers or Goods; and (ii) Small stationary equipment such as rebar cutting machines, rebar bending machines, wood processing machines, grinders, portable concrete mixers, air blowers for cutting and processing materials, mixing concrete materials, and maintaining the work environment, respectively. (d) Electric power equipment means the following mobile equipment or tools with the electric motors: (i) Electric equipment such as pumps and small conveyors (ii) Electric tools such as disc grinders, drills, circular saws and planers (e) Equipment and tools mean the following items: (i) Equipment such as jacks, winches, lever hoists. (ii) Power tools such as pneumatic jack hammer, hydraulic pipe bending machine, prime mover chain saw (iii) Hand tools such as wrench, drift pin, chisel, hand saw, hammer. The Contractor shall comply with “OHSA Part1926 Subpart N-Helicopters, Hoists, Elevators, and Conveyors, and Subpart I-Tools-and and Power” for the equipment, tools and stationary equipment listed in the above (c), (d) and (e) regarding other measures than specified in this Chapter.
4.1.2 各作業の作業員への周知 請負者は、機器を用いて作業を行うときは、作業に必要な下記の安全上の措置について、本仕様書 1.3[安全衛生にかかわる計画書]に規定の事項に加え、必要に応じ作業員に説明しなければならない。 (1) 建設機械の作業 (a) 作業内容、作業方法、作業範囲 (b) 種類、能力及び台数 (c) 作業場所及び運行経路	**4.1.2 Instruction for Contractor’s Personnel** The Contractor shall instruct the following safety measures in addition to the items specified in JSSS 1.6 [Contractor’s Safety Plan] for Contractor’s Personnel as necessary in using the contractor’s equipment. (1) Works by construction equipment (a) Work descriptions, work method, working area (b) Type, capacity and number of equipment (c) Work place and operational route (d) Location where there is a risk of falling or rotating of	**4.1.2 Instruction for Contractor’s Personnel** The Contractor shall explain the following safety measures in addition to the items specified in JSSS 1.6 [Contractor’s Safety Plan] to the Contractor’s Personnel who works using the Contractor’s Equipment as necessary. (1) Works with construction equipment: (a) Work descriptions, work method, working area; (b) Type, capacity and number of construction equipment; (c) Work place and operational route of construction equipment;

(d) 建設機械の転倒又は転落の危険のある場所

(e) 高圧線、危険物貯蔵庫などの危険箇所と機械の移動・稼働制限範囲

(f) 立入禁止箇所の特定と注意標識、柵の設置場所

(g) 誘導者、監視員の配置場所

(h) 建設機械の運転者、操作者

(i) 建設機械に異常が発生したときの対処方法

(j) サイト隣地や公道における近隣住民・第三者への建設機械による危険性

(k) 振動、騒音、粉じん等の環境影響軽減措置

(2) 建設設備の作業

上記(1)のうち建設設備の作業に該当する項目に追加して、次の措置を当該作業の作業員に説明すること。

(a) 建設設備の種類、能力、使用上の制限事項

(b) 建設設備の操作又は建設設備を使用する作業に伴う危険

(c) 建設設備の操作者

(d) 建設設備に異常が発生したときの対処方法

(3) 定置機械の作業

上記(1)のうち定置機械の作業に該当する項目に追加して、次の措置を当該作業の作業員に説明すること。

(a) 定置機械の種類、能力、積載荷重、使用上の制限事項

(b) 定置機械の操作又は定置機械を使用する作業に伴う危険

(c) 定置機械の操作者

(d) 定置機械に異常が発生したときの対処方法

(4) 電気機械器具の作業

上記(1)のうち電気機械器具の作業に該当する項目に追加して、電気機械器具を使用した作業による作業員の感電を防止するため、次の措置を当該作業の作業員に説明すること。

(a) 電気機械器具の種類、性能、用途

(b) 電気機械器具による感電の危険性

(c) 電気機械器具の作業者

(d) 電気機械器具に異常が発生したときの対処方法

construction equipment

(e) Hazardous locations and the restricted areas of movement and operation such as high-voltage lines and dangerous goods storage

(f) Identification of restricted areas, caution signs, and fence

(g) Placement of flagmen and spotters

(h) Drivers and operators of each construction equipment

(i) Process of emergency case in construction equipment

(j) Danger to neighboring residents and third parties on adjacent sites and public roads by construction equipment.

(k) Environmental impact mitigation measures such as vibration, noise, and dust

(2) Works by construction facilities

The Contractor shall instruct the following measures for Contractor's personnel addition to the items applicable to the works by construction facilities in (1).

(a) Type, capacity and restrictions of construction facilities

(b) Risks for the operations by construction facilities

(c) Operators of construction facilities

(d) Process of abnormalities in construction facilities

(3) Works by stationary equipment

The Contractor shall instruct the following measures for Contractor's personnel addition to the items applicable to the works by stationary equipment in (1).

(a) Type, capacity and restrictions of stationary equipment

(b) Risks for the operations by stationary equipment

(c) Operators of stationary equipment

(d) Process of abnormalities in stationary equipment

(4) Works by electric construction equipment

The Contractor shall instruct the following measures for Contractor's personnel addition to the items applicable to the works by electric construction equipment in (1).

(a) Type, capacity and restrictions of electric construction equipment

(b) Risks for the operations by electric construction equipment

(c) Operators of electric construction equipment

(d) Process of abnormalities in electric construction equipment

(d) Location where there is a risk of fall or overturn of construction equipment;

(e) Hazardous locations and restricted areas of movement and operation for construction equipment such as high-voltage lines and dangerous goods storage;

(f) Identification of restricted areas, locations of caution signs and fences;

(g) Placement of Flagmen and Spotters;

(h) Names of drivers and operators of each construction equipment;

(i) Measures at the time of occurrence of abnormalities in construction equipment;

(j) Danger to neighboring residents and third parties on adjacent place of the Site and public roads by construction equipment; and

(k) Environmental impact mitigation measures against vibration, noise, dust, etc.

(2) Works with construction facilities:

The Contractor shall explain the following measures the Contractor's personnel in addition to the items in the above (1) applicable to the works with construction facilities.

(a) Type, capacity and restrictions of construction facilities;

(b) Risks in the operation with construction facilities;

(c) Names of operators of construction facilities; and

(d) Measures at the time of occurrence of abnormalities in construction facilities.

(3) Works by stationary equipment:

The Contractor shall explain the following measures the Contractor's personnel in addition to the items in the above (1) applicable to the works with stationary equipment.

(a) Type, capacity and restrictions of stationary equipment;

(b) Risks in the operation with stationary equipment;

(c) Names of operators of stationary equipment;

(d) Measures at the time of occurrence of abnormalities in stationary equipment; and

(4) Works by electric power equipment:

The Contractor shall explain the following measures the Contractor's personnel in addition to the items in the above (1) applicable to the works with electric power equipment.

(a) Type, capacity and restrictions of electric power equipment;

(b) Risks for the operations by electric power equipment;

(c) Names of workers of electric power equipment; and

(d) Measures at the time of occurrence of abnormalities in electric power equipment.

4.1.3 機器の運転者、操作者、作業者 請負者は、機器の運転者、操作者、作業者の配置に関して、次の措置を講じなければならない。 (1) 本仕様書 1.16[請負者の要員の適正配置]に従い、必要な資格・技能等を有する運転者、操作者又は作業者に、機器の運転、操作又は作業を行わせること。 (2) 運転者、操作者又は作業者の氏名を、当該建設機械、建設設備、定置機械に明示するとともに、当該運転者、操作者又は作業者以外の者に、運転、操作又は作業を禁止する旨を表示しなければならない。 (3) 本仕様書 1.16[要員の適正配置上の留意点]に従い、作業前の健康状態を確認し、当該機器の運転、操作又は作業に不適当な状態であると判断された運転者、操作者又は作業者を、当該作業に従事させてはならない。	**4.1.3 Operators and Drivers** The Contractor shall take the following measures for the arrangement of operators, drivers and workers. (1) The Contractor shall ensure that operators and drivers with necessary skills and qualifications handle construction equipment, complying with JSSS 1.16[Proper Placement of Contractor's Personnel]. (2) The Contractor shall place signs that show the name of operators and drivers with the prohibition of the operation by other operators and drivers on each contractor's equipment. (3) The Contractor shall implement the health check before the work and prohibit operators and drivers under the condition of unsuitable from operating contractor's equipment, complying with JSSS 1.16[Proper Placement of Contractor's Personnel].	**4.1.3 Operators and Drivers** The Contractor shall take the following measures for the placement of operators, drivers and workers: (1) The Contractor shall place operators and drivers with necessary skills and qualifications to operate construction equipment, complying with JSSS 1.16 [Proper Placement of Contractor's Personnel]. (2) The Contractor shall place signs that show the name of operators and drivers, and the prohibition of the operation by others than assigned operators and drivers of Contractor's Equipment. (3) The Contractor shall implement the health check before the work and prohibit operators and drivers under the condition of unsuitable from operating Contractor's Equipment, complying with JSSS 1.16[Proper Placement of Contractor's Personnel].
4.1.4 安全教育と指導 請負者は、機器の運転者、操作者又は作業者が当該作業に従事するまでに、本仕様書 1.36[教育訓練の実施]に規定する教育訓練に加えて、各機器の特性に応じて以下の項目について教育訓練を実施しなければならない。 (1) 当該機器の危険性、操作方法 (2) 安全・警報装置の機能・性能、操作方法、点検項目・点検方法 (3) 作業手順、運転開始の合図・連絡、日常点検 (4) 掃除・点検等の場合の運転停止、通電停止、起動装置施錠等の手順及び必要な措置 (5) 異常が発生したときの運転・操作・作業の停止と当該作業の担当者への報告 (6) 安全装置の取り外しの禁止	**4.1.4 Safety Instructions** The Contractor shall conduct the following trainings addition to trainings specified with JSSS 1.18[Skill Training] before operators and drivers operate. (1) Risks and operation method (2) Functions, performance operation methods, inspection items / methods of emergency alarm devices (3) Work procedure, signal / contact for starting the operation, daily inspection (4) Lockout and Tagout Procedures for shutting down operation, turning off the power, locking the starter and necessary measures for cleaning and inspection (5) Stop of the operation / work when an abnormality occurs and report to the person in charge (6) Prohibition from removing safety devices	**4.1.4 Safety Instructions and Training** The Contractor shall conduct the following trainings in addition to trainings specified in JSSS 1.18 [Skill Training] before operators and drivers engage in the work to operate the Contractor's equipment: (1) Risks and operation method; (2) Functions, performance, operation methods, inspection items, inspection method of safety device and emergency alarm device; (3) Work procedure, signal and communication method at starting time of the operation, and daily inspection; (4) Lockout and Tagout Procedures for shutting down operation, turning off the power, locking the starter and necessary measures for the time of cleaning and inspection of the Contractor's equipment; (5) Stop of the operation and work with the Contractor's equipment when an abnormality occurs and report to the person in charge; and (6) Prohibition from removing safety devices.
4.1.5 機器の作業環境 請負者は、機器の作業環境の確保のために、機器の特性に応じ必要な次の作業環境に関する措置を講じなければならない。 (1) 機器の作業による危険防止のため、作業箇所には十分な照度を確保すること。 (2) 機器への巻き込まれにより作業員に危険を及ぼすおそれのある機器を使用するときは、作業員の服装・頭髪等に関し、巻き込まれ防止の適切な措置を講ずること。 (3) 機器による粉じん、騒音、高温低温等から作業員を保護する措置を、本仕様書 2.1[適切な作業環境の整備]に従い講じること。措置を講じることが困難であるときは、作業員に保護具を着用させること。 (4) 運転に伴う加熱、発熱、漏電等による火災のおそれがある機器について	**4.1.5 Work Environment** The Contractor shall take the following measures for the work environment. (1) Ensure enough illuminance at the work site for the prevention of darkness of the danger during the operation (2) Take the appropriate measure to prevent the accidents regarding worker's clothes, hair, etc. in using the contractor's equipment which has a risk to workers due to being caught in a rotating part of the equipment. (3) Take measures to protect Contractor's Personnel from dust, noise, high temperature and low temperature by contractor's equipment in accordance with JSSS 2.1[WORK ENVIRONMENT]. If it is difficult to take measures, let Contractor's Personnel wear the personal protected equipment (4) Be equipped with fire extinguisher, etc. in accordance with JSSS	**4.1.5 Work Environment** The Contractor shall take the following measures for the work environment: (1) Ensure enough illuminance at the work site for the prevention of danger during the operation; (2) Take appropriate measure to prevent accidents related with worker's clothes, hair, etc. in the work using the Contractor's Equipment which has a risk to workers due to being caught in rotating part of the Contractor's Equipment; (3) Take measures to protect Contractor's Personnel from dust, noise, high temperature and low temperature by Contractor's Equipment in accordance with JSSS 2.1 [WORK ENVIRONMENT]. If it is difficult to take measures, make the Contractor's Personnel wear PPE; (4) Equip with fire extinguisher, etc. in accordance with JSSS 2.8 [FIRE

は、本仕様書 2.8[火災予防]に従い、消火器等を配備したうえで作業すること。 (5) 緊急事態発生時における連絡方法と応急処置の方法を、本仕様書 1.10[緊急事態対応計画及び緊急通報体制]及び 1.11[救急救護計画]に従い、運転者、操作者又は作業員が分かりやすい所に表示すること。 (6) 作業中に機器に異常が発見された場合には、運転者、操作者又は作業員に直ちに作業を中止させること。 (7) 当該機器の異常の原因の特定と修理を行うこと。	2.8[FIRE PREVENTION] for contractor's equipment that may cause a fire due to heating, heat generation, electric leakage, etc. during the operation (5) Indicate the method of communication and first aid in an emergency in an easy-to-understand location for operators and drivers in accordance with JSSS 1.21[Accident Response Plan] and 1.24[Emergency Response Plan]. (6) When a failure is found in contractor's equipment during the operation, to stop operator's and driver's operation immediately (7) Identify the failure and repair the contractor's equipment	PREVENTION] to the Contractor's Equipment in which has risk of fire due to its heating, heat generation, electric leakage, etc. during the operation; (5) Indicate the method of communication and first aid in an emergency on easy-to-see locations for operators and drivers in accordance with JSSS 1.21[Accident Response Plan] and 1.24 [Emergency Response Plan]; (6) When abnormalities are found in the Contractor's Equipment during the operation, stop operation immediately; and (7) Identify the cause of abnormalities and repair the Contractor's Equipment.
4.1.6 機器の点検・整備 請負者は、機器の点検、整備に関して次の事項を遵守し、使用する機器を良好な状態に維持しなければならない。 (1) 機器の保守管理のために、当該国の法律及び当該機器の製造者のマニュアルの規定に従い、本仕様書 4.2.1[建設機械の点検・整備]、4.3.1[建設設備の点検・整備]、4.4.1[定置機械の点検・整備]、4.5.1[電気機械器具の点検・整備]に規定する点検項目のうち、当該機器に該当する点検項目を網羅する日常点検表、定期点検表を準備し、次に規定する点検、検査を実施し、これを記録すること。 (2) 必要に応じて次に示す点検・検査を実施すること。(a) (d)及び(e)については機器の整備に必要な能力と経験を持った者に、(b)については建設設備、定置機械の専門家に、(c)については機器の運転者、操作者又は作業者に行わせること。 (a) 建設機械の搬入時の点検 (b) 建設設備、定置機械の設置時の試験 (c) 日常点検 (d) 定期点検 (e) 悪天候及び地震の点検 (3) 整備が完了するまで、機器を使用しないこと。 (4) 建設機械の搬入時の点検、建設設備、定置機械の設置時の試験結果は、エンジニアに提出すること。 (5) 日常点検及び定期点検は、点検結果を工事終了まで保管すること。また、点検結果は、月次の進捗報告書に含めること。 (6) 日常点検では次の措置を講じること。 (a) 作業開始前に日常点検を行うこと。 (b) 請負者が準備した点検表に基づき点検を行うこと。 (c) 点検の結果又は随時必要が認められた場合は整備を実施すること。 (d) 作業開始前の動作点検は、周辺に人がいないこと、障害物がないことを確認してから行うこと。	**4.1.6 Inspections and Maintenances** The Contractor shall keep contractor's equipment in good condition complying with the following items. (1) Make daily checklist and periodic checklist that cover check items applicable to the equipment specified in JSSS 4.2.1 [Inspections and Maintenances of Construction Equipment] and 4.3.1 [Inspections and Maintenances of Construction Facilities] and 4.4.1 [Inspections and Maintenances of Stationary Equipment] and 4.5.1 [Inspections and Maintenances of Electric Construction Equipment] and implement and record inspection and maintenance works. (2) Implement the following inspections and maintenances if necessary. For (a), (d) and (e), those who have the necessary skills and experience for equipment maintenance, for (b), construction and stationary equipment specialists, and for (c), equipment operator implement the inspections and maintenances. (a) Inspections in installation of construction equipment (b) Testing in installation of construction facilities and stationary equipment (c) Daily inspections and check (d) Periodical inspections (e) Inspection in bad weather and earthquake (3) Not use the equipment unless the maintenance will be finished. (4) Report the inspection status to the Engineer in installation of construction equipment, construction facilities and stationary equipment. (5) Keep the inspection record of daily and periodic inspections until the end of construction work. Include the inspection record in the monthly progress report. (6) Take the following measures in daily inspections (a) Implement the daily inspections before the operation (b) Use the checklist prepared by the Contractor (c) Implement the maintenance if necessary or due to the result of inspections. (d) Ensure that there are no obstacles and workers around in the operation check before the start of operations.	**4.1.6 Inspection and Maintenance** The Contractor shall maintain the Contractor's Equipment in good condition in accordance with the following measures: (1) Make daily and periodic checklists that cover the check items applicable to the Contractor's Equipment specified in JSSS 4.2.1 [Inspection and Maintenance of Construction Equipment] and 4.3.1 [Inspection and Maintenance of Construction Facilities] and 4.4.1 [Inspection and Maintenance of Stationary Equipment] and 4.5.1 [Inspection and Maintenance of Electric Power Equipment], implement and record the inspection and maintenance of the Contractor's Equipment. (2) Implement the following inspection and maintenance. These shall be made by persons who have the necessary skills and experience of equipment maintenance for (a), (d) and (e) below, specialists of construction and stationary equipment for (b), or equipment drivers/operators for (c): (a) Inspection of the construction equipment at the time when they are newly brought in at the site; (b) Testing of construction facilities and stationary equipment at the time when they are newly installed/fabricated at the site; (c) Daily inspection; (d) Periodic inspection; and (e) Inspection before commencement of operation of the Contractor's Equipment after adverse weather and earthquake according to the characteristics of the Contractor's Equipment. (3) Prohibit to use the Contractor's Equipment unless the maintenance is finished. (4) Report the inspection or test results of the Contractor's Equipment mentioned above (a) and (b) to the Engineer. (5) Keep the inspection record of daily and periodic inspection until the end of construction work and include the inspection records in the monthly progress report. (6) Take the following measures in daily inspection: (a) Implement the daily inspection before the operation; (b) Use the checklist prepared by the Contractor; (c) Implement the maintenance if necessary or due to the result of

(7) 定期点検では次の措置を講じること。 (a) 請負者が準備した点検表に基づき定期に点検を行うこと。 (b) 点検の結果、不具合、部品の損傷又は消耗箇所が認められた場合には、修理、交換を行い整備すること。 (8) 本仕様書 2.7[悪天候及び地震時の対策]に規定の悪天候及び地震後には、建設設備、定置機械及び悪天候及び地震時により影響を受ける機械は、日常点検に準じた点検及び製造者のマニュアルに規定の点検を行うこと。	(7) Take the following measures in periodic inspections (a) Use the checklist prepared by the Contractor (b) Repair and exchange the defective parts if the result of inspection shows that there is a defect, damage to a part, or wear. (8) Implement the inspection according to the daily inspection and check as specified in the manufacture's manual after the bad weather and earthquake complying with JSSS 2.7 [ADVERSE WEATHER REQUIREMENTS], to the construction equipment, stationary equipment and the other equipment affected by bad weather and earthquake.	inspection; and (d) Ensure that there are no obstacles and workers around at the time of the operation check before the start of operations. (7) Take the following measures in periodic inspection (a) Use the checklist prepared by the Contractor; and (b) Repair and replace the defective parts when the result of inspection shows that there is defect, damage, or wear in parts of the Contractor's Equipment. (8) Implement the inspection as same as the daily inspection and check as specified in the manufacture's manual after the adverse weather or earthquake complying with JSSS 2.7 [ADVERSE WEATHER REQUIREMENTS], of the construction equipment, stationary equipment and the other equipment affected by adverse weather or earthquake.
4.1.7 機器の点検・整備作業時の安全措置 請負者は、機器の点検、整備作業を行うときは、次の措置を講じなければならない。 (1) 機器の点検・整備作業を行うときは、当該機器の特性に応じ、機器の機能を完全に停止したうえで、点検・整備中の誤作動を防ぐために起動装置の施錠、起動装置に表示板を取り付ける、または監視人を配置する等（ロックアウト・タグアウトシステム）の措置を講じること (2) 点検・整備作業を行う場所に、関係者以外の立入りを禁止すること。 (3) 高所で点検・整備作業を行う場合には、本仕様書 2.5[墜落防止]に規定する措置。	**4.1.7 Safety Measures in Inspection and Maintenance** The Contractor shall take the following measures for safety in inspection and maintenance. (1) When performing inspections and maintenance work, stop the equipment functions completely and take measures based on the procedures of the lockout and tagout system to prevent malfunctions during inspection and maintenance. (2) Prohibit non- Contractors Personnel entering in the place where inspection and maintenance work is performed. (3) Measures specified in JSSS 2.6 [FALLING OBJECTS] when performing inspection and maintenance work at high places.	**4.1.7 Safety Measures at Inspection and Maintenance** The Contractor shall take the following measures for safety of workers engaging in the inspection and maintenance work. (1) When performing inspection and maintenance work, stop the equipment functions completely according to the characters of the Contractor's Equipment and take measures based on the procedures of the lockout and tagout system to prevent accidents during inspection and maintenance. The lockout and tagout system shall include lock of starting system and warning signs not to start the equipment on the starting system or provision of Spotter; (2) Prohibit persons other than workers appointed for the inspection or maintenance work entering in the place where inspection or maintenance work is performed; and (3) Take measures specified in JSSS 2.6 [FALLING OBJECTS] when performing inspection and maintenance work at high places.
4.2 建設機械 **4.2.1 建設機械の点検・整備** 請負者は本仕様書 4.1.7[機器の点検・整備]に従い、次の点検・整備を行わなければならない。 (1) 建設機械の搬入時の点検 建設機械の搬入時には次に従い点検を実施すること。 (a) 建設機械の点検・整備記録の確認を行なうこと。かかる点検・整備記録においては、次の(3)に規定する項目のうち、当該機械に該当する項目が含むこと。 (b) 建設機械の点検・整備記録がない又は不十分な場合は、上記(a)に準じて搬入時に点検・整備を行うこと。 (2) 建設機械の日常点検 日常点検では、次の点検項目を含む請負者が準備した点検表に基づき点検を行うこと。	**4.2 Construction Heavy Equipment** **4.2.1 Inspections and Maintenances of Construction Equipment** The Contractor shall conduct the following inspections and maintenances complying with JSSS 4.1.7 [Inspections and Maintenances]. (1) Inspections in Installations period Conduct the inspections as follows in installations (a) Ensure that the inspection and maintenance records include the item applicable each equipment specified in (3). (b) When the inspection and maintenance record is insufficient or nothing, implement the inspection and maintenance in installation according to above (a). (2) Daily inspections and check Conduct the inspections and check based on the check list included the following items prepared by the Contractor. (a) Well function of brakes, clutches, operating devices and working devices (b) Damages of wire ropes and chains	**4.2 Construction Equipment** **4.2.1 Inspection and Maintenances of Construction Equipment** The Contractor shall conduct the following inspection and maintenance of Construction Equipment complying with JSSS 4.1.6 [Inspection and Maintenances]. (1) Inspection at the time when Construction Equipment is newly brought in at the site: Conduct the inspection as follows at newly brought in at the site: (a) Ensure that the inspection and maintenance records include the items applicable each equipment specified in (3) below; (b) When the inspection and maintenance records are insufficient or not available, implement the inspection and maintenance at newly brought in at the site according to above (a); and (2) Daily inspection: Conduct the inspection based on the checklist included the following items prepared by the Contractor. (a) Abnormalities of brakes, clutches, operating devices and

(a) ブレーキ、クラッチ、操作装置及び作業装置の異常の有無 (b) ワイヤロープ及びチェーンの損傷の有無 (c) バケット等アタッチメントの損傷の有無 (3) 建設機械の定期点検 定期点検では、次の点検項目を含む請負者が準備した点検表に基づき点検を行うこと。 (a) 圧縮圧力、弁すき間その他原動機 (b) クラッチ、トランスミッション、プロペラシャフト、デフアレンシャルその他動力伝達装置 (c) 起動輪、遊動輪、上下転輪、履帯、タイヤ、ホイールベアリングその他走行装置 (d) かじ取り車輪の左右の回転角度、ナックル、ロツド、アームその他操縦装置 (e) 制動能力、ブレーキドラム、ブレーキシユーその他ブレーキ (f) ブレード、ブーム、リンク機構、バケット、ワイヤロープその他の作業装置 (g) 油圧ポンプ、油圧モーター、シリンダー、安全弁その他油圧装置 (h) 電圧、電流その他電気系統 (i) 車体、操作装置、ヘッドガード、バツクストツパー、昇降装置、ロック装置、警報装置、方向指示器、燈火装置及び計器	(c) Damages of other attachment items such as buckets etc. (3) Periodic Inspections Conduct the periodic inspections based on the check list included the following items prepared by the Contractor. (a) Compression pressure, valve clearance and other motors (b) Clutch, transmission, propeller shaft, differential and other power transmission devices (c) Drive wheel, idling wheel, vertical trunk roller, a belt, a tire, a wheel bearing and other traveling devices. (d) Starter wheels, idle wheels, up and down wheels, crawler belts, tires, wheel bearings and other vehicle devices (e) Left and right rotation angle of steering wheel, knuckle, rod, arm and other control devices (f) Brake capacity, brake drum, brake shoe and other brakes (g) Blades, booms, link mechanisms, buckets, wire ropes and other work equipment (h) Hydraulic pump, hydraulic motor, cylinder, safety valve and other hydraulic equipment (i) Voltage, current and other electrical systems (j) Car body, operation device, head guard, back stopper such as cylinder, mechanical lock and, lifting device, lock device, alarm device, direction indicator, turn signals and instrument	working devices; (b) Damages of wire ropes and chains; and (c) Damages of other attachment such as buckets, etc. (3) Periodic Inspection: Conduct the periodic inspection based on the checklist included the following items prepared by the Contractor. (a) Compression pressure, valve clearance and other parts of a prime mover; (b) Clutch, transmission, propeller shaft, differential and other parts of power transmission devices; (c) Drive wheels, idling wheels, vertical trunk rollers, belts, tires, wheel bearing and other parts of traveling devices; (d) Left and right rotation angle of steering wheel, knuckle, rod, arm and other parts of control devices; (e) Brake capacity, brake drum, brake shoe and other parts of brakes; (f) Blades, booms, link mechanisms, buckets, wire ropes and other parts of work equipment; (g) Hydraulic pump, hydraulic motor, cylinder, safety valve and other parts of hydraulic equipment; (h) Voltage, amperage and other parts of electrical system; and (i) Body, operation device, head guard, back stopper, up and down access facility, locking devices, warning alarm device, direction indicator, lightning device and indicators.
4.2.2 建設機械の作業環境 請負者は、建設機械の作業環境の確保のために、本仕様書 4.1.5[機器の作業環境]に加えて、次の措置を講じなければならない。 架空電線の充電電路に建設機械が接触し、作業員に感電の危険が生じるおそれのあるときは、本仕様書 3.2[架空線等上空施設一般]に規定する措置を講じること。	**4.2.2 Work Environment for Construction Equipment** The Contractor shall take the following measures addition to JSSS 4.1.6 [Work Environment] to ensure the work environment for construction equipment. When there is considered the risk of an electric shock to the Contractor's Personnel as construction equipment come into contact with the electrical power line of the overhead wire, take measures as specified in JSSS 3.2[OVERHEAD SERVICES].	**4.2.2 Work Environment for Construction Equipment** The Contractor shall take the following measures in addition to JSSS 4.1.6 [Work Environment] to ensure the work environment with construction equipment. When there is risk of electric shock of the workers when the construction equipment contacts or works near charged circuits of overhead electrical power lines, take measures as specified in JSSS 3.2 [OVERHEAD SERVICES].
4.2.3 建設機械の運用時の安全措置 請負者は、建設機械の運用時の安全のために、次の措置を講じなければならない。 (1) 建設機械と作業員の接触の防止 (a) 運転中の建設機械に接触することにより作業員に危険が生ずるおそれのある箇所は、作業員の立入を禁止とする、または誘導者を配置し、その者に当該建設機械を誘導させること。 (b) 誘導者及び作業員に合図並びに誘導の方法や運転者の視認性に関し、誘導員及び作業員の理解を徹底させること。 (2) 建設機械で登坂、降坂を伴う作業を行うときは、運転者に次の措置を講じさせること。	**4.2.3 Safety Measures in Operation** The Contractor shall take the following measures for the safety in operation. (1) Prevent of collision of construction heavy equipment and Contractor's Personnel (a) Prevent Contractor's Personnel of entering where there are risks because of collision with operating construction equipment, or place flagmen which guide construction equipment (b) Disseminate a signal system, guidance methods and driver visibility to Flagmen and Contractor's Personnel (2) Let the operator and driver take the following measures in uphill and downhill by construction heavy equipment	**4.2.3 Safety Measures in Operation** The Contractor shall take the following measures for the safety in operation. (1) Prevent of collision with construction equipment and Contractor's Personnel (a) Prevent Contractor's Personnel of entering where there are risks of collision with operating construction equipment, or place Flagmen which guide construction equipment (b) Disseminate to Flagmen and workers signal system, guide method and driver's visibility of Flagmen *(To MD: This visibility means how much drivers can see/identify signals by flagmen.)* (2) Make the operators or drivers take the following measures on uphill and downhill when operating construction equipment

(a) 建設機械の登坂能力及び安定度を超えて走行しないこと。

(b) 建設機械の機種に応じた運転上遵守すべき事項を厳守すること。

(3) 作業場所の地形、地盤その他に異常を認めたときは、運転者に作業を中止させること。地盤その他の安全性が確認されるまで作業を再開させないこと。

(4) 建設機械の転倒・転落の対策

(a) 建設機械の転倒又は転落による運転者を含む作業員の危険を防止するため、建設機械の運行経路の路肩の崩壊を防止すること、地盤の不同沈下を防止すること、必要な幅員を保持すること等必要な措置を講じること。

(b) 路肩、のり肩、傾斜地等で、建設機械の転倒又は転落により作業員に危険が生ずるおそれのあるときは、誘導者を配置し、その者に当該建設機械を誘導させること。また、請負者は、当該建設機械の運転者に、誘導者が行う誘導に従わせること。

(c) 路肩、のり肩、傾斜地等で、建設機械の転倒又は転落により運転者に危険のおそれのある作業には転倒保護構造（ROPS）又は横転時保護構造（TOPS）の機械を使用し、かつ、シートベルトを備えた建設機械を使用させること。また、運転者にシートベルトを使用させること。

(5) 建設機械への落下物の対策

建設機械への落下物のおそれのある作業時の運転者の安全のため、落下物保護構造物（FOPS）のついた機械を使用すること。

(6) 建設機械のワイヤロープ

建設機械で使用するワイヤロープは、安全係数が６以上のものを使用すること。この安全係数は、ワイヤロープの切断荷重の値を当該ワイヤロープにかかる荷重の最大の値で除した値とする。

ワイヤロープが次の状態の場合には、交換したうえで切り捨てて廃棄する等の処理を講ずること。

(a) ワイヤロープ一よりの間において素線の数の十パーセント以上の素線が切断しているもの

(b) 直径の減少が公称径の七パーセントを超えるもの

(c) キンクしたもの(any kink in wire rope)

(d) 著しい形くずれ又は腐食があるもの

(7) 建設機械の運転者が運転位置から離れるときは、運転者に次の措置を講じさせること。

(a) 建設機械を地盤の良い平坦な場所に止めること。

(b) ~~各種建設機械には逸走防止をするための輪止めを携帯し、~~停止時には、逸走防止のために足回りに輪止め等を確実にすること。

(c) バケット等の作業装置を地面まで降ろすこと。

(d) 原動機を止め、ブレーキは完全に掛け、ブレーキペダルをロックする

(a) Prohibit operate beyond climbing ability and stability of construction equipment

(b) Comply with the precaution according to construction equipment

(3) When any abnormalities are observed in the topography, ground, etc. of the work place, stop the driver operating and resume work until the safety of the ground and others is confirmed.

(4) Measures of the falling construction equipment

(a) Take necessary measures such as preventing the collapse of the shoulder of the operation route and the uneven settlement of the ground, maintaining the necessary width for the safety of operators and Contractor's Personnel because of the falling construction heavy equipment.

(b) When there are risks for Contractor's Personnel because of the falling construction heavy equipment at road shoulders and slopes etc. place flagmen which guide construction equipment. In addition, the contractor shall let the operator of construction heavy equipment to comply with the instruction of flagmen.

(c) When there are risks for operators and drivers because of the falling Construction heavy equipment at road shoulders and slopes etc., use Construction heavy equipment with seatbelt and of Roll Over Protective Structure (ROPS) or Tip Over Protective Structure (TOPS) and let operators use the seatbelt in operation.

(5) Measures against falling objects onto Construction heavy equipment

Use machineries of Falling Object Protective Structure (FOPS) for the safety of operators by falling objects onto construction equipment

(6) Wire ropes of construction equipment

Use wire ropes whose safety factor is over 6 for construction equipment. This safety factor obtained by dividing the cutting load value of wire ropes by the maximum load applied to wire ropes.

When wire ropes are the following conditions, take measures such as discharging after the replacement.

(a) Regarding to a twine of wire rope, more than 10% of the number of strands are cut

(b) Diameter reduction exceeds 7% of nominal diameter

(c) Any kink in wire rope

(d) Significant deformation or corrosion

(7) When operators and drivers move from drivers' seat of construction equipment, let operators take the following measures.

(a) Park construction equipment on flat and stiff ground

(a) Prohibit to operate beyond climbing ability and stability of construction equipment; and

(b) Comply with the matters that the drivers/operators shall comply according to type and kind of construction equipment.

(3) When any abnormalities are observed of the topography, ground, etc. at the work place, stop operating of construction equipment until the safety of the ground and others is secured.

(4) Measures against falling of construction equipment

(a) Take measures such as preventing collapse of road shoulder on the operation route and uneven settlement of the ground, maintaining necessary width for the safety of drivers/operators and worker;

(b) When there are risks to workers by fall accident of construction equipment on road shoulders and slopes, etc., place Flagmen which guide construction equipment. In addition, the Contractor shall make the divers/operators of construction equipment to comply with the instruction of Flagmen; and

(c) When there are risks to divers/operators by fall accident of construction equipment on road shoulders and slopes etc., use construction equipment which is equipped seatbelts and Roll Over Protective Structure (ROPS) or Tip Over Protective Structure (TOPS) and make divers/operators use the seatbelts during time of operation.

(5) Measures against falling objects onto construction equipment

Use machineries of Falling Object Protective Structure (FOPS) for the safety of drivers/operators by falling objects onto construction equipment.

(6) Wire ropes of construction equipment

Use wire ropes whose safety factor is over 6 for construction equipment. This safety factor is obtained by dividing the breaking strength of wire ropes by the maximum load applied to wire ropes.

When wire ropes are in the following states, such wire ropes shall be replaced, made unusable or disposed.

(a) Regarding to a twine of wire rope, more than 10% of the number of strands are cut;

(b) Diameter reduction exceeds 7% of nominal diameter;

(c) Any kink in wire rope; and

(d) Significant deformation or corrosion

Note: To MD, There are same following sentences as above. Please rearrange these sentences.
6.5.2 (3)
(i) Those with one-tenth or more of the element wires are cut in one strand.
(ii) Those with the reduction ratio of a diameter due to wear-out, of which are exceeding 7% of the nominal diameter.
(iii) Those with kink.
(iv) Those with marked deformation or corrosion.

(7) When operators and drivers leave drivers' seat of construction

こと。 (e) 作業装置はロックし、キーをはずして所定の場所へ保管すること。 (8) 悪天候時の対策 本仕様書 2.7[悪天候及び地震時の対策]の措置に加えて、悪天候時には建設機械が不安定な状態になることを回避するために、次のような措置を講じること。 (a) 強風時には、リーダー・ブームを倒す又は機械・リーダー等をアンカー等で固定すること。 (b) 大雨時には、増水の恐れや地盤が不安定になる場所から退避すること。 (c) 降雪時には、除雪を行いスリップによる脱輪や逸脱を防止すること。	(b) Be equipped with a wedge stopper to prevent runaway, and make sure to secure the wedge stopper with each construction equipment when stopping. (c) Lowering a bucket or other work equipment to the ground. (d) Stop the prime mover, fully engage the brake, and lock the brake pedal. (e) Lock the work equipment and stored the key in place. (8) Measures in bad weather predictive In addition to the measures described in JSSS 2.7[ADVERSE WEATHER REQUIREMENTS], take the following measures in bad weather predictive for the prevention of the unstable situation of construction equipment (a) Before strong winds predictive, fold the leader boom or anchoring the machine / leader with anchors. (b) Before heavy rain predictive, evacuate from a place where there is a risk of flood or the ground becomes unstable. (c) After snowfall, in cleaning snow to prevent run-off and deviation of access road.	equipment, make drivers/operators take the following measures. (a) Park construction equipment on flat and stiff ground; (b) Place wedge stoppers below construction equipment to prevent runaway of construction equipment when (stopping) parking; (c) Lowering bucket or other work equipment to the ground. (d) Stop the prime mover, fully engage the brake, and lock the brake pedal; and (e) Lock the work equipment and store the starter key of construction equipment in the designated place. (8) Measures at the time of adverse weather In addition to the measures described in JSSS 2.7 [ADVERSE WEATHER REQUIREMENTS], take the following measures in adverse weather for prevention of the state that the construction equipment becomes unstable. (a) Before strong winds, fold or put down the leader/boom on the ground or anchoring the machine/leader with anchors; (b) Before heavy rain, evacuate from the place where there is a risk of flood or the ground becomes unstable. (c) After snowfall, remove snow to prevent from going-off the shoulder of the road by slipping. *To MD: Names of leader boom are shown in Annex A of BS ISO 11886:2002.*
4.2.4 建設機械の用途外使用の制限 請負者は、建設機械を主たる用途以外に使用してはならない。作業の性質上やむを得ずパワーショベル等の建設機械を吊り上げ作業等の用途外で使用をする際には、以下の条件を満たさなければならない。 (1) アーム、バケット等の作業装置につり上げ用の器具を取り付けて使用するとき。 (2) アーム、バケット、~~玉掛用具が本仕様書[玉掛け用具]従い、~~フック、シャックル等の金具その他のつり上げ用の器具が、負荷させる荷重に応じた十分な強度を有するものであるとき。*(変更が間違いであった。)* (3) フック、シャックル等の金具その他のつり上げ用の器具に、外れ止め装置が使用され、器具からつり上げた荷が落下するおそれのないとき。 (4) フック、シャックル等の金具その他のつり上げ用の器具がアーム、バケット等の作業装置から外れるおそれのないとき。 (5) パワーショベル等の建設機械で吊り上げ作業に係わる運転者は、クレーン作業の免許(必要な場合)と教育を受けた者でなければならない。 荷のつり上げの作業以外の建設機械の用途外使用を行う場合には、作業員に危険を及ぼすおそれのない作業であることを確認したうえで行わなければならない。	**4.2.4 Restriction to Operate Construction Equipment for Other Use** The Contractor shall not operate construction equipment besides the main use. When construction equipment is operated for unavoidable reason such excavators are used for lifting work, the Contractor shall be satisfied with the following requirement. (1) Use a working device such as an arm or bucket attached to lifting equipment (2) Arms, bucket, hook, shackles and other metal fittings and other lifting equipment have sufficient strength in accordance with the load to be applied. (3) There are no risks of the falling of loads lifted from equipment such as hooks and shackles and other equipment for lifting by locking devices. (4) There are no risks that the lifting equipment such as a hook and shackles will be detached from the working equipment such as arms and a bucket. (5) Operators involved in lifting work with construction equipment such as excavators shall be licensed and trained for crane work. When construction equipment is operated for other use excluded the lifting work, ensure that there are no risks for Contractor's Personnel.	**4.2.4 Restriction to Operate Construction Equipment for Other Use** The Contractor shall not operate construction equipment other than the main purpose. When construction equipment shall be operated for unavoidable reason such as excavators are used for lifting work, the Contractor shall be satisfied with the following requirement: (1) Use Hoisting Equipment such as hook attached on working device of construction equipment such as arm or bucket; *(To MD, please see photo on the last page.)* (2) Arms, bucket, Hoisting Equipment, Rigging Equipment shall have enough strength to lift the loads as specified in JSSS 6.5.2 [Hoisting and Rigging Equipment]; (3) There is no risk of fall of loads lifted by the equipment with hooks, shackles and other devices for lifting; (4) There is no risk that the lifting devices such as hook and shackles will be detached from arm or bucket of the construction equipment; (5) Operators engaged in lifting work with construction equipment such as excavators shall be licensed when necessary and trained for crane work; and When construction equipment is used for other purpose than lifting work, use it after ensuring that there is no risk to workers in the work.
4.2.5 点検・整備作業時の安全措置 請負者は、点検・整備作業時の安全確保のために、本仕様書 4.1.7[機器の	**4.2.5 Safety Measures in Inspection and Maintenance** The Contractor shall take the following measures in addition to JSSS 4.1.8 [Safety Measures in Inspection and Maintenance] for safety in inspection	**4.2.5 Safety Measures at Inspection and Maintenance** The Contractor shall take the following measures in addition to JSSS 4.1.8 [Safety Measures in Inspection and Maintenance] for safety at inspection

点検・整備作業時の安全措置］に加え、次の措置を講じなければならない。 (1) 平坦地に建設機械を停止させて点検・整備作業を行うこと。やむを得ず傾斜地で行う場合は、機械の足回りに歯止めをする等、逸走や転倒を防止する措置を講じること。 (2) 点検・整備作業を行う建設機械のアタッチメント等の作業装置は必ず地面に降させること。やむを得ずブレード、バケット等を上げ、その下で点検・整備作業を行う場合には、安全ブロックで支持するなどの降下防止策をとること。	and maintenance. (1) Perform inspection and maintenance work at flat ground. If it is unavoidable to take place on sloping terrain, take measures to prevent runaway and fall, such as wedge stopper to the wheals or crawlers of construction equipment. (2) Ensure that equipment such as attachments should be lowered to the ground. If it is unavoidable to raise the blade, bucket, etc., and implement inspection and maintenance works, take measures to prevent the descent, such as supporting it with safety blocks/shafts/wedges etc.	and maintenance; (1) Perform inspection and maintenance work for construction equipment at level ground. If it is unavoidable to take place on sloped ground, take measures to prevent run-away and fall such as placing wedge stoppers below wheels of construction equipment; and (2) Lower work equipment such as attachments to the ground at inspection and maintenance. If it is unavoidable to implement inspect or maintenance below the raised blade, bucket, etc., take measures to prevent the descent of attachments such as supporting it with safety blocks, etc.
4.2.6 作業装置の装着等の作業時の安全措置 請負者は、アタッチメント等、建設機械の作業装置の装着及び取りはずし作業では、次の措置を講じなければならない。 (1) アタッチメントの装着又は取り外しの作業を行うときは、アタッチメントが倒壊すること等による作業員の危険を防止するための措置をとること。 (2) 誤操作や当該作業員の挟まれ防止のために、当該作業の作業主任の合図に従い、当該作業員に作業を行わせること。	**4.2.6 Safety Measures in Attachment and Removal of Work Devices** The Contractor shall take the following measures in attachment and removal of work devices of construction equipment. (1) When equip or remove the heavy equipment attachment, take measures to prevent Contractor's Personnel from the danger due to the heavy equipment falling. (2) In order to prevent accidental operation and the Contractor 's Personnel being trapped, the Contractor's Personnel executes the work according to the signal of the person in charge of the work.	**4.2.6 Safety Measures at Attaching and Removal of Work Devices** The Contractor shall take the following measures in attaching *(To MD, please select suitable word from equipping, installation; furnishing; fitting; mounting)* and removal of work devices of construction equipment. (1) When equipping or removing attachment of the construction equipment, take measures to prevent workers from the danger by fall of attachments from the construction equipment; and (2) To prevent accidental mis-operation of the construction equipment and the workers being trapped, make workers do the attaching or removal work under the instruction of Operation Leader.
4.2.7 建設機械の搬送時の安全措置 (1) 建設機械の積込み・積卸し 請負者は、建設機械の積込み及び積卸しでは、次の措置を講じなければならない。 (a) 建設機械をトレーラ又はトラック等に積載して移送する場合は、登坂用具又は専用装置を備えた移送用の車両を使用すること。 (b) 積込み又は積卸しを行う場合は、支持力のある平坦な地盤で、作業に必要な広さのある場所を選定すること。 (c) 積込み又は積卸し作業時には、移送用車両は必ず駐車ブレーキを掛け、タイヤに輪止めをすること。 (d) 登坂用具は、積込み又は積卸しする機械重量に耐えられる強度、長さ及び幅を持ち、キャタピラや車輪の回転によって荷台からはずれないような、爪付きのもの又ははずれ止め装置の装備されたものを使用すること。 (e) 建設機械を道路の制限高さを超えないように積込みすること。 (2) 建設機械の積込後の固定等 請負者は、建設機械の積込後、次の措置を講じなければならない。 (a) 建設機械を荷台の所定位置で停止させ、駐車ブレーキを掛けること。 (b) 建設機械のバケット等はトレーラ等の床上に下ろし固定すること。 (c) 積込みの状態及び輪止め等固定の状態が適切であるかを確認する	**4.2.7 Safety Measures in Loading and Unloading of Construction heavy Equipment** (1) Loading and Unloading of construction heavy equipment The Contractor shall take the following measures in loading and unloading construction heavy equipment. (a) Use vehicles with climbing equipment or special equipment when construction heavy equipment is transported by trailers or tracks (b) Select a place with in sufficient space for work on a flat and stiff ground when loading and unloading (c) Ensure to set the parking brake on the trailer and wedge stopper to the wheels when loading and unloading. (d) Ensure that the climbing boards to the trailer have an enough strength, length and width that can withstand the weight of the construction equipment to be loaded or unloaded, and is equipped with a claw or a fixing device that does not come off the platform due to the slip of the caterpillar or wheels (e) Ensure that the height of construction heavy equipment with trailers do not exceed the maximum height of the road regulation of the country. (2) Fixing after Loading construction heavy equipment The Contractor shall take the following measures after loading construction heavy equipment on to the trailer. (a) Fix the construction heavy equipment at a suitable position on the platform of a trailer and apply the parking brake.	**4.2.7 Safety Measures for Transportation of Construction Equipment** (1) Loading and unloading of construction equipment The Contractor shall take the following measures of loading and unloading construction equipment to and from transportation equipment: (a) Use transportation equipment such as trailers or tracks equipped climbing equipment or special equipment for construction equipment; (b) Select place with enough space for work on level and stiff ground when loading and unloading; (c) Set parking brake of the transportation equipment and put wedge stoppers below its wheels when loading and unloading; (d) Ensure that the climbing equipment shall have enough strength, length and width that can withstand the weight of the construction equipment to be loaded or unloaded, and is equipped with claws or a fixing device so that they do not come off from cargo bed due to the movement of caterpillars or wheels; and (e) Ensure that the height of construction equipment on the transportation equipment do not exceed the maximum height stipulated in the Laws of the Country. (2) Fixing after loading construction equipment The Contractor shall take the following measures after loading construction equipment on the transportation equipment: (a) Fix the construction equipment at suitable position on the cargo bed of transportation equipment and set the parking brake of the

こと。	(b) Rest and fix the bucket of construction heavy equipment on the platform of a trailer. (c) Ensure whether the loading condition and the fixed state of wedge stopper to wheel are appropriate.	construction equipment; (b) Put down and fix the bucket of construction equipment on the cargo bed of transportation equipment; and (c) Inspect whether the loading condition and the fixing state by wedge stoppers below wheels of the construction equipment are appropriate on the transportation equipment.
4.2.8 リース建設機械の使用 (1) 請負者は、リース建設機械を使用する場合は、リース会社から、搬入時に以下の書面による報告を受理しなければならない。 (a) 当該建設機械にかかる点検整備状況にかかる記録 (b) 当該建設機械の能力、特性その他その使用上の注意すべき事項 (2) 請負者は、リース機械を使用する際には、次を行わなければならない。 (a) 搬入時に本仕様書 4.2.1［建設機械の点検・整備］の(3)[建設機械の定期点検]に規定する項目のうち、当該建設機械に該当する項目を含む点検・整備に関する記録を確認すること。確認できなかった場合、使用開始に先立ち同様の項目の点検・整備を実施すること。 (b) 不備のあるリース建設機械は使用しないこと。 (3) 請負者は、運転者付きのリース建設機械を使用する際には、次を行わなければならない。 (a) リース建設機械会社の要員を運転者または操作者に、本仕様書 4.1.4[安全教育と指導]に準じて教育を受けさせなければならない (b) 作業開始前に機体の保守点検記録、整備状況、安全装置の装備、その正常動作の点検整備状況を機械整備の担当に確認させること。 (c) 不備のある建設機械を使用させないこと。 (4) 請負者は、リース建設機械についても、本仕様書 4.1[請負者の機器の一般的留意事項]及び 4.2[建設機械]に規定された事項を遵守しなければならない。	**4.2.8 Use of Leasing Construction Heavy Equipment** (1) When the Contractor use leasing Construction heavy equipment, the Contractor shall receive the following report from the leasing company in beforehand. (a) Inspection and maintenance records for leasing construction heavy equipment (b) Capability and characteristic and other precautions for use of construction heavy equipment (2) When the Contractor use leasing construction heavy equipment, the Contractor shall take the following measures. (a) Check inspection and maintenance records including items applicable to the equipment specified in JSSS 4.2.1 (3) [Periodic Inspections]. If not confirmed, inspect and maintain the same items before the start of operations. (b) Prohibit use defective leasing construction heavy equipment (3) When the Contractor lease construction heavy equipment with operators and drivers from leasing companies, the Contractor shall take the following measures. (a) Let operators and drivers from leasing companies be trained according to JSSS 4.1.5[Safety Instructions] (b) Let the machinery maintenance worker confirm maintenance inspection records, maintenance status and safety equipment before the start of operations. (c) prohibit the driver from using defective leasing machines (4) The Contractor shall comply with the JSSS 4.1[General Requirements for Contractor's Equipment] and 4.2[Construction Equipment] for use of leasing construction heavy equipment.	**4.2.8 Use of Leased Construction Equipment** (1) When the Contractor use leased construction equipment, the Contractor shall receive the following report from the lease company in beforehand; (a) Inspection and maintenance records of leased construction equipment; (b) Capability, characteristic and other precautions for use of the construction equipment. (2) When the Contractor use leased construction equipment, the Contractor shall take the following measures. (a) Check inspection and maintenance records of the leased construction equipment including items applicable to the equipment specified in JSSS 4.2.1 (3) [Periodic Inspection]. When records are insufficient or not available, inspect and maintain the same items before the start of operations; and (b) Prohibit use defective leased construction equipment. (3) When the Contractor use leased construction equipment with operator or driver from lease company, the Contractor shall take the following measures: (a) Make operators and drivers from lease companies be trained according to JSSS 4.1.5 [Safety Instructions]; (b) Make his worker in charge of machinery maintenance inspect maintenance inspection records, maintenance status and safety equipment before the start of operations of leased construction equipment; and (c) Prohibit using defective leased construction equipment. (4) The Contractor shall comply with the JSSS 4.1 [General Requirements for Contractor's Equipment] and 4.2 [Construction Equipment] for use of leased construction equipment.
4.3 建設設備 **4.3.1 建設設備の点検・整備** 請負者は本仕様書 4.1.6[機器の点検・整備]に従い、次の点検・整備を行わなければならない。 (1) 建設設備の日常点検 日常点検では、次の点検項目を含む請負者が準備した点検表に基づき点検を行うこと。 (a) 原動機及びプーリーの機能、非常停止装置の機能、原動機、回転軸、歯車、プーリー等の覆い、囲い等の異常の有無	**4.3 Construction Facilities** **4.3.1 Inspection and Maintenance of Construction Facilities** The Contractor shall perform the following inspection and maintenance in accordance with 4.1.6 [Inspection and Maintenance of Equipment]. (1) Daily Inspection of Construction Facilities In daily inspections, inspections should be performed based on the inspection table prepared by the Contractor including the following check points: (a) Functions of a prime mover and a pulley, functions of an emergency stop device, abnormalities in a cover, an enclosure, etc. of a prime mover, a rotating shaft, a gear, a pulley, etc.,	**4.3 Construction Facilities** **4.3.1 Inspection and Maintenance of Construction Facilities** The Contractor shall perform the following inspection and maintenance in accordance with 4.1.6 [Inspection and Maintenance]. (1) Daily Inspection of Construction Facilities Daily inspection shall be performed using the checklist prepared by the Contractor including the following check items: (a) Functions of prime mover, pulley, emergency stop device, abnormalities in cover, enclosure, etc. of prime mover, rotating shaft, gear, pulley, etc.;

(b) 異常な音、振動、臭気等 (c) 設備の清掃、給油の状況 (d) 設備周辺の整理、整頓 (2) 建設設備の定期点検 (3) 悪天候及び地震後の点検	(b) Abnormal sound, vibration, odor, etc., (c) Condition of cleaning and refuelling on facilities, and (d) Arrangement around the facilities. (2) Periodic Inspection of Construction Facilities (3) Inspection after adverse weather and earthquake	(b) Abnormal sound, vibration, smell, etc.; (c) State of cleaning and lubricating of facilities; and (d) State of sorting and setting-in-order around the facilities. (2) Periodic Inspection of Construction Facilities (3) Inspection after adverse weather and earthquake
4.3.2 建設設備の作業環境 請負者は、建設設備の作業に際しては、本仕様書 4.1.5[機器の作業環境]に加えて、次に示す安全上の措置を講じなければならない。 (1) 建設設備の出入口には，本仕様書 2.4[監視員・誘導員の配置]に従い、状況に応じて誘導員を配置すること。 (2) 次のときは、建設設備の機械一部又は全てに覆い又は囲い等を設けること。 (e) 機械の回転部等に挟まれ、巻き込まれることにより作業員に危険を及ぼすおそれのあるとき。 (f) 設備で取り扱う材料、コンクリート等が飛来することにより作業員に危険を及ぼすおそれのあるとき。 (3) 建設設備に通ずる場所及び建設設備内には、本仕様書 7.4[通路]に従い、作業者が使用するための安全な通路を設け、かつ、これを常時有効に保持すること。 (4) 作業員の埋没の危険のおそれがあるコンクリートの骨材のストックパイルには、立入りを禁止すること。	**4.3.2 Working Environment on Construction Facilities** The Contractor shall take the following safety measures in addition to this specification 4.1.5 [Work Environment on Equipment] when working on construction facilities. (1) In accordance with the specifications 2.4 [Allocation of Spotters / Flagmen] at the entrances and exits of construction facilities, flagmen should be allocated according to the situation. (2) In the following cases, provide a cover or enclosure for part or all of the machinery installed in the construction facility: (a) When there is a risk of danger to workers due to being caught in a rotating part of the machine, and (b) When materials, concrete, etc. handled by the facility may fly and cause danger to workers. (3) A safe passage for use by workers shall be provided in accordance with this specification 7.4 [Temporary Walkway] in the place aproaching to the construction facility and in the construction facility, and this shall be kept effective at all times. (4) Access to concrete aggregate stock piles with the risk of being buried by workers is prohibited.	**4.3.2 Work Environment with Construction Facilities** The Contractor shall take the following safety measures in addition to JSSS 4.1.5 [Work Environment] when working with construction facilities. (1) In accordance with JSSS 2.4 [Spotters, Flagmen and the like] at the entrances and exits of construction facilities, Spotters shall be allocated according to its situation; (2) In the following cases, provide covers or enclosure around parts or whole of the construction facilities; (a) When there is risk of danger to workers of being hit or caught into rotating parts of the construction facilities, and (b) When there is risk of danger to workers by flying or scattering of materials, concrete, etc. handled by the construction facilities. (3) Safe passage for use by workers shall be provided in accordance with JSSS 7.4 [Temporary Walkway] on the place accessing to and in the construction facilities, and always maintained effective. (4) Access of workers to concrete aggregate stock piles where there is risk of workers being buried shall be prohibited.
4.3.3 建設設備の設置、組立、解体時の安全措置 請負者は、建設設備の設置、組立、解体を行うときは、次の措置を講じなければならない。 (1) 建設設備の設置、組立、解体は、当該機設備の専門家の指揮のもとに行うこと。 (2) 建設設備の設計に従い、基礎の建設、据え付けを行うこと。 (3) 本仕様書 4.1.6[機器の点検・整備]に従い、建設設備の設置又は組立作業終了時には完成時試験を行うこと。	**4.3.3 Safety Measures for Installation, Assembly and Dismantling of Construction Facilities** The Contractor shall take the following measures when installing, assembling and dismantling construction facilities: (1) Installation, assembly, and dismantling of construction facilities should be carried out under the direction of the facility specialist, (2) To construct and install the foundation according to the design of the construction facilities, and (3) In accordance with this specification 4.1.6 [Inspection and Maintenance of Equipment], the completion test shall be conducted at the installation or after assembling of the construction facilities.	**4.3.3 Safety Measures for Installation, Assembly and Dismantling of Construction Facilities** The Contractor shall take the following measures for installing, assembling and dismantling of construction facilities: (1) Installation, assembly and dismantling of construction facilities shall be carried out under the direction of the facility specialist; (2) The foundation shall be constructed or installed according to the design of the construction facilities; and (3) In accordance with JSSS 4.1.6 [Inspection and Maintenance], the completion test shall be conducted at the completion of installation or assembling of the construction facilities.
4.3.4 建設設備の作業時の安全措置 請負者は、建設設備を使用して作業を行うときは、次の措置を講じなければならない。 (1) 建設設備の運転者又は操作者、保守点検の担当者の氏名を、建設設備の見やすい位置に掲示すること。 (2) 保守点検の担当者以外に、建設設備の覆い・囲いや安全装置を取り外	**4.3.4 Safety Measures in Working with Construction Facilities** The Contractor shall take the following measures when working with construction facilities: (1) Post the name of the operator of the construction facilities, or the person in charge of maintenance and inspection in an easy-to-see position on the facilities, (2) Except for the person in charge of maintenance and inspection, cover	**4.3.4 Safety Measures for the Work with Construction Facilities** The Contractor shall take the following measures when working with construction facilities; (1) Post the names of the operators of the construction facilities, or the person in charge of maintenance and inspection on easy-to-see positions on the facilities; (2) Other person than the person in charge of inspection and maintenance shall not remove the cover, enclosure and safety devices of the

し、又はその機能を失わせないこと。 (3) 建設設備の運転者、操作者又は作業員が、建設設備の音、振動、臭気、温度等に異常を認めた場合は、建設設備の使用を停止して、保守点検の担当者へ報告させること。 (4) 建設設備に異常を認めた場合、異常の原因の特定と修理等の対応を行い、建設設備の安全が確認されるまで、建設設備を使用しないこと。 (5) 部品の交換後は、直ちに正常な動作性を確認すること。 (6) 機械の運転を停止したときは、本仕様書 4.1.7[機器の点検・整備作業時の安全措置]の(1)及び(2) の措置を講じ、上記の作業に従事する作業員以外の者が当該機械を運転することを防止すること。	/ enclosure and safety devices of the construction facilities must not be removed or its function shall not be lost, (3) If the operator or worker of the construction facility identifies an abnormality in the sound, vibration, odor, temperature, etc., stop using it and let him report to the person in charge of maintenance, (4) If any abnormality is identified in the construction facilities, do not use them until the cause of the abnormality is identified and repaired, and the safety of them is confirmed, (5) When replacing parts, check normal operation immediately, and (6) When the operation of the machine is stopped, take the measures (1) and (2) in 4.1.7 [Safety Measures for Inspection and Maintenance of Equipment], and prevent anyone other than the operators from using the machine.	construction facilities or make its function be lost; (3) When the operator or worker of the construction facility identifies abnormality in sound, vibration, smell, temperature, etc., the operator or worker shall stop using it and report it to the person in charge of maintenance; (4) If any abnormality is identified in the construction facilities, it shall not be used until the cause of the abnormality is identified and repaired, and its safety is secured; (5) When part of construction facilities is replaced, check immediately its normal operation; and (6) When the operation of the construction facilities is stopped, take the measures (1) and (2) in JSSS 4.1.7 [Safety Measures for Inspection and Maintenance], and prevent anyone other than the operators from using the machine.
4.3.5 点検・整備作業時の安全措置 請負者は、建設設備の点検・整備作業時の安全確保のために、本仕様書 4.1.7[機器の点検・整備作業時の安全措置]に加え、次の措置を講じなければならない。 建設設備の掃除、給油、検査、修理又は調整の作業を行う場合において、作業員に危険を及ぼすおそれのあるときは、建設設備の運転を停止しなければならない。ただし、建設設備の運転中に作業を行わなければならない場合において、危険な箇所に覆いを設ける等の措置を講じたときは、この限りでない。	**4.3.5 Safety measures during inspection and maintenance work** The Contractor shall take the following measures in addition to 4.1.7 [Safety Measures during Equipment Inspection / Maintenance Work] in order to ensure safety during inspection / maintenance work of construction facilities. When cleaning, refueling, inspecting, repairing, or adjusting work for construction facilities, they must be shut down if there is a risk of danger to workers. Provided, however, that this shall not apply to cases where work must be performed during operation of the construction facilities and measures are taken such as providing a cover in a dangerous place.	**4.3.5 Safety Measures at Inspection and Maintenance** The Contractor shall take the following measures in addition to JSSS 4.1.7 [Safety Measures at Inspection and Maintenance] to ensure safety of the workers at the inspection and maintenance of the construction facilities. When the Contractor carries out the work of cleaning, lubricating, inspecting, repairing, or adjusting for construction facilities, the Contractor shall shut down the construction facilities when there is a risk with the work to the workers. The above will not apply to the case when work must be performed during operation of the construction facilities and measures such as providing covers on dangerous place are taken.
4.4 定置機械 **4.4.1 定置機械の点検・整備** 請負者は本仕様書 4.1.6[機器の点検・整備]に従い、次の点検・整備を行わなければならない。 (1) 定置機械の日常点検 日常点検では、次の点検項目を含む請負者が準備した点検表に基づき点検を行うこと。 (a) 定置機械に共通する点検項目 (i) 安全装置の機能 (ii) 異常な音、振動、臭気等 (iii) 機械の清掃、給油(潤滑油)の状況 (iv) 機械周辺の整理、整頓 (b) 工事用エレベーター、建設用リフトに関する点検項目 (i) 運転者又は操作者の名前の標示 (ii) 最大積載荷重の明示 (iii) 機械の周辺の囲いの異常の有無 (iv) 搬器扉及び各階扉の異常の有無 (v) インターホンの異常の有無	**4.4 Fixed Equipment** **4.4.1 Inspection / Maintenance of Fixed Equipment** The Contractor shall perform the following inspection and maintenance in accordance with 4.1.6 [Inspection and Maintenance of Equipment] of this specification. (1) Daily Inspection of Fixed Equipment In daily inspections, inspections should be performed based on the inspection table prepared by the contractor including the following check points. (a) Check Points Common to Fixed Equipment (i) Function of safety device (ii) Abnormal sound, vibration, odor, etc. (iii) Condition of cleaning and refuelling on facilities (iv) Arrangement around the facilities (b) Check Points on Elevators and Lifts for Construction Works (i) Display the name of operators (ii) Display the maximum load capacity (iii) Abnormality of enclosures around equipment (iv) Abnormality on the door of carriers and doors on each floor	**4.4 Stationary Equipment** **4.4.1 Inspection and Maintenance of Stationary Equipment** The Contractor shall perform the following inspection and maintenance of stationary equipment in accordance with JSSS 4.1.6 [Inspection and Maintenance]. (1) Daily inspection of stationary equipment Daily inspection shall be performed using the checklist prepared by the Contractor including the following inspection items: (a) Inspection items common to the stationary equipment (i) Function of safety devices; (ii) Abnormal sound, vibration, smell, etc.; (iii) State of cleaning and lubricating of facilities; and (iv) State of sorting and setting-in-order around the facilities. (b) Inspection items of elevators and lifts for the Works (i) Post the names of operators (ii) Post the maximum load capacity (iii) Abnormality in enclosures around equipment (iv) Abnormality in the door of carriers and doors on each floor

(vi) 建設用リフトの場合、ブレーキ及びクラッチの異常の有無、日常点検可能な場所のワイヤロープが通っている箇所の摩耗、損傷の有無

(c) グラインダー、丸鋸等の回転部のある電気機械

(i) 回転部分の磨耗、損傷の有無

(ii) アースの状況

(2) 建設機械の定期点検

定期点検では、次の点検項目を含む請負者が準備した点検表に基づき点検を行うこと。

工事用エレベーター及び建設用リフトは一月以内ごとに一回、定期に、次の事項について検査を行うこと。ただし、一月をこえる期間使用しない工事用エレベーター、建設用リフトの当該使用しない期間においては、この限りでないが、その使用を再開する際は、次の事項について検査を行うこと。

(a) 工事用エレベーター

(i) ファイナルリミットスイッチ、非常止めその他の安全装置、ブレーキ及び制御装置の異常の有無

(ii) ワイヤロープの損傷の有無

(iii) ガイドレールの状態

(iv) 屋外に設置されているエレベーターにあっては、ガイロープを緊結している部分の異常の有無

(b) 建設用リフト

(i) ブレーキ及びクラッチの異常の有無

(ii) ウィンチの据え付けの状態

(iii) ワイヤロープの損傷の有無

(iv) ガイロープを緊結している部分の異常の有無

(v) 配線、開閉器及び制御装置の異常の有無

(vi) ガイドレールの状態

(v) Abnormality on the interphones

(vi) In the case of lifts for construction works, abnormalities in brakes and clutches, wear or damage of parts that can be inspected daily, where the wire rope passes.

(c) Electric Machines with Rotating Parts such as Grinders and Circular Saws

(i) Wear or damage of rotating parts

(ii) Grounding situation

(2) Periodic Inspection of Construction Machinery

Periodic inspections should be carried out based on the inspection table prepared by the Contractor including the following check points.

For elevators and lifts, the following items should be inspected once a month or less on a regular basis. However, this shall not apply during the period when elevators and lifts are not used for a period exceeding one month, but when resuming its use, the following matters shall be inspected.

(a) Elevators

(i) Abnormality of final limit switch, emergency stop and other safety devices, brakes and control devices

(ii) Wire rope damage

(iii) Guide rail condition

(iv) In the case of an elevator installed outdoors, whether or not there is an abnormality in the part where the guy rope is tied

(b) Lifts

(i) Abnormality of brakes and clutches

(ii) Abnormality of winch installation status

(iii) Wire rope damage

(iv) Abnormality in the part where the guy rope is tight

(v) Abnormality in wiring, switches and control devices

(vi) Abnormality in guiderails

(v) Abnormality in the interphones

(vi) Abnormalities in brakes and clutches, wear or damage of parts where wire rope passes, which can be inspected daily, of lifts for construction works.

(c) Electric machines with rotating parts such as grinders and circular saws

(i) Wear or damage of rotating parts; and

(ii) Grounding situation.

(2) Periodic inspection of stationary equipment

Periodic inspection shall be carried out using the checklist prepared by the Contractor including the following inspection items;

For elevators and lifts, the following items shall be inspected once a month or less on a regular basis. However, this shall not apply during the period when elevators and lifts are not used for period exceeding one month, but when resuming its use, the following items shall be inspected.

(a) Elevators

(i) Abnormality of final limit switch, emergency stop and other safety devices, brakes and control devices;

(ii) Wire rope damage;

(iii) Guide rail condition; and

(iv) For elevators installed outdoors, abnormality in the part where the guy ropes are tied.

(b) Lifts

(i) Abnormality of brakes and clutches;

(ii) Abnormality of installation of winches;

(iii) Damage in wire ropes;

(iv) Abnormality in the part where the guy rope is tight;

(v) Abnormality in wiring, switches and control devices; and

(vi) Abnormality in guiderails.

4.4.2 大型の定置機械の設置、組立、解体時の安全措置

請負者は、大型の定置機械の設置、組立、解体を行うときは、次の措置を講じなければならない。

(1) 定置機械の設置、組立、解体は、当該機械の専門家の指揮のもとに行うこと。

(2) 定置機械の設計に従い、必要に応じ基礎の建設、据え付けを行うこと。

(3) 本仕様書 4.1.6[機器の点検・整備]に従い、定置機械の設置又は組立作業終了時には完成時試験を行うこと。

4.4.2 Safety Measures for Installation, Assembly and Dismantling of Large Fixed Equipment

The Contractor shall take the following measures when installing, assembling and dismantling of large fixed equipment:

(1) Installation, assembly, and dismantling of fixed equipment shall be carried out under the direction of specialists of the equipment,

(2) Construct and build the foundation according to the design of the fixed equipment, and

(3) In accordance with 4.1.6 [Inspection and Maintenance of Equipment] of this specification, the completion test shall be conducted at the installation or after assembling of the fixed equipment.

4.4.2 Safety Measures for Installation, Assembly and Dismantling of Large Stationary Equipment

The Contractor shall take the following measures for installing, assembling and dismantling of large stationary equipment:

(1) Installation, assembly, and dismantling of large stationary equipment shall be carried out under the direction of specialists of the large stationary equipment,

(2) Construct and build the foundation when necessary according to the design of the large stationary equipment, and

(3) In accordance with JSSS 4.1.6 [Inspection and Maintenance], the completion test shall be conducted at the installation or after assembling of the large stationary equipment.

4.4.3 小型の定置機械の作業環境 請負者は、小型の定置機械を用いた作業に際しては、本仕様書 4.1.5[機器の作業環境]に加えて、次に示す安全上の措置を講じなければならない。 (1) 次のときは、機械一部又は全てに覆い又は囲い等を設けること。 (a) 機械の回転部等に挟まれ、巻き込まれることにより作業員に危険を及ぼすおそれのあるとき。 (b) 加工物等が切断し、又は欠損して飛来することにより作業員に危険を及ぼすおそれのあるとき。 (c) 切削屑が飛来すること等により作業員に危険を及ぼすおそれのあるとき。 (2) 丸のこ盤には、歯の接触予防装置等、作業員の危険を予防するための設備を設けること。	**4.4.3 Work Environment for Small Fixed Equipment** The Contractor shall take the following safety measures in addition to 4.1.5 [Working Environment Using Equipment] of this specification when working with small fixed equipment. (1) In the following cases, provide a cover or enclosure for part or all of the equipment. (a) When there is a risk of danger to workers due to being caught in a rotating part of the equipment. (b) When there is a risk of danger to workers due to work pieces being cut or missing and flying. (c) When there is a risk of danger to workers due to flying cutting waste. (2) The circular saw machine shall be equipped with equipment to prevent worker danger, such as a tooth contact prevention device.	**4.4.3 Work Environment for Small Stationary Equipment** The Contractor shall take the following safety measures in addition to JSSS 4.1.5 [Work Environment] when working with small stationary equipment; (1) In the following cases, provide covers or enclosure around parts or whole of the equipment; (a) When there is a risk of danger to workers by being hit by or caught into rotating parts, etc. of the equipment; (b) When there is a risk of danger to workers by flying of cut or broken workpiece, etc. from the equipment; and (c) When there is a risk of danger to workers due to scattering chips, etc. from the equipment. (2) Circular saw machines shall be equipped with devices to prevent worker danger, such as disc contact prevention device, etc. *To MD, The 4.1. General describes as follows:* *The Contractor shall comply with "OHSA Part1926 Subpart N- Helicopters, Hoists, Elevators, and Conveyors, and Subpart I-Tools-and and Power" for the equipment, tools and stationary equipment which are not specified in (c), (d) and (e).* *Do you think if we shall specify Subpart I, §1926.304 Woodworking tools again to specify more details for saws in 4.4.3 (2)?*
4.4.4 定置機械の作業時の安全措置 請負者は、定置機械を操作して、又は使用して作業を行うときは、次の措置を講じなければならない。 (1) 大型及び小型定置機械に共通した措置 (a) 機械の保守点検の担当者の氏名を、機械の見やすい位置に掲示すること。 (b) 保守点検の担当者以外に、覆い・囲いや安全装置を取り外し、又はその機能を失わせないこと。 (c) 機械の操作者又は作業員が、機械の音、振動、臭気、温度等に異常を認めた場合は、機械の操作又は使用を停止して、保守点検の担当者へ報告させること。 (d) 機械に異常を認めた場合、異常の原因の特定と修理等の対応を行い、機械の安全が確認されるまで、機械の操作者又は作業員に機械を使用させないこと。 (2) 大型定置機械に関する措置 (a) 建設用リフト等を運転する場合、必要に応じ合図を行なう者を指名し、請負者が定めた一定の合図を無線通信、モニター等の手段を用いて、運転者に対して行なわせること。 (b) 地震時及び悪天候の場合には、製造者のマニュアルに従って点検・整備を行うこと。 (c) 各機械には、積載荷重、操作者氏名、資格名を、機械の見やすい	**4.4.4 Safety Measures for Working on Fixed Equipment** The Contractor shall take the following measures when operating or using the fixed equipment. (1) Measures Common to Large and Small Fixed Equipment. (a) Post the name of the person in charge of maintenance and inspection of the equipment in an easily visible position on them. (b) Other than the person in charge of maintenance and inspection, the cover / enclosure and safety devices must not be removed or their functions lost. (c) If an operator or worker of the equipment identifies an abnormality in the sound, vibration, odor, temperature, etc. of the equipment, stop the operation and report it to the person in charge of maintenance and inspection. (d) If an abnormality is found in the equipment, the cause of the abnormality must be identified and repaired, and the operator or worker should not be used until the machine safety is confirmed. (2) Safety Measures for Large Fixed Equipment (a) When operating a lift for construction, etc., appoint a person who performs a signal as necessary, and let the driver perform a certain signal determined by the Contractor by means of wireless communication, monitor, etc. about. (b) After the occurrence of an earthquake and adverse weather, check and maintain the equipment according to the manufacturer's manual. (c) Post the load capacity, operator's name, and the title of his	**4.4.4 Safety Measures for the Work with Stationary Equipment** The Contractor shall take the following measures when operating or using the stationary equipment. (1) Measures common to large and small stationary equipment (a) Post names of the person in charge of maintenance and inspection of the equipment on easy-to-see locations of the equipment; (b) Other person than the person in charge of inspection and maintenance shall not remove the cover, enclosure and safety devices of the equipment or make its function be lost (c) When the operator or worker of the equipment identifies an abnormality in sound, vibration, smell, temperature, etc., the operator or worker shall stop using it and report it to the person in charge of maintenance; (d) If any abnormality is identified in the equipment, it shall not be used until the cause of the abnormality is identified and repaired, and its safety is secured. (2) Safety Measures for large stationary equipment (a) When operating lifts for construction, etc., place Flagmen when necessary, and make operators operate with signals determined by the Contractor by means of wireless communication system, monitoring TV, etc.; (b) After the occurrence of earthquake or adverse weather, inspect and make maintenance the equipment according to its manufacturer's manual;

位置に掲示すること。 (d) 工事用エレベーター、建設用リフトを用いて作業を行なうときは、次に該当する場所に作業員を立ち入らせてはならない。 (i) 搬器の昇降によって作業員に危険が生ずるおそれのある箇所 (ii) 巻上げ用ワイヤロープの内角側で、当該ワイヤロープが通っているシーブ又はその取付け部の破損により、当該ワイヤロープが跳ねる、又は当該シーブ若しくはその取付具がの飛来することにより作業員に危険を生ずるおそれのある箇所 (e) 荷揚げ物の落下・飛散などの防止措置を講ずること。 (3) 小型定置機械に関する措置 (a) 機械のアタッチメントは、機械の製造者が推奨する規格のもの又はこれと同等の機能を有することを証明できるものを使用すること。 (b) 部品の交換後は、直ちに正常な動作性を確認すること。 (c) 機械の掃除、給油、検査、修理又は調整の作業を行う場合に際しては、機械の運転を停止すること。 (d) 機械の運転を停止したときは、本仕様書 4.1.7[機器の点検・整備作業時の安全措置]の(1)及び(2)の措置を講じ、~~上記の~~点検・整備作業に従事する作業員以外の者が当該機械を運転することを防止すること。 (e) 研削といしについては製造者のマニュアルに従って使用すること。	qualification on each machine in an easily visible position. (d) When performing works using elevators and lifts, do not allow workers to enter the following locations. (i) Locations that may cause danger to workers due to lifting and lowering of the carrier (ii) Areas located inside angle of the hoisting wire rope where the wire rope may jump due to breakage of the sheave through which the wire rope passes or its mounting part, or locations that may cause danger to workers due to flying of sheave or its attachment. (e) Take preventive measures such as dropping / scattering of the cargo. (3) Safety Measures for Small Fixed Equipment (a) The attachment of equipment shall be of the standard recommended by the manufacturer or one that can be proved to have equivalent functions. (b) In case of having replaced parts, check the equipment to work properly immediately after it. (c) Stop operation when cleaning, refueling, inspection, repair or adjustment work for equipment. (d) When the equipment is stopped, take measures (1) and (2) in 4.1.7 [Safety Measures for Inspection and Maintenance of Equipment] of this specification and prevent anyone other than the workers engaged from operating the machine. (e) Use grinding wheels in accordance with the manufacturer's manual.	(c) Post the load capacity, operator's name and title at easy-see locations on the machine; (d) When performing works using elevators and lifts, do not allow workers to enter the following locations; (i) Locations that may cause danger to workers due to lifting and lowering of the carrier; and (ii) Areas located inside angle of hoisting wire rope where the wire rope may jump due to breakage of the sheave through which the wire rope passes or its mounting part, or locations that may cause danger to workers due to flying of sheave or its attachment; *To MD, please see Figure 1 in last page for (ii) above.* (e) Take preventive measures to avoid dropping or scattering of good transporting by the equipment. (3) Safety Measures for small stationary equipment (a) The attachment of equipment shall be of the standard and recommended ones by the manufacturer or that can be proved to have equivalent functions; (b) Immediately after replacement of parts, inspect the equipment to work properly; (c) Stop operation when cleaning, lubricating, inspection, repair or adjustment work for equipment; (d) When the operation of the equipment is stopped, take the measures (1) and (2) in JSSS 4.1.7 [Safety Measures for Inspection and Maintenance], and prevent anyone other than the workers engaged in the inspection and maintenance works; and (e) Work with grinding wheels in accordance with the manufacturer's manual.
4.5 電気機械器具 **4.5.1 電気機械器具の点検・整備** 請負者は本節 4.1.6[機器の点検・整備]に従い、次の点検・整備を行わなければならない。 (1) 日常点検 その日の電気機械器具の使用を開始する前に、次の点検項目を含む請負者が準備した点検表に基づき点検を行うこと。 (a) 本仕様書 4.5.2[電気機械器具の作業時の安全措置]の(1)(d)にもとづき設置された感電防止用漏電しや断装置 (b) 電気機械器具で接地をしたものの接地線の切断、接地極の浮上がり等の異常の有無 (c) 移動電線及びこれに附属する接続器具の被覆又は外装の損傷の有無 (2) 定期点検	**4.5 Electric Power Equipment** **4.5.1 Inspection and Maintenance of Electric Power Equipment** The Contractor shall perform the following inspection and maintenance in accordance with 4.1.6 [Inspection and Maintenance of Equipment] in this section. (1) Daily Inspection Before using of electrical power equipment on that day, carry out the inspection based on the inspection table prepared by the Contractor including the following check list. (a) Electric leakage prevention and disconnection device installed based on (1) (d) of this specification 4.5.2 [Safety Measures for Working of Electric Power Equipment] (b) Abnormality such as disconnection of grounding wire and lifting of grounding electrode, although grounded with an electric power equipment (c) Whether there is damage to the sheathing or exteriors of the movable wire and its connecting equipment (2) Periodical Inspection	**4.5 Electric Power Equipment** **4.5.1 Inspection and Maintenance of Electric Power Equipment** The Contractor shall perform the following inspection and maintenance of electric power equipment in accordance with JSSS 4.1.6 [Inspection and Maintenance]. (1) Daily Inspection Before use of electrical power equipment on the day, carry out the inspection using the checklist prepared by the Contractor including the following inspection items; (a) Earth Leakage Circuit Breaker (ELCB) installed in accordance with (1) (d) of JSSS 4.5.2 [Safety Measures for Work with Electric Power Equipment]; (b) Abnormality of grounding such as disconnection of grounding wire and grounding electrode located not in ground; and (c) Damage to sheathing or exteriors of movable wire and its connecting equipment. (2) Periodic Inspection

電動機械器具は、製造者の取扱説明書に従い、請負者が作成した点検表に基づき、定期点検を行うこと。	When conducting periodic inspections of electrical power equipment, carry out inspections in accordance with the instruction manuals for each equipment, and store the inspection results until the target work is finished.	Periodic inspection shall be carried out using the checklist prepared by the Contractor including the inspection items specified by the manual of its manufacturer.
4.5.2 電気機械器具の作業時の安全措置 請負者は、電気機械器具を使用した作業時の感電防止のために、次の措置を講じなければならない。 (1) 電気機械器具、開閉器、ケーブル、感電防止用漏電しや断装置 (a) 電気機械器具及び関連した器具・装置は、当該国の法律で規定されたものを使用すること、あるいは国際的な規格品を用いること。 (b) 電気機械器具用の開閉器は、カバー付きを使用し、金属製などの箱に収め、操作が容易な位置で湿気がない所に設置すること。開閉器・手元スイッチ等には、箱に危険を表わす色を塗る等の手段にて、感電に対する注意喚起を促すこと。 (c) 電気機械器具の電源用電線は、キャブタイヤケーブルを使用すること。 (d) 対地電圧が百五十ボルトをこえる電動機械器具、~~で、対地電圧が百五十ボルトをこえるもの~~又は~~水等~~導電性の高い液体等による湿潤~~している場所箇所、その他~~鉄板や~~上、~~鉄骨~~上、定盤(~~鉄製~~の作業~~テーブル~~)上等の導電性の高い場所~~でにおいて~~使用する~~器具もの~~については、~~漏電による~~感電~~の危険を~~防止~~するの~~ため、~~当該電動機械器具が接続される電路に、~~当該電路の定格に適合し、感度が良好~~であり~~、かつ動作性を確認した~~確実に作動する~~~~感電防止用漏電しや断装置を接続すること。 (e) 前項に規定する措置を講ずることが困難なときは、電気機械器具の金属製外わく、電動機の金属製外被等の金属部分を、接地して使用すること。 (2) 電気機械器具の作業による感電の危険又は誤操作による危険の防止のため、作業箇所には十分な照度を確保すること。 (3) ケーブル、電線の取り扱い 移動して使用するケーブル、電線等は、被覆材の保護のため、直接、釘や鉄筋・丸太足場等に掛けないこと。 (4) 電気機械器具の修理・移動・保守 (a) 電気機械器具の修理や移動の作業は、電源を切断して行うこと。 (b) ヒューズの取り換え (i) ヒューズを鉄線・銅線等で代用しないこと。 (ii) ヒューズの取りかえは、指名した者に行わせること。 (5) 電気機械器具の使用禁止 次のいづれかの状態のときは、作業員に電気機械器具の使用を、禁止すること。	**4.5.2 Safety Measures on Electric Power Equipment** The Contractor shall take the following measures to prevent electric shock when performing works using electric power equipment. (1) Electric Power Equipment, Switches, Cables, Electrical Leakage Prevention and Disconnection Devices (a) Use electric power equipment and related equipment & devices shall be stipulated by the laws of the target country or use international standard products. (b) Use switches with covers for electrical power equipment, place them in a metal box, etc., and install them in a place where they are easy to operate and free from moisture. For switches and hand switches, call attention to electric shock by painting the box with a color that represents danger. (c) Use cabtyre cables as power cables for electrical power equipment. (d) For electric power equipment that have a ground voltage exceeding 150 volts, or equipment that is used in wet areas with highly conductive liquids, on steel plates, steel frames and iron tables, etc. For preventing electrical shocks, connect an electrical leakage prevention or disconnection device that conforms to the rating of the relevant circuit, has good sensitivity, and has confirmed operability. (e) When it is difficult to take the measures in the preceding paragraph, use metal exterior of electrical power equipment or metal outer casing of electric motor while grounding them. (2) Ensure sufficient illuminance at the work site to prevent danger of electric shock due to work of electrical power equipment or danger due to incorrect operation. (3) Handling of Cables and Wires Avoid hanging cables, electric wires, etc. directly on nails, reinforcing bars, or log scaffolding to protect the coating. (4) Repair, Movement and Maintenance of Electrical Power Equipment (a) Turn off the power before repairing or moving electrical power equipment. (b) Replacement of fuses (i) Avoid replacing the fuse with iron wire or copper wire (ii) Have the designated person replace the fuse (5) Prohibition of Use of Electric Power Equipment In any of the following conditions, the use of electric machinery is prohibited for workers. (a) The worker's body is wet, the worker is in a puddle, or touches the ground with the worker's bare feet	**4.5.2 Safety Measures forWorks with Electric Power Equipment** The Contractor shall take the following measures to prevent electric shock when performing works using electric power equipment. (1) Electric power equipment, switches, cables, ELCB (a) Use electric power equipment, equipment and devices such as switches, cables, ELCB in accordance with the Laws of the Country or internationally accepted standards; (b) Use switches with covers for electrical power equipment, place them in a metal box, etc., and install them in a place where they are easy to operate and free from moisture/wet. Prevent electric shock by painting boxes for switches and hand switches with color to show danger; (c) Use cabtyre cables for power cables for electrical power equipment; (d) When electric power equipment that have ground voltage exceeding 150 volts, or equipment that is used in wet areas with highly conductive liquids, on steel plates, steel frames and steel tables, etc., for preventing electrical shocks, provide ELCB in the circuit for electric power equipment. The ELCB shall conform to the rating of the relevant circuit, and be of good sensitivity and operability. *To MD,* *Please coordinate 7.7 Temporary Elect. Installations.* *Electric leakage prevention and disconnection device is important device.* (e) When it is difficult to provide ELCB specified in the above (d), metal exterior of electrical power equipment or metal outer casing of electric motor of electrical power equipment shall be grounded for use of electric power equipment. (2) Provide enough illuminance at the work site to prevent danger of electric shock to the workers due to work of electrical power equipment or danger due to incorrect operation. (3) Handling of electric cables and wires Avoid hanging electric cables, electric wires, etc. directly on nails, reinforcing bars, or logs in scaffolding to protect their coating. (4) Repair, movement and maintenance of electrical power equipment (a) Turn off the power before repairing, moving or making maintenance of electric power equipment; (b) Replacement of fuses (i) Prohibit replacing fuse with iron wire or copper wire; and (ii) Make the designated person replace the fuse. (5) Prohibition of use of electric power equipment Use of electric power equipment shall be prohibited to workers under any of the following situation;

(a) 作業員の身体が濡れている、作業員が水溜まりにいる、又は地面に作業員の素足で接触している状態 (b) 電気機械器具が濡れている状態 (6) ~~仮設電気設備又は~~電気機械器具の異常を発見したときは、直ちに電源を切断し、作業を中止すること。 (7) 電気機械器具を使用する作業員には、作業に適切な服、~~作業に必要な~~保護帽、安全靴等の保護具を着用させること。 (8) 感電事故が発生した場合は、~~感電事故が発生した~~当該電気機械器具の電源を切ること及び本仕様書 3.2.2[充電した架空線の近くでの工事の現場管理](6)に規定の感電事故発生時の対応に従い、処置を行うこと。	(b) Electric power equipment is wet (6) When any abnormality in temporary electrical equipment or electrical power equipment is identified, immediately turn off the power and stop the work. (7) Have workers who use electric power equipment wear appropriate working clothes, protective caps and safety shoes, etc. (8) When an electric shock occurs, turn off the power of the electrical power equipment and take measures in accordance with 3.2.2 [Site Management for Construction near Charged Circuit] (6).	(a) The worker's body is wet, the worker is in puddle, or the worker touches on ground with the worker's bare feet; and (b) Electric power equipment is wet. (6) When any abnormality in electric power equipment is identified, immediately turn off its power and stop the work. (7) Make workers who use electric power equipment wear appropriate PPE such as working clothes, protective helmets, safety shoes, etc. (8) When electric shock accident occurs, turn off the power of the electrical power equipment and take measures in accordance with 3.2.2 [Site Management for Construction near Charged Circuit] (6).

Terms
BS 6100 Part 6
12 76016 batching plant: plant (01) for mixing, storing and supplying measured quantities of concrete (01), asphalt (01) or aggregate (01)
12 76012 crushers: machine for reducing rock (03 23027) to small particles

For Using Earthmovers to Lift and Place Heavy Loads
https://www.forconstructionpros.com/equipment/earthmoving/article/20973127/five-tips-when-using-earthmoving-equipment-to-lift-and-place-heavy-loads

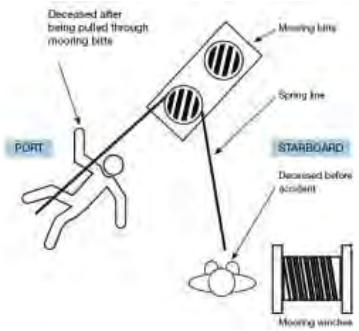
Circular saw machines

https://www.isastur.com/external/seguridad/data/en/2/2_9_8.htm

8. Hazards resulting from the use of circular saws
Hazards:
·Projected particles.
·Electric shocks.
·Breakage of the disc.
·Cuts and amputations.
·Blows caused by objects.
·Abrasions and becoming trapped.
·Overstrain.
·Ambient noise.

Preventive measures:
·Circular saw machinery is to be equipped with the following protective elements: guard for the disc, cut-dividing blade, mechanism for pushing the part to cut and guide, guard for the pulley drive, watertight electric switch and earth, which must be incorporated in the power lead itself.

(Reference)
https://safety4sea.com/fatal-accident-mooring-operation-deck/
Fatal accident during mooring operation on deck
During mooring operation on board, a Hong Kong registered bulk carrier, a crew member was killed after being hit by a mooring rope, the HK Marine Department informs. The chief officer was the person in charge of the mooring operation at the forward station of the vessel, assisted by other crew members including one ordinary seaman (OS)



https://www.marineinsight.com/marine-safety/avoiding-death-traps-on-ships-understanding-dangers-of-mooring-operation/

2) Rope Bight
Mooring ropes are long and heavy ropes stored on board ships in coil form. When these ropes are under operation, they tend to form a coil or ring shape naturally known as rope bight.

Rope Bight
If a person involved in mooring operation comes under this rope bight, the pull of the rope can drag him over the ship or smash him in the hard deck over machines. Several injuries and deaths have been reported due to crew unaware of standing over bight and dragged by the rope.

The best ways to avoid accidents due to rope bight are:
•The crew must be aware of where he is standing while handling the ropes or when near them. It must be repeatedly made known to them that they should NEVER stand in the bight of a rope as the smallest error can cause them their life

•The supervisor must concentrate on others action and should not involve himself/herself in the operation as working hand. Being the officer in charge of the whole operation, the person must ensure that he oversees the safe mooring operation and carry out the Master's orders. There is absolutely no need, unless in a critical situation, for the officer to get involved with the handling of ropes as rather than helping the situation, it only further increases the risk

滑車内角側周辺　立ち入り禁止
*　ワイヤーロープの引っ掛かりなど予想しない荷重が作用する場合があります。*
*　一般的には巻き上げ機に過負荷制御機能があるケースは残念ながら少数です。*
*　従って、滑車が壊れワイヤーロープが跳ねることを前提にし、滑車の内角側周辺には立ち入らない作業計画をお立てください。*

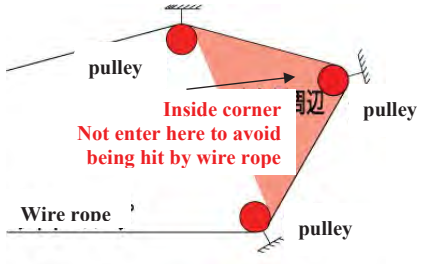


Figure 1 for 4.4.4 (2) (d) (ii)

JICA Standard Safety Specification Preparation Study
5 Transport (English R1)

2019.12.4 Japanese Prov. Final R2
2019.12.14 NKDraft R1

JSSS in Japanese （Provisional Final Draft R2）	JSSS in English R0（12/11）	JSSS in English R1（12/14）
5 運搬作業 5.1 一般事項 5.2 運搬作業 5.2.1 作業員への周知 5.2.2 運搬車両・運搬機械の運転者及び操作者 5.2.3 安全教育と指導 5.3 運搬車両の点検・整備 5.3.1 運搬車両の搬入時の点検 5.3.2 運搬車両の点検・整備 5.3.3 運搬車両の点検・整備時の安全措置 5.4 運搬車両による運搬作業 5.4.1 運搬車両の作業環境 5.4.2 運搬車両の運搬作業時の安全措置 5.5 運搬機械の点検・整備 5.5.1 運搬機械の設置時の試験 5.5.2 運搬機械の点検・整備 5.6 運搬機械による運搬作業 5.6.1 運搬機械の設置、組立、解体作業 5.6.2 運搬機械の運搬作業時の安全措置 5.6.3 運搬機械の作業後及び修理等時の安全措置	Contents 5 Transport 5.1 General 5.2 Transport Works 5.2.1 Instruction for Contractor’s Personnel 5.2.2 Operators and Drivers of Transportation vehicles and Transport Equipment 5.2.3 Safety Instructions 5.3 Inspections and Maintenance of Transportation vehicles 5.3.1 Inspections in Installations of Transportation vehicles 5.3.2 Inspections and Maintenances of Transportation vehicles 5.3.3 Safety Measures in Inspections and Maintenances of Transportation vehicles 5.4 Transport Works by Transportation vehicles 5.4.1 Work Environment 5.4.2 Safety Measures in Operations 5.5 Inspections and Maintenance of Transport Equipment 5.5.1 Testing in Installations of Transport Equipment 5.5.2 Inspections and Maintenances of Transport Equipment 5.6 Transport Works by Transport Equipment 5.6.1 Installations, Assembly and Dismantling 5.6.2 Safety Measures in Operation 5.6.3 Safety Measures after Operation and in Repairment	**5 Transportation Works** 5.1 General Requirements 5.2 Transportation Works 5.2.1 Instruction to the Workers 5.2.2 Drivers and Operators 5.2.3 Safety Trainings and Instructions 5.3 Inspection and Maintenance of Transportation Vehicles 5.3.1 Inspection at Delivery 5.3.2 Inspection and Maintenance 5.3.3 Safety Measures at Inspection and Maintenance 5.4 Transport Works by Transportation Vehicles 5.4.1 Work Environment 5.4.2 Safety Measures in Operations 5.5 Inspections and Maintenance of Transportation Equipment 5.5.1 Testing at Installation of Transportation Equipment 5.5.2 Inspections and Maintenances of Transportation Equipment 5.6 Transport ion Works by Transport Equipment 5.6.1 Installations, Assembly and Dismantling 5.6.2 Safety Measures in Operation 5.6.3 Safety Measures after Operation and at Maintenance
5 運搬作業 **5.1 一般事項** (1) 本章では、運搬作業にかかわる運搬車両の運転者、補助員、監視員、誘導員(「運搬車両の作業員」という。)、運搬機械の操作者及び合図者、(「運搬機械の作業員」という。)、運搬車両・運搬機械の点検・整備を行う者「運搬車両・機械の整備の作業員」という。)の危険を防止するための措置について規定する。 (2) 本章では、現場(Site)内の運搬作業、異なる現場間での運搬作業、現場への又は現場から資機材を運搬する道路での運搬作業について規定する。 (3) 本仕様書で使用する用語の定義は以下のとおりである。 (a) 運搬車両とは、トラック、ダンプトラック、セミトレラー、タンクローリー等の物を運搬するための車両をいう。 (b) 運搬機械とは、ベルトコンベヤを利用して物を運搬するための定置の機械をいう。	**5 Transport** **5.1 General Requirement** (1) This chapter specified the safety requirements for the drivers, assistants, spotters and guiders of transportation vehicles (referred to as Contractor’s Personnel of transportation vehicles), operators, flagmen of transport equipment (referred to as Contractor’s Personnel of transport equipment), inspectors, mechanics of transportation vehicles and equipment (referred to as Contractor’s Personnel for the maintenance of transportation vehicles and equipment) by transport works. (2) This chapter specified the transport works of the materials in the site, between the deference sites and to/from the site. (3) Definitions of terms in JSSS are as follows. (a) “Transport Vehicle” means the vehicle for transporting materials such as tracks, dump tracks, tank lorries and semi-trailers, etc. (b) “Transport Equipment” means the fixed machine for transporting materials with belt conveyors.	**5 Transportation Works** **5.1 General Requirements** (1) This Chapter specifies the safety measures for the drivers, assistant drivers, Spotters, Flagmen and workers of transportation vehicles (hereinafter referred to as “workers for transportation vehicles), operators, Flagmen and workers of transportation equipment (“workers for transportation equipment)”, mechanics and workers for repair and maintenance of transportation vehicles and equipment (“workers for the maintenance”) in the transportation works. (2) This Chapter specifies the safety measures for transportation works of the Goods, Materials, etc. in and between the Site and on roads outside the Site. (3) Definitions of terms in JSSS are as follows. (a) “Transportation Vehicle” means the vehicle for transporting Goods, Materials, etc. such as tracks, dump tracks, tank lorries, semi-trailers, etc. (b) “Transportation Equipment” means the fixed machine for transporting materials such as belt conveyors (excluding those of portable and provided in the construction facilities.

5.2 運搬作業

5.2.1 作業員への周知

請負者は、運搬作業を行うときは、作業に必要な下記の安全上の措置について、必要に応じ当該作業員に説明しなければならない。

(1) 運搬車両の作業員
  (a) 運搬作業内容、作業方法、作業範囲
  (b) 運搬車両の作業場所及び運行経路
  (c) 運搬車両の転倒又は転落の危険のある場所
  (d) 高圧線、危険物貯蔵庫などの危険箇所と運搬車両の移動制限範囲
  (e) 作業員の立入禁止箇所及び運搬車両の進入禁止箇所の特定と注意標識、柵の設置場所
  (f) 運搬車両の作業場所周辺の安全通路
  (g) 誘導者、監視員の配置場所
  (h) 運搬車両・運搬機械に異常が発生したときの対処方法
  (i) サイト隣地や公道における近隣住民・第三者への運搬車両による交通事故防止措置
  (j) 運搬車両による振動、騒音、粉じん等の環境影響を軽減する措置
(2) 運搬機械の作業員
  (a) 運搬機械の~~作業場所~~危険性
  (b) 立入禁止箇所の特定と注意標識、柵の設置場所
  (c) 運搬機械内又はその周辺の安全通路
  (d) 運搬機械に異常が発生したときの対処方法
(3) 運搬車両・機械の整備の作業員
  点検・整備のときに、作業員におよぶおそれのある危険及び危険箇所

5.2.2 運搬車両・運搬機械の運転者及び操作者

請負者は、本仕様書 4.1.3[建設機械の運転者及び操作者]に準じ、運搬車両の運転者又は運搬機械の操作者の適正配置、氏名の運搬車両・運搬機械への明示、作業前の健康状態の確認を行わなければならない。

5.2.3 安全教育と指導

請負者は、本仕様書 4.1.4[安全教育と指導]に準じ、運搬車両・運搬機械の特性に応じて運搬車両の運転者、運転を補助する者（運転助手）、運搬機械の操作者へ、次の事項を含む教育を行わなければならない。

(1) 運搬車両の交通事故防止
  (a) 交通事故防止のための事項
    (i) 交通事故防止の運転ルール

5.2 Transport Works

5.2.1 Instruction for Contractor's Personnel

The Contractor shall instruct the following safety measures for Contractor's Personnel as necessary in transport works.

(1) Contractor's Personnel of transportation vehicles
  (a) Work contents, methods, ranges
  (b) Work places and service roads of transportation vehicles
  (c) The place with danger of the falling of transportation vehicles
  (d) Hazardous locations and the area of movement and operation restriction such as high-voltage lines and dangerous goods storage
  (e) Identification of restricted areas for common workers and transportation vehicles with caution signs, and fence.
  (f) Safety walkway surrounded the work places of transportation vehicles
  (g) Placements of flagmen and spotters.
  (h) Process of malfunction in transportation vehicles
  (i) Prevention measures of transportation vehicles' accidents to neighboring residents and third parties on adjacent sites and public roads.
  (j) Mitigation measures for effecting of environmental such as vibration, noise, and dust by transportation vehicles.
(2) Contractor's Personnel of transport equipment
  (a) Operation area of transport equipment
  (b) Identification of restricted areas, caution signs, and fence.
  (c) Safety walkway around and in the transport equipment
  (d) Process of malfunction in transport equipment
(3) Contractor's Personnel for the maintenance of transportation vehicles and equipment

  Dangers and restricted areas for Contractor's Personnel in inspections and maintenances.

5.2.2 Operators and Drivers of Transportation vehicles and Transport Equipment

The Contractor shall ensure the proper assignment of drivers of transportation vehicles and operators of transport equipment and indicate the name of operators and drivers on transportation vehicles and transport equipment, and to carry out the health check before the work. All requirements are complying with JSSS 4.1.4 [Operators and Drivers of Construction Machineries].

5.2.3 Safety Instructions

The Contractor shall conduct the following trainings for drivers and driving assistants of transportation vehicles and operators of transport equipment complying with JSSS 4.1.5 [Safety Instruction] according to the characteristic of transportation vehicles and transport equipment.

(1) Prevention of traffic accidents on transport vehicle

5.2 Transportation Works

5.2.1 Instruction to the Workers

The Contractor shall instruct the following safety measures for Contractor's Personnel as necessary in the transportation works.

(1) Workers of transportation vehicles
  (a) Work contents, methods, ranges;
  (b) Work places and route of transportation vehicles;
  (c) Places with danger of falling of transportation vehicles;
  (d) Hazardous locations and areas restricted of movement and operation due to such as high-voltage lines and dangerous Goods storage;
  (e) Identification of restricted areas for the workers and transportation vehicles and locations of caution signs and fences;
  (f) Safety walkways in and around the work places of transportation vehicles;
  (g) Placements of Spotters and Flagmen;
  (h) Measures when malfunction of transportation vehicles;
  (i) Prevention measures of traffic accident due to transportation vehicles to residents and third parties neighboring areas of the Site and public roads; and
  (j) Mitigation measures for avoiding effects to environment such as vibration, noise, dust, etc. by transportation vehicles.
(2) Workers of transportation equipment
  (a) Hazards of transportation equipment;
  (b) Identification of restricted areas for the workers and locations of caution signs and fences;
  (c) Safety walkway around and in the transportation equipment; and
  (d) Measures when malfunction of transportation equipment.
(3) Workers for maintenance

  Dangers and restricted areas for workers in inspection and maintenance works.

5.2.2 Drivers and Operators

The Contractor shall assign drivers of transportation vehicles and operators of transportation equipment, indicate the name of operators and drivers on easy-to-see locations of transportation vehicles and transportation equipment, and carry out the health check before the work in accordance with JSSS 4.1.3 [Operators and Drivers].

5.2.3 Safety Trainings and Instructions

The Contractor shall conduct the trainings and instructions on the following items for drivers and driving assistants of transportation vehicles and operators of transport equipment complying with JSSS 4.1.4 [Safety Instructions and Training] according to the characteristic of transportation vehicles and transport equipment.

(1) Prevention of traffic accidents with transportation vehicle

(ii) ~~公道での交通事故の多い第3者のバイクとの接触・衝突の事故防止のための運転方法~~

(iii) ~~公道で車両の前へ飛び出す住民、バイクとの接触・衝突の事故防止のための運転方法~~

(iv) 公道での住民、バイクとの接触・衝突の事故防止のための運転方法

(v) 追い越しするとき及び追い越されるときの交通事故防止のための運転方法

(vi) 凸凹や障害物のある道路での交通事故防止のための運転技術

(b) 車両整備不足による交通事故防止のために、車両の運転開始前の点検整備の徹底

(c) 当該運搬車両への乗車を許可されたもの以外の乗車の禁止の徹底

(2) 運搬機械の運転及び整備時の事故防止

(a) 運搬機械運転時の事故防止

(i) 運搬機械始動時の合図の徹底

(ii) 緊急時の停止方法の確認

(iii) ベルト上に乗ることの禁止

(b) 運搬機械の整備時の事故防止

(i) 運搬機械停止時の誤作動の防止のための措置の確認

(ii) 運搬機械の点検整備後の運転再開前の合図の徹底

(a) Items for prevention of traffic accidents

(i) Driving rules for prevention of traffic accidents

(ii) Driving methods to prevent accidents of contact and collision with motorcycles on the public roads

(iii) Driving methods to prevent accidents in overtaking and undertook

(iv) Driving methods to prevent accidents on the road with bumps and obstacles

(b) Inspections and maintenances before starting operation to prevent traffic accidents due to insufficient maintenance

(c) Prohibition of boarding other than those who permitted to board the transportation vehicles.

(2) Prevention of accidents in operations and maintenances of transport equipment

(a) Prevention of accidents in operations of transport equipment

(i) Implementation of signals/alarm in starting the transport equipment

(ii) Confirmation of the measure of emergency stop

(iii) Prohibition of boarding on the belt of the belt conveyors

(b) Prevention of accidents in maintenances of transport equipment

(i) Confirmation of the measures to prevent the malfunction when the transport equipment stops

(ii) Implementation of signals in restarting the transport equipment after the maintenances

(a) Items for prevention of traffic accidents

(i) Driving rules for prevention of traffic accidents;

(ii) Driving methods to prevent accidents of contact and collision with residents or motorcycles on roads;

(iii) Driving methods to prevent accidents in overtaking other vehicles and undertaken by others; and

(iv) Driving methods to prevent accidents due to holes, bumps or obstacles on the road.

(b) Inspection and maintenance before starting operation to prevent traffic accidents due to insufficient maintenance

(c) Prohibition of boarding of other persons than those who permitted to ride *(board?)* on transportation vehicles.

(2) Prevention of accidents with transportation equipment

(a) Prevention of accidents in operation of transportation equipment

(i) Be thorough on alarm at starting the operation of transportation equipment

(ii) Confirmation of the measures of emergency stop

(iii) Prohibition of ride *(boarding?)* on the belts of the belt conveyors

(b) Prevention of accidents at inspection and maintenance

(i) Confirmation of measures to prevent mis-operation such as sudden start during the time of the transportation equipment is stopped; and

(ii) Be thorough on alarm when restarting the operation of the transportation equipment after inspection and maintenance.

5.3 運搬車両の点検・整備

5.3.1 運搬車両の搬入時の点検

請負者は、運搬車両の使用を開始するに当たり、搬入時の点検・整備記録の確認を、本仕様書4.2.1[建設機械の点検整備]に従って、行わなければならない。この点検には、本仕様書 5.3.2 に規定の点検項目を含まなければならない。

搬入時の点検に合格しない運搬車両は、現場内で使用してはならない。この運搬車両には、資機材供給者の車両等の工事事に必要な全ての運搬車両を含めなければならない。

点検結果の要約は進捗報告書で報告しなければならない。

5.3.2 運搬車両の点検・整備

請負者は、本仕様書 4.2.1[建設機械の点検整備]に規定の点検事項のうち当該運搬車両に適用すべき事項に加えて、次の日常点検、定期点検に規定の事項を含めた日常点検表、定期点検表を作成し、点検・整備を実施しなけれ

5.3 Inspections and Maintenance of Transportation vehicles

5.3.1 Inspections in Installation of Transportation vehicles

The Contractor shall ensure the inspection and maintenance records complying with JSSS 4.1.6 [Inspections in Installations] before starting the transportation vehicles during installation on the site. This inspection shall be included the items specified in JSSS 5.3.2.

The Contractor shall reject operating the transportation vehicles which do not pass the inspections. The transportation vehicles shall be included the all vehicles necessary for the construction works, such as the vehicles of equipment and materials suppliers.

5.3.2 Inspections and Maintenances of Transportation vehicles

The Contractor shall carry out the inspections and maintenances with the daily and periodic checklist included the following items of (1) daily inspections and (2) periodic inspections, addition to the items which are specified in JSSS4.1.7 [Maintenances] to be applied to the transportation vehicles.

5.3 Inspection and Maintenance of Transportation Vehicles

5.3.1 Inspection at Delivery

The Contractor shall inspect the inspection and maintenance records of the transportation vehicles complying with JSSS 4.2.1 [Inspection and Maintenance of Construction Equipment] before starting of use of transportation vehicles at delivery on the Site. This inspection shall be included the items specified in JSSS 5.3.2 below.

The Contractor shall reject operating the transportation vehicles which do not pass the inspection. The inspection at delivery shall be made on all transportation vehicles necessary for the Works including the vehicles of suppliers of Goods, etc.

The results of inspection and maintenance shall be kept and their summary shall be reported in the progress report.

5.3.2 Inspection and Maintenance

The Contractor shall prepare the daily and periodic checklists including the items of (1) daily inspection and (2) periodic inspection below, and carry out the inspection and maintenance applying JSSS 4.1.6 [Inspection and Maintenance] and JSSS 4.2.1 [Inspection and Maintenance of

ばならない。なお、運搬車両は点検・整備が完了するまで使用してはならない。また、点検結果の要約を進捗報告書で報告しなければならない。

(1) 日常点検

請負者は、運搬作業を行うときは、その日の作業を開始する前に、次の項目を含む点検表に基づく点検を行なうこと。

(a) 運搬車両の点検項目：制動装置及び操縦装置の機能、荷役装置及び油圧装置の機能、車輪の異常の有無、前照燈、尾燈、方向指示器及び警音器の機能

(b) 製造者のマニュアルに規定の作業前点検項目

(2) 定期点検

請負者は、本仕様書 4.1.9[定期点検]に従い、次の項目を含め定期に点検を行ない、必要に応じて整備を実施しなければならない。

(a) 製造者のマニュアルに規定の定期点検の項目

(b) ~~運搬車両の場合：~~当該国の法律で規定の緊急対応用の備品（例えば発煙筒、三角表示板、消火器等）の有無と使用期限の確認

5.3.3 運搬車両の点検・整備時の安全措置

荷台等の下での点検、整備等の作業を行う場合においては荷台等が不意に降下することによる作業員の危険を防止するため、安全支柱、安全ブロツク等を使用しなければならない。これらを使用していないときは、荷台等の下に作業員を立ち入らせてはならない。

(1) Daily Inspections

The Contractor shall carry out the daily inspections based on the checklist included the following items which is prepared by The Contractor complying with JSSS 4.1.8 [Daily Inspections] before starting the work.

(a) Inspection items of transportation vehicles : Functions of braking devices, control devices, cargo handling devices and hydraulic devices, malfunction of wheel system, function of headlights, taillights, direction indicators and horn.

(b) Inspection items before operation specified in the manufacture's manual

(2) Periodic inspections

The Contractor shall carry out the inspections included the following items complying with JSSS 4.1.9 [Periodic Inspections] and the maintenances as necessary.

(a) Periodic inspection items specified in the manufacture's manual

(b) Transportation vehicles: Emergency equipment such as smoke cylinders and fire extinguishers, etc. and to check their expiration date.

5.3.3 Safety Measures in Inspections and Maintenances of Transportation vehicles

The Contractor shall ensure to put the safety blocks or safety supports in order to prevent the open box bed descending unexpectedly in inspections and maintenances under the open box bed. When the Contractor do not put the safety blocks or safety supports, the Contractor shall prohibit Contractor's Personnel from entering under the open box bed.

Construction Equipment]. The results of inspection and maintenance shall be kept and their summary shall be reported in the progress report.

(1) Daily Inspection

The Contractor shall carry out the daily inspection using the checklist including the following items:

(a) Braking devices, control devices, cargo handling devices, hydraulic devices, wheel system, headlights, taillights, direction indicators and horn of the transportation vehicles; and

(b) Inspection items specified in the manufacturer's official instructions and recommendations of the transportation vehicles.

(2) Periodic inspections

The Contractor shall carry out the inspection using the checklist including the following items and maintenance as necessary.

(a) Periodic inspection items specified in the manufacturer's official instructions and recommendations of the transportation vehicles.; and

(b) Emergency kit such as red fusee, red warning triangle, fire extinguisher, etc. if required by the Laws of the Country and their expiration date.

5.3.3 Safety Measures at Inspection and Maintenance

The Contractor shall put safety blocks or safety supports to prevent cargo bed descending unexpectedly at the time of inspection and maintenance under cargo bed of vehicles. When the Contractor do not put the safety blocks or safety supports, the Contractor shall prohibit workers from entering under the cargo bed of vehicles.

5.4 運搬車両による運搬作業

5.4.1 運搬車両の作業環境

請負者は、運搬車両を用いた作業を行う場合には、運搬作業における現場内での安全な作業環境を確保するために、次の措置を講じなければならない。

(1) 運行経路について必要な幅員を保持すること、地盤の不同沈下を防止すること、路肩の崩壊を防止すること、常に補修し安全に走行できるよう維持すること等必要な措置を講じること。

(2) 運行経路の必要と認められる箇所には、制限速度を示す標識を立て、カーブ、交差点、危険箇所（路肩、崖縁等）等には注意標識を立てること。

(3) 運搬車両の走路と歩行者の安全通路を明示し、走路が狭隘な（狭くゆとりがない）箇所には運搬車両用の退避所を設けること。

(4) 規模の大きな工事現場においては運搬専用道路を設け、なるべく一方通行として、必要に応じて適当な退避所を設けること。

(5) 夜間の運搬作業時には、運行経路の必要箇所に照明を施すこと。

5.4 Transport Works by Transportation vehicles

5.4.1 Work Environment

The Contractor shall take the following measures for the safety working condition in the sites in operating transportation vehicles.

(1) Take the necessary measures for the service road with well maintenance such as keeping sufficient road width, preventing from uneven settlement, and collapse of the road shoulders

(2) Put the signboards indicating speed limit at the necessary places on service road and put caution signboards on curves, intersections, dangerous places (road shoulders, cliff edges, etc.).

(3) Indicate the service roads of transportation vehicles and safety walk ways for Contractor's Personnel and set the passing area if the service road is narrow.

(4) In large construction site, set the exclusive transport service road which is one-way if possible, and the passing area if necessary.

(5) Place the sufficient lighting instruments at the necessary place along the service roads when the work operating at night

5.4 Transport Works by Transportation Vehicles

5.4.1 Work Environment

The Contractor shall take the following measures for the safety working environment in the Site for operation of transportation vehicles.

(1) Take measures for the transportation road such as keeping sufficient road width, preventing from uneven settlement on roadway and collapse of road shoulders;

(2) Put signboards indicating speed limit at the necessary places on roads and put caution signboards on curves, intersections, dangerous places (road shoulders, cliff edges, etc.);

(3) Separate roads for vehicles and walkways for workers and provide passing area for vehicles at places where the road is narrow;

(4) In large construction site, provide exclusive transport roads which are one-way if possible, and passing areas at narrow roads; and

(5) Provide sufficient lighting facilities at necessary places along the roads when work operating in night.

5.4.2 運搬車両の運搬作業時の安全措置

請負者は、運搬車両による運搬作業時の安全の確保のために、運搬車両の運搬作業を十分理解した作業主任に、施工計画にもとづき作業を直接指揮させるとともに、本仕様書 ~~4.1.10[運用時の安全措置]~~ 4.2.3[建設機械の運用時の安全措置]に準拠するとともに、次の措置を講じなければならない。

(1) 当該国の法令で認められている場合を除き、車両運行時には荷台を含め~~及び~~運転席（キャビン）以外の場所への~~請負者の要員~~いずれの者の搭乗を禁止すること。

(2) 次の作業又は場所で、請負者の要員及び運搬車両に危険が及ぶおそれがある場合は、本仕様書 2.4[監視員、誘導員の配置]に従い、誘導員を配置すること。

(a) 運搬車両に荷を積み卸しするとき

(b) 運搬車両が後進するとき

(c) 荷の積込場、土捨場、崖の縁、見通しのきかない場所、公道との交差部、他の作業箇所に近接する箇所

(3) 運搬車両の荷の積載に関する措置

(a) 運搬車両に積載重量を明示すること。

(b) 偏荷重が生じないように積載すること。

(c) 荷崩れ又は荷の落下による作業員又は第 3 者への危険を防止するため、荷にロープ又はシートを掛ける等必要な措置を講ずること。

(d) 建設機械の運搬のためトレーラに建設機械を積込む作業は、本仕様書 ~~4.3.1[建設機械の積込及び積卸し]~~4.2.7[建設機械の搬送時の安全措置]の規定を遵守すること。

(e) 荷の固定用の繊維ロープ、ワイヤロープの点検を行い、異常を認めたときは、ただちに取り換えること。

(4) 運転者が運転位置から離れる場合は、本仕様書 ~~4.1.10[運用時の安全措置]~~ 4.2.3［建設機械の運用時の安全措置］の(7)に準じた措置を講ずること。

5.4.2 Safety Measures in Operations

The Contractor shall let an Operation Leader for transport works by transportation vehicles direct the operation based on the construction plan and take the following measures addition to complying with JSSS 4.1.10 [Safety Measures in Operations] in order to ensure the safety in operation by transportation vehicles.

(1) Safety measures for Contractor's Personnel

Prohibit that Contractor's Personnel ride on the open box bed and out of cabin in operations unless permitted by the law of country.

(2) Placement of flagmen for transportation vehicles

Place flagmen's complying with JSSS 2.4 [Spotters, Flagmen and the Like] to be at risks for the Contractor's Personnel or transportation vehicles at the following works or places.

(a) Loading and unloading the materials from transportation vehicles

(b) Drive transportation vehicles backward

(c) Places close to other work places such as loading places, dumping sites, cliffs, blinding points and intersections with public roads.

(3) Measures related in loading materials on transportation vehicles

(a) Indicate the limitation of loading weight on transportation vehicles

(b) Load to prevent from uneven material loading

(c) Take the necessary measures such as tighten the materials by sling or covered by sheets to against falling and/or collapse the materials from the open box bed for prevent of the risks of Contractor's Personnel and third parties.

(d) In loading the construction heavy equipment on trailers, comply with JSSS 4.2.7 [Safety Measures for Transportation of Construction Equipment］.

(e) Inspect wire ropes and/or synthetic fiver ropes for fix the materials. If any abnormality is found, replace the wire ropes and/or synthetic fiver ropes immediately.

(4) Measures when drivers move out from the drivers' seat

Take the measures complying with (7) in JSSS 4.2.3 [Safety Measures in Operation] when drivers move out from the driver's seat.

5.4.2 Safety Measures in Operations

The Contractor shall place Operation Leader for transportation works with transportation vehicles to direct the operation in accordance with the Method Statement and take the following measures in addition to complying with JSSS 4.2.3 [Safety Measures in Operation] to ensure the safety in operation with transportation vehicles.

(1) Prohibit anybody ride on places including cargo bed other than cabin of vehicles unless permitted by the Law of the Country.

(2) Place Flagmen complying with JSSS 2.4 [Spotters, Flagmen and the Like] at the following works or places in which there are risks to the workers or transportation vehicles:

(a) Loading on and unloading from transportation vehicles Goods, Materials, etc.

(b) Drive transportation vehicles backward; and

(c) Places such as dumping sites, cliffs, places where prospect is not clear and intersections with public roads.

(3) Measures related with loading on transportation vehicles

(a) Indicate the limitation of loading weight on transportation vehicles;

(b) Prevent materials on cargo bed from uneven loading;

(c) Take measures such as tighten the materials with sling or covered by sheets to avoid falling or collapse of the materials from the cargo bed for prevention of risks to workers and third parties;

(d) Comply with JSSS 4.2.7 [Safety Measures for Transportation of Construction Equipment］ for transportation of the construction equipment on transportation equipment; and

(e) Inspect wire ropes and/or synthetic fiver ropes for fix the materials. If any abnormality is found, replace the wire ropes and/or synthetic fiver ropes immediately.

(4) When drivers leave the driver's seat, take the measures complying with (7) in JSSS 4.2.3 [Safety Measures in Operation].

5.5 運搬機械の点検・整備

5.5.1 運搬機械の設置時の試験

請負者は、運搬機械の設置作業終了時には、当該国の規則及び~~に基づき、又は規則がない場合は~~当該機械の製造者のマニュアルに従い、作動試験等の完成時試験を行うこと。

5.5.2 運搬機械の点検・整備

請負者は、本仕様書 ~~4.1.7[建設機械の点検・整備]~~ 4.1.6[機器の点検・整備]

5.5 Inspections and Maintenance of Transport Equipment

5.5.1 Testing in Installations of Transport Equipment

The Contractor shall conduct completion inspections such as commencement of operation just after the installation based on the regulation of the country and if there are no regulations in the country that to conduct the manual by the manufacture of transport equipment.

5.5.2 Inspections and Maintenances of Transport Equipment

5.5 Inspections and Maintenance of Transportation Equipment

5.5.1 Testing at Installation of Transportation Equipment

The Contractor shall conduct completion inspection and operation test just after the installation in accordance with the Laws of the Country and the manufacturer's official instructions and recommendations of the transport equipment.

5.5.2 Inspections and Maintenances of Transportation Equipment

及び 4.4.1[定置機械の点検・整備]に準拠するとともに、以下の日常点検、定期点検に記載した事項も含んだ、運搬機械の日常点検表、定期点検表の作成と各点検を実施し、整備、点検記録を保管し、その要約を進捗報告書で報告しなければならない。

(1) 日常点検

請負者は、運搬作業を行うときは、その日の作業を開始する前に、本仕様書 4.1.8[日常点検]に従い、次の項目を含む~~運搬車両・運搬機械の請負者が準備した~~点検表に基づく日常点検を行なうこと。

(a) ~~運搬機械の点検項目：~~原動機及びプーリーの機能、逸走等防止装置の機能、非常停止装置の機能、原動機、回転軸、歯車、プーリー等の覆い、囲い等の異常の有無

(b) 製造者のマニュアルに規定の作業を開始する前の点検項目

(2) 定期点検

請負者は、本仕様書 4.1.9[定期点検]に従い、製造者のマニュアルに規定の定期点検の項目を含め、定期に点検を行ない、必要に応じて整備を実施しなければならない。

The Contractor shall carry out the inspections and maintenances with the daily and periodic checklist included the following items of (1) daily inspections and (2) periodic inspections, addition to the items which are specified in JSSS 4.1.7 [Maintenances] and inform the results of inspections and maintenances by progress report.

(1) Daily Inspections

The Contractor shall carry out the daily inspections based on the checklist which is prepared by The Contractor included the following items complying with JSSS 4.1.8 [Daily Inspections] before starting the work.

(a) Inspection items of transport equipment: Function of motors, pulleys, prevention devices such as runway, emergency stop devices and covering of motors, rotating shafts, gears and pulleys, etc.

(b) Inspection items before operation specified in the manufacture's manual

(2) Periodic inspections

The Contractor shall carry out the periodic inspections included the items specified in the manufacture's manual and the maintenances as necessary complying with JSSS 4.1.9 [Periodic Inspections]

The Contractor shall prepare the daily and periodic checklists including the items of (1) daily inspection and (2) periodic inspection below, and carry out the inspection and maintenance with. applying JSSS 4.1.6 [Inspection and Maintenance] and 4.4.1 [Inspection and Maintenance of Stationary Equipment]. The results of inspection and maintenance shall be kept and their summary shall be reported in the progress report.

(1) Daily Inspections

Daily inspection shall be made using the checklist including the following items：

(a) Function of motors, pulleys, prevention devices against for example runaway, emergency stop devices and covers of motors, rotating shafts, gears and pulleys, etc.; and

(b) Inspection items before operation specified by the manufacturer's official instructions and recommendations.

(2) Periodic inspection

The Contractor shall carry out the periodic inspection including the items specified by the manufacturer's official instructions and recommendations.

5.6 運搬機械による運搬作業

5.6.1 運搬機械の設置、組立、解体作業

請負者は、運搬機械を設置、組立、解体の作業を行うときは、次の措置を講じなければならない。

(1) 運搬機械の装置・設備

運搬機械には以下の装置を備えること。

(a) 非常停止装置（コンベヤには、連続した非常停止スイッチを設け、又は要所ごとに非常停止スイッチを設けること。）

(b) 起動を予告する警報装置

(c) 動力伝導部分、ベルト、プーリー、ローラー等の作業員がはさまれ又は巻き込まれるおそれのある部分の覆い又は囲い

(d) 荷等の落下を防止するための装置

(2) 運搬機械の設置、組立、解体作業

運搬機械の設置、組立、解体の作業は、当該機械の専門家の指揮のもとに行うこと。

5.6.2 運搬機械の運搬作業時の安全措置

請負者は、運搬機械を運転するときは、次の措置を講じなければならない。

(1) 運搬機械の取扱説明書を機械に備えつけて、使用条件を機械に表示すること。取扱説明書等に記載された使用目的以外及び使用条件以外で機械を使用しないこと。

5.6 Transport Works by Transport Equipment

5.6.1 Installations, Assembly and Dismantling

The Contractor shall take the following measures in installation, assembly and dismantling of transport equipment.

(1) Devices and facilities of transport equipment

Ensure to be equipped the following devices and facilities in transport equipment

(a) Emergency stop buttons of transport equipment (in case of the belt conveyor, place the emergency stop buttons for each necessary point)

(b) Warning alarm systems for start-up of transport equipment

(c) Covers and guards to prevent workers contact on power transmission gear of transport equipment such as belt, pulley, roller, etc.

(d) The devices to prevent the dropping material from the belt.

(2) Installations, assembly and dismantling of transport equipment

Carry out the installations, assembly and dismantling of transport equipment based on the instruction by the expert.

5.6.2 Safety Measures in Operation

The Contractor shall take the following measures in operation of transport equipment.

(1) Indicate the terms of use on transport equipment by equipped with the manuals. Prohibit from using transport equipment on conditions

5.6 Transport ion Works by Transport Equipment

5.6.1 Installations, Assembly and Dismantling

The Contractor shall take the following measures in installation, assembly and dismantling works of transportation equipment.

(1) Devices and facilities of transportation equipment

Equip the following devices and facilities in the transportation equipment:

(a) Emergency stop system of transportation equipment (in case of the belt conveyor, place the emergency stop buttons for each necessary point);

(b) Warning alarm system for start-up of transportation equipment;

(c) Covers and guards to prevent workers contact to power transmission parts of transportation equipment such as belt, pulley, roller, etc.; and

(d) Devices to prevent material dropping from belts of transportation equipment.

(2) Installation, assembly and dismantling of transportation equipment

Carry out the installation, assembly and dismantling of transportation equipment under the instruction of the experts for the transportation equipment.

5.6.2 Safety Measures in Operation

The Contractor shall take the following measures in operation of transportation equipment.

(1) Provide user's manual and indicate conditions of use of transportation equipment at places of easy-to-see on the

(2) 運転中のベルトコンベアのベルト上に作業員を搭乗させないこと。

(3) 運搬機械の始動時、非常停止又は事故停止後の再起動時には、運搬機械周辺や荷の安全を確認した上で、運搬機械の操作を行うこと。

5.6.3 運搬機械の作業後及び修理等時の安全措置

(1) 作業終了時には、機械の機能を完全に停止したうえで、施錠（ロックアウト）等の機械が作動しない措置、施錠できない場合には監視員（警備員）の配置等の誤作動防止の措置、及び作動禁止の掲示（タグアウト）等措置を講じること。

(2) 運搬機械の掃除、給油、検査、修理等の作業時に、労働者に危険を及ぼす恐れがあるときには、上記と同じ措置を講ずること。

other than the condition specified in the manuals and Prohibit that workers step on the belt of operating belt conveyors.

(2) To confirm the safety of loading materials and surrounding of transport equipment when in start-up and restart after emergency stop and accidents stop.

5.6.3 Safety Measures after Operation and in Repairment

(1) To take safety measures just after the operation, to lock the function of the transport equipment completely, then take the measures for prohibition of operation such as lock out, and/or the measures for prevention from the malfunction such as the placement the security guard and/or tug out, etc.

(2) Take the same measures as (1) in cleaning, inspections, repairments and refueling of transport equipment if there are the risks for the worker.

transportation equipment.

(2) Prohibit from using transportation equipment on other conditions than specified by the manufacturer's official instructions and recommendations.,

(3) Prohibit workers ride on the belts during operating time of belt conveyors, and

(4) Start of operation after confirmation of the safety of loading materials and surrounding state of transportation equipment after normal, emergency and accidental stops.

5.6.3 Safety Measures after Operation and at Maintenance

(1) Take safety measures after the daily operation as below:

(a) Completely stop of the whole function of the transportation equipment,

(b) Take the following Lockout/Tagout Procedures for prevention of operation by mis-operation:

(i) Lock out operation system and provide tags to indicate "Do Not Start" or similar language to indicate that the equipment is not to be operated, or

(ii) Placement of security guards when lock out cannot be made and provide tags same as above.

To MD, I wanted to say Lockout/Tagout Procedures as shown below: However, it cannot describe properly. Can you kindly rewrite above (1) referring the following:
OSHA §1926.702 Requirements for equipment and tools.
(j) Lockout/Tagout Procedures.
(1) No employee shall be permitted to perform maintenance or repair activity on equipment (such as compressors, mixers, screens or pumps used for concrete and masonry construction activities) where the inadvertent operation of the equipment could occur and cause injury, unless all potentially hazardous energy sources have been locked out and tagged.
(2) Tags shall read Do Not Start or similar language to indicate that the equipment is not to be operated.

(2) Take the same measures as above (1) at the time when cleaning, inspection, maintenance and lubricating of transportation equipment if there are risks to the workers.

To MD; fo your information:
We considered the Transportation Equipment in JSSS is large/long belt conveyors such as shown in the photos below:
Belt conveyors for concrete aggregates:

http://maruwa-conveyor.com/news/2016/08/88

http://www.asahi.com/area/gunma/articles/MTW20151120100580001.html

Belt conveyors for RCC dam concrete:

https://www.conveyor.co.jp/en/conveyor/intraplantconveyor.html

JICA Standard Safety Specification Preparation Study
4 CONTRACTOR'S EQUIPMENT (R2 for issue 3)

2020.5.11 NK Eng. R2

JSSS in Japanese (2019/11/27)	JSSS in English Issue 2 （2020/01/21）	JICA Comments (2020/1/30) to Issue 2 (2020/1/21) JC: JICA Comments in blue letters on sentence underlined NK: NK actions	JSSS in English R2 for Issue 3 （2020/5/11） Red letters: Modified from last issue.
4　請負者の機器	**4　CONTRACTOR'S EQUIPMENT**	**4　CONTRACTOR'S EQUIPMENT**	**4　CONTRACTOR'S EQUIPMENT**
4.1　請負者の機器の一般的留意事項	**4.1　GENERAL REQUIREMENT**	**4.1　GENERAL REQUIREMENT**	**4.1　GENERAL REQUIREMENT**
4.1.1　一般事項	4.1.1　Scope	4.1.1　Scope	4.1.1　Scope
4.1.2　各作業の作業員への周知	4.1.2　Compliance Standards	4.1.2　Compliance Standards	4.1.2　Compliance Standards
4.1.3　機器の運転者、操作者、作業者	4.1.3　Instruction for Contractor's Personnel	4.1.3　Instruction for Contractor's Personnel	4.1.3　Instruction for Contractor's Personnel
4.1.4　安全教育と指導	4.1.4　Safety Training	4.1.4　Safety Training	4.1.4　Safety Training
4.1.5　機器の作業環境	4.1.5　Qualification of Operators	4.1.5　Qualification of Operators	4.1.5　Requirements to Operators
4.1.6　機器の点検・整備	4.1.6　Signaling	4.1.6　Signaling	4.1.6　Signaling
4.1.7　機器の点検・整備作業時の安全措置	**4.2　INSPECTION, MAINTENANCE AND REPAIR**	**4.2　INSPECTION, MAINTENANCE AND REPAIR**	**4.2　INSPECTION, MAINTENANCE AND REPAIR**
4.2　建設機械	4.2.1　Requirements Generally	4.2.1　Requirements Generally	4.2.1　Requirements Generally
4.2.1　建設機械の点検・整備	4.2.2　Defects and Repair during Operation	4.2.2　Defects and Repair during Operation	4.2.2　Defects and Repair during Operation
4.2.2　建設機械の作業環境	**4.3　SAFETY REQUIREMENT**	**4.3　SAFETY REQUIREMENT**	**4.3　SAFETY REQUIREMENT**
4.2.3　建設機械の運用時の安全措置	4.3.1　General Safety Measures	4.3.1　General Safety Measures	4.3.1　General Safety Measures
4.2.4　建設機械の用途外使用の制限	4.3.2　Transportation to and Removal from Site	4.3.2　Transportation to and Removal from Site	4.3.2　Safety Measures during Cleaning, Inspection and Maintenance
4.2.5　点検・整備作業時の安全措置	4.3.3　Safety Measures during Cleaning, Inspection and Maintenance	4.3.3　Safety Measures during Cleaning, Inspection and Maintenance	4.3.3　Safety Measures during Operation
4.2.6　作業装置の装着等の作業時の安全措置	4.3.4　Safety Measures during Operation	4.3.4　Safety Measures during Operation	4.3.4　Safety Measures When Mobile Equipment Is Not in Use
4.2.7　建設機械の搬送時の安全措置	4.3.5　Safety Measures When Equipment Is Not in Use	4.3.5　Safety Measures When Equipment Is Not in Use	4.3.5　Safety Measures during Connection of Attachment
4.2.8　リース建設機械の使用	4.3.6　Safety Measures during Connection of Attachment	4.3.6　Safety Measures during Connection of Attachment	4.3.6　Safety Measures during Loading and Transporting of Contactor's Equipment
4.3　建設設備	4.3.7　Safety Measures during Loading and Transporting	4.3.7　Safety Measures during Loading and Transporting	4.3.7　Safety Measures During Loading and Transporting of Materials
4.3.1　建設設備の点検・整備	4.3.8　Access Road	4.3.8　Access Road	4.3.8　Roads in the Site
4.3.2　建設設備の作業環境	4.3.9　Additional Requirements for Static Equipment	4.3.9　Additional Requirements for Static Equipment	4.3.9　Additional Requirements for Static Equipment
4.3.3　建設設備の設置、組立、解体時の安全措置	4.3.10　Additional Requirements for Personnel and Goods Elevators and Material Conveyors	4.3.10　Additional Requirements for Personnel and Goods Elevators and Material Conveyors	4.3.10　Additional Requirements for Personnel and Goods Elevators and Material Conveyors
4.3.4　建設設備の作業時の安全措置	4.3.11　Additional Requirements for Tools, Tackles and Small	4.3.11　Additional Requirements for Tools, Tackles and Small	4.3.11　Additional Requirements for Tools, Tackles and Small
4.3.5　点検・整備作業時の安全措置	4.3.12　Additional Requirements for Electric Powered Equipment	4.3.12　Additional Requirements for Electric Powered Equipment	4.3.12　Additional Requirements for Electric Powered Equipment
4.4　定置機械	4.3.13　Additional Safety Measures during Adverse Weather	4.3.13　Additional Safety Measures during Adverse Weather	4.3.13　Additional Safety Measures during Adverse Weather
4.4.1　定置機械の点検・整備	**4.4　ROPES, SLINGS AND CHAINS**	**4.4　ROPES, SLINGS AND CHAINS**	**4.4　ROPES, SLINGS AND CHAINS**
4.4.2　大型の定置機械の設置、組立、解体時の安全措置	4.4.1　Requirement Generally	4.4.1　Requirement Generally	4.4.1　Requirement Generally
4.4.3　小型の定置機械の作業環境	**4.5　ALTERNATIVE USE OF CONTRACTORS'S EQUIPMENT**	**4.5　ALTERNATIVE USE OF CONTRACTORS'S EQUIPMENT**	**4.5　ALTERNATIVE USE OF CONTRACTORS'S EQUIPMENT**
4.4.4　定置機械の作業時の安全措置	4.5.1　Requirement Generally	4.5.1　Requirement Generally	4.5.1　Requirement Generally
4.5　電気機械器具	**4.6　HIRED/LEASED CONTRACTORS'S EQUIPMENT**	**4.6　HIRED/LEASED CONTRACTORS'S EQUIPMENT**	**4.6　HIRED/LEASED CONTRACTORS'S EQUIPMENT**
4.5.1　電気機械器具の点検・整備	4.6.1　Requirement Generally	4.6.1　Requirement Generally	4.6.1　Requirement Generally
4.5.2　電動機械器具の作業時の安全措置	**4.7　TEMPORARY FUELLING FACILLITIES**	**4.7　TEMPORARY FUELLING FACILLITIES**	**4.7　TEMPORARY FUELLING FACILLITIES**
	4.7.1　Requirement Generally	4.7.1　Requirement Generally	4.7.1　Requirement Generally
5　運搬作業			
5.1　一般事項			
5.2　運搬作業			
5.2.1　作業員への周知			
5.2.2　運搬車両・運搬機械の運転者及び操作者			
5.2.3　安全教育と指導			
5.3　運搬車両の点検・整備			
5.3.1　運搬車両の搬入時の点検			
5.3.2　運搬車両の点検・整備			
5.3.3　運搬車両の点検・整備時の安全措置			
5.4　運搬車両による運搬作業			
5.4.1　運搬車両の作業環境			
5.4.2　運搬車両の運搬作業時の安全措置			
5.5　運搬機械の点検・整備　　58			
5.5.1　運搬機械の設置時の試験			
5.5.2　運搬機械の点検・整備			
5.6　運搬機械による運搬作業			
5.6.1　運搬機械の設置、組立、解体作業			
5.6.2　運搬機械の運搬作業時の安全措置			
5.6.3　運搬機械の作業後及び修理等時の安全措置			

4 請負者の機器

4.1 請負者の機器の一般的留意事項

4.1.1 一般事項

本章では、請負者の機器のうち、以下の建設機械、建設設備、定置機械、電動機械器具、器具工具(以下、「機器」という。)を扱う。運搬機械、揚貨機械については、それぞれ本仕様書 5[運搬作業]、6[揚貨・玉掛け作業]で扱う。

(1) 用語の定義

本仕様書で使用する用語の定義は以下のとおりである。

4 CONTRACTOR'S EQUIPMENT

4.1 GENERAL REQUIREMENTS

4.1.1 Scope

(1) This Chapter specifies the safety requirements for Contractor's Equipment which shall include mobile equipment, static equipment, tools, tackle and small equipment and electric power equipment as further described in the following paragraphs.

(2) The requirements of this Chapter shall apply to Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where works are being executed and who may be affected by such work.

(3) For additional requirements for hoisting, rigging and cranes, refer to JSSS 6.0 [*Hoisting and Rigging*].

(4) Operators and signallers

(a) Any reference to "operator" in this Chapter and elsewhere in JSSS shall be deemed to include "driver" also;

(b) Any reference to "Spotter" in this Chapter shall be deemed to include "flagman" and "signaller" also.

4 CONTRACTOR'S EQUIPMENT

4.1 GENERAL REQUIREMENTS

4.1.1 Scope

(1) This Chapter specifies the safety requirements for Contractor's Equipment which shall include mobile equipment, static equipment, tools, tackle and small equipment and electric power equipment as further described in the following paragraphs.

(2) The requirements of this Chapter shall apply to Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where works are being executed and who may be affected by such work.

(3) For additional requirements for hoisting, rigging and cranes, refer to JSSS 6.0 [*Hoisting and Rigging*]. (JC1)

JC1: 必ず 6 章(5 章に変更)に含めるようにしてください。
Be sure to include it in section 6 (now section 5).

NK: 第 5 章に揚重、玉掛について十分規定済み。
Section 5 stipulates regarding hoisting and rigging in detail.

(4) Operators and signallers (JC2)

JC2: "Spotters"に修正してください。 Please change to "Spotters"

NK: Spotters は次項目の対応の通り削除しました。
"Spotters" is deleted as explained in the next clause.

(a) Any reference to "operator" in this Chapter and elsewhere in JSSS shall be deemed to include "driver" also; (JC3)

JC3: この operator は小文字にされていますが、全体を通してこの使い方とするか否かについては章ごとの整合性の観点から検討してください。
This "operator" is used lower case. It should be considered whether it is proper to use lower case as a whole of JSSS.

NK: "operator"という用語は JSSS では定義していません。第 9 章等他章でも小文字で表現しております。このままとします。
The term "operator" in not defined in JSSS. In other Chapters such as Chapter 9 [Concrete Works], the word "operator" is used in lower case. Left as it is.

(b) Any reference to "Spotter" in this Chapter shall be deemed to include "flagman" and "signaller" also. (JC4)

JC4: この Spotter については総則で定義されていますが、signaller を含めるという意図で敢えてこの記述としているのでしょうか。
This "Spotter" is defined in the Chapter1, [General], but is it meant to include signaller?

4 CONTRACTOR'S EQUIPMENT

4.1 GENERAL REQUIREMENTS

4.1.1 Scope

(1) This Chapter specifies the safety requirements for Contractor's Equipment which shall include mobile equipment, static equipment, tools, tackle and small equipment and electric power equipment as further described in the following paragraphs.

(2) The requirements of this Chapter shall apply to Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where works are being executed and who may be affected by such work.

(3) For additional requirements for hoisting, rigging and cranes, refer to JSSS 6.0 [*Hoisting and Rigging*].

(4) ~~Operators and signallers~~ Any reference to "operator" in this Chapter and elsewhere in JSSS shall be deemed to include "driver" also.

~~(a) Any reference to "operator" in this Chapter and elsewhere in JSSS shall be deemed to include "driver" also;~~

~~(b) Any reference to "Spotter" in this Chapter shall be deemed to include "flagman" and "signaller" also.~~

(a) 建設機械とは、次の自走型建設機械をいう。
(i) ブルドーザー、トラクターショベル等の整地・運搬・積込み用機械
(ii) パワーショベル、クラムシェル等の掘削用機械
(iii) 杭打ち機、アースドリル等の基礎工事用機械
(iv) ローラー等の締め固め用機械
(v) コンクリートポンプ車等のコンクリート打設用機械
(vi) ブレーカー、コンクリート圧砕機、解体用つかみ機等の解体用機械

(b) 建設設備とは、次の建設用の設備をいう。
(i) コンクリート用の骨材を製造する砕石設備（crusher）
(ii) コンクリート、アスファルトコンクリートを製造するコンクリート混合設備、アスファルトコンクリート混合設備(Concrete/asphalt concrete batching plant)

(5) Mobile equipment including wheeled or tracked, self-propelled construction machinery such as:

(a) Surface excavation and spoil movement equipment for bulk excavation, grading and levelling, such as bulldozers, graders and tractor excavators;

(b) Excavators such as backhoes, face shovels, power shovels;

(c) Loaders such as payloaders and face shovels;

(d) Dump trucks for removal or importation of spoil;

(e) Specialist foundation equipment such as pile driving and boring machines;

(f) Compaction and surface treatment equipment such as smooth or sheepsfoot rollers, pneumatic and vibration rollers;

(g) Mobile cranes and other hoisting equipment;

(h) Concreting equipment such as concrete mixer trucks, agitator trucks, pump trucks;

(i) Demolition equipment such as breakers, concrete crushers and demolition grippers; and

(j) Transportation Equipment, such as cars and buses for Contractor's Personnel and trucks and trailers for transporting Contractor's Equipment to, around and

NK: 総則の定義で"Spotter"は、下記のように定義しています。ここで繰り返す必要はないと考えます。(b)は削除し、(4)の構成を右のように修正します。

(24) "Spotter" means a member of the Contractor's Personnel who is generally responsible for warning other Contractor's and Employer's Personnel and other persons and keeping them away from working operations and areas, for assisting drivers of trucks and operators of other Contractor's Equipment in positioning their vehicles and equipment particularly when reversing, positioning or hoisting, and such further duties as are assigned to them in JSSS Section 2.4 [Spotters Flagmen and the Like].

Any reference to a "Spotter" in JSSS shall also be deemed to include a reference to a banksman, flagman or signaller.

Any reference to a "Spotter" in JSSS shall also be deemed to include a reference to a banksman, flagman or signaller.

As "Spotter" is defied in Chapter 1 as above, it is unnecessary to repeat here. Therefore, (b) is deleted and clause (4) is modified as right.

(5) Mobile equipment including wheeled or tracked, self-propelled construction machinery such as: (JC5)

JC5: この定義使った方がいいのでは？後述

(a) Surface excavation and spoil movement equipment for bulk excavation, grading and levelling, such as bulldozers, graders and tractor excavators;

(b) Excavators such as backhoes, face shovels, power shovels;

(c) Loaders such as payloaders and face shovels;

(d) Dump trucks for removal or importation of spoil;

(e) Specialist foundation equipment such as pile driving and boring machines;

(f) Compaction and surface treatment equipment such as smooth or sheepsfoot rollers, pneumatic and vibration rollers;

(g) Mobile cranes and other hoisting equipment;

(h) Concreting equipment such as concrete mixer trucks, agitator trucks, pump trucks;

(i) Demolition equipment such as breakers, concrete crushers and demolition grippers; and

(j) Transportation Equipment, such as cars and buses for Contractor's Personnel and trucks and trailers for transporting

(5) Mobile equipment including wheeled or tracked, self-propelled construction machinery such as:

(a) Surface excavation and spoil movement equipment for bulk excavation, grading and levelling, such as bulldozers, graders and tractor excavators;

(b) Excavators such as backhoes, face shovels, power shovels;

(c) Loaders such as payloaders and face shovels;

(d) Dump trucks for removal or importation of spoil;

(e) Specialist foundation equipment such as pile driving and boring machines;

(f) Compaction and surface treatment equipment such as smooth or sheepsfoot rollers, pneumatic and vibration rollers;

(g) Mobile cranes and other hoisting equipment;

(h) Concreting equipment such as concrete mixer trucks, agitator trucks, pump trucks;

(i) Demolition equipment such as breakers, concrete crushers and demolition grippers; and

(j) Transportation Equipment, such as cars and buses for Contractor's Personnel and trucks and trailers for transporting Contractor's Equipment and materials

	from the Site.	Contractor's Equipment to, around and from the Site. (JC6) JC6: 運ぶものは equipment だけではないため、"& materials "を挿入してください。 "Material" should be added because only equipment are not transported. NK: コメントの通り追加しました。 "Material" is added as commented. NK: By the comments on Chap 10 Diving Works, (k) Workboat is added.	to, around and from the Site. (k) Workboat for diving works
(c) 定置機械とは、次に示す定置の機械をいう。 (i) 人又は資機材の運搬等を目的とした工事用エレベーター、建設用リフト等の大型の定置式の機械 (ii) 資材の切断・加工、コンクリート材料の混合、作業環境の維持等を目的とした鉄筋切断機、鉄筋加工機、木材加工機、グラインダー、ポータブルコンクリートミキサー、送風機等の小型の定置式の機械	(6) Static equipment includes powered stationary equipment such as: (a) Stone crushing plants and screening equipment; (b) Concrete and asphalt concrete batching plants. (c) Tower cranes, derrick cranes; (d) Personnel and Goods Elevators; and (e) Material conveyors.	(6) Static equipment includes powered stationary equipment such as: (JC7) JC7: エアコンプレッサーを追加してください。 Please add air compressors. NK: (f)にエアコンプレッサーを追加しました。 Air compressor is added as (f). (a) Stone crushing plants and screening equipment; (b) Concrete and asphalt concrete batching plants. (c) Tower cranes, derrick cranes; (d) Personnel and Goods Elevators; and (e) Material conveyors.	(6) Static equipment includes powered stationary equipment such as: (a) Stone crushing plants and screening equipment; (b) Concrete and asphalt concrete batching plants. (c) Tower cranes, derrick cranes; (d) Personnel and Goods Elevators; and (e) Material conveyors. (f) Air compressors.
(d) 電動機械器具とは、次の電動機を有する可搬式の機械又は器具をいう。 (i) ポンプ、小型のコンベヤ等の電動機械 (ii) ディスクグラインダー、ドリル、丸のこ、かんな等の電動器具 (e) 器具(equipment)及び工具(tool) とは、次のものをいう。 (i) ジャッキ、ウィンチ、レバーホイスト等の器具 (ii) 空気式ジャックハンマー、油圧式パイプ曲げ機、原動機付きチェーンソー等の動力工具 (iii) レンチ、ドリフトピン、のみ、手鋸、金槌等の手工具	(7) Tools, tackle and small equipment such as: (a) Hand steered vibrating rollers; (b) Plate compactors and vibratory rammers; (c) Reinforcement, cutting and bending machines; (d) Pipe bending machines; (e) Pneumatic drills, hammers, breakers, compactors and compressors; (f) Wood processing equipment; (g) Independent concrete mixers; (h) Air extract or blowing equipment for improving the working area environment; (i) Pneumatic power tools such as jack hammers, drills, (j) Engine driven chain saws; (k) Hand operated equipment such as jacks, winches, lever hoists; and (l) Hand tools such as wrenches, chisels, hand saw, picks, hammers	(7) Tools, tackle and small equipment such as: (a) Hand steered vibrating rollers; (b) Plate compactors and vibratory rammers; (c) Reinforcement, cutting and bending machines; (d) Pipe bending machines; (e) Pneumatic drills, hammers, breakers, compactors and compressors; (f) Wood processing equipment; (g) Independent concrete mixers; (h) Air extract or blowing equipment for improving the working area environment; (i) Pneumatic power tools such as jack hammers, drills, (j) Engine driven chain saws; (k) Hand operated equipment such as jacks, winches, lever hoists; and (l) Hand tools such as wrenches, chisels, and saw, picks, hammers. (8) Electric powered equipment means portable	(7) Tools, tackle and small equipment such as: (a) Hand steered vibrating rollers; (b) Plate compactors and vibratory rammers; (c) Reinforcement, cutting and bending machines; (d) Pipe bending machines; (e) Pneumatic drills, hammers, breakers, compactors and compressors; (f) Wood processing equipment; (g) Independent concrete mixers; (h) Air extract or blowing equipment for improving the working area environment; (i) Pneumatic power tools such as jack hammers, drills, (j) Engine driven chain saws; (k) Hand operated equipment such as jacks, winches, lever hoists; and (l) Hand tools such as wrenches, chisels, and saw, picks, hammers. (8) Electric powered equipment means portable

	(8) Electric power equipment means portable electric powered mobile equipment or tools such as:. (a) Pumps and small conveyors; (b) Angle grinders, drills, circular saws and planers.	electric powered mobile equipment or tools such as: (JC7a) (c) Pumps and small conveyors; (d) Angle grinders, drills, circular saws and planers. JC7a: 特に(8)にも電動の equipment が多数含まれているので、独立させておく必要があるでしょうか。 Is it necessary to independently define as (8) contains lots of electric power equipment? NK: It is left as it is without (a) and (b)because it needs to specify requirements for portable electric powered mobile equipment or tools.	electric powered mobile equipment or tools.
(2) 請負者は、上記の(c)、(d)及び(e)の定置機械、器具及び工具について本節に規定のない事項は、OHSA Part 1926 Subpart N—Helicopters, Hoists, Elevators, and Conveyors、又は Subpart I-Tools-and and Power の規定に従わなければならない。	4.1.2 Compliance Standards (1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], the Contractor shall comply with the requirements of this Chapter, read jointly with and including the further technical requirements of the *HSE Provision and Use of Work Equipment Regulations 1998 (PUWER).* (2) In accordance with these regulations, together with JSSS 1.34 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the Contractor shall ensure that all Contractor's Equipment provided for use upon the Works is: (a) Suitable and fit for the purpose for which it is intended; (b) Safe for use, maintained in a safe condition and inspected to ensure it is correctly installed and used and does not subsequently deteriorate; (c) Used only by people who have received adequate information, instruction and training; (d) Accompanied by suitable health and safety measures, such as protective devices and controls. These shall include emergency stop devices, adequate means of isolation from sources of energy, clearly visible markings and warning devices; and (e) Used for the designed and intended purpose.	4.1.2 Compliance Standards (1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], the Contractor shall comply with the requirements of this Chapter, read jointly with and including the further technical requirements of the *HSE Provision and Use of Work Equipment Regulations 1998 (PUWER).* (2) In accordance with these regulations, together with JSSS 1.34 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the Contractor shall ensure that all Contractor's Equipment provided for use upon the Works is: (a) Suitable and fit for the purpose for which it is intended; (b) Safe for use, maintained in a safe condition and inspected to ensure it is correctly installed and used and does not subsequently deteriorate; (c) Used only by people who have received adequate information, instruction and training; (d) Accompanied by suitable health and safety measures, such as protective devices and controls. These shall include emergency stop devices, adequate means of isolation from sources of energy, clearly visible markings and warning devices; and (e) Used for the designed and intended purpose.	4.1.2 Compliance Standards (1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], the Contractor shall comply with the requirements of this Chapter, read jointly with and including the further technical requirements of the *HSE Provision and Use of Work Equipment Regulations 1998 (PUWER).* (2) In accordance with these regulations, together with JSSS 1.34 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the Contractor shall ensure that all Contractor's Equipment provided for use upon the Works is: (a) Suitable and fit for the purpose for which it is intended; (b) Safe for use, maintained in a safe condition and inspected to ensure it is correctly installed and used and does not subsequently deteriorate; (c) Used only by people who have received adequate information, instruction and training; (d) Accompanied by suitable health and safety measures, such as protective devices and controls. These shall include emergency stop devices, adequate means of isolation from sources of energy, clearly visible markings and warning devices; and (e) Used for the designed and intended purpose.
4.1.2 各作業の作業員への周知 請負者は、機器を用いて作業を行うときは、作業に必要な下記の安全上の措置について、本仕様書 1.3[安全衛生にかかわる計画書]に規定の事項に加え、必要に応じ作業員に説明しなければならない。 (1) 建設機械の作業	4.1.3 Instruction for Contractor's Personnel Further to the requirements of JSSS 1.6 [*Contractor's Safety Plan*], JSSS 1.7 [*Contractor's Method Statements*] and JSSS 1.13.2 [*Contractor's Safety Management Activities*], the Contractor shall include details of the following in the Method	4.1.3 Instruction for Contractor's Personnel Further to the requirements of JSSS 1.6 [*Contractor's Safety Plan*], JSSS 1.7 [*Contractor's Method Statements*] and JSSS 1.13.2 [*Contractor's Safety Management Activities*], the Contractor shall	4.1.3 Instruction for Contractor's Personnel Further to the requirements of JSSS 1.6 [*Contractor's Safety Plan*], JSSS 1.7 [*Contractor's Method Statements*] and JSSS 1.13.2 [*Contractor's Safety Management Activities*], the Contractor shall

(a) 作業内容、作業方法、作業範囲
(b) 種類、能力及び台数
(c) 作業場所及び運行経路
(d) 建設機械の転倒又は転落の危険のある場所
(e) 高圧線、危険物貯蔵庫などの危険箇所と機械の移動・稼働制限範囲
(f) 立入禁止箇所の特定と注意標識、柵の設置場所
(g) 誘導者、監視員の配置場所
(h) 建設機械の運転者、操作者
(i) 建設機械に異常が発生したときの対処方法
(j) サイト隣地や公道における近隣住民・第三者への建設機械による危険性
(k) 振動、騒音、粉じん等の環境影響軽減措置

(2) 建設設備の作業
上記(1)のうち建設設備の作業に該当する項目に追加して、次の措置を当該作業の作業員に説明すること。
(a) 建設設備の種類、能力、使用上の制限事項
(b) 建設設備の操作又は建設設備を使用する作業に伴う危険
(c) 建設設備の操作者
(d) 建設設備に異常が発生したときの対処方法

(3) 定置機械の作業
上記(1)のうち定置機械の作業に該当する項目に追加して、次の措置を当該作業の作業員に説明すること。
(a) 定置機械の種類、能力、積載荷重、使用上の制限事項
(b) 定置機械の操作又は定置機械を使用する作業に伴う危険
(c) 定置機械の操作者
(d) 定置機械に異常が発生したときの対処方法

(4) 電気機械器具の作業
上記(1)のうち電気機械器具の作業に該当する項目に追加して、電気機械器具を使用した作業による作業員の感電を防止するため、次の措置を当該作業の作業員に説明すること。
(a) 電気機械器具の種類、性能、用途
(b) 電気機械器具による感電の危険性
(c) 電気機械器具の作業者
(d) 電気機械器具に異常が発生したときの対処方法

4.1.3 機器の運転者、操作者、作業者

請負者は、機器の運転者、操作者、作業者の配置に関して、次の措置を講じなければならない。

(1) 本仕様書 1.8[請負者の要員の適正配置]に従い、必要な資格・技能等を有する運転者、操作者又は作業者に、機器の運転、操作又は作業を行わせること。

(2) 運転者、操作者又は作業者の氏名を、当該建設機械、建設設備、定置機械に明示するとともに、当該運転者、操作者又は作業者以外の者に、運転、操作又は作業を禁止する旨を表示しなければならない。

(3) 本仕様書 1.8.1[要員の適正配置上の留意点]に従

Statement and Safety Plan for works involving the use of Contractor's Equipment and shall fully inform all Contractor's Personnel associated therewith of all requirements before the commencement of any such operations, including:

(1) The scope of work, locations and areas, work methods, dimensions, levels and quantities to be achieved.

(2) Types, capacities and numbers of units.

(3) Work places, area limits and operational routes, restricted areas, locations of caution signs and fences.

(4) The preservation of safe access, walkways and footpaths around the working areas and transportation areas.

(5) Identities, location and scope of Spotters.

(6) Environmental impact mitigation including required measures against vibration, noise, dust and the like.

(7) Environmental conditions in the working area, nearby areas for storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, Operational Areas or areas where Dangerous Work is taking place.

(8) The potential danger to other Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where Contractor's Equipment is to be used and who may be affected by the use of Contractor's Equipment and the required measures to avoid any risk accident or injury.

(9) Any potential hazards in the use of Contractor's Equipment including those which may create a risk of falling or overturning.

(10) Restrictions to the movement and operation of Contractor's Equipment such as existing structures, foundations, surfaces, underground or overhead services and dangerous goods storage.

(11) Measures for breakdown, defect or fault in Contractor's Equipment including location of areas for inspection and maintenance.

(12) The name of the authorised operator for each unit of Contractor's Equipment.

(13) The name and contact of the HSO to inform when there is any requirement for inspection, maintenance and repair of Contractor's Equipment.

include details of the following in the Method Statement and Safety Plan for works involving the use of Contractor's Equipment and shall fully inform all Contractor's Personnel associated therewith of all requirements before the commencement of any such operations, including:

(1) The scope of work, locations and areas, work methods, dimensions, levels and quantities to be achieved.

(2) Types, capacities and numbers of units.

(3) Work places, area limits and operational routes, restricted areas, locations of caution signs and fences.

(4) The preservation of safe access, walkways and footpaths around the working areas and transportation areas.

(5) Identities, location and scope of Spotters.

(6) Environmental impact mitigation including required measures against vibration, noise, dust and the like.

(7) Environmental conditions in the working area, nearby areas for storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, Operational Areas or areas where Dangerous Work is taking place.

(8) The potential danger to other Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where Contractor's Equipment is to be used and who may be affected by the use of Contractor's Equipment and the required measures to avoid any risk accident or injury.

(9) Any potential hazards in the use of Contractor's Equipment including those which may create a risk of falling or overturning.

(10) Restrictions to the movement and operation of Contractor's Equipment such as existing structures, foundations, surfaces, underground or overhead services and dangerous goods storage.

(11) Measures for breakdown, defect or fault in Contractor's Equipment including location of areas for inspection and maintenance.

(12) The name of the authorised operator for each unit of Contractor's Equipment.

(13) The name and contact of the HSO to inform when there is any requirement for inspection, maintenance and repair of Contractor's

include details of the following in the Method Statement and Safety Plan for works involving the use of Contractor's Equipment and shall fully inform all Contractor's Personnel associated therewith of all requirements before the commencement of any such operations, including:

(1) The scope of work, locations and areas, work methods, dimensions, levels and quantities to be achieved.

(2) Types, capacities and numbers of units.

(3) Work places, area limits and operational routes, restricted areas, locations of caution signs and fences.

(4) The preservation of safe access, walkways and footpaths around the working areas and transportation areas.

(5) Identities, location and scope of Spotters.

(6) Environmental impact mitigation including required measures against vibration, noise, dust and the like.

(7) Environmental conditions in the working area, nearby areas for storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, Operational Areas or areas where Dangerous Work is taking place.

(8) The potential danger to other Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where Contractor's Equipment is to be used and who may be affected by the use of Contractor's Equipment and the required measures to avoid any risk accident or injury.

(9) Any potential hazards in the use of Contractor's Equipment including those which may create a risk of falling or overturning.

(10) Restrictions to the movement and operation of Contractor's Equipment such as existing structures, foundations, surfaces, underground or overhead services and dangerous goods storage.

(11) Measures for breakdown, defect or fault in Contractor's Equipment including location of areas for inspection and maintenance.

(12) The name of the authorised operator for each unit of Contractor's Equipment.

(13) The name and contact of the HSO to inform when there is any requirement for inspection, maintenance and repair of Contractor's

い、作業前の健康状態を確認し、当該機器の運転、操作又は作業に不適当な状態であると判断された運転者、操作者又は作業者を、当該作業に従事させてはならない。

4.1.4 安全教育と指導

請負者は、機器の運転者、操作者又は作業者が当該作業に従事するまでに、本仕様書 1.9(1)[教育訓練の実施]に規定する教育訓練に加えて、各機器の特性に応じて以下の項目について教育訓練を実施しなければならない。

(1) 当該機器の危険性、操作方法
(2) 安全・警報装置の機能・性能、操作方法、点検項目・点検方法
(3) 作業手順、運転開始の合図・連絡、日常点検
(4) 掃除・点検等の場合の運転停止、通電停止、起動装置施錠等の手順及び必要な措置
(5) 異常が発生したときの運転・操作・作業の停止と当該作業の担当者への報告
(6) 安全装置の取り外しの禁止

4.1.5 機器の作業環境

請負者は、機器の作業環境の確保のために、機器の特性に応じ必要な次の作業環境に関する措置を講じなければならない。

(1) 機器の作業による危険防止のため、作業箇所には十分な照度を確保すること。
(2) 機器への巻き込まれにより作業員に危険を及ぼすおそれのある機器を使用するときは、作業員の服装・頭髪等に関し、巻き込まれ防止の適切な措置を講ずること。
(3) 機器による粉じん、騒音、高温低温等から作業員を保護する措置を、本仕様書 2.1[適切な作業環境の整備]に従い講じること。措置を講じることが困難であるときは、作業員に保護具を着用させること。
(4) 運転に伴う加熱、発熱、漏電等による火災のおそれがある機器については、本仕様書 2.8[火災予防]に従い、消火器等を配備したうえで作業すること。
(5) 緊急事態発生時における連絡方法と応急処置の方法を、本仕様書 1.10[緊急事態対応計画及び緊急通報体制]及び 1.11[救急救護計画]に従い、運転者、操作者又は作業員が分かりやすい所に表示すること。
(6) 作業中に機器に異常が発見された場合には、運転者、操作者又は作業員に直ちに作業を中止させること。
(7) 当該機器の異常の原因の特定と修理を行うこと。

4.1.4 Safety Training

The Contractor shall provide health and safety training in accordance with JSSS 1.17 [*Safety Training Generally*] taking account of the characteristics of the particular types of Contractor's Equipment.

Particular safety training for transportation operators shall also include prevention of traffic accidents on and off the Site for example including:

(1) Driving rules for prevention of traffic accidents;
(2) Compliance with speed limits, signs, alcohol use, drugs and all other requirements the Laws of the Country;
(3) Driving methods to prevent accidents including contact and collision with other persons, cycles, motorcycles and other vehicles;
(4) Driving methods to prevent accidents in overtaking other vehicles and undertaken by others;
(5) Driving methods to prevent accidents due to holes, bumps or obstacles on the road;
(6) Required inspection and maintenance before starting operation;
(7) Proper use of vehicles including behaviour and control of passengers, prevention of

Equipment.

4.1.4 Safety Training

The Contractor shall provide health and safety training in accordance with JSSS 1.19 [*Safety Training Generally*] taking account of the characteristics of the particular types of Contractor's Equipment. (JC8)

JC8: 1.19 に equipment に必要なトレーニングが追加される形で総則が修正されているということでしょうか。
Does this mean that 1.19 [Safety Training Generally] has been revised to accommodate the necessary training for equipment operators?

NK: 1.19 (Issue 7)は次のように安全衛生の教育訓練の義務、各分野に関する詳細は安全計画書に示すことを一般規定して規定しています。そのため、1.19 は原案通りと致します。
The 1.19 (Issue 7) stipulates the responsibility of H&S education and training as general requirement, and details to be described in the Safety Plan. Therefore, 1.19 is left as it is.

1.19 Safety Training Generally
1.19.1 The Contractor shall conduct health and safety education and training for all the Contractor's Personnel.
1.19.2 The Contractor shall describe in the Safety Plan the outline of the health and safety training plans describing participants, time, teaching materials, policy for selecting trainers, etc. In addition, the Contractor shall submit full details of all health and safety training to the Engineer for information before the start of any training.

Particular safety training for transportation operators shall also include prevention of traffic accidents on and off the Site for example including: (JC9)

(1) Driving rules for prevention of traffic accidents;
(2) Compliance with speed limits, signs, alcohol use, drugs and all other requirements the Laws of the Country;
(3) Driving methods to prevent accidents including contact and collision with other persons, cycles, motorcycles and other vehicles;
(4) Driving methods to prevent accidents in overtaking other vehicles and undertaken by others;
(5) Driving methods to prevent accidents due to holes, bumps or obstacles on the road;
(6) Required inspection and maintenance before starting operation;
(7) Proper use of vehicles including behaviour and control of passengers, prevention of

Equipment.

4.1.4 Safety Training

The Contractor shall provide health and safety training in accordance with JSSS 1.19 [*Safety Training Generally*] taking account of the characteristics of the particular types of Contractor's Equipment.

The health and safety training shall be done to the personnel including the following items depending on the characteristics of the Contractor's Equipment with which the personnel will be engaged in works.

(1) Functions, performance, operation methods, inspection items, inspection method of safety device and emergency alarm device;
(2) Work procedure, signal and communication method at starting time of the operation, and daily inspection;
(3) Lockout and tagout procedures for shutting down operation, turning off the power, locking the starter and necessary measures for the time of cleaning and inspection of the Contractor's equipment;
(4) Stop of the operation and work with the Contractor's equipment when an abnormality occurs and report to the person in charge; and
(5) Prohibition from removing safety devices; and
(6) Risks during operation of the Contractor's Equipment..

Particular safety training for transportation operators shall also include prevention of traffic accidents on and off the Site for example including:

(1) Driving rules for prevention of traffic accidents;
(2) Compliance with speed limits, signs, alcohol use, drugs and all other requirements the Laws of the Country;
(3) Driving methods to prevent accidents including contact and collision with other persons, cycles, motorcycles and other vehicles;
(4) Driving methods to prevent accidents in overtaking other vehicles and undertaken by others;
(5) Driving methods to prevent accidents due to holes, bumps or obstacles on the road;
(6) Required inspection and maintenance before starting operation;

	and control of passengers, prevention of overcrowding, overloading and unauthorised passengers.	overcrowding, overloading and unauthorised passengers. JC9: ここの transportation に関するトレーニングの内容がかなり詳細なので、この内容と 1.19 の記述のバランスが取れているかを確認のうえ調整願います。 The provisions of the training for "transportation" here are quite detailed, so please make sure that this is harmonized with the description of 1.19.? NK: 本款の(1)~(7)の項目は、特に事故が多い交通事故の防止に関する教育に注力して規定しています。 The items (1) ~ (7) in this clause is emphasized to focus on education and training for prevention of traffic accidents which is very important. NK: 技能のある者を雇用し、請負者が機器を使用した作業に従事させるとの前提で、機械の特性に応じて行うべき教育と指導すべき事項を前半の(1)~(6)に追記致します。 The items (1)~(6) for education and training to the worker who is employed as qualified, skilled and experienced person are added at the beginning of this clause as stipulated in Japanese draft.	(7) Proper use of vehicles including behaviour and control of passengers, prevention of overcrowding, overloading and unauthorised passengers.
	4.1.5 Qualification of Operators Further to the requirements of JSSS 1.16 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that operators are appropriately qualified, skilled and experienced in operation of the Contractor's Equipment to which they are assigned and duly certified as such by the HSO. The Contractor shall also ensure that	4.1.5 Qualification of Operators (JC10) Further to the requirements of JSSS 1.16 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that operators are appropriately qualified, skilled and experienced in operation of the Contractor's Equipment to which they are assigned and duly certified as such by the HSO. The Contractor shall also ensure that JC10: 内容は qualification のことではないようです。workmanship ではないでしょうか。 The content is not about the qualification. Isn't it about workmanship? NK: 資格だけの規定ではないので、提案された workmanship は、辞書では何かを作る技術とありますので、款名は Requirements to Operators ではいかがでしょうか？MD 氏へ相談します。 Because the content of this Clause is not only qualification, we propose the title of the clause to be "Requirements to Operators" as the "workmanship" proposed by JICA means the skill with which something was made or done in the dictionary.	4.1.5 Requirements to Operators Further to the requirements of JSSS 1.16 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that operators are appropriately qualified, skilled and experienced in operation of the Contractor's Equipment to which they are assigned and duly certified as such by the HSO. The Contractor shall also ensure that
	(1) Operators shall be fully aware of the following: (a) Work procedures, possible risks and operation methods; (b) The need to stop all work when any defect or abnormality is detected; (c) Not to remove, interfere with or	(1) Operators shall be fully aware of the following: (a) Work procedures, possible risks and operation methods; (b) The need to stop all work when any defect or abnormality is detected; (c) Not to remove, interfere with or override any safety devices; (JC11) JC11: ここだけ動詞形 Only (c) is the verb form. NK: 名詞とします。 Modified to noun form as right.	(1) Operators shall be fully aware of the following: (a) Work procedures, possible risks and operation methods; (b) The need to stop all work when any defect or abnormality is detected; (c) Prohibition of removing, interfering with or overriding any safety devices;

override any safety devices;

(d) The identity of and location(s) for Spotters and the communication and signalling requirements including equipment to be used and signals; and

(e) The procedures in case of emergency.

(2) In addition, operators shall:

(a) Safely and competently operate the Contractor's Equipment;

(b) Operate all safety devices including emergency alarm and stop devices; and

(c) Inspect, clean, service and maintain the unit of Contractor's Equipment under their responsibility and control or ensure that other qualified persons perform these operations.

4.1.6 Signalling

(1) Signalling between operators and Spotters and any associated workers shall only be carried out by designated personnel (hereinafter referred to as signallers).

(2) Signallers shall be located in a safe place and where they can clearly see and be seen by the operator.

(3) When it is not possible for signallers to give direct visible and audible signals to the operator, other systems including hand-held radios or video cameras must be provided and

(d) The identity of and location(s) for Spotters and the communication and signalling requirements including equipment to be used and signals; and

(e) The procedures in case of emergency.

(2) In addition, operators shall:

(a) Safely and competently operate the Contractor's Equipment;

(b) Operate all safety devices including emergency alarm and stop devices; and

(c) Inspect, clean, service and maintain the unit of Contractor's Equipment under their responsibility and control or ensure that other qualified persons perform these operations. (JC12)

JC12: operators の責任？機械責任者の仕事では？要修正。
Isn't this the operator's responsibility but equipment supervisor?

NK: コメントの通り、これらは管理者の責務である。削除。
As commented, it is supervisor's duty to control these aspects. Deleted.

4.1.6 Signalling

(1) Signalling between operators and Spotters and any associated workers shall only be carried out by designated personnel (hereinafter referred to as signallers).

(2) Signallers shall be located in a safe place and where they can clearly see and be seen by the operator. (JC13)

JC13: 冒頭で Spotters に signallers も含まれる旨定義されているので、ここで signallers が出るのは違和感があります。以下、signallers が出てくる場合も同様です。
As the top of this section, it is defined that Spotter is deemed to include signaller, it seems strange to use "signaller" here.

NK: 4.1.1 (4) での signaller の定義は削除しました。
2.4 で次のように Signallers を含めた Spotters の責務を規定しています。そのため、本款では Signallers は、Spotters に変更します。
The definition of "Signaller" in 4.1.1 (4) is deleted.
2.4 is specified the duties of the Spotters including Signallers as below. Therefore, Signallers are replaced with Spotters in this Section.

2.4 SPOTTERS, FLAGMEN AND THE LIKE
2.4.1 Definitions
In accordance with the definition provided in JSSS Annex1.1 [Definitions and Abbreviations], a reference to either of Spotter or Flagman in JSSS shall be deemed to include a reference to the other or both and therefore references in this Chapter are to Spotters, which shall be deemed to include both.
2.4.2 Duties

(d) The identity of and location(s) for Spotters and the communication and signalling requirements including equipment to be used and signals; and

(e) The procedures in case of emergency.

(2) In addition, operators shall:

(a) Safely and competently operate the Contractor's Equipment;

(b) Operate all safety devices including emergency alarm and stop devices; and

(c) Inspect, clean, service and maintain the unit of Contractor's Equipment under their responsibility. ~~and control or ensure that other qualified persons perform these operations.~~

4.1.6 Signalling

(1) Signalling between operators ~~and Spotters~~ and any associated workers shall only be carried out by the Spotters.

(2) ~~Signallers~~ Spotters shall be located in a safe place and where they can clearly see and be seen by the operator.

4.1.6 機器の点検・整備 請負者は、機器の点検、整備に関して次の事項を遵守し、使用する機器を良好な状態に維持しなければならない。 (1) 機器の保守管理のために、当該国の法律及び当該機器の製造者のマニュアルの規定に従い、本仕様書 4.2.1[建設機械の点検・整備]、4.3.1[建設設備の点検・整備]、4.4.1[定置機械の点検・整備]、4.5.1[電気機械器具の点検・整備]に規定する点検項目のうち、当該機器に該当する点検項目を網羅する日常点検表、定期点検表を準備し、次に規定する点検、検査を実施し、これを記録すること。 (2) 必要に応じて次に示す点検・検査を実施すること。 (a) (d)及び(e)については機器の整備に必要な能力と経験を持った者に、(b)については建設設備、定置機械の専門家に、(c)については機器の運転者、操作者又は作業者に行わせること。 (a) 建設機械の搬入時の点検 (b) 建設設備、定置機械の設置時の試験 (c) 日常点検 (d) 定期点検	used. **4.2 INSPECTION, MAINTENANCE AND REPAIR** 4.2.1 Requirements Generally (1) Further to the requirements of JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the HSO shall ensure that all Contractor's Equipment is inspected, fully maintained and operational when it is mobilised to the Site. Thereafter all Contractor's Equipment shall be inspected, maintained and repaired before the commencement of the first and of all subsequent days of operation. (2) Inspections shall include all items necessary to ensure the safe performance of the Contractor's Equipment including the following examples and any further requirements due to the characteristics, capability and condition of the Contractor's Equipment and in compliance with the	*Duties include for example:* *(1) Preventing unauthorised personnel from entering areas where Dangerous Work is being carried out.* *(2) Giving appropriate guidance and signals during operation of Contractor's Equipment to prevent the equipment tipping, overturning or falling.* *(3) Giving appropriate guidance and signals to prevent Contractor's Personnel from being struck or pinned by Contractor's Equipment.* *(4)* Assisting drivers *of vehicles including trucks and operators of other Contractor's Equipment in positioning their vehicles particularly when manoeuvring.* (3) When it is not possible for signallers to give direct visible and audible signals to the operator, other systems including hand-held radios or video cameras must be provided and used. (JC14) JC14: 何故？Video Camera?? 監視カメラのことを言いたいのであれば別の表現が適切ではないでしょうか。 Why does it need to be a video camera? "Monitoring camera" would be better. NK：ビデオカメラとビデオモニターを組み合わせテレビ（ビデオ）電話のことを指していると考えます。OSHA の下記の記述を参考に、videotelephone への変更を提案します。 The term of video cameras means videophone system consisting of video camera and monitor. We propose to replace it with videophone. *§1926.1419 Signals—general requirements.* *(e) Suitability. The signals used (hand, voice, audible, or new), and means of transmitting the signals to the operator (such as direct line of sight, video, radio, etc.), must be appropriate for the site conditions.* *§1926.1420 Signals—radio, telephone or other electronic transmission of signals.* *(a) The device(s) used to transmit signals must be tested on site* **4.2 INSPECTION, MAINTENANCE AND REPAIR** 4.2.1 Requirements Generally (1) Further to the requirements of JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the HSO shall ensure that all Contractor's Equipment is inspected, fully maintained and operational when it is mobilised to the Site. Thereafter all Contractor's Equipment shall be inspected, maintained and repaired before the commencement of the first and of all subsequent days of operation. (2) Inspections shall include all items necessary to ensure the safe performance of the Contractor's Equipment including the following examples and any further requirements due to the characteristics, capability and condition of the Contractor's Equipment and in compliance with the manufacturer's official maintenance and	(3) When it is not possible for ~~Signallers~~ Spotters to give direct visible and audible signals to the operator, other systems including hand-held radios or ~~video cameras~~ videophone must be provided and used. **4.2 INSPECTION, MAINTENANCE AND REPAIR** 4.2.1 Requirements Generally (1) Further to the requirements of JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the HSO shall ensure that all Contractor's Equipment is inspected, fully maintained and operational when it is mobilised to the Site. Thereafter all Contractor's Equipment shall be inspected, maintained and repaired before the commencement of the first and of all subsequent days of operation. (2) Inspections shall include all items necessary to ensure the safe performance of the Contractor's Equipment including the following examples and any further requirements due to the characteristics, capability and condition of the Contractor's Equipment and in compliance with the manufacturer's official maintenance and

(e) 悪天候及び地震の点検

(3) 整備が完了するまで、機器を使用しないこと。

(4) 建設機械の搬入時の点検、建設設備、定置機械の設置時の試験結果は、エンジニアに提出すること。

(5) 日常点検及び定期点検は、点検結果を工事終了まで保管すること。また、点検結果は、月次の進捗報告書に含めること。

(6) 日常点検では次の措置を講じること

(a) 作業開始前に日常点検を行うこと。

(b) 請負者が準備した点検表に基づき点検を行うこと。

(c) 点検の結果又は随時必要が認められた場合は整備を実施すること。

(d) 作業開始前の動作点検は、周辺に人がいないこと、障害物がないことを確認してから行うこと。

(7) 定期点検では次の措置を講じること。

(a) 請負者が準備した点検表に基づき定期に点検を行うこと。

(b) 点検の結果、不具合、部品の損傷又は消耗箇所が認められた場合には、修理、交換を行い整備すること。

(8) 本仕様書 2.7[悪天候及び地震時の対策]に規定の悪天候及び地震後には、建設設備、定置機械及び悪天候及び地震時により影響を受ける機械は、日常点検に準じた点検及び製造者のマニュアルに規定の点検を行うこと。

4.1.7 機器の点検・整備作業時の安全措置

請負者は、機器の点検、整備作業を行うときは、次の措置を講じなければならない。

(1) 機器の点検・整備作業を行うときは、当該機器の特性に応じ、機器の機能を完全に停止したうえで、点検・整備中の誤作動を防ぐために起動装置の施錠、起動装置に表示板を取り付ける、または監視人を配置する等（ロックアウト・タグアウトシステム）の措置を講じること。

(2) 点検・整備作業を行う場所に、関係者以外の立入りを禁止すること。

(3) 高所で点検・整備作業を行う場合には、本仕様書 2.5[墜落防止]に規定する措置。

4.2 建設機械

4.2.1 建設機械の点検・整備

請負者は本仕様書 4.1.6[機器の点検・整備]に従い、次の点検・整備を行わなければならない。

(1) 建設機械の搬入時の点検

建設機械の搬入時には次に従い点検を実施すること。

(a) 建設機械の点検・整備記録の確認を行なうこと。かかる点検・整備記録においては、次の(3)に規定する項目のうち、当該機械に該当

manufacturer's official maintenance and repair manual.

(3) Inspection at the time when Contractor's Equipment is mobilised to the Site and before commencement of operation, for which the Contractor shall:

(a) Inspect all units of Contractor's Equipment to ensure that all components are installed and functioning, all inspection and maintenance covers, safety guards to prevent contact with moving parts, and the like are in place, adequate and fit for purpose, securely fixed and that all such units of equipment are in the condition required by the Contract;

(b) Ensure as a minimum that the daily and periodical check items listed below in this Sub Clause, have already been inspected and recorded;

(c) Ensure that all inspection and maintenance records are available for inspection by the Engineer if and when may be required in compliance with JSSS; and

(d) If any inspection and maintenance records are incomplete or not available, the Contractor shall carry out inspections and maintenance to ensure that a full and acceptable record is available for all units of Contractor's Equipment.

In relation with the above, it should be noted that Contractor's Equipment shall be in a working and safe condition and fully compliant with the Contract when it is

repair manual.

(3) Inspection at the time when Contractor's Equipment is mobilised to the Site and before commencement of operation, for which the Contractor shall:

(a) Inspect all units of Contractor's Equipment to ensure that all components are installed and functioning, all inspection and maintenance covers, (JC15) safety guards to prevent contact with moving parts, and the like are in place, adequate and fit for purpose, securely fixed and that all such units of equipment are in the condition required by the Contract;

JC15: 何のことを指しているのかが分かりません。
This "all inspection and maintenance covers," is not understandable.

NK: MD 氏に記述の見直しと変更を依頼します。
We will ask MD to review and modify this sentence referring to the items separated in (a).

(b) Ensure as a minimum that the daily and periodical check items listed below in this Sub Clause, have already been inspected and recorded;

(c) Ensure that all inspection and maintenance records are available for inspection by the Engineer if and when may be required in compliance with JSSS; and

(d) If any inspection and maintenance records are incomplete or not available, the Contractor shall carry out inspections and maintenance to ensure that a full and acceptable record is available for all units of Contractor's Equipment. (JC16)

JC16: 上記(b), (c), (d)の記録をエンジニアが求めた場合の提出義務を追記しては？
Obligation of submittal of the record in (b), (c) and (d) should be added.

NK: (c)でエンジニアによる閲覧が保証されているので、提出義務は必要ないと考えます。
As inspection of all records by the Engineer is stipulated in (c), it is deemed that stipulating submittal of inspection and maintenance records to the Engineer is not necessary.

In relation with the above, it should be noted that Contractor's Equipment shall be in a working and safe condition and fully compliant with the Contract when it is mobilised to the Site. ~~The Engineer may refuse to accept delivery to the Site and instruct the Contractor to remove from the Site of any Contractor's Equipment that is not in this condition.~~

repair manual.

(3) Inspection at the time when Contractor's Equipment is mobilised to the Site and before commencement of operation, for which the Contractor shall:

(a) Inspect all units of Contractor's Equipment to ensure that

- all components are installed and functioning,
- ~~all inspection and maintenance covers,~~
- safety guards to prevent contact with moving parts and the like are in place, adequate and fit for purpose, securely fixed, and
- ~~that~~ all such units of equipment are in the condition required by the Contract;

To MD: Please review the JICA comment and NK proposal above and make the items above to one sentence.

(b) Ensure as a minimum that the daily and periodical check items listed below in this Sub Clause, have already been inspected and recorded;

(c) Ensure that all inspection and maintenance records are available for inspection by the Engineer if and when may be required in compliance with JSSS; and

(d) If any inspection and maintenance records are incomplete or not available, the Contractor shall carry out inspections and maintenance to ensure that a full and acceptable record is available for all units of Contractor's Equipment.

In relation with the above, it should be noted that Contractor's Equipment shall be in a working and safe condition and fully compliant with the Contract when it is mobilised to the Site. The Engineer may refuse to accept delivery to the Site ~~and~~

する項目が含むこと。 (b) 建設機械の点検・整備記録がない又は不十分な場合は、上記(a)に準じて搬入時に点検・整備を行うこと。 (2) 建設機械の日常点検 日常点検では、次の点検項目を含む請負者が準備した点検表に基づき点検を行うこと。 (a) ブレーキ、クラッチ、操作装置及び作業装置の異常の有無 (b) ワイヤロープ及びチェーンの損傷の有無 (c) バケット等アタッチメントの損傷の有無 (3) 建設機械の定期点検 定期点検では、次の点検項目を含む請負者が準備した点検表に基づき点検を行うこと。 (a) 圧縮圧力、弁すき間その他原動機 (b) クラッチ、トランスミッション、プロペラシャフト、デフアレンシャルその他動力伝達装置 (c) 起動輪、遊動輪、上下転輪、履帯、タイヤ、ホイールベアリングその他走行装置 (d) かじ取り車輪の左右の回転角度、ナックル、ロツド、アームその他操縦装置 (e) 制動能力、ブレーキドラム、ブレーキシユーその他ブレーキ (f) ブレード、ブーム、リンク機構、バケット、ワイヤロープその他の作業装置 (g) 油圧ポンプ、油圧モーター、シリンダー、安全弁その他油圧装置 (h) 電圧、電流その他電気系統 (i) 車体、操作装置、ヘッドガード、バツクストツパー、昇降装置、ロック装置、警報装置、方向指示器、燈火装置及び計器	mobilised to the Site. The Engineer may refuse to accept delivery to the Site and instruct the Contractor to remove from the Site of any Contractor's Equipment that is not in this condition. (4) The Contractor shall undertake the following daily inspection items, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted: (a) Operating condition of engine, gearbox(s), drive shafts, pulleys and main components, emergency stop and safety devices, any defects or abnormalities in covers, doors and enclosures; (b) Abnormal sounds, vibrations or smell; (c) Leaks, levels and condition of lubricants, coolant, hydraulic fluid levels, and the like; (d) Lights and indicators; (e) Brakes, clutches, steering and operating devices and working devices; (f) Cables, slings, ropes and chains; (g) Protective covers are adequately provided over all rotating or moving parts; (h) Attachments and tools such as buckets,	(JC17) JC17: 分かりにくい、かつ前文が満たされれば OK ということで削除します。 This part is difficult to understand and when the requirement in the first sentence is fulfilled, the second sentence is unnecessary. Deleted. NK: In stead of deletion of the sentence, we propose to modify to make clear the Engineer's action (4) The Contractor shall undertake the following daily inspection items, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted: (JC18) JC18: (c)以下は建設機械に関係するものが中心であって、4.1.1 の(6)以下で列挙されているすべての機械の点検項目として網羅できているでしょうか。していないのであれば、例示としての記述が適切ではないでしょうか。 または、「製造者のマニュアルに従った点検項目」といった形での記述が考えられます。 Do the inspection items in (c) to (k) which are mainly for construction equipment, cover all inspection items enumerated in 4.1.1 (6), etc. If not, it may be appropriate to describe as examples. Or a description such as "inspection items in accordance with the manufacturer's manual" may works. NK: 列挙した項目のみでは不足する可能性があります。製造者のマニュアルを引用する項目(l)を追加します。 There is a possibility that the lists cannot cover all items. Added the item (l) regarding the items stipulated in the manufacturer's official maintenance and repair manual. (a) Operating condition of engine, gearbox(s), drive shafts, pulleys and main components, emergency stop and safety devices, any defects or abnormalities in covers, doors and enclosures; (b) Abnormal sounds, vibrations or smell; (c) Leaks, levels and condition of lubricants, coolant, hydraulic fluid levels, and the like; (d) Lights and indicators; (e) Brakes, clutches, steering and operating devices and working devices; (f) Cables, slings, ropes and chains; (g) Protective covers are adequately provided over all rotating or moving parts; (h) Attachments and tools such as buckets, grabs, etc.	~~instruct the Contractor to remove from the Site of~~ any Contractor's Equipment ~~that is not in this condition.~~ which does not meet the requirements stipulated in the Contract. (4) The Contractor shall undertake the following daily inspection items, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted: (a) Operating condition of engine, gearbox(s), drive shafts, pulleys and main components, emergency stop and safety devices, any defects or abnormalities in covers, doors and enclosures; (b) Abnormal sounds, vibrations or smell; (c) Leaks, levels and condition of lubricants, coolant, hydraulic fluid levels, and the like; (d) Lights and indicators; (e) Brakes, clutches, steering and operating devices and working devices; (f) Cables, slings, ropes and chains; (g) Protective covers are adequately provided over all rotating or moving parts; (h) Attachments and tools such as buckets, grabs, etc.

	grabs, etc. (i) Cleanliness of each unit or item of Contractor's Equipment; and (j) Cleanliness of each working area and removal of obstructions. (k) Emergency kits such as warning flares and triangles, fire extinguisher, first aid kit and the like, as required by the Laws of the Country with the testing and expiration date clearly indicated.	(i) Cleanliness of each unit or item of Contractor's Equipment; and (j) Cleanliness of each working area and removal of obstructions. (k) Emergency kits (JC18)such as warning flares and triangles, fire extinguisher, first aid kit and the like, as required by the Laws of the Country with the testing and expiration date clearly indicated. JC18a: この項目だけ機械のメンテナンスの話ではないので、たとえば 4.3.7 に移動されてはいかがでしょうか。 This(k) only is not item for maintenance, so it is suggested to move this to 4.3.7(?). NK: It is better to specify this in daily inspection items to make the Contractor's attention and check to items, so it is left here. NK: Added (i) to specify the items stipulated by the manufacturer.	(i) Cleanliness of each unit or item of Contractor's Equipment; and (j) Cleanliness of each working area and removal of obstructions. (k) Emergency kits such as warning flares and triangles, fire extinguisher, first aid kit and the like, as required by the Laws of the Country with the testing and expiration date clearly indicated. (l) For other items not covered here, the inspection items stipulated in the manufacturer's official maintenance and repair manual shall be applied.
	(5) The Contractor shall undertake the following periodic inspection items, (at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted: (a) Engine compression pressure, valve clearance and other relevant parts of prime energy unit; (b) Gearbox, clutch, transmission, propeller shaft, differential and other parts of power transmission devices; (c) Drive wheels, idling wheels, vertical trunk rollers, belts, tires, wheel bearings and other parts of traveling devices; (d) Springs, shock absorbers and other parts of suspension devices; (e) Left and right rotation angle of steering wheel, knuckle, rod, arm and other parts of control devices; (f) Brake capacity, brake drum, brake shoe and other parts of braking systems; (g) Blades, booms, link mechanisms, buckets, wire ropes and other parts of work equipment;	(5) The Contractor shall undertake the following periodic inspection items, (at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted: (JC19) JC19: (4)のコメントに同じ。Same comment as (4). NK: (4)と同様に(k)を追加。Same as (4), added (k). (a) Engine compression pressure, valve clearance and other relevant parts of prime energy unit; (b) Gearbox, clutch, transmission, propeller shaft, differential and other parts of power transmission devices; (c) Drive wheels, idling wheels, vertical trunk rollers, belts, tires, wheel bearings and other parts of traveling devices; (d) Springs, shock absorbers and other parts of suspension devices; (e) Left and right rotation angle of steering wheel, knuckle, rod, arm and other parts of control devices; (f) Brake capacity, brake drum, brake shoe and other parts of braking systems; (g) Blades, booms, link mechanisms, buckets, wire ropes and other parts of work equipment; (h) Hydraulic pump, hydraulic motor, cylinder, safety valve and other parts of	(5) The Contractor shall undertake the following periodic inspection items, (at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted: (a) Engine compression pressure, valve clearance and other relevant parts of prime energy unit; (b) Gearbox, clutch, transmission, propeller shaft, differential and other parts of power transmission devices; (c) Drive wheels, idling wheels, vertical trunk rollers, belts, tires, wheel bearings and other parts of traveling devices; (d) Springs, shock absorbers and other parts of suspension devices; (e) Left and right rotation angle of steering wheel, knuckle, rod, arm and other parts of control devices; (f) Brake capacity, brake drum, brake shoe and other parts of braking systems; (g) Blades, booms, link mechanisms, buckets, wire ropes and other parts of work equipment; (h) Hydraulic pump, hydraulic motor,

4.2.2 **建設機械の作業環境**

請負者は、建設機械の作業環境の確保のために、本仕様書 4.1.5[機器の作業環境]に加えて、次の措置を講じなければならない。

架空電線の充電電路に建設機械が接触し、作業員に感電の危険が生じるおそれのあるときは、本仕様書 3.2[架空線等上空施設一般]に規定する措置を講じること。

(h) Hydraulic pump, hydraulic motor, cylinder, safety valve and other parts of hydraulic equipment;

(i) Voltage, amperage and relevant performance and components of electrical systems; and

(j) Body, operating devices, head guards, back stoppers, access doors, protective covers, ladders and steps, locking devices, warning alarm devices, direction indicators and lightning devices.

(6) Operation of any unit of Contractor's Equipment shall not be allowed to commence until the HSO has certified that it is safe to do so.

(7) The Contractor shall prepare standard checklists for all inspections and the HSO shall ensure that these are complied with, completed and signed and kept as a record in accordance with JSSS 1.31 [*Health and Safety Records*].

4.2.2 Defects and Repair During Operation

(1) If an operator notices any defect or abnormality in the Contractor's Equipment during operation (such as abnormal noise, temperature, smell, etc.) the operator shall stop the operation immediately;

(2) The operator shall then identify the cause of the defect or abnormality and make necessary repairs by using authorised and qualified specialist mechanics, electricians or representative technical engineers authorised by the Contractor's Equipment manufacturer; and

(3) The HSO shall ensure that no further operation shall resume unless the above has been complied with and the Contractor's Equipment has been re-inspected by him and certified in accordance with JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*].

4.3 SAFETY REQUIREMENTS

4.3.1 General Safety Measures

In addition to other safety and health requirements of JSSS, the Contractor shall:

(1) Ensure that there is sufficient lighting to perform all work safely and provide artificial lighting where necessary.

hydraulic equipment;

(i) Voltage, amperage and relevant performance and components of electrical systems; and

(j) Body, operating devices, head guards, back stoppers, access doors, protective covers, ladders and steps, locking devices, warning alarm devices, direction indicators and lightning devices.

(6) Operation of any unit of Contractor's Equipment shall not be allowed to commence until the HSO has certified that it is safe to do so.

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4.3 SAFETY REQUIREMENTS

4.3.1 General Safety Measures

In addition to other safety and health requirements of JSSS, the Contractor shall:

(1) Ensure that there is sufficient lighting to

cylinder, safety valve and other parts of hydraulic equipment;

(i) Voltage, amperage and relevant performance and components of electrical systems; and

(j) Body, operating devices, head guards, back stoppers, access doors, protective covers, ladders and steps, locking devices, warning alarm devices, direction indicators and lightning devices.

(k) For other items not covered here, the inspection items stipulated in the manufacturer's official maintenance and repair manual shall be applied.

(6) Operation of any unit of Contractor's Equipment shall not be allowed to commence until the HSO has certified that it is safe to do so.

(7) The Contractor shall prepare standard checklists for all inspections and the HSO shall ensure that these are complied with, completed and signed and kept as a record in accordance with JSSS 1.31 [*Health and Safety Records*].

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(3) The HSO shall ensure that no further operation shall resume unless the above has been complied with and the Contractor's Equipment has been re-inspected by him and certified in accordance with JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*].

4.3 SAFETY REQUIREMENTS

4.3.1 General Safety Measures

In addition to other safety and health requirements of JSSS, the Contractor shall:

(1) Ensure that there is sufficient lighting to

4.2.3 建設機械の運用時の安全措置

請負者は、建設機械の運用時の安全のために、次の措置を講じなければならない。

(1) 建設機械と作業員の接触の防止

(a) 運転中の建設機械に接触することにより作業員に危険が生ずるおそれのある箇所は、作業員の立入を禁止とする、または誘導者を配置し、その者に当該建設機械を誘導させること。

(b) 誘導者及び作業員に合図並びに誘導の方法や運転者の視認性に関し、誘導員及び作業員の理解を徹底させること。

(2) 建設機械で登坂、降坂を伴う作業を行うときは、運転者に次の措置を講じさせること。

(a) 建設機械の登坂能力及び安定度を超えて走行しないこと。

(b) 建設機械の機種に応じた運転上遵守すべき事項を厳守すること。

(3) 作業場所の地形、地盤その他に異常を認めたときは、運転者に作業を中止させること。地盤その他の安全性が確認されるまで作業を再開させないこと。

(4) 建設機械の転倒・転落の対策

(c) 建設機械の転倒又は転落による運転者を含む作業員の危険を防止するため、建設機械の運行経路の路肩の崩壊を防止すること、地盤の不同沈下を防止すること、必要な幅員を保持すること等必要な措置を講じること。

(d) 路肩、のり肩、傾斜地等で、建設機械の転倒又は転落により作業員に危険が生ずるおそれのあるときは、誘導者を配置し、その者に当該建設機械を誘導させること。また、請負者は、当該建設機械の運転者に、誘導者が行う誘導に従わせること。

(e) 路肩、のり肩、傾斜地等で、建設機械の転倒又は転落により運転者に危険のおそれのある作業には転倒保護構造（ROPS）又は横転時保護構造（TOPS）の機械を使用し、かつ、シートベルトを備えた建設機械を使用させること。また、運転者にシートベルトを使用させること。

(4) 建設機械への落下物の対策

建設機械への落下物のおそれのある作業時の運転者の安全のため、落下物保護構造物（FOPS）のついた機械を使用すること。

(5) 建設機械のワイヤーロープ

建設機械で使用するワイヤーロープは、安全係数が6 以上のものを使用すること。この安全係数は、ワイヤロープの切断荷重の値を当該ワイヤロープにかかる荷重の最大の値で除した値とする。

ワイヤーロープが次の状態の場合には、交換したうえで切り捨てて廃棄する等の処理を講ずること。

(a) ワイヤロープ一よりの間において素線の数の十パーセント以上の素線が切断しているもの

(b) 直径の減少が公称径の七パーセントを超えるもの

(c) キンクしたもの(any kink in wire rope)

(d) 著しい形くずれ又は腐食があるもの

perform all work safely and provide artificial lighting where necessary.

(2) Ensure that Contractor's Equipment is equipped with suitable protective safety devices such as covers, screens, guards, contact prevention devices, auto-stop devices, enclosures, barriers and the like all as necessary to prevent any risk of injury to personnel from equipment or parts of equipment, where:

(a) There may be any risk of persons being hit by, caught or injured or entangled in any ropes, cables, sheaves, moving or rotating parts; and

(b) There may be any risk of persons being hit by flying debris, offcuts, or the like produced by the equipment.

(3) Ensure that Contractor's Equipment is equipped with suitable ladders and steps for access to the operating cabin and also to all other levels and components to permit inspection, assembly, maintenance and repair of the equipment. Inspection platforms and ladders on cranes and the like shall be fitted with cages. When any Contractor's Personnel need to work at a height of 2 m or more, the Contractor shall take suitable measures in accordance with JSSS 2.5 [*Fall Prevention*], including the provision and use by all Contractor's Personnel of guide ropes and PFAS.

(4) Prohibit personnel other than operators, workers and other authorised personnel from entering the place where Contractor's Equipment is in use for the Works.

(2) Ensure that Contractor's Equipment is equipped with suitable protective safety devices such as covers, screens, guards, contact prevention devices, auto-stop devices, enclosures, barriers and the like all as necessary to prevent any risk of injury to personnel from equipment or parts of equipment, where:

(a) There may be any risk of persons being hit by, caught or injured or entangled in any ropes, cables, sheaves, moving or rotating parts; and

(b) There may be any risk of persons being hit by flying debris, offcuts, or the like produced by the equipment.

(3) Ensure that Contractor's Equipment is equipped with suitable ladders and steps for access to the operating cabin and also to all other levels and components to permit inspection, assembly, maintenance and repair of the equipment. ~~Inspection platforms and ladders on cranes and the like shall be fitted with cages.~~ (JC20) When any Contractor's Personnel need to work at a height of 2 m or more, the Contractor shall take suitable measures in accordance with JSSS 2.5 [*Fall Prevention*], including the provision and use by all Contractor's Personnel of guide ropes and PFAS.

JC20: (3)はクレーンを強くイメージして書いていると思われるので、クレーンである旨記載願います。そのうえで必要であるならば後述の additional requirement に記載ください。もしくは 6 章。
This clause seems to be written imaging the case of cranes. Therefore, it should be described clearly as regarding crane. If necessary, stipulate it in the additional requirement later or in Chapter 6.

NK: 本項目は特にクレーンに注目しているものではなく、建設機械一般の点検時の安全について規定しているものです。クレーンについて記述している “Inspection platforms and ladders on cranes and the like shall be fitted with cages.”の文は、特に必要ないので削除します。
This clause is not highlighting to cranes, rather those requirements in (3) are general for various construction equipment except for the sentence “Inspection platforms and ladders on cranes and the like shall be fitted with cages.”
The sentence is deleted.

(4) Prohibit personnel other than operators, workers and other authorised personnel from entering the place where Contractor's Equipment is in use for the Works.

~~(5) Prohibit all personnel from accessing spoil heaps, stone, aggregate, sand and other material stock pile areas where there is any risk of material slippage and~~

perform all work safely and provide artificial lighting where necessary.

(2) Ensure that Contractor's Equipment is equipped with suitable protective safety devices such as covers, screens, guards, contact prevention devices, auto-stop devices, enclosures, barriers and the like all as necessary to prevent any risk of injury to personnel from equipment or parts of equipment, where:

(a) There may be any risk of persons being hit by, caught or injured or entangled in any ropes, cables, sheaves, moving or rotating parts; and

(b) There may be any risk of persons being hit by flying debris, offcuts, or the like produced by the equipment.

(3) Ensure that Contractor's Equipment is equipped with suitable ladders and steps for access to the operating cabin and also to all other levels and components to permit inspection, assembly, maintenance and repair of the equipment. ~~Inspection platforms and ladders on cranes and the like shall be fitted with cages.~~ When any Contractor's Personnel need to work at a height of 2 m or more, the Contractor shall take suitable measures in accordance with JSSS 2.5 [*Fall Prevention*], including the provision and use by all Contractor's Personnel of guide ropes and PFAS.

(4) Prohibit personnel other than operators, workers and other authorised personnel from entering the place where Contractor's Equipment is in use for the Works.

(6) 建設機械の運転者が運転位置から離れるときは、運転者に次の措置を講じさせること。
(a) 建設機械を地盤の良い平坦な場所に止めること。
(b) 停止時には、逸走防止のために足回りに輪止め等を確実にすること。
(c) バケット等の作業装置を地面まで降ろすこと。
(d) 原動機を止め、ブレーキは完全に掛け、ブレーキペダルをロックすること。
(e) 作業装置はロックし、キーをはずして所定の場所へ保管すること。

(7) 悪天候時の対策

本仕様書 2.7[悪天候及び地震時の対策]の措置に加えて、悪天候時には建設機械が不安定な状態になることを回避するために、次のような措置を講じること。
(a) 強風時には、リーダー・ブームを倒す又は機械・リーダー等をアンカー等で固定すること。
(b) 大雨時には、増水の恐れや地盤が不安定になる場所から退避すること。
(c) 降雪時には、除雪を行いスリップによる脱輪や逸脱を防止すること。

4.2.4 建設機械の用途外使用の制限

請負者は、建設機械を主たる用途以外に使用してはならない。作業の性質上やむを得ずパワーショベル等の建設機械を吊り上げ作業等の用途外で使用をする際には、以下の条件を満たさなければならない。

(1) アーム、バケット等の作業装置につり上げ用の器具を取り付けて使用するとき。

(2) アーム、バケット、フック、シャックル等の金具その他のつり上げ用の器具が、負荷させる荷重に応じた十分な強度を有するものであるとき。

(3) フック、シャックル等の金具その他のつり上げ用の器具に、外れ止め装置が使用され、器具からつり上げた荷が落下するおそれのないとき。

(4) フック、シャックル等の金具その他のつり上げ用の器具がアーム、バケット等の作業装置から外れるおそれのないとき。

(5) パワーショベル等の建設機械で吊り上げ作業に係わる運転者は、クレーン作業の免許(必要場合)と教育を受けた者でなければならない。

荷のつり上げの作業以外の建設機械の用途外使用を行う場合には、作業員に危険を及ぼすおそれのない作業であることを確認したうえで行わなければならない。

4.2.5 点検・整備作業時の安全措置

請負者は、点検・整備作業時の安全確保のために、本仕様書 4.1.7[機器の点検・整備作業時の安全措置]に加え、次の措置を講じなければならない。

(1) 平坦地に建設機械を停止させて点検・整備作業を

(5) Prohibit all personnel from accessing spoil heaps, stone, aggregate, sand and other material stock pile areas where there is any risk of material slippage and consequent injury.

(6) Ensure that each unit of Contractor's Equipment is provided with appropriate numbers and types of fire extinguishing equipment and such other facilities that are necessary to ensure safety and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and fire safety procedures.

(7) Ensure that each working area where Contractor's Equipment is in use, is provided with appropriate numbers and types of first-aid equipment and such other facilities that are necessary to ensure safety and treat accidents and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and first-aid procedures.

(8) Post a label clearly showing the name of the operator on each unit of Contractor's Equipment together with the name and contact of the HSO who shall be contacted in the event of breakdown or fault.

(9) Ensure that only the authorised operating, inspection and maintenance personnel access the mechanical, electrical and other components and systems of the Contractor's Equipment and prohibit all other persons from such access and prevent them from disabling any features and tampering with or removing any inspection and maintenance covers, safety guards to prevent contact with moving parts and the like.

~~consequent injury.~~ (JC20a)

JC20a: コンクリート・骨材プラント特有の問題を一般化すると唐突感。equipment と関係ないと思われるため削除してください。
Particular requirements related with concrete/crushing plants are specified in general requirements for equipment. It seems strange, so please delete (5).

NK: Deleted.

(5) Ensure that each unit of Contractor's Equipment is provided with appropriate numbers and types of fire extinguishing equipment (JC21) and such other facilities that are necessary to ensure safety and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and fire safety procedures.

JC21: 本当？→全部には備え付けないものと考えますので、必要なものに備え付けるという旨に記述を修正願います。
Really? Fire extinguishing equipment would not be provided all Equipment. Please modify the stipulation to provide it when necessary.

NK: We will modify it referring to the following clause of OSHA:
1926.601 Motor vehicles.
(14) All vehicles in use shall be checked … These requirements also apply to equipment such as …, fire extinguishers, etc., where such equipment is necessary.

(6) Ensure that each working area where Contractor's Equipment is in use, is provided with appropriate numbers and types of first-aid equipment and such other facilities that are necessary to ensure safety and treat accidents and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and first-aid procedures.

(7) Post a label clearly showing the name of the operator on each unit of Contractor's Equipment together with the name and contact of the HSO who shall be contacted in the event of breakdown or fault.

(8) Ensure that only the authorised operating, inspection and maintenance personnel access the mechanical, electrical and other components and systems of the Contractor's Equipment and prohibit all other persons from such access and prevent them from disabling any features and tampering with or removing any inspection and maintenance covers, safety guards to prevent contact with moving parts and the like.

(9) Ensure that installation, assembly, testing commissioning, operation and dismantling of all major equipment including static

(5) Ensure that each unit of Contractor's Equipment is provided with appropriate numbers and types of fire extinguishing equipment and such other facilities ~~that are necessary to ensure safety~~ where such equipment is necessary and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and fire safety procedures.

(6) Ensure that each working area where Contractor's Equipment is in use, is provided with appropriate numbers and types of first-aid equipment and such other facilities that are necessary to ensure safety and treat accidents and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and first-aid procedures.

(7) Post a label clearly showing the name of the operator on each unit of Contractor's Equipment together with the name and contact of the HSO who shall be contacted in the event of breakdown or fault.

(8) Ensure that only the authorised operating, inspection and maintenance personnel access the mechanical, electrical and other components and systems of the Contractor's Equipment and prohibit all other persons from such access and prevent them from disabling any features and tampering with or removing any inspection and maintenance covers, safety guards to prevent contact with moving parts and the like.

行うこと。やむを得ず傾斜地で行う場合は、機械の足回りに歯止めをする等、逸走や転倒を防止する措置を講じること。

(2) 点検・整備作業を行う建設機械のアタッチメント等の作業装置は必ず地面に降させること。やむを得ずブレード、バケット等を上げ、その下で点検・整備作業を行う場合には、安全ブロックで支持するなどの降下防止策をとること。

4.2.6 作業装置の装着等の作業時の安全措置

請負者は、アタッチメント等、建設機械の作業装置の装着及び取りはずし作業では、次の措置を講じなければならない。

(1) アタッチメントの装着又は取り外しの作業を行うときは、アタッチメントが倒壊すること等による作業員の危険を防止するための措置をとること。

(2) 誤操作や当該作業員の挟まれ防止のために、当該作業の作業主任の合図に従い、当該作業員に作業を行わせること。

4.2.7 建設機械の搬送時の安全措置

(1) 建設機械の積込み・積卸し

請負者は、建設機械の積込み及び積卸しでは、次の措置を講じなければならない。

(a) 建設機械をトレーラ又はトラック等に積載して移送する場合は、登坂用具又は専用装置を備えた移送用の車両を使用すること。

(b) 積込み又は積卸しを行う場合は、支持力のある平坦な地盤で、作業に必要な広さのある場所を選定すること。

(c) 積込み又は積卸し作業時には、移送用車両は必ず駐車ブレーキを掛け、タイヤに輪止めをすること。

(d) 登坂用具は、積込み又は積卸しする機械重量に耐えられる強度、長さ及び幅を持ち、キャタピラや車輪の回転によって荷台からはずれないような、爪付きのもの又ははずれ止め装置の装備されたものを使用すること。

(e) 建設機械を道路の制限高さを超えないように積込みすること。

(2) 建設機械の積込後の固定等

請負者は、建設機械の積込後、次の措置を講じなければならない。

(a) 建設機械を荷台の所定位置で停止させ、駐車ブレーキを掛けること。

(b) 建設機械のバケット等はトレーラ等の床上に下ろし固定すること。

(c) 積込みの状態及び輪止め等固定の状態が適切であるかを確認すること。

4.2.8 リース建設機械の使用

(1) 請負者は、リース建設機械を使用する場合は、リース会社から、搬入時に以下の書面による報告を受理しなければならない。

(a) 当該建設機械にかかる点検整備状況にかかる記録

(b) 当該建設機械の能力、特性その他その使用上の注

(10) Ensure that installation, assembly, testing commissioning, operation and dismantling of all major equipment including static equipment, personnel and goods elevators and the like, is carried out under the direction of an Operation Leader appropriately qualified, skilled and experienced in such activities for the particular type and capacity of equipment and strictly in accordance with the manufacturer's written instructions.

4.3.2 Transportation to and Removal from Site

(1) When transporting heavy or long goods on public roads, select roads on which the transportation does not pose danger to general traffic, third parties, structures adjacent to the transportation route, obtain all necessary prior permission from the relevant authorities including police, road authority before commencement of transportation and comply with all requirements.

(2) When transporting heavy or long goods within the Site, select suitable route where the transportation does not pose danger to existing permanent or temporary buildings or structures or other works and obtain the consent of the Engineer before commencement of the transportation and comply with all requirements.

4.3.3 Safety Measures During Cleaning, Inspection and Maintenance

The Contractor shall take the following measures for safety of Contractor's Personnel during cleaning, inspection and maintenance. Until such measures are taken, the Contractor shall prohibit any inspection or maintenance personnel or other workers from entering the areas at risk.

(1) Perform inspection and maintenance work wherever possible on a level surface. Where unavoidable ensure that wheels are securely chocked to prevent any movement of equipment.

(2) Provide safety blocks or supports under cargo bed of vehicles to prevent them descending unexpectedly during inspection and maintenance.

(3) Lower attachments (buckets and blades etc.) to the ground during any inspection and

equipment, personnel and goods elevators and the like, is carried out under the direction of an Operation Leader appropriately qualified, skilled and experienced in such activities for the particular type and capacity of equipment and strictly in accordance with the manufacturer's written instructions.

~~4.3.2 Transportation to and Removal from Site~~ (JC22)

~~(1) When transporting heavy or long goods on public roads, select roads on which the transportation does not pose danger to general traffic, third parties, structures adjacent to the transportation route, obtain all necessary prior permission from the relevant authorities including police, road authority before commencement of transportation and comply with all requirements.~~

~~(2) When transporting heavy or long goods within the Site, select suitable route where the transportation does not pose danger to existing permanent or temporary buildings or structures or other works and obtain the consent of the Engineer before commencement of the transportation and comply with all requirements.~~

JC22: 4.3.4 の operation のところに入れてください。
Please move these (1) and (2) to 4.3.4 [Safety Measures During Operation].

NK: 4.3.7 (1) & (2)に移動しました。章番号を繰り上げます。
Moved to 4.3.7 (1) & (2) and Clause Nos are changed.

4.3.3 Safety Measures During Cleaning, Inspection and Maintenance

The Contractor shall take the following measures for safety of Contractor's Personnel during cleaning, inspection and maintenance. Until such measures are taken, the Contractor shall prohibit any inspection or maintenance personnel or other workers from entering the areas at risk.

(1) Perform inspection and maintenance work wherever possible on a level surface. Where unavoidable ensure that wheels are securely chocked to prevent any movement of equipment.

(2) Provide safety blocks or supports under cargo bed of vehicles to prevent them descending unexpectedly during inspection and maintenance.

(3) Lower attachments (buckets and blades etc.) to the ground during any inspection and maintenance. Where unavoidable ensure that attachments are securely supported to prevent any fall or downward movement.

(9) Ensure that installation, assembly, testing commissioning, operation and dismantling of all major equipment including static equipment, personnel and goods elevators and the like, is carried out under the direction of an Operation Leader appropriately qualified, skilled and experienced in such activities for the particular type and capacity of equipment and strictly in accordance with the manufacturer's written instructions.

~~4.3.2 Transportation to and Removal from Site~~

~~(1) When transporting heavy or long goods on public roads, select roads on which the transportation does not pose danger to general traffic, third parties, structures adjacent to the transportation route, obtain all necessary prior permission from the relevant authorities including police, road authority before commencement of transportation and comply with all requirements.~~

~~(2) When transporting heavy or long goods within the Site, select suitable route where the transportation does not pose danger to existing permanent or temporary buildings or structures or other works and obtain the consent of the Engineer before commencement of the transportation and comply with all requirements.~~

4.3.2 Safety Measures During Cleaning, Inspection and Maintenance

The Contractor shall take the following measures for safety of Contractor's Personnel during cleaning, inspection and maintenance. Until such measures are taken, the Contractor shall prohibit any inspection or maintenance personnel or other workers from entering the areas at risk.

(1) Perform inspection and maintenance work wherever possible on a level surface. Where unavoidable ensure that wheels are securely chocked to prevent any movement of equipment.

(2) Provide safety blocks or supports under cargo bed of vehicles to prevent them descending unexpectedly during inspection and maintenance.

(3) Lower attachments (buckets and blades etc.) to the ground during any inspection and

意すべき事項

(2) 請負者は、リース機械を使用する際には、次を行わなければならない。

(a) 搬入時に本仕様書 4.2.1[建設機械の点検・整備]の(3)[建設機械の定期点検]に規定する項目のうち、当該建設機械に該当する項目を含む点検・整備に関する記録を確認すること。確認できなかった場合、使用開始に先立ち同様の項目の点検・整備を実施すること。

(b) 不備のあるリース建設機械は使用しないこと。

(3) 請負者は、運転者付きのリース建設機械を使用する際には、次を行わなければならない。

(a) リース建設機械会社の要員を運転者または操作者に、本仕様書 4.1.4[安全教育と指導]に準じて教育を受けさせなければならない

(b) 作業開始前に機体の保守点検記録、整備状況、安全装置の装備、その正常動作の点検整備状況を機械整備の担当に確認させること。

(c) 不備のある建設機械を使用させないこと。

(4) 請負者は、リース建設機械についても、本仕様書 4.1[請負者の機器の一般的留意事項]及び 4.2[建設機械]に規定された事項を遵守しなければならない。

4.3 建設設備

4.3.1 建設設備の点検・整備

請負者は本仕様書 4.1.6[機器の点検・整備]に従い、次の点検・整備を行わなければならない。

(1) 建設設備の日常点検

日常点検では、次の点検項目を含む請負者が準備した点検表に基づき点検を行うこと。

(a) 原動機及びプーリーの機能、非常停止装置の機能、原動機、回転軸、歯車、プーリー等の覆い、囲い等の異常の有無

(b) 異常な音、振動、臭気等

(c) 設備の清掃、給油の状況

(d) 設備周辺の整理、整頓

(2) 建設設備の定期点検

(3) 悪天候及び地震後の点検

4.3.2 建設設備の作業環境

請負者は、建設設備の作業に際しては、本仕様書 4.1.5[機器の作業環境]に加えて、次に示す安全上の措置を講じなければならない。

(1) 建設設備の出入口には，本仕様書 2.4[監視員・誘導員の配置]に従い、状況に応じて誘導員を配置すること。

(2) 次のときは、建設設備の機械一部又は全てに覆い又は囲い等を設けること。

(a) 機械の回転部等に挟まれ、巻き込まれることにより作業員に危険を及ぼすおそれのあるとき。

maintenance. Where unavoidable ensure that attachments are securely supported to prevent any fall or downward movement.

(4) Stop and isolate the functions completely, establish and implement lockout and tagout procedures to prevent accidents during inspection and maintenance. The lockout and tagout system shall fully isolate the starting system.

(5) Post warning signs to prohibit start-up or use of any Contractor's Equipment during inspection and maintenance.

(6) Assign a Spotter.

(7) Ensure that only authorised personnel have access to the inspection and maintenance area.

4.3.4 Safety Measures During Operation

(1) The Contractor shall ensure the safety of all Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where works are being executed and who may be affected by such work.

(2) Unless otherwise specifically permitted by the HSO, all work involving the use of Contractor's Equipment shall be designated as Dangerous Work and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

maintenance. Where unavoidable ensure that attachments are securely supported to prevent any fall or downward movement.

(4) Stop and isolate the functions completely, establish and implement lockout and tagout procedures to prevent accidents during inspection and maintenance. The lockout and tagout system shall fully isolate the starting system.

(5) Post warning signs to prohibit start-up or use of any Contractor's Equipment during inspection and maintenance.

(6) Assign a Spotter.

(7) Ensure that only authorised personnel have access to the inspection and maintenance area.

4.3.4 Safety Measures During Operation

(1) The Contractor shall ensure the safety of all Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where works are being executed and who may be affected by such work.

(2) Unless otherwise specifically permitted by the HSO, (JC23) all work involving the use of Contractor's Equipment shall be designated as Dangerous Work (JC24) and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

JC23: エンジニアではなく？
Shouldn't this be the Engineer?

NK: JC24 のコメントとおり、Contractor's Equipment の範囲が広いのためと現場の条件によっては、立入禁止措置がとれない場合もあります。その場合の判断は HSO が責任をもって行うものと考えます。
Because Contractor's Equipment are various types from heavy equipment to tools and small equipment, and depending on the site conditions, it may not be possible to take entry prevention measures. In such a case, the HSO is the one who has to make judgment and decision. Left as is.

JC24: Contractor's Equipment の範囲が広いので、すべてを Dangerous Work とするのは間違いではないでしょうか。したがって、「Contractor's Equipment を用いる場合で unless it is not practicable な場合にはフェンスを設置する」という趣旨の文を記載願います。
It is not appropriate to designated all works as "Dangerous Work" because Contractor's Equipment includes various types. Please, stipulate such that When using Contractor's Equipment, unless it is not practicable, shall enclose the working area.

NK: Contractor's Equipment を用いる仕事は危険な作業とする原則を規定し、ただし、HSO が許可した場合は、危険な作業から除外できると、原案は規定しています。現場に判断を任せず、原則を規定することが事故

maintenance. Where unavoidable ensure that attachments are securely supported to prevent any fall or downward movement.

(4) Stop and isolate the functions completely, establish and implement lockout and tagout procedures to prevent accidents during inspection and maintenance. The lockout and tagout system shall fully isolate the starting system.

(5) Post warning signs to prohibit start-up or use of any Contractor's Equipment during inspection and maintenance.

(6) Assign a Spotter.

(7) Ensure that only authorised personnel have access to the inspection and maintenance area.

4.3.3 Safety Measures During Operation

(1) The Contractor shall ensure the safety of all Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where works are being executed and who may be affected by such work.

(2) Unless otherwise specifically permitted by the HSO, all work involving the use of Contractor's Equipment shall be designated as Dangerous Work and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [Prohibition of Entry - Dangerous Work].

(b) 設備で取り扱う材料、コンクリート等が飛来することにより作業員に危険を及ぼすおそれのあるとき。

(3) 建設設備に通ずる場所及び建設設備内には、本仕様書 7.4[通路]に従い、作業者が使用するための安全な通路を設け、かつ、これを常時有効に保持すること。

(4) 作業員の埋没の危険のおそれがあるコンクリートの骨材のストックパイルには、立入りを禁止すること。

4.3.3 建設設備の設置、組立、解体時の安全措置

請負者は、建設設備の設置、組立、解体を行うときは、次の措置を講じなければならない。

(1) 建設設備の設置、組立、解体は、当該機設備の専門家の指揮のもとに行うこと。

(2) 建設設備の設計に従い、基礎の建設、据え付けを行うこと。

(3) 本仕様書 4.1.6[機器の点検・整備]に従い、建設設備の設置又は組立作業終了時には完成時試験を行うこと。

4.3.4 建設設備の作業時の安全措置

請負者は、建設設備を使用して作業を行うときは、次の措置を講じなければならない。

(1) 建設設備の運転者又は操作者、保守点検の担当者の氏名を、建設設備の見やすい位置に掲示すること。

(2) 保守点検の担当者以外に、建設設備の覆い・囲いや安全装置を取り外し、又はその機能を失わせないこと。

(3) 建設設備の運転者、操作者又は作業員が、建設設備の音、振動、臭気、温度等に異常を認めた場合は、建設設備の使用を停止して、保守点検の担当者へ報告させること。

(4) 建設設備に異常を認めた場合、異常の原因の特定と修理等の対応を行い、建設設備の安全が確認されるまで、建設設備を使用しないこと。

(5) 部品の交換後は、直ちに正常な動作性を確認すること。

(6) 機械の運転を停止したときは、本仕様書 4.1.7[機器の点検・整備作業時の安全措置]の(1)及び(2)の措置を講じ、上記の作業に従事する作業員以外の者が当該機械を運転することを防止すること。

4.3.5 点検・整備作業時の安全措置

請負者は、建設設備の点検・整備作業時の安全確保のために、本仕様書 4.1.7[機器の点検・整備作業時の安全措置]に加え、次の措置を講じなければならない。

建設設備の掃除、給油、検査、修理又は調整の作業を行う場合において、作業員に危険を及ぼすおそれのあるときは、建設設備の運転を停止しなければならない。ただし、建設設備の運転中に作業を行わなければなら

(3) The Contractor shall also ensure that:

(a) All operators are able to clearly see and communicate effectively with Spotters and other relevant persons;

(b) No Contractor's Equipment shall be allowed to operate beyond the capacity or operational limits officially prescribed by the equipment manufacturer;

(c) The surfaces upon which the Contractor's Equipment is working, and any adjacent surfaces and areas over which access is required, are sound, safe and suitable to support the equipment and the Contractor shall provide any temporary foundations, hardstanding or other surfaces, sleepers or steel plates as are necessary to ensure safety and stability of the equipment at all times;

(d) Spotters shall always be provided to enable precise movement and positioning of Contractor's Equipment, particularly when reversing, loading and unloading, dangerous areas, areas where the operator's view is not clear and intersections with public roads.

(e) All Contractor's Equipment is equipped with seatbelts or safety harnesses and that such seatbelts and harnesses are used;

(f) Where there is any risk of turnover,

の防止上必要と考えますので、原案通りとします。
This clause specify that the principle is the work using Contractor's Equipment shall be Dangerous Work, and the work which the HSO permits as not Dangerous Work.
This does not leave the judgement to the Contractor. The principle stipulation is important to prevent accident with Contractor's Equipment.
Therefore, (2) is left as it is.

(3) The Contractor shall also ensure that:

(a) All operators are able to clearly see and communicate effectively with Spotters and other relevant persons;

(b) No Contractor's Equipment shall be allowed to operate beyond the capacity or operational limits officially prescribed by the equipment manufacturer;

(c) The surfaces upon which the Contractor's Equipment is working, and any adjacent surfaces and areas over which access is required, are sound, safe and suitable to support the equipment and the Contractor shall provide any temporary foundations, hardstanding or other surfaces, sleepers or steel plates as are necessary to ensure safety and stability of the equipment at all times;

(d) Spotters shall always be provided to enable precise movement and positioning of Contractor's Equipment, particularly when reversing, loading and unloading, dangerous areas, areas where the operator's view is not clear and intersections with public roads.

(e) All Contractor's Equipment is equipped with seatbelts or safety harnesses (JC25) and that such seatbelts and harnesses are used;

JC25: 建設機械だけを意味してはいないので、それは違うのでは？mobile equipment として記述するか、主語はこのままにして適切に範囲を絞るような表現をするか（(f)のような書き方）、いずれかで適切に書き換えをお願いします。
This is not correct because Contractor's Equipment includes various equipment including construction equipment. Please modify the stipulation by using "mobile equipment" or applying a phrase such as "where there is any risk, etc."

NK: 追記しました。Added as commented.

(f) Where there is any risk of turnover, slippage, collapse or fall, Contractor's Equipment shall be equipped with a "Roll-Over Protective Structure"

(3) The Contractor shall also ensure that:

(a) All operators are able to clearly see and communicate effectively with Spotters and other relevant persons;

(b) No Contractor's Equipment shall be allowed to operate beyond the capacity or operational limits officially prescribed by the equipment manufacturer;

(c) The surfaces upon which the Contractor's Equipment is working, and any adjacent surfaces and areas over which access is required, are sound, safe and suitable to support the equipment and the Contractor shall provide any temporary foundations, hardstanding or other surfaces, sleepers or steel plates as are necessary to ensure safety and stability of the equipment at all times;

(d) Spotters shall always be provided to enable precise movement and positioning of Contractor's Equipment, particularly when reversing, loading and unloading, dangerous areas, areas where the operator's view is not clear and intersections with public roads.

(e) Where there is any risk of turnover, slippage, collapse or fall, Contractor's Equipment shall be equipped with seatbelts or safety harnesses and that such seatbelts and harnesses are used;

(f) Where there is any risk of turnover, slippage, collapse or fall, Contractor's

ない場合において、危険な箇所に覆いを設ける等の措置を講じたときは、この限りでない。 **4.4 定置機械** **4.4.1 定置機械の点検・整備** 請負者は本仕様書 4.1.6[機器の点検・整備]に従い、次の点検・整備を行わなければならない。 (1) 定置機械の日常点検 日常点検では、次の点検項目を含む請負者が準備した点検表に基づき点検を行うこと。 (a) 定置機械に共通する点検項目 (i) 安全装置の機能 異常な音、振動、臭気等 機械の清掃、給油の状況 機械周辺の整理、整頓 (b) 工事用エレベーター、建設用リフトに関する点検項目 (i) 運転者又は操作者の名前の標示 最大積載荷重の明示 機械の周辺の囲いの異常の有無 搬器扉及び各階扉の異常の有無 インターホンの異常の有無 建設用リフトの場合、ブレーキ及びクラッチの異常の有無、日常点検可能な場所のワイヤロープが通っている箇所の摩耗、損傷の有無 (c) グラインダー、丸鋸等の回転部のある電気機械 (i) 回転部分の磨耗、損傷の有無 (ii) アースの状況 (2) 建設機械の定期点検 定期点検では、次の点検項目を含む請負者が準備した点検表に基づき点検を行うこと。 工事用エレベーター及び建設用リフトは一月以内ごとに一回、定期に、次の事項について検査を行うこと。ただし、一月をこえる期間使用しない工事用エレベーター、建設用リフトの当該使用しない期間においては、この限りでないが、その使用を再開する際は、次の事項について検査を行うこと。 (a) 工事用エレベーター (i) ファイナルリミットスイッチ、非常止めその他の安全装置、ブレーキ及び制御装置の異常の有無 ワイヤロープの損傷の有無 ガイドレールの状態 屋外に設置されているエレベーターにあっては、ガイロープを緊結している部分の異常の有無 (b) 建設用リフト (i) ブレーキ及びクラッチの異常の有無 ウィンチの据え付けの状態	slippage, collapse or fall, Contractor's Equipment shall be equipped with a "Roll-Over Protective Structure" (ROPS); (g) Where there is any risk of injury to operators due to falling objects Contractor's Equipment shall be equipped with a "Falling Object Protective Structure" (FOPS); (h) Operators shall pay careful and constant attention to the position of any workers near to the operating area and particularly when reversing; (i) Operators shall ensure that excavator buckets never pass over the operator's seat of the other Contractor's Equipment; and (j) Workers shall not enter under a bucket which is loading material and shall keep away from dump trucks when loading or unloading materials. (k) No person shall ride on trucks, trailers or cargo bed other than cabin of vehicles unless permitted by the Law of the Country. 4.3.5 Safety Measures When Equipment Is Not in Use (1) When Contractor's Equipment is not in use, the Contractor shall ensure that operators: (a) Park on surfaces which are level, sound, safe and suitable to support the equipment; (b) Securely chock all wheels to prevent any movement; (c) Lower attachments (buckets and blades etc.) to the ground; (d) Stop and isolate the functions completely, fully engage brakes and	(ROPS); (g) Where there is any risk of injury to operators due to falling objects Contractor's Equipment shall be equipped with a "Falling Object Protective Structure" (FOPS); (h) Operators shall pay careful and constant attention to the position of any workers near to the operating area and particularly when reversing; (JC25) (i) Operators shall ensure that excavator buckets never pass over the operator's seat of the other Contractor's Equipment; and (JC25) JC25: ★ (comment is not shown.) NK: A phrase is added to clarify the kind of operators. (j) Workers shall not enter under a bucket which is loading material and shall keep away from dump trucks when loading or unloading materials. (k) No person shall ride on trucks, trailers or cargo bed other than cabin of vehicles unless permitted by the Law of the Country. (l) 4.3.5 Safety Measures When Equipment Is Not in Use (JC26) JC26: Contractor's Equipment とするか mobile とするか Please consider to change it to "Contractor's Equipment" or "mobile"? NK: 内容が移動機械のものであるため"Mobile Equipment"に修正しました。下の(1)も同様。 As the provisions are regarding to mobile equipment, modified to "Mobile Equipment". (1) below also is modified. (1) When Contractor's Equipment (JC26)is not in use, the Contractor shall ensure that operators: JC26: この辺りも建設機械に特化した記述かと This is also stipulation particularly for construction equipment. NK: Modified to mobile equipment. (a) Park on surfaces which are level, sound, safe and suitable to support the equipment; (b) Securely chock all wheels to prevent any movement; (c) Lower attachments (buckets and blades etc.) to the ground; (d) Stop and isolate the functions	Equipment shall be equipped with a "Roll-Over Protective Structure" (ROPS); (g) Where there is any risk of injury to operators due to falling objects Contractor's Equipment shall be equipped with a "Falling Object Protective Structure" (FOPS); (h) Operators shall pay careful and constant attention to the position of any workers near to the operating area and particularly when mobile equipment is reversing; (i) Operators of excavating equipment shall ensure that excavator buckets never pass over the operator's seat of the other Contractor's Equipment; and (j) Workers shall not enter under a bucket which is loading material and shall keep away from dump trucks when loading or unloading materials. (k) No person shall ride on trucks, trailers or cargo bed other than cabin of vehicles unless permitted by the Law of the Country. 4.3.4 Safety Measures When ~~Equipment~~ Mobile Equipment Is Not in Use (1) When ~~Contractor's Equipment~~ mobile equipment is not in use, the Contractor shall ensure that operators: (a) Park on surfaces which are level, sound, safe and suitable to support the equipment; (b) Securely chock all wheels to prevent any movement; (c) Lower attachments (buckets and blades

ワイヤロープの損傷の有無
ガイロープを緊結している部分の異常の有無
配線、開閉器及び制御装置の異常の有無
ガイドレールの状態

4.4.2 大型の定置機械の設置、組立、解体時の安全措置

請負者は、大型の定置機械の設置、組立、解体を行うときは、次の措置を講じなければならない。

(1) 定置機械の設置、組立、解体は、当該機械の専門家の指揮のもとに行うこと。

(2) 定置機械の設計に従い、必要に応じ基礎の建設、据え付けを行うこと。

(3) 本仕様書 4.1.6[機器の点検・整備]に従い、定置機械の設置又は組立作業終了時には完成時試験を行うこと。

4.4.3 小型の定置機械の作業環境

請負者は、小型の定置機械を用いた作業に際しては、本仕様書 4.1.5[機器の作業環境]に加えて、次に示す安全上の措置を講じなければならない。

(1) 次のときは、機械一部又は全てに覆い又は囲い等を設けること。
(a) 機械の回転部等に挟まれ、巻き込まれることにより作業員に危険を及ぼすおそれのあるとき。
(b) 加工物等が切断し、又は欠損して飛来することにより作業員に危険を及ぼすおそれのあるとき。
(c) 切削屑が飛来すること等により作業員に危険を及ぼすおそれのあるとき。

(2) 丸のこ盤には、歯の接触予防装置等、作業員の危険を予防するための設備を設けること。

4.4.4 定置機械の作業時の安全措置

請負者は、定置機械を操作して、又は使用して作業を行うときは、次の措置を講じなければならない。

(1) 大型及び小型定置機械に共通した措置
(a) 機械の保守点検の担当者の氏名を、機械の見やすい位置に掲示すること。
(b) 保守点検の担当者以外に、覆い・囲いや安全装置を取り外し、又はその機能を失わせないこと。
(c) 機械の操作者又は作業員が、機械の音、振動、臭気、温度等に異常を認めた場合は、機械の操作又は使用を停止して、保守点検の担当者へ報告させること。
(d) 機械に異常を認めた場合、異常の原因の特定と修理等の対応を行い、機械の安全が確認されるまで、機械の操作者又は作業員に機械を使用させないこと。

(2) 大型定置機械に関する措置
(a) 建設用リフト等を運転する場合、必要に応じ合図を行なう者を指名し、請負者が定めた一定の合図を無線通信、モニター等の手段を用

lock the brake pedal; and

(e) Lock the equipment and store the starter key in the designated place.

(2) The Contractor shall prohibit all persons other than authorised personnel from entering the area where Contractor's Equipment is parked.

4.3.6 Safety Measures During Connection of Attachments

The Contractor shall take the following measures when connecting and removing attachments (buckets, blades etc.) to Contractor's Equipment:

(1) Prevent any risk due to movement or fall of attachments.

(2) Prevent accidental movement or operation causing persons to be trapped.

4.3.7 Safety Measures During Loading and Transporting

(1) Select and use trailers, ramps, tracks and climbing equipment or other equipment which is suitable for the particular type, size and weight of the Contractor's Equipment and fit for the purpose for which they are intended.

completely, fully engage brakes and lock the brake pedal; and

(e) Lock the equipment and store the starter key in the designated place.

(2) The Contractor shall prohibit all persons other than authorised personnel from entering the area where Contractor's Equipment is parked.

4.3.6 Safety Measures During Connection of Attachments

The Contractor shall take the following measures when connecting and removing attachments (buckets, blades etc.) to Contractor's Equipment:

(1) Prevent any risk due to movement or fall of attachments.

(2) Prevent accidental movement or operation causing persons to be trapped.

4.3.7 Safety Measures During Loading and Transporting (JC27)

JC27: タイトル要修正。場合によっては要分割・統合。
・Contractor's Equipment を運ぶときの話
・Contractor's Equipment で材料等を運ぶときの話
・Contractor's Equipment でその他のことをする場合の話
が混在しています。
Contractor's Equipment で輸送・荷卸しする時ではなくて、Contractor's Equipment を輸送・荷卸しする時なので、このタイトルは Loading and Transporting of Contractor's Equipment では.でないと、ここで勘違いして？？？になる
It is necessary to modify the title or divide/merge contents, because the contents are mixed with transporting equipment, transporting materials with equipment and others.

NK: 本章の題を [Safety Measures during Loading and Transporting of Contractor's Equipment]に変更し、新たに 4.3.7 [Safety Measures during Loading and Transporting of Materials]を加え、その中に 4.3.2 (1), (2)及び本章の材料等の運搬に係わる(9), (13), (14)を移動しました。
Changed the title to [Safety Measures during Loading and Transporting of Contractor's Equipment], and added a new Clause 4.3.7 [Safety Measures during Loading and Transporting of Materials], which contains measures for transporting materials from 4.3.2 (1) & (2) and 4.3.7 (9), (13) and 14.

(1) Select and use trailers, ramps, tracks and climbing equipment or other equipment which is suitable for the particular type, size and weight of the Contractor's Equipment and fit for the purpose for which they are intended.

(2) Select location and loading and unloading areas which have sufficient space and

etc.) to the ground;

(d) Stop and isolate the functions completely, fully engage brakes and lock the brake pedal; and

(e) Lock the equipment and store the starter key in the designated place.

(2) The Contractor shall prohibit all persons other than authorised personnel from entering the area where Contractor's Equipment is parked.

4.3.5 Safety Measures During Connection of Attachments

The Contractor shall take the following measures when connecting and removing attachments (buckets, blades etc.) to Contractor's Equipment:

(1) Prevent any risk due to movement or fall of attachments.

(2) Prevent accidental movement or operation causing persons to be trapped.

4.3.6 Safety Measures during Loading and Transporting of Contactor's Equipment

(1) Select and use trailers, ramps, tracks and climbing equipment or other equipment which is suitable for the particular type, size and weight of the Contractor's Equipment and fit for the purpose for which they are intended.

(2) Select location and loading and unloading

いて、運転者に対して行なわせること。

(b) 地震時及び悪天候の場合には、製造者のマニュアルに従って点検・整備を行うこと。

(c) 各機械には、積載荷重、操作者氏名、資格名を、機械の見やすい位置に掲示すること。

(d) 工事用エレベーター、建設用リフトを用いて作業を行なうときは、次に該当する場所に作業員を立ち入らせてはならない。

(i) 搬器の昇降によって作業員に危険が生ずるおそれのある箇所

巻上げ用ワイヤロープの内角側で、当該ワイヤロープが通っているシーブ又はその取付け部の破損により、当該ワイヤロープがはね、又は当該シーブ若しくはその取付具が飛来することにより作業員に危険を生ずるおそれのある箇所

(e) 荷揚げ物の落下・飛散などの防止措置を講ずること。

(3) 小型定置機械に関する措置

(a) 機械のアタッチメントは、機械の製造者が推奨する規格のもの又はこれと同等の機能を有することを証明できるものを使用すること。

(b) 部品の交換後は、直ちに正常な動作性を確認すること。

(c) 機械の掃除、給油、検査、修理又は調整の作業を行う場合に際しては、機械の運転を停止すること。

(d) 機械の運転を停止したときは、本仕様書 4.1.7[機器の点検・整備作業時の安全措置]の(1)及び(2)の措置を講じ、点検・整備作業に従事する作業員以外の者が当該機械を運転することを防止すること。

(e) 研削といしについては製造者のマニュアルに従って使用すること。

4.5 電気機械器具

4.5.1 電気機械器具の点検・整備

請負者は本節 4.1.6[機器の点検・整備]に従い、次の点検・整備を行わなければならない。

(1) 電気機械器具の日常点検

その日の電気機械器具の使用を開始する前に、次の点検項目を含む請負者が準備した点検表に基づき点検を行うこと。

(a) 本仕様書 4.5.2[電気機械器具の作業時の安全措置]の(1)(d)にもとづき設置された感電防止用漏電しや断装置

(b) 電気機械器具で接地をしたものの接地線の切断、接地極の浮上がり等の異常の有無

(c) 移動電線及びこれに附属する接続器具の被覆又は外装の損傷の有無

(2) 定期点検

電動機械器具は、製造者の取扱説明書に従い、請負者が作成した点検表に基づき、定期点検を行うこと。

(2) Select location and loading and unloading areas which have sufficient space and surfaces which are level, sound, safe and suitable to support all of the equipment.

(3) Securely chock all trailer wheels to prevent any movement.

(4) Stop and isolate the functions of trailer and load and fully engage brakes.

(5) Ensure trailers are equipped with tie down devices to allow secure fixing of load.

(6) Ensure that the weight and height of the loaded Contractor's Equipment does not exceed actually required or legal limits.

(7) Ensure that all lights, brakes, steering and safety devices are working properly.

(8) Ensure that suitable load limit, height, speed limit and any other required signage is applied to the trailer.

(9) Ensure that materials are loaded evenly.

(10) Ensure that Contractor's Equipment is braked, wedged, securely locked in position and tied to the trailer with adequately sized chains or other fixings and tensioned to prevent any movement during transit.

(11) Place any attachments on the trailer and securely tie down.

(12) Inspect the tie-down tensioning, before and at intervals during transportation to ensure that there is no slackening.

(13) Secure all loads with adequate and tensioned slings and cover with protective sheets, to avoid any fall or collapse of the conveyed articles and prevent any risk to workers and third parties;

(14) Inspect slings for securing transported materials and if any abnormality is found, replace immediately.

surfaces which are level, sound, safe and suitable to support all of the equipment.

(3) Securely chock all trailer wheels to prevent any movement.

(4) Stop and isolate the functions of trailer and load and fully engage brakes.

(5) Ensure trailers are equipped with tie down devices to allow secure fixing of load.

(6) Ensure that the weight and height of the loaded Contractor's Equipment does not exceed actually required or legal limits.

(7) Ensure that all lights, brakes, steering and safety devices are working properly.

(8) Ensure that <u>suitable</u> (JC28)load limit, height, speed limit and any other required signage is applied to the trailer.

JC28: suitable で良いか確認ください。「定められた」といった概念の言葉が入るべきではないでしょうか。
Please check if it is proper to use "suitable" here. It should mean the concept of such as "legally determined."

NK: トレーラの積載荷重の表示のため"authorized maximum loading capacity" に変更します。
Modified to "authorized maximum loading capacity".

(9) ~~Ensure that materials are loaded evenly.~~ (JC28a)

(10) Ensure that Contractor's Equipment is braked, wedged, securely locked in position and tied to the trailer with adequately sized chains or other fixings and tensioned to prevent any movement during transit.

(11) Place any attachments on the trailer and securely tie down.

(12) Inspect the tie-down tensioning, before and at intervals during transportation to ensure that there is no slackening.

(13) ~~Secure all loads with adequate and tensioned slings and cover with protective sheets, to avoid any fall or collapse of the conveyed articles and prevent any risk to workers and third parties;~~(JC28a)

(14) ~~Inspect slings for securing transported materials and if any abnormality is found, replace immediately~~.(JC28a)

JC28a: Contractor's Equipment で輸送することを言っているならあり、Contractor's Equipment を輸送するなら無し
(9)も(14)もそうで、安易に組み替えた感じあり。

NK: (9), (13) and (14) are deleted here and moved to 4.3.7.

areas which have sufficient space and surfaces which are level, sound, safe and suitable to support all of the equipment.

(3) Securely chock all trailer wheels to prevent any movement.

(4) Stop and isolate the functions of trailer and load and fully engage brakes.

(5) Ensure trailers are equipped with tie down devices to allow secure fixing of load.

(6) Ensure that the weight and height of the loaded Contractor's Equipment does not exceed actually required or legal limits.

(7) Ensure that all lights, brakes, steering and safety devices are working properly.

(8) Ensure that ~~suitable load limit~~ authorized maximum loading capacity, height, speed limit and any other required signage is applied to the trailer.

(9) Ensure that Contractor's Equipment is braked, wedged, securely locked in position and tied to the trailer with adequately sized chains or other fixings and tensioned to prevent any movement during transit.

(10) Place any attachments on the trailer and securely tie down.

(11) Inspect the tie-down tensioning, before and at intervals during transportation of Contractor's Equipment to ensure that there is no slackening.

4.3.7 Safety Measures During Loading and Transporting

4.5.2 **電気機械器具の作業時の安全措置** 請負者は、電動機械器具を使用した作業時の感電防止のために、次の措置を講じなければならない。 (1) 電気機械器具、開閉器、ケーブル、感電防止用漏電しや断装置 (a) 電動機械器具及び関連した器具・装置は、当該国の法律で規定されたもの、あるいは国際的な規格品を用いること。 (b) 電気機械器具用の開閉器は、カバー付きを使用し、金属製などの箱に収め、操作が容易な位置で湿気がない所に設置すること。開閉器・手元スイッチ等には、箱に危険を表わす色を塗る等の手段にて、感電に対する注意喚起を促すこと。 (c) 電気機械器具の電源用電線は、キャブタイヤケーブルを使用すること。 (d) 電動機械器具で、対地電圧が 150 ボルトをこえるもの又は水等導電性の高い液体によって湿潤している場所その他鉄板上、鉄骨上、定盤(鉄製の作業テーブル)上等導電性の高い場所において使用するものについては、漏電による感電の危険を防止するため、当該電気機械器具が接続される電路に、当該電路の定格に適合し、感度が良好であり、かつ、確実に作動する感電防止用漏電しや断装置を接続すること。 (e) 前項に規定する措置を講ずることが困難なときは、電気機械器具の金属製外わく、電動機の金属製外被等の金属部分を、接地して使用すること。 (2) 電気機械器具の作業による感電の危険又は誤操作による危険の防止のため、作業箇所には十分な照度を確保すること。 (3) ケーブル、電線の取り扱い 移動して使用するケーブル、電線等は、被覆材の保護のため、直接、釘や鉄筋・丸太足場等に掛けないこと。 (4) 電気機械器具の修理・移動・保守 (a) 電気機械器具の修理や移動の作業は、電源を切断して行うこと。 (b) ヒューズの取り換え (i) ヒューズを鉄線・銅線等で代用しないこと。 ヒューズの取りかえは、指名した者に行わせること。 (5) 電気機械器具の使用禁止 次のいづれかの状態のときは、作業員に電気機械器具の使用を、禁止すること。 (a) 作業員の身体が濡れている、作業員が水溜まりにいる、又は地面に作業員の素足で接触している状態 (b) 電気機械器具が濡れている状態 (6) 電気機械器具の異常を発見したときは、直ちに電源を切断し、作業を中止すること。 (7) 電気機械器具を使用する作業員には、作業に適切な服、保護帽、安全靴等の保護具を着用させる	4.3.8 Access Roads (1) Take measures for ensuring that access roads are of suitable construction, of sufficient	4.3.8 ~~Access Roads~~ (JC29) JC29: 違和感あり、この上でも混乱しているので輸送車両等の Additional Requirements for か輸送時の安全措置でまとめた方が良いかと。4.3.2 も改めてみると中途半端な感じ。 There is confusion, so it is better to specify requirements in Additional Requirements for transporting equipment or Safety measures during transportation. 4.3.2 seems something imperfect. “Access Roads”はサイトの外をイメージさせますが、記述の内容はサイト内のことであるように思います。タイトルを適切に変更したうえで(transportation in the Site など)、すなおに理解できるようにしてください。場合によっては 2 章に移動させることも検討してください(risk control in the site という見出しを新たに作ってそこに入れるなど) “Access Roads” would give an impression that means roads outside of the site, whereas the contents are regarding the roads inside of the site. Please, change the title properly such as “Transportation in the Site” to make the clause easier to understand. If necessary, consider to move this to Chapter 2 making new clause, for example [Risk Control in the Site]. NK: タイトルを Roads in the Site に変更しました。 The title is changed to [Roads in the Site]. (1) Take measures for ensuring that access roads are of suitable construction, of sufficient width, free from potholes, uneven settlement and collapse. (2) Provide signs indicating height and weight restrictions, bends, speed limits, intersections,	of Materials (1) When transporting heavy or long goods on public roads, select roads on which the transportation does not pose danger to general traffic, third parties, structures adjacent to the transportation route, obtain all necessary prior permission from the relevant authorities including police, road authority before commencement of transportation and comply with all requirements. (2) When transporting heavy or long goods within the Site, select suitable route where the transportation does not pose danger to existing permanent or temporary buildings or structures or other works and obtain the consent of the Engineer before commencement of the transportation and comply with all requirements. (3) Ensure that materials are loaded evenly (4) Secure all loads with adequate and tensioned slings and cover with protective sheets, to avoid any fall or collapse of the conveyed articles and prevent any risk to workers and third parties; (5) Inspect slings for securing transported materials and if any abnormality is found, replace immediately. 4.3.8 ~~Access Roads~~ Roads in the Site (1) Take measures for ensuring that ~~access~~ roads in the Site are of suitable construction, ~~of~~ sufficient width, free from potholes,

こと。 (8) 感電事故が発生した場合は、当該電気機械器具の電源を切ること及び本仕様書 3.2.2[充電した架空線の近くでの工事の現場管理](6)に規定の感電事故発生時の対応に従い、処置を行うこと。 **5 運搬作業** **5.1 一般事項** (1) 本章では、運搬作業にかかわる運搬車両の運転者、補助員、監視員、誘導員(「運搬車両の作業員」という。)、運搬機械の操作者及び合図者、(「運搬機械の作業員」という。)、運搬車両・運搬機械の点検・整備を行う者「運搬車両・機械の整備の作業員」という。)の危険を防止するための措置について規定する。 (2) 本章では、現場(Site)内の運搬作業、異なる現場間での運搬作業、現場への又は現場から資機材を運搬する道路での運搬作業について規定する。 (3) 本仕様書で使用する用語の定義は以下のとおりである。 (a) 運搬車両とは、トラック、ダンプトラック、セミトレラー、タンクローリー等の物を運搬するための車両をいう。 (b) 運搬機械とは、ベルトコンベヤを利用して物を運搬するための定置の機械をいう。 **5.2 運搬作業** **5.2.1 作業員への周知** 請負者は、運搬作業を行うときは、作業に必要な下記の安全上の措置について、必要に応じ当該作業員に説明しなければならない。 (1) 運搬車両の作業員 (a) 運搬作業内容、作業方法、作業範囲 (b) 運搬車両の作業場所及び運行経路 (c) 運搬車両の転倒又は転落の危険のある場所 (d) 高圧線、危険物貯蔵庫などの危険箇所と運搬車両の移動制限範囲 (e) 作業員の立入禁止箇所及び運搬車両の進入禁止箇所の特定と注意標識、柵の設置場所 (f) 運搬車両の作業場所周辺の安全通路 (g) 誘導者、監視員の配置場所 (h) 運搬車両・運搬機械に異常が発生したときの対処方法 (i) サイト隣地や公道における近隣住民・第三者への運搬車両による交通事故防止措置 (j) 運搬車両による振動、騒音、粉じん等の環境影響を軽減する措置 (2) 運搬機械の作業員 (a) 運搬機械の作業場所 (b) 立入禁止箇所の特定と注意標識、柵の設置場所 (c) 運搬機械内又はその周辺の安全通路 (d) 運搬機械に異常が発生したときの対処方法 (e) 運搬車両・機械の整備の作業員	width, free from potholes, uneven settlement and collapse. (2) Provide signs indicating height and weight restrictions, bends, speed limits, intersections, dangerous places and the like (road shoulders, cliff edges.). (3) Separate roads for vehicles and walkways for workers and provide passing area for vehicles at places where the road is narrow. (4) In large construction site, provide exclusive transport roads which are one-way if possible, and passing areas at narrow roads. (5) Provide sufficient lighting facilities at necessary places along the roads when work operating in night. 4.3.9 Additional Requirements for Static Equipment (1) The Contractor shall design and construct suitable foundations and support structures for static equipment with paved surfaces, screens, fencing and associated facilities for storage of material and product and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended. Unless otherwise stated in the Contract, all such foundations, support structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works. All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer. (2) Unless otherwise stated in the Contract, all remaining aggregate, rock, cement, bitumen and the like used by or processed with the static equipment shall be removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.	dangerous places and the like (road shoulders, cliff edges.). (3) Separate roads for vehicles and walkways for workers and provide passing area for vehicles at places where the road is narrow. (4) In large construction site, provide exclusive transport roads which are one-way if possible, and passing areas at narrow roads. (5) Provide sufficient lighting facilities at necessary places along the roads when work operating in night. 4.3.9 Additional Requirements for Static Equipment (JC30) JC30: 骨材プラント、コンクリートプラント、アスファルトプラントなどを明示してもいい。 It is better to exemplify such as aggregate plant, concrete plant, etc.? NK: 定置機械については 4.1.1 (6)で例示しているので、ここでの改めての例示は不要と考えます。 Static equipment are exemplified in 4.1.1 (6). Thus, it is not necessary to mention again here. (1) The Contractor shall design and construct suitable foundations and support structures for static equipment with paved surfaces, screens, fencing and associated facilities for storage of material and product and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended. Unless otherwise stated in the Contract, all such foundations, support structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works. All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer. (2) Unless otherwise stated in the Contract, all remaining aggregate, rock, cement, bitumen and the like used by or processed with the static equipment shall be removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer. 4.3.10 Additional Requirements for Personnel and Goods Elevators and Material Conveyors(JC31) JC31: 定置機械にまとめた模様。	uneven settlement and collapse. (2) Provide signs indicating height and weight restrictions, bends, speed limits, intersections, dangerous places and the like (road shoulders, cliff edges.). (3) Separate roads for vehicles and walkways for workers and provide passing area for vehicles at places where the road is narrow. (4) In large construction site, provide exclusive transport roads which are one-way if possible, and passing areas at narrow roads. (5) Provide sufficient lighting facilities at necessary places along the roads when work operating in night. 4.3.9 Additional Requirements for Static Equipment (1) The Contractor shall design and construct suitable foundations and support structures for static equipment with paved surfaces, screens, fencing and associated facilities for storage of material and product and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended. Unless otherwise stated in the Contract, all such foundations, support structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works. All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer. (2) Unless otherwise stated in the Contract, all remaining aggregate, rock, cement, bitumen and the like used by or processed with the static equipment shall be removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works. All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer. 4.3.10 Additional Requirements for Personnel and Goods

(f)　点検・整備のときに、作業員におよぶおそれのある危険及び危険箇所

5.2.2　運搬車両・運搬機械の運転者及び操作者

請負者は、本仕様書 4.1.4[建設機械の運転者及び操作者]に準じ、運搬車両の運転者又は運搬機械の操作者の適正配置、氏名の運搬車両・運搬機械への明示、作業前の健康状態の確認を行わなければならない。

5.2.3　安全教育と指導

請負者は、本仕様書 4.1.5[安全教育と指導]に準じ、運搬車両・運搬機械の特性に応じて運搬車両の運転者、運転を補助する者（運転助手）、運搬機械の操作者へ、次の事項を含む教育を行わなければならない。

(1)　運搬車両の交通事故防止

(g)　交通事故防止のための事項

(i)　交通事故防止の運転ルール
公道での交通事故の多い第 3 者のバイクとの接触・衝突の事故防止のための運転方法
公道で車両の前へ飛び出す住民、バイクとの接触・衝突の事故防止のための運転方法
追い越しするとき及び追い越されるときの交通事故防止のための運転方法
凸凹や障害物のある道路での交通事故防止のための運転技術

(a)　車両整備不足による交通事故防止のために、車両の運転開始前の点検整備の徹底

(b)　当該運搬車両への乗車を許可されたもの以外の乗車の禁止の徹底

(2)　運搬機械の運転及び整備時の事故防止

(a)　運搬機械運転時の事故防止

(i)　運搬機械始動時の合図の徹底
緊急時の停止方法の確認
ベルト上に乗ることの禁止

(b)　運搬機械の整備時の事故防止

(i)　運搬機械停止時の誤作動の防止のための措置の確認
運搬機械の点検整備後の運転再開前の合図の徹底

5.3　運搬車両の点検・整備

5.3.1　運搬車両の搬入時の点検

請負者は、運搬車両の使用を開始するに当たり、搬入時の点検・整備記録の確認を、本仕様書 4.1.6[搬入時の点検]に従って、行わなければならない。この点検には、本仕様書 5.3.2 に規定の点検項目を含まなければならない。

搬入時の点検に合格しない運搬車両は、現場内で使用してはならない。この運搬車両には、資機材供給者の車両等の工事事に必要な全ての運搬車両を含めな

4.3.10　Additional Requirements for Personnel and Goods Elevators and Material Conveyors

(1)　General Requirements

The Contractor shall post the maximum load capacity and any restrictions on the use

(2)　The Contractor shall undertake the following additional daily inspection items, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(a)　Defects or operational faults in elevator enclosures, doors, guide-rails and runners;

(b)　Defects or operational faults in emergency stop and alarm systems;

(c)　Defects or operational faults in power, lighting and control systems;

(d)　Defects or operational faults with interphone systems;

(e)　Defects or operational faults in brakes, clutches; and

(f)　Defects or operational faults of sheaves and pulleys.

(3)　The Contractor shall undertake the following additional periodical inspection items, (at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(a)　Defects or operational faults in supporting cables and wire ropes; and

専門業者による組み立て、起動予告ブザー、連続装置設置(連続した非常停止スイッチ)、コンベア搭乗禁止とか削除されているので、復活させてください。エレベーターとコンベアを一緒にするか否かも要検討。
Please add the provisions of installation under the instruction of the experts, warning alarm system for start-up, emergency stop buttons for each necessary point and prohibition of riding on conveyor, etc. stipulated in Japanese version. Please consider whether requirements for elevators and conveyers shall be specified together or separately.

NK: 追記・別々に規定しました。(組立てに関しては 4.3.1(9)に規定済です。)
Added and separately specified. (Installation under instruction by expert is specified in 4.3.1(9).) Provisions for conveyors are stipulated referring to OSHA 1926.555 Conveyors.

(1)　General Requirements

The Contractor shall post the maximum load capacity and any restrictions on the use

(2)　The Contractor shall undertake the following additional daily inspection items, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(a)　Defects or operational faults in elevator enclosures, doors, guide-rails and runners;

(b)　Defects or operational faults in emergency stop and alarm systems;

(c)　Defects or operational faults in power, lighting and control systems;

(d)　Defects or operational faults with interphone systems;

(e)　Defects or operational faults in brakes, clutches; and

(f)　Defects or operational faults of sheaves and pulleys.

(3)　The Contractor shall undertake the following additional periodical inspection items, (at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(a)　Defects or operational faults in supporting cables and wire ropes; and

Elevators and Material Conveyors

(1)　General

(a)　The Contractor shall undertake the ~~following additional~~ daily and periodical inspection ~~items~~ in addition to the items stipulated in JSSS 4.2 [INSPECTION, MAINTENANCE AND REPAIR], 4.2.1 [Requirements Generally], (4) and (5) as specified below, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(a)　~~The Contractor shall undertake the following additional periodical inspection items, (at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:~~

(b)　The Contractor shall post the maximum load capacity and any restrictions on the use.

(2)　Personnel and Goods Elevators

(a)　Additional daily inspection items

(i)　Defects or operational faults in elevator enclosures, doors, guide-rails and runners;

(ii)　Defects or operational faults in emergency stop and alarm systems;

(iii)　Defects or operational faults in power, lighting and control systems;

(iv)　Defects or operational faults with interphone systems;

(v)　Defects or operational faults in brakes, clutches; and

(vi)　Defects or operational faults of sheaves and pulleys.

(b)　Additional periodical inspection items

(i)　Defects or operational faults in daily inspection items;

(ii)　Defects or operational faults in ~~supporting cables and~~ wire ropes;

(iii)　Defects or operational faults in winch and its foundation; and

ければならない。

5.3.2 運搬車両の点検・整備

請負者は、本仕様書4.1.7[建設機械の点検・整備]に規定の点検事項のうち当該運搬車両に適用すべき事項に加えて、次の日常点検、定期点検に規定の事項を含めた日常点検表、定期点検表を作成し、点検・整備を実施しなければならない。なお、運搬車両は点検・整備が完了するまで使用してはならない。また、点検状況は進捗報告書で報告しなければならない。

(1) 日常点検

請負者は、運搬作業を行うときは、その日の作業を開始する前に、次の項目を含む点検表に基づく点検を行なうこと。

(a) 運搬車両の点検項目：制動装置及び操縦装置の機能、荷役装置及び油圧装置の機能、車輪の異常の有無、前照燈、尾燈、方向指示器及び警音器の機能

(b) 製造者のマニュアルに規定の作業前点検項目

(2) 定期点検

請負者は、本仕様書 4.1.9[定期点検]に従い、次の項目を含め定期に点検を行ない、必要に応じて整備を実施しなければならない。

(a) 製造者のマニュアルに規定の定期点検の項目

(b) 運搬車両の場合：発煙筒、消火器等の緊急対応用の備品の有無と使用期限

5.3.3 運搬車両の点検・整備時の安全措置

荷台等の下での点検、整備等の作業を行う場合においては荷台等が不意に降下することによる作業員の危険を防止するため、安全支柱、安全ブロック等を使用しなければならない。これらを使用していないときは、荷台等の下に作業員を立ち入らせてはならない。

5.4 運搬車両による運搬作業

5.4.1 運搬車両の作業環境

請負者は、運搬車両を用いた作業を行う場合には、運搬作業における現場内での安全な作業環境を確保するために、次の措置を講じなければならない。

(1) 運行経路について必要な幅員を保持すること、地盤の不同沈下を防止すること、路肩の崩壊を防止すること、常に補修し安全に走行できるよう維持すること等必要な措置を講じること。

(2) 運行経路の必要と認められる箇所には、制限速度を示す標識を立て、カーブ、交差点、危険箇所（路肩、崖縁等）等には注意標識を立てること。

(3) 運搬車両の走路と歩行者の安全通路を明示し、走路が狭隘な（狭くゆとりがない）箇所には運搬車両用の退避所を設けること。

(4) 規模の大きな工事現場においては運搬専用道路を設け、なるべく一方通行として、必要に応じて適当な退避所を設けること。

before any further operation of the Contractor's Equipment is permitted:

(a) Defects or operational faults in supporting cables and wire ropes; and

(b) Defects or operational faults in supporting structures, guy ropes, fixings and anchors.

(b) Defects or operational faults in supporting structures, guy ropes, fixings and anchors.

(iv) Defects or operational faults in supporting structures, guy ropes, fixings and anchors.

(3) Belt Conveyors

(a) Additonal safety measures

(i) Conveyor systems shall be equipped with an audible warning signal to be sounded immediately before starting up the conveyor.

(ii) Means for stopping the motor or engine shall be provided at the motor or engine location.

(iii) Emergency stop switches shall be provided and be arranged so that the conveyor cannot be started again until the actuating stop switch has been reset to running or "on" position.

(iv) Where a conveyor passes over work areas, roads and walkways, suitable guards shall be provided to protect workers required to work below the conveyors.

(v) Riding of workers on the moving belts of the belt conveyors shall be prohibited.

(b) Additional daily inspection items

(i) Defects or operational faults in prevention devices against uncontrolled run and reverse run, and emergency stop switches; and

(ii) Defects or operational faults in guards.

(c) Additional periodical inspection items

Defects or operational faults in daily inspection items; and

~~(1) General Requirements~~

~~The Contractor shall post the maximum load capacity and any restrictions on the use.~~

~~(2) The Contractor shall undertake the following additional daily inspection items, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted.~~

(5) 夜間の運搬作業時には、運行経路の必要箇所に照明を施すこと。

5.4.2 運搬車両の運搬作業時の安全措置

請負者は、運搬車両による運搬作業時の安全の確保のために、運搬車両の運搬作業を十分理解した作業主任に、施工計画にもとづき作業を直接指揮させるとともに、本仕様書 4.1.10[運用時の安全措置]に準拠するとともに、次の措置を講じなければならない。

(1) 作業員への安全措置

当該国の法令で認められている場合を除き、車両運行時には荷台及び運転席(キャビン)以外の場所への請負者の要員の搭乗を禁止すること。

(2) 運搬車両のための誘導員の配置

次の作業又は場所で、請負者の要員及び運搬車両に危険が及ぶおそれがある場合は、本仕様書 2.4[誘導員の配置]に従い、誘導員を配置すること。

(a) 運搬車両に荷を積み卸しするとき

(b) 運搬車両が後進するとき

(c) 荷の積込場、土捨場、崖の縁、見通しのきかない場所、公道との交差部、他の作業箇所に近接する箇所

(3) 運搬車両の荷の積載に関する措置

(a) 運搬車両に積載重量を明示すること。

(b) 偏荷重が生じないように積載すること。

(c) 荷崩れ又は荷の落下による作業員又は第 3 者への危険を防止するため、荷にロープ又はシートを掛ける等必要な措置を講ずること。

(d) 建設機械の運搬のためトレーラに建設機械を積込む作業は、本仕様書 4.3.1[建設機械の積込及び積卸し]の規定を遵守すること。

(e) 荷の固定用の繊維ロープ、ワイヤロープの点検を行い、異常を認めたときは、ただちに取り換えること。

(4) 運転者が運転位置から離れる場合の措置

運転者が運転位置から離れる場合は、本仕様書 4.1.10[運用時の安全措置]の(7)に準じた措置を講ずること。

5.5 運搬機械の点検・整備

5.5.1 運搬機械の設置時の試験

請負者は、運搬機械の設置作業終了時には、当該国の規則に基づき、又は規則がない場合は当該機械の製造者のマニュアルに従い、作動試験等の完成時試験を行うこと。

5.5.2 運搬機械の点検・整備

請負者は、本仕様書 4.1.7[建設機械の点検・整備]に従うとともに、以下の日常点検、定期点検に記載した事項も含んだ、運搬機械の日常点検表、定期点検表の作成と各点検を実施し整備、点検状況を進捗報告書で報告を行わなければならない。

(1) 日常点検

請負者は、運搬作業を行うときは、その日の作業を

4.3.11 Additional Requirements for Tools, Tackle and Small Equipment

(1) Accessories and attachments shall be the standard types obtained from or recommended by the manufacturer of the equipment to which they are connected.

(2) Any repairs shall be carried out by the manufacturers recommended repair agents and using the manufacturers genuine or recommended spare parts.

(3) All equipment shall be tested and re-certified by the HSO as safe for use after any repair or replacement of parts, before such equipment is put back into use.

4.3.12 Additional Requirements for Electric Powered Equipment

(1) The Contractor shall undertake the following additional daily inspection items, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

4.3.11 Additional Requirements for Tools, Tackle and Small Equipment

(1) Accessories and attachments shall be the standard types obtained from or recommended by the manufacturer of the equipment to which they are connected.

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(1) The Contractor shall undertake the following additional daily inspection items, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(a) All equipment is provided with Earth Leakage Circuit Breakers (ELCB) and that these are working properly with no

~~(a) Defects or operational faults in elevator enclosures, doors, guide-rails and runners;~~

~~(b) Defects or operational faults in emergency stop and alarm systems;~~

~~(c) Defects or operational faults in power, lighting and control systems;~~

~~(d) Defects or operational faults with interphone systems;~~

~~(e) Defects or operational faults in brakes, clutches; and~~

~~(f) Defects or operational faults of sheaves and pulleys.~~

~~(3) The Contractor shall undertake the following additional periodical inspection items, (at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:~~

~~(a) Defects or operational faults in supporting cables and wire ropes; and~~

~~(b) Defects or operational faults in supporting structures, guy ropes, fixings and anchors.~~

4.3.11 Additional Requirements for Tools, Tackle and Small Equipment

(1) Accessories and attachments shall be the standard types obtained from or recommended by the manufacturer of the equipment to which they are connected.

(2) Any repairs shall be carried out by the manufacturers recommended repair agents and using the manufacturers genuine or recommended spare parts.

(3) All equipment shall be tested and re-certified by the HSO as safe for use after any repair or replacement of parts, before such equipment is put back into use.

4.3.12 Additional Requirements for Electric Powered Equipment

(1) The Contractor shall undertake the following additional daily inspection items, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is

開始する前に、本仕様書 4.1.8[日常点検]に従い、次の項目を含む運搬車両・運搬機械の請負者が準備した点検表に基づく日常点検を行なうこと。

(a) 運搬機械の点検項目：原動機及びプーリーの機能、逸走等防止装置の機能、非常停止装置の機能、原動機、回転軸、歯車、プーリー等の覆い、囲い等の異常の有無

(b) 製造者のマニュアルに規定の作業を開始する前の点検項目

(2) 定期点検

請負者は、本仕様書 4.1.9[定期点検]に従い、製造者のマニュアルに規定の定期点検の項目を含め、定期に点検を行ない、必要に応じて整備を実施しなければならない。

5.6 運搬機械による運搬作業

5.6.1 運搬機械の設置、組立、解体作業

請負者は、運搬機械を設置、組立、解体の作業を行うときは、次の措置を講じなければならない。

(1) 運搬機械の装置・設備

運搬機械には以下の装置を備えること。

(a) 非常停止装置（コンベヤには、連続した非常停止スイッチを設け、又は要所ごとに非常停止スイッチを設けること。）

(b) 起動を予告する警報装置

(c) 動力伝導部分、ベルト、プーリー、ローラー等の作業員がはさまれ又は巻き込まれるおそれのある部分の覆い又は囲い

(d) 荷等の落下を防止するための装置

(2) 運搬機械の設置、組立、解体作業

運搬機械の設置、組立、解体の作業は、当該機械の専門家の指揮のもとに行うこと。

5.6.2 運搬機械の運搬作業時の安全措置

請負者は、運搬機械を運転するときは、次の措置を講じなければならない。

(1) 運搬機械の取扱説明書を機械に備えつけて、使用条件を機械に表示すること。取扱説明書等に記載された使用目的以外及び使用条件以外で機械を使用しないこと。運転中のベルトコンベアのベルト上に作業員を搭乗させないこと。

(2) 運搬機械の始動時、非常停止又は事故停止後の再起動時には、運搬機械周辺や荷の安全を確認した上で、運搬機械の操作を行うこと。

5.6.3 運搬機械の作業後及び修理等時の安全措置

(1) 作業終了時には、機械の機能を完全に停止したうえで、施錠（ロックアウト）等の機械が作動しない措置、施錠できない場合には監視員（警備員）の配置等の誤作動防止の措置、及び作動禁止の掲示（タグアウト）等措置を講じること。

(2) 運搬機械の掃除、給油、検査、修理等の作業時に、労働者に危険を及ぼす恐れがあるときには、

(a) All equipment is provided with Earth Leakage Circuit Breakers (ELCB) and that these are working properly with no defects or operational faults;

(b) Defects or operational faults with grounding such as disconnection of grounding wire and insecure fixing of grounding electrodes; and

(c) Damage to insulation and protective coverings of all wires and cables including flexible cables

(d) Damage to plugs, sockets, transformers and all wiring fittings and appliances

(2) The Contractor shall comply with the following additional safety requirements:

(a) Use metal-clad weatherproof switches with covers, securely fixed in accessible and dry places;

(b) Label and paint electrical power and switch boxes with warning signs and coloured hazard markings;

(c) Use rubber cabtyre cables for all electrical power equipment;

(d) Wherever possible provide an ELCB's to each item of electrical equipment.

(e) If for any reason, an ELCB cannot be provided, ensure that the metal exterior of the electrical power supply, metal outer casing of electric motors and the electrical equipment are all grounded.–

(f) Avoid hanging electric cables and wires directly on nails, reinforcing bars or scaffolding tubes to prevent damage to the insulation and protective covering.

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defects or operational faults;

(b) Defects or operational faults with grounding such as disconnection of grounding wire and insecure fixing of grounding electrodes; and

(c) Damage to insulation and protective coverings of all wires and cables including flexible cables

(d) Damage to plugs, sockets, transformers and all wiring fittings and appliances

(2) The Contractor shall comply with the following additional safety requirements:

(a) Use metal-clad weatherproof switches with covers, securely fixed in accessible and dry places; (JC32)

JC32: metalclad 形式に限定され他のタイプを排除することになりませんか。用語の意味を再度確認してください。これに限定するということでしょうか。途上国の現場で見たことがない気がします。
Doesn't it limit only to the metal clad type and eliminate other types? Please reconfirm the meaning of the term of metal clad. Does it mean to limit metal-clad? I feel I have not seen this in the developing countries.
https://www.google.co.jp/search?q=metalclad&source=lnms&tbm=isch&sa=X&ved=2ahUKEwi9jc-hm6rnAhVQw4sBHSlXCx8Q_AUoAXoECA4QAw&biw=1567&bih=748#spf=1580349127635

NK: 和文の規定を参考に変更します。
Modified referring to Japanese version "Use switches with covers for electrical power equipment, place them in a metal box, etc."

(b) Label and paint electrical power and switch boxes with warning signs and coloured hazard markings;

(c) Use rubber cabtyre cables for all electrical power equipment;

(d) Wherever possible provide an ELCB's to each item of electrical equipment.

(e) If for any reason, an ELCB cannot be provided, ensure that the metal exterior of the electrical power supply, metal outer casing of electric motors and the electrical equipment are all grounded.–

(f) Avoid hanging electric cables and wires directly on nails, reinforcing bars or scaffolding tubes (JC33) to prevent damage to the insulation and protective covering.

JC33: 日本語の丸太足場を鋼管に替えているようですが、妥当性を再度確認願います（scaffolding tubes は削除でも良い）。
←被覆材保護のために摩擦係数の大きい丸太足場にひ

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permitted:

(a) All equipment is provided with Earth Leakage Circuit Breakers (ELCB) and that these are working properly with no defects or operational faults;

(b) Defects or operational faults with grounding such as disconnection of grounding wire and insecure fixing of grounding electrodes; and

(c) Damage to insulation and protective coverings of all wires and cables including flexible cables

(d) Damage to plugs, sockets, transformers and all wiring fittings and appliances

(2) The Contractor shall comply with the following additional safety requirements:

(a) Use, ~~metal-clad~~ weatherproof switches with covers, securely fixed in accessible and dry places;

(b) Label and paint electrical power and switch boxes with warning signs and coloured hazard markings;

(c) Use rubber cabtyre cables for all electrical power equipment;

(d) Wherever possible provide an ELCB's to each item of electrical equipment.

(e) If for any reason, an ELCB cannot be provided, ensure that the metal exterior of the electrical power supply, metal outer casing of electric motors and the electrical equipment are all grounded.–

(f) Avoid hanging electric cables and wires directly on nails, reinforcing bars ~~or scaffolding tubes~~ and the like to prevent damage to the insulation and

上記と同じ措置を講ずること。		っかけないように、というのが原文の意味ではなかったのですか。(以下、日本語版) 移動して使用するケーブル、電線等は、被覆材の保護のため、直接、釘や鉄筋・丸太足場等に掛けないこと。 It looks that log scaffolding has been changed to scaffolding tubes. Please, check its compatibility. Wasn't the original concept that the cables and wires shall not be hanged on log scaffoldings of large friction factor in order to prevent damage to the insulation? NK: コメントに従い、"scaffolding tubes"を削除しました。 As commented, "scaffolding tubes" is deleted and "and the like" is added.. (g) Turn off the power before repairing, moving or maintaining electric power equipment; (h) Replace fuses with correct type and rating, prohibit replacing fuses with a higher rating or with iron or copper wire; (i) Ensure that fuses are replaced by an authorised person; (j) Prevent any use of electric power equipment from use in the rain, or when the user is wet, standing in water and not wearing rubber soled insulated footwear or when the electric power equipment is wet; (k) When any operational fault is identified immediately turn off the power, unplug and stop using the equipment and advise (or hand to) the HSO; (l) Ensure that workers using electric power equipment wear appropriate PPE such as working clothes, protective helmets, safety shoes; (JC34) and JC34: electric power equipment の定義と照らし合わせて適切でしょうか。 Is this clause appropriate against the definition of electric power equipment? NK: 4.1.1.(8)で持ち運びできる電動機械もしくは工具と定義しています。これらを使用する場合に当然適した保護具を使用することが求められます。器具により必要な保護具も変わりますので右のように修正します。 Electric power equipment is defined in 4.1.1 (8) that electric power equipment means portable electric powered mobile equipment or tools. When using these, it is necessary to use appropriate protective equipment which vary according to the type of equipment. The clause is modified. (m) When electric shock accident occurs, unplug and stop using the equipment and advise (or hand to) the HSO and	protective covering.
	(g) Turn off the power before repairing, moving or maintaining electric power equipment; (h) Replace fuses with correct type and rating, prohibit replacing fuses with a higher rating or with iron or copper wire; (i) Ensure that fuses are replaced by an authorised person; (j) Prevent any use of electric power equipment from use in the rain, or when the user is wet, standing in water and not wearing rubber soled insulated footwear or when the electric power equipment is wet; (k) When any operational fault is identified immediately turn off the power, unplug and stop using the equipment and advise (or hand to) the HSO; (l) Ensure that workers using electric power equipment wear appropriate PPE such as working clothes, protective helmets, safety shoes; and		(g) Turn off the power before repairing, moving or maintaining electric power equipment; (h) Replace fuses with correct type and rating, prohibit replacing fuses with a higher rating or with iron or copper wire; (i) Ensure that fuses are replaced by an authorised person; (j) Prevent any use of electric power equipment from use in the rain, or when the user is wet, standing in water and not wearing rubber soled insulated footwear or when the electric power equipment is wet; (k) When any operational fault is identified immediately turn off the power, unplug and stop using the equipment and advise (or hand to) the HSO; (l) Ensure that workers using electric power equipment wear appropriate PPE suitable for the electric power equipment in use such as working clothes, protective helmets, safety shoes, eye and face protection, ear protection; and

(m) When electric shock accident occurs, unplug and stop using the equipment and advise (or hand to) the HSO and take measures in accordance with JSSS 1.21 [*Accident Response Plan*].

4.3.13 Additional Safety Measures during Adverse Weather

Further to the requirements of JSSS 2.7 [*Adverse Weather Requirements*], the Contractor shall ensure that Contractor's Equipment is parked in a stable and secure state by taking all necessary measures including:

(1) Dropping the jib, boom, arm and attachments to ground level and securing where necessary with adequate anchors and chains.

(2) If heavy rain and flooding can be anticipated, moving Contractor's Equipment to higher ground or to places where there is no risk of instability.

(3) Removing snow or ice.

4.4 ROPES, SLINGS AND CHAINS

4.4.1 Requirements Generally

(1) The Contractor shall ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

(2) Wire ropes, slings and chains shall have a safety factor of at least 6, obtained by dividing the breaking strength by the maximum applied load for each type.

(3) Requirements for Ropes, slings and chains shall be as required under JSSS 6.5 [*Rigging Equipment*].

4.5 ALTERNATIVE USE OF CONTRACTOR'S EQUIPMENT

4.5.1 Requirements Generally

The Contractor shall not use Contractor's Equipment for any other purpose than the purpose for which it is designed and other than the purpose recommended by the manufacturer.

take measures in accordance with JSSS 1.21 [*Accident Response Plan*].

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4.4 ROPES, SLINGS AND CHAINS

4.4.1 Requirements Generally

(1) The Contractor shall ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

(2) Wire ropes, slings and chains shall have a safety factor of at least 6, (JC35) obtained by dividing the breaking strength by the maximum applied load for each type.

JC35: マニュファクチャーズレコメンデーションに従う旨の記載に代えてください。(ワイヤーロープやスリングは現場では作らず専門業者から調達することを想定)
Please change this part as to comply with the recommendation by the manufacturer. (It is assumed that wire ropes and slings shall not be fabricated at the site but procured from the vendors.)

NK: コメントに従い、右のように修正しました。
As commented, the clause is changed as right.

(3) Requirements for Ropes, slings and chains shall be as required under JSSS 6.5 [*Rigging Equipment*].

4.5 ALTERNATIVE USE OF CONTRACTOR'S EQUIPMENT

4.5.1 Requirements Generally

The Contractor shall not use Contractor's Equipment for any other purpose than the purpose for which it is designed and other than the purpose recommended by the manufacturer.

If the manufacturer allows alternative use (for example bucket excavators used for lifting operations) then such alternative use shall be strictly in accordance with the manufacturer's written

(m) When electric shock accident occurs, unplug and stop using the equipment and advise (or hand to) the HSO and take measures in accordance with JSSS 1.21 [*Accident Response Plan*].

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Further to the requirements of JSSS 2.7 [*Adverse Weather Requirements*], the Contractor shall ensure that Contractor's Equipment is parked in a stable and secure state by taking all necessary measures including:

(1) Dropping the jib, boom, arm and attachments to ground level and securing where necessary with adequate anchors and chains.

(2) If heavy rain and flooding can be anticipated, moving Contractor's Equipment to higher ground or to places where there is no risk of instability.

(3) Removing snow or ice.

4.4 ROPES, SLINGS AND CHAINS

4.4.1 Requirements Generally

(1) The Contractor shall ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

(2) Wire ropes, slings and chains shall have a safety factor recommended by the manufactures ~~of at least 6~~, obtained by dividing the breaking strength by the maximum applied load for each type.

(3) Requirements for Ropes, slings and chains shall be as required under JSSS 6.5 [*Rigging Equipment*].

4.5 ALTERNATIVE USE OF CONTRACTOR'S EQUIPMENT

4.5.1 Requirements Generally

The Contractor shall not use Contractor's

	If the manufacturer allows alternative use (for example bucket excavators used for lifting operations) then such alternative use shall be strictly in accordance with the manufacturer's written instructions and in any event within the designed operating capacity of the equipment. Under these circumstances the Contractor shall take account of the following: (1) Ensure the Contractor's Equipment can safely handle the load without creating instability, tipping or loss of control and avoiding the resultant risk of injury or damage or stress to the equipment. (2) Ensure that operators understand the equipment capability, are properly trained in the alternative use, are fully aware of and follow the manufacturer's written instructions and load charts. (3) Ensure that operators have accurately determined the total weight of the load, taking account of the weight of any attachments, the reach and angle and configuration of the equipment and have informed the HSO of this and obtained his permission before commencing the operation. (4) Check the working area and improve the ground surface as necessary to ensure the	instructions (JC36) and in any event within the designed operating capacity of the equipment. JC36: 用途外使用の際の使用方法に関する書面でのマニュアルを本当にメーカーが出している事例があるのでしょうか。具体例を複数確認して提示願います。ないようであれば、この記述は修正が必要です。 Is there really any example that manufacturer of equipment issues written manual which contains usage for the purpose other than that of intended? Please, present at least examples for such usage. If there is no such example, the description has to be changed. NK: 下記サイトに用途外使用に関する情報がありましたが、あくまで安衛法の基づいた注意書に過ぎません。 There is one site in Japan that explains use of equipment for purpose other than one for which it is designed, however it is only points to care based on the Occupational Safety and Health Regulations of Japan. the clause is change to comply with the Law. https://www.taiyokenki.co.jp/rental/tidbits/post_13.html In USA, there is the following information how to use lifting by excavator following the manufacturer's Excavator Lift Capacity Chart : https://www.forconstructionpros.com/equipment/earthmoving/backhoe-loaders/article/11416879/interpret-the-surprises-in-your-backhoes-lift-chart-to-place-big-loads-safely http://zoskin.praysafeconsulting.com/excavator-lift-capacity-chart/tips-for-using-earthmoving-equipment-for-lifting-equipment.html Additional stipulation is added regarding the regulation and confirmation by the HSO. Under these circumstances the Contractor shall take account of the following: (1) Ensure the Contractor's Equipment can safely handle the load without creating instability, tipping or loss of control and avoiding the resultant risk of injury or damage or stress to the equipment. (2) Ensure that operators understand the equipment capability, are properly trained in the alternative use, are fully aware of and follow the manufacturer's written instructions and load charts. (3) Ensure that operators have accurately determined the total weight of the load, taking account of the weight of any attachments, the reach and angle and configuration of the equipment and have informed the HSO of this and obtained his permission before commencing the operation. (4) Check the working area and improve the ground surface as necessary to ensure the stability of the equipment. (5) Ensure that manufacturer's genuine	Equipment for any other purpose than the purpose for which it is designed and other than the purpose recommended by the manufacturer. If the manufacturer allows alternative use (for example bucket excavators used for lifting operations) then such alternative use shall be strictly in accordance with the manufacturer's written instructions and in any event within the designed operating capacity of the equipment. When the manufacturer's written instructions and the Laws of the Country regarding alternative use, the safety of alternative use shall be approved by the HSO by checking for example the following items for lifting: (1) Rigging Equipment such as hook attached on construction equipment such as arm or bucket are used; (2) Arms, bucket, Rigging Equipment have enough strength to lift the load; (3) There is no risk that the lifting devices such as hook and shackles will be detached from arm or bucket of the construction equipment; (4) The lifting capacity for alternative use is confirmed by loading tests at the Site; and (5) Operators engaged in lifting work with construction equipment such as excavators shall be licensed when necessary and trained for lifting work. Under these circumstances the Contractor shall take account of the following: (1) Ensure the Contractor's Equipment can safely handle the load without creating instability, tipping or loss of control and avoiding the resultant risk of injury or damage or stress to the equipment. (2) Ensure that operators understand the equipment capability, are properly trained in the alternative use, are fully aware of and follow the manufacturer's written instructions and load charts. (3) Ensure that operators have accurately determined the total weight of the load, taking account of the weight of any attachments, the reach and angle and configuration of the

	stability of the equipment. (5) Ensure that manufacturer's genuine specialised accessories such as lifting hooks etc. are provided and used. (6) Ensure that the equipment is stable, if provided lower stabilisers, if the equipment is equipped with a blade, lower the blade to the ground for added stability and ensure that necessary counterweights are in place. (7) Check the rigging to ensure it is appropriate to the use and rated to handle the load. Inspect it before each use for any signs of damage or wear, and make sure it is properly secured to the machine and load. (8) Ensure that the area is clear of any unnecessary personnel, Spotters should be the only individuals in the immediate area, and should be stationed clear of the lift area yet visible to the operator throughout the operation. (9) Lift the load slowly, keep the lifting point directly over the centre of the load, keep the load as close to the machine and the ground as possible and position the equipment to hoist and lower end on not sideways. (10) If there are any signs of instability or loss of control of the machine or load, discontinue the lift and lower the load to the ground. **4.6 HIRED/LEASED CONTRACTOR'S EQUIPMENT** 4.6.1 Requirements Generally (1) Contractor's Equipment from hire or lease companies shall comply with all of the requirements of the Contract and JSSS as if it were the Contractor's own property, in particular the Contractor shall ensure compliance with the requirements of JSSS 1.34 [*Contractor's Equipment, Temporary*	specialised accessories such as lifting hooks etc. are provided and used.(JC37) JC37: 本節は用途外使用を規定しています。用途外使用をするための genuine accessories というのが存在するのでしょうか。 Is there any "genuine accessory" for purpose other than one for which it is designed? NK: バケットに取り付けるフックなどは、重機のメーカーではなく、部品メーカーが多種の製品を製造しています。純正となると、バケットに収納できる特殊フックしかないようです。本項目は削除します。 Accessories such as hooks for lifting are produced by suppliers not by the equipment manufacturer. A hook as a genuine accessory was found only in a special type bucket which can store the hook when it is not in use. This clause is deleted. (6) Ensure that the equipment is stable, if provided lower stabilisers, if the equipment is equipped with a blade, lower the blade to the ground for added stability and ensure that necessary counterweights are in place. (7) Check the rigging to ensure it is appropriate to the use and rated to handle the load. Inspect it before each use for any signs of damage or wear, and make sure it is properly secured to the machine and load. (8) Ensure that the area is clear of any unnecessary personnel, Spotters should be the only individuals in the immediate area, and should be stationed clear of the lift area yet visible to the operator throughout the operation. (9) Lift the load slowly, keep the lifting point directly over the centre of the load, keep the load as close to the machine and the ground as possible and position the equipment to hoist and lower end on not sideways. (10) If there are any signs of instability or loss of control of the machine or load, discontinue the lift and lower the load to the ground. **4.6 HIRED/LEASED CONTRACTOR'S EQUIPMENT** 4.6.1 Requirements Generally (1) Contractor's Equipment from hire or lease companies shall comply with all of the requirements of the Contract and JSSS as if it were the Contractor's own property, in particular the Contractor shall ensure compliance with the requirements of JSSS 1.34 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*]. (2) The Contractor shall ensure that the hire/lease	equipment and have informed the HSO of this and obtained his permission before commencing the operation. (4) Check the working area and improve the ground surface as necessary to ensure the stability of the equipment. ~~(5) Ensure that manufacturer's genuine specialised accessories such as lifting hooks etc. are provided and used.~~ (6) Ensure that the equipment is stable, if provided lower stabilisers, if the equipment is equipped with a blade, lower the blade to the ground for added stability and ensure that necessary counterweights are in place. (7) Check the rigging to ensure it is appropriate to the use and rated to handle the load. Inspect it before each use for any signs of damage or wear, and make sure it is properly secured to the machine and load. (8) Ensure that the area is clear of any unnecessary personnel, Spotters should be the only individuals in the immediate area, and should be stationed clear of the lift area yet visible to the operator throughout the operation. (9) Lift the load slowly, keep the lifting point directly over the centre of the load, keep the load as close to the machine and the ground as possible and position the equipment to hoist and lower end on not sideways. (10) If there are any signs of instability or loss of control of the machine or load, discontinue the lift and lower the load to the ground. **4.6 HIRED/LEASED CONTRACTOR'S EQUIPMENT** 4.6.1 Requirements Generally (1) Contractor's Equipment from hire or lease companies shall comply with all of the requirements of the Contract and JSSS as if it were the Contractor's own property, in particular the Contractor shall ensure compliance with the requirements of JSSS

	Works, Safety Equipment and Personal Protective Equipment]. (2) The Contractor shall ensure that the hire/lease companies have performed all necessary inspection, maintenance and repair works before the Contractor's Equipment is mobilised to the Site and that the following is provided with the equipment to the Contractor upon mobilisation and is available for the inspection of the Engineer: (a) Inspection and maintenance records; (b) Operation, repair and maintenance manuals; and (c) Spare and replacement parts, tools, maintenance equipment, lubricants, filters, hydraulic fluids and the like. (3) The Contractor shall double-check to ensure that the inspection and maintenance has been carried out and if the Contractor has any doubt over the adequacy of such inspection or maintenance or if complete records are not made available, the Contractor shall not allow this Contractor's Equipment to be used upon the Works. The Contractor shall inspect and carry out full maintenance and repair on such equipment in compliance with the requirements of this Chapter before it is certified for use by the HSO and used upon the Works. (4) Operators from hire/lease companies are by definition Contractor's Personnel and they shall be treated as if they are employed by the Contractor, in terms of compliance with the Contract and JSSS. Such operators shall be tested and certified by the HSO, shall receive safety training and shall perform all inspection, maintenance and other requirements fully in compliance with JSSS, in the same way as the Contractor's own employees. **4.7 TEMPORARY FUELLING FACILITIES** 4.7.1 Requirements Generally	companies have performed all necessary inspection, maintenance and repair works before the Contractor's Equipment .(JC38) is mobilised to the Site and that the following is provided with the equipment to the Contractor upon mobilisation and is available for the inspection of the Engineer: JC38: この表現でいい？ 例えば Rental or Lease equipment の方が素直に読めますがいかがでしょうか。そのうえで 4.6 内での表現を統一してください。 Is this a proper expression? It would be better to use, for example, "rental and lease equipment". And please unify the expression in 4.6. NK: (2)及び(3)で使用されている" the Contractor's Equipment" は単に "equipment" で明確に意味が通じるので、"equipment"に変更します。 The term "the Contractor's Equipment" used in (2) & (3) can be replaced simply with "equipment", by which the meaning of this clause become clearer. (a) Inspection and maintenance records; (b) Operation, repair and maintenance manuals; and (c) Spare and replacement parts, tools, maintenance equipment, lubricants, filters, hydraulic fluids and the like. (3) The Contractor shall double-check to ensure that the inspection and maintenance has been carried out and if the Contractor has any doubt over the adequacy of such inspection or maintenance or if complete records are not made available, the Contractor shall not allow this Contractor's Equipment to be used upon the Works. The Contractor shall inspect and carry out full maintenance and repair on such equipment in compliance with the requirements of this Chapter before it is certified for use by the HSO and used upon the Works. (4) Operators from hire/lease companies are by definition Contractor's Personnel and they shall be treated as if they are employed by the Contractor, in terms of compliance with the Contract and JSSS. Such operators shall be tested and certified by the HSO, shall receive safety training and shall perform all inspection, maintenance and other requirements fully in compliance with JSSS, in the same way as the Contractor's own employees. **4.7 TEMPORARY FUELLING FACILITIES** 4.7.1 Requirements Generally (1) Unless otherwise specified in the Contract, the Contractor shall design and construct	1.34 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*]. (2) The Contractor shall ensure that the hire/lease companies have performed all necessary inspection, maintenance and repair works before ~~the Contractor's Equipment~~ the equipment is mobilised to the Site and that the following is provided with the equipment to the Contractor upon mobilisation and is available for the inspection of the Engineer: (a) Inspection and maintenance records; (b) Operation, repair and maintenance manuals; and (c) Spare and replacement parts, tools, maintenance equipment, lubricants, filters, hydraulic fluids and the like. (3) The Contractor shall double-check to ensure that the inspection and maintenance has been carried out and if the Contractor has any doubt over the adequacy of such inspection or maintenance or if complete records are not made available, the Contractor shall not allow ~~this Contractor's Equipment~~ this equipment to be used upon the Works. The Contractor shall inspect and carry out full maintenance and repair on such equipment in compliance with the requirements of this Chapter before it is certified for use by the HSO and used upon the Works. (4) Operators from hire/lease companies are by definition Contractor's Personnel and they shall be treated as if they are employed by the Contractor, in terms of compliance with the Contract and JSSS. Such operators shall be tested and certified by the HSO, shall receive safety training and shall perform all inspection, maintenance and other requirements fully in compliance with JSSS, in the same way as the Contractor's own employees.

	(1) Unless otherwise specified in the Contract, the Contractor shall design and construct temporary fuel storage and dispensing facilities at the Site for the use of Contractor's Equipment. These facilities shall be substantial and secure and capable of storing and dispensing fuel in a safe and environmentally acceptable manner all to the approval of the Engineer. (2) The facility shall include storage tanks, suitable foundations, support or containment structures, protective bund walls as necessary, paved surfaces, screens, fencing and associated facilities for storage of separate fuels and lubricants and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended. (3) Unless otherwise specified in the Contract, all such tanks, foundations, support and containment structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works. All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer. (4) The Contractor must ensure that the temporary fuel storage and dispensing facility is operated and occupied at all time only by authorised personnel and that all unauthorised personnel are prohibited from entering such areas at all times. The Contractor shall be particularly careful and provide measures to prevent any unauthorised access, tampering, damage and theft at any time. (5) All storage tanks shall be bunded either as jacketed tanks or by providing bunded enclosures, such that in the event of a catastrophic failure, the tank contents will be safely contained and shall not be allowed to run freely or enter the surface or ground water systems.	temporary fuel storage and dispensing facilities at the Site for the use of Contractor's Equipment. These facilities shall be substantial and secure and capable of storing and dispensing fuel in a safe and environmentally acceptable manner all to the approval of the Engineer. (2) The facility shall include storage tanks, suitable foundations, support or containment structures, protective bund walls as necessary, paved surfaces, screens, fencing and associated facilities for storage of separate fuels and lubricants and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended. 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(5) <u>All storage tanks shall be bunded either as jacketed tanks or by providing bunded enclosures, .(JC39)</u> such that in the event of a catastrophic failure, the tank contents will be safely contained and shall not be allowed to run freely or enter the surface or ground water systems. JC39: 単純に英語の意味がわからない bund: A secondary enclosure, typically consisting of a wall or berm, which surrounds a tank or fluid-handling mechanism, intended to contain any spills or leaks. *ex.) Plant room floors are generally bunded and/or waterproofed to contain any leaks or spillages of liquids and fluids from faulty tanks, plant or pipe work.*  NK: 貯蔵タンクの燃料流出防止のために、2 重タンク又は流出防止壁の設置を規定していると解釈します。MD 氏に表現の再検討及び出典の提示を依頼します。	**4.7 TEMPORARY FUELLING FACILITIES** 4.7.1 Requirements Generally (1) Unless otherwise specified in the Contract, the Contractor shall design and construct temporary fuel storage and dispensing facilities at the Site for the use of Contractor's Equipment. These facilities shall be substantial and secure and capable of storing and dispensing fuel in a safe and environmentally acceptable manner all to the approval of the Engineer. (2) The facility shall include storage tanks, suitable foundations, support or containment structures, protective bund walls as necessary, paved surfaces, screens, fencing and associated facilities for storage of separate fuels and lubricants and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended. (3) Unless otherwise specified in the Contract, all such tanks, foundations, support and containment structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works. All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer. (4) The Contractor must ensure that the temporary fuel storage and dispensing facility is operated and occupied at all time only by authorised personnel and that all unauthorised personnel are prohibited from entering such areas at all times. The Contractor shall be particularly careful and provide measures to prevent any unauthorised access, tampering, damage and theft at any time. (5) All storage tanks shall be bunded either as jacketed tanks or by providing bunded enclosures, such that in the event of a catastrophic failure, the tank contents will be safely contained and shall not be allowed to run freely or enter the surface or ground water systems. To MD, please review JICA comments and show us the source of these requirements.

	(6) The Contractor is reminded of the requirements of JSSS 1.23 [*Fire Prevention*] and will be required to provide a comprehensive and a high standard of fire protection in fuel storage areas.	We will transfer the above comment and request to make it easy to understand and show the source of these requirements. (6) The Contractor is reminded of the requirements of JSSS 1.23 [*Fire Prevention*] and will be required to provide a comprehensive and a high standard of fire protection in fuel storage areas.	(6) The Contractor is reminded of the requirements of JSSS 1.23 [*Fire Prevention*] and will be required to provide a comprehensive and a high standard of fire protection in fuel storage areas.

JICA Standard Safety Specification Preparation Study
4 CONTRACTOR'S EQUIPMENT (R3 for issue 3)

2020.5.27 NK Eng. R3

JSSS in English R2 for Issue 3 (2020/5/11) Red letters: Modified from last issue.	JICA Comments (2020/5/24) to R2 for Issue 3 (2020/5/11) JC: JICA Comments in blue letters on sentence underlined NK: NK actions	JSSS in English R3 for Issue 3 (2020/5/27) Red letters: Modified from last issue.
4 CONTRACTOR'S EQUIPMENT **4.1 GENERAL REQUIREMENT** 4.1.1 Scope 4.1.2 Compliance Standards 4.1.3 Instruction for Contractor's Personnel 4.1.4 Safety Training 4.1.5 Requirements to Operators 4.1.6 Signaling **4.2 INSPECTION, MAINTENANCE AND REPAIR** 4.2.1 Requirements Generally 4.2.2 Defects and Repair during Operation **4.3 SAFETY REQUIREMENT** 4.3.1 General Safety Measures 4.3.2 Safety Measures during Cleaning, Inspection and Maintenance 4.3.3 Safety Measures during Operation 4.3.4 Safety Measures When Mobile Equipment Is Not in Use 4.3.5 Safety Measures during Connection of Attachment 4.3.6 Safety Measures during Loading and Transporting of Contactor's Equipment 4.3.7 Safety Measures During Loading and Transporting of Materials 4.3.8 Roads in the Site 4.3.9 Additional Requirements for Static Equipment 4.3.10 Additional Requirements for Personnel and Goods Elevators and Material Conveyors 4.3.11 Additional Requirements for Tools, Tackles and Small 4.3.12 Additional Requirements for Electric Powered Equipment 4.3.13 Additional Safety Measures during Adverse Weather **4.4 ROPES, SLINGS AND CHAINS** 4.4.1 Requirement Generally **4.5 ALTERNATIVE USE OF CONTRACTORS'S EQUIPMENT** 4.5.1 Requirement Generally **4.6 HIRED/LEASED CONTRACTORS'S EQUIPMENT** 4.6.1 Requirement Generally **4.7 TEMPORARY FUELLING FACILLITIES** 4.7.1 Requirement Generally	**4 CONTRACTOR'S EQUIPMENT** **4.1 GENERAL REQUIREMENT** 4.1.1 Scope 4.1.2 Compliance Standards 4.1.3 Instruction for Contractor's Personnel 4.1.4 Safety Training 4.1.5 Requirements to Operators 4.1.6 Signaling **4.2 INSPECTION, MAINTENANCE AND REPAIR** 4.2.1 Requirements Generally 4.2.2 Defects and Repair during Operation **4.3 SAFETY REQUIREMENTS** 4.3.1 General Safety Measures 4.3.2 Safety Measures during Cleaning, Inspection and Maintenance 4.3.3 Safety Measures during Operation 4.3.4 Safety Measures When Mobile Equipment Is Not in Use 4.3.5 Safety Measures during Connection of Attachment 4.3.6 Safety Measures during Loading and Transporting of Contactor's Equipment 4.3.7 Safety Measures During Loading and Transporting of Materials 4.3.8 Roads in the Site 4.3.9 Additional Requirements for Static Equipment 4.3.10 Additional Requirements for Personnel and Goods Elevators and Material Conveyors 4.3.11 Additional Requirements for Tools, Tackles and Small 4.3.12 Additional Requirements for Electric Powered Equipment 4.3.13 Additional Safety Measures during Adverse Weather **4.4 ROPES, SLINGS AND CHAINS** 4.4.1 Requirement Generally **4.5 ALTERNATIVE USE OF CONTRACTORS'S EQUIPMENT** 4.5.1 Requirement Generally **4.6 HIRED/LEASED CONTRACTORS'S EQUIPMENT** 4.6.1 Requirement Generally **4.7 TEMPORARY FUELLING FACILLITIES** 4.7.1 Requirement Generally	**4 CONTRACTOR'S EQUIPMENT** **4.1 GENERAL REQUIREMENT** 4.1.1 Scope 4.1.2 Compliance Standards 4.1.3 Instruction for Contractor's Personnel 4.1.4 Safety Training 4.1.5 Requirements to Operators 4.1.6 Signaling **4.2 INSPECTION, MAINTENANCE AND REPAIR** 4.2.1 Requirements Generally 4.2.2 Defects and Repair during Operation **4.3 SAFETY REQUIREMENTS** 4.3.1 General Safety Measures 4.3.2 Safety Measures during Cleaning, Inspection and Maintenance 4.3.3 Safety Measures during Operation 4.3.4 Safety Measures When Mobile Equipment Is Not in Use 4.3.5 Safety Measures during Connecting and Removing of Attachment 4.3.6 Safety Measures during Loading and Transporting of Contactor's Equipment 4.3.7 Safety Measures During Loading and Transporting of Materials 4.3.8 Temporary Transporting Roads in the Site 4.3.9 Additional Requirements for Static Equipment 4.3.10 Additional Requirements for Personnel and Goods Elevators and Material Conveyors 4.3.11 Additional Requirements for Small Equipment and Tools 4.3.12 Additional Requirements for Electric Powered Equipment 4.3.13 Additional Safety Measures during Adverse Weather **4.4 ROPES, SLINGS AND CHAINS** 4.4.1 Requirement Generally **4.5 ALTERNATIVE USE OF CONTRACTORS'S EQUIPMENT** 4.5.1 Requirement Generally **4.6 HIRED/LEASED CONTRACTORS'S EQUIPMENT** 4.6.1 Requirement Generally **4.7 TEMPORARY FUELLING FACILLITIES** 4.7.1 Requirement Generally
4. CONTRACTOR'S EQUIPMENT **4.1 GENERAL REQUIREMENTS** **4.1.1 Scope** (1) This Chapter specifies the safety requirements for Contractor's Equipment which shall include mobile equipment, static equipment, tools, tackle and small equipment and electric power equipment as further described in the following paragraphs. (2) The requirements of this Chapter shall apply to Contractor's Personnel, Employer's Personnel and any other persons that are on	**4. CONTRACTOR'S EQUIPMENT** **4.1 GENERAL REQUIREMENTS (JC1)** JC1: 全体を通して、特に Tools についてはすべての要求事項が適用されるわけではないと思います。したがって、適用除外される可能性を上手に書き分ける表現になるよう工夫していただけますでしょうか。 (Tools(器具工具)について 適用されない箇所が多くあるため。(例:Operatorの指名や責任者の掲示など)) Whole Provisions in this Chapter may not apply all to Tools, so please devise to stipulate possibility of exemption of some provisions. (There are many provisions which will not apply to Tools for example, appointment of Operator, post of a label showing the name.) NK: We will review and modify provisions as commented. **4.1.1 Scope** (1) This Chapter specifies the safety requirements for Contractor's Equipment which shall include mobile equipment, static equipment, tools, tackle and small equipment and electric power equipment as further described in the following paragraphs. (2) The requirements of this Chapter shall apply to Contractor's	**4. CONTRACTOR'S EQUIPMENT** **4.1 GENERAL REQUIREMENTS** **4.1.1 Scope** (1) This Chapter specifies the safety requirements for Contractor's Equipment which shall include mobile equipment, static equipment, tools, tackle and small equipment and electric power equipment as further described in the following paragraphs. (2) The requirements of this Chapter shall apply to Contractor's

the Site, adjacent to the Site and other places (if any) where works are being executed and who may be affected by such work.	Personnel, Employer's Personnel and any other persons (JC 2) that are on the Site, adjacent to the Site (JC3) and other places (if any) where works are being executed ~~and who may be affected by such work~~.(JC4) JC2: この Chapter で三箇所出てくるようなのでまとめましょう。(in this Chapter called as "Concerned Personnel") There are same phrase in 3 locations in this Chapter, therefore it is better to define as (in this Chapter called as "Concerned Personnel"). NK: Modified as commented. JC3: "who are on or adjacent to the Site and any other places where…でいいのでは can this be "who are on or adjacent to the Site and any other places where…"? NK: Modified as commented. JC4: 英語のつながりが悪いし、影響を受ける人に対する requirement ではないので削除します。 The sentences connection is not good and this is not requirement for persons to be affected. NK: Modified as commented.	Personnel, Employer's Personnel and any other persons (in this Chapter called as "Concerned Personnel") who are on or adjacent to the Site and any other places where and other places (if any) where works are being executed.
(3) For additional requirements for hoisting, rigging and cranes, refer to JSSS 6.0 [*Hoisting and Rigging*].	(3) For additional requirements for hoisting, rigging and cranes, refer to JSSS 6.0 [*Hoisting and Rigging*].	(3) For additional requirements for hoisting, rigging and cranes, refer to JSSS 6.0 [*Hoisting and Rigging*].
(4) ~~Operators and signallers~~ Any reference to "operator" in this Chapter and elsewhere in JSSS shall be deemed to include "driver" also. ~~(a) Any reference to "operator" in this Chapter and elsewhere in JSSS shall be deemed to include "driver" also;~~ ~~(b) Any reference to "Spotter" in this Chapter shall be deemed to include "flagman" and "signaller" also.~~	(4) Any reference to "operator" in this Chapter and elsewhere in JSSS shall be deemed to include "driver" also. (JC5) JC5: 少しシンプルに。 is synonymous with "driver"の方が MDB 版の表現でもありますし、それが通常だと思います。全体のバージョンで出していただく際に、synonymous の表現に合わせて全体を調整してください。 Please make phrases simple a little. The phrase of "is synonymous with "driver"" is one used in FIDIC MDB version and normal. When all JSSS Chapters are submitted, please adjust all document to use this phrase. NK: FIDIC MDB uses this as follows: *1.2 Interpretation (e)the word "tender" is synonymous with "bid", and "tenderer" with "bidder" and the words "tender documents" with "bidding documents* 日本語では、Operator は操作者、操縦者、Driver は運転手、運転士、運転者、機関士が類義語辞典に記載があります。 (4)では、Operator の用語にはに Driver も含まれると規定し、これは、Operator と Driver が synonymous（同義語）との規定ではなく、他の呼び名の機械を操作・運転する者がいることと示しています。 別の Spotter でも次のように同様に規定しています。 *(b) Any reference to "Spotter" in this Chapter shall be deemed to include "flagman" and "signaller" also.* 上記の理由で(4)はこのままとします。同様の文章があればそれを見直し、必要があれば変更します。 The operators include pilots, etc. The drivers include engine driver, motorman, etc. The (3) states "operator" includes "driver" but not that "operator" is synonymous with "driver". The same expression is made for the Spotter as below. *(b) Any reference to "Spotter" in this Chapter shall be deemed to include "flagman" and "signaller" also.* With the above reason, the (4) is not modified. Other sentences as above will be reviewed and modified when necessary. To MD: Please review NK reply above.	(4) Any reference to "operator" in this Chapter and elsewhere in JSSS shall be deemed to include "driver" also.
(5) Mobile equipment including wheeled or tracked, self-propelled construction machinery such as: (a) Surface excavation and spoil movement equipment for bulk excavation, grading and levelling, such as bulldozers,	(5) Mobile equipment includes wheeled or tracked, self-propelled construction machinery such as: (a) Surface excavation and spoil movement equipment for bulk excavation, grading and levelling, such as bulldozers, graders	(5) Mobile equipment includes wheeled or tracked, self-propelled construction machinery such as: (a) Surface excavation and spoil movement equipment for bulk excavation, grading and levelling, such as bulldozers, graders

graders and tractor excavators;

(b) Excavators such as backhoes, face shovels, power shovels;

(c) Loaders such as payloaders and face shovels;

(d) Dump trucks for removal or importation of spoil;

(e) Specialist foundation equipment such as pile driving and boring machines;

(f) Compaction and surface treatment equipment such as smooth or sheepsfoot rollers, pneumatic and vibration rollers;

(g) Mobile cranes and other hoisting equipment;

(h) Concreting equipment such as concrete mixer trucks, agitator trucks, pump trucks;

(i) Demolition equipment such as breakers, concrete crushers and demolition grippers; and

(j) Transportation Equipment, such as cars and buses for Contractor's Personnel and trucks and trailers for transporting Contractor's Equipment and materials to, around and from the Site.

(k) Workboat for diving works

(6) Static equipment includes powered stationary equipment such as:

(a) Stone crushing plants and screening equipment;

(b) Concrete and asphalt concrete batching plants.

(c) Tower cranes, derrick cranes;

(d) Personnel and Goods Elevators; and

(e) Material conveyors.

(f) Air compressors.

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and tractor excavators;

(b) Excavators such as backhoes, face shovels, power shovels;

(c) Loaders such as payloaders and face shovels;

(d) Dump trucks for removal or importation of spoil;

(e) Specialist foundation equipment such as pile driving and boring machines;(JC6)

JC6: equipment に修正. Revise to equipment.
NK: JICA has commented same in Chap. 6 TW that "replace machine with equipment?"
BS 8081 Code of practice for grouted anchors use the terms as follows:
Machine: drilling machine, Equipment: mixers, pumps.
Following the BS, Boring machine is left as it is.

(f) Compaction and surface treatment equipment such as smooth or sheepsfoot rollers, pneumatic and vibration rollers; (JC7)

JC7: Asphalt finisher も入れてほしい。Please add Asphalt finisher.
NK: Added.

(g) Mobile cranes and other hoisting equipment (JC8);

JC8: Mobile ではない。This is not mobile equipment.
NK: Mobile means able to be moved from one place to another. It seems there are other hoisting equipment than mobile cranes, however NK cannot show examples so far. Deleted it..

(h) Concreting equipment such as concrete mixer trucks, agitator trucks, pump trucks;

(i) Demolition equipment such as breakers, concrete crushers and demolition grippers; and

(j) Transportation Equipment, such as cars and buses for Contractor's Personnel and trucks and trailers for transporting Contractor's Equipment and materials to, around and from the Site.

(k) Workboat for diving works

(l) TBM (Slurry and EPB) (JC9)

JC9: JICA added. EPB: Earth pressure balance type TBM
NK: TBM is added but Slurry and EPB are not because they are too detail to be referred to.

(6) Static equipment includes powered stationary equipment such as:

(a) Stone crushing plants and screening equipment;

(b) Concrete and asphalt concrete batching plants.

(c) Tower cranes, derrick cranes;

(d) Personnel and Goods Elevators; (JC10) and

JC10: 今更かも知れませんが。 Personnel and Goods Elevator は単純に Elevator ではダメなんでしたっけ？特段問題なければこれでよいと思います。
Is there any reasons to stipulate Personnel and Goods Elevator in stead of Elevator? If no special reason, Elevator can be use.
NK: 日本の安衛則に準じて分けていました。まとめて良いと考えます。
We specified it following Japanese regulation. They can be Elevator.

(e) Material conveyors.

(f) Air compressors.(JC11)

JC11: Engine Generator も追加しましょう。Submersible pump, engine pump も加えたい。 Please add Engine Generator, Submersible pump, engine pump

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and tractor excavators;

(b) Excavators such as backhoes, face shovels, power shovels;

(c) Loaders such as payloaders and face shovels;

(d) Dump trucks for removal or importation of spoil;

(e) Specialist foundation equipment such as pile driving and boring machines;

(f) Compaction and surface treatment equipment such as smooth or sheepsfoot rollers, pneumatic and vibration rollers, asphalt finisher;

(g) Mobile cranes;

(h) Concreting equipment such as concrete mixer trucks, agitator trucks, pump trucks;

(i) Demolition equipment such as breakers, concrete crushers and demolition grippers; and

(j) Transportation Equipment, such as cars and buses for Contractor's Personnel and trucks and trailers for transporting Contractor's Equipment and materials to, around and from the Site.

(k) Workboat for diving works

(l) Tunnel Boring Machine (TBM) .

(6) Static equipment includes powered stationary equipment such as:

(a) Stone crushing plants and screening equipment;

(b) Concrete and asphalt concrete batching plants.

(c) Tower cranes, derrick cranes;

(d) Elevators;

(e) Material conveyors;

(f) Air compressors, engine generator, submersible pump, engine pump; and

(g) Reinforcement, cutting and bending machines.

(7) Small equipment, tools and tackle (tools and tackle are collectively

(7) Tools, tackle and small equipment such as:

(a) Hand steered vibrating rollers;

(b) Plate compactors and vibratory rammers;

(c) Reinforcement, cutting and bending machines;

(d) Pipe bending machines;

(e) Pneumatic drills, hammers, breakers, compactors and compressors;

(f) Wood processing equipment;

(g) Independent concrete mixers;

(h) Air extract or blowing equipment for improving the working area environment;

(i) Pneumatic power tools such as jack hammers, drills,

(j) Engine driven chain saws;

(k) Hand operated equipment such as jacks, winches, lever hoists; and

(l) Hand tools such as wrenches, chisels, and saw, picks, hammers.

(8) Electric powered equipment means portable electric powered mobile equipment or tools.

4.1.2 Compliance Standards

(1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], the Contractor shall comply with the requirements of this Chapter, read jointly with and including the further technical requirements of the *HSE Provision and Use of Work Equipment Regulations 1998 (PUWER).*

(2) In accordance with these regulations, together with JSSS 1.34 [*Contractor's Equipment, Temporary Works, Safety Equipment and*

NK: Added.

(7) Small equipment, tools and tackle (JC46) such as:

JC46: (JICA comment to 4.3.11) これらを総称して Tools でいいのでは. Tools and Tackle can be called as "Tools".

NK: Defied "Tools" in (7) here.

(a) Hand steered vibrating rollers;

(b) Plate compactors and vibratory rammers;

(c) ~~Reinforcement, cutting and bending machines;~~ (JC12)

JC12: これらは tool, tackle and small equipment としては大きすぎるのでは →(6)に移動してください。
Please move these to (6) as they are too large as tool, tackle and small equipment.

NK: Moved to (6)(g)

(d) Pipe bending machines;

(e) ~~Pneumatic~~ drills, hammers, breakers, compactors and compressors;

(f) Wood processing equipment;

(g) Independent concrete mixers;

(h) Air extract or blowing equipment for improving the working area environment;

(i) ~~Pneumatic power tools such as~~, Jack hammers and drills, (JC13)

(j) ~~Engine driven~~ Chain saws; (JC13)

JC13: 電動も含まれるようにして下記の(8)は削除しています。
Modified to include electric power equipment and deleted (8) below.

NK: Modified.

(k) Hand operated equipment such as jacks, winches, lever hoists; and

(l) Hand tools such as wrenches, chisels, and saw, picks, hammers.

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(8) ~~Electric powered equipment means portable electric powered mobile equipment or tools.~~ (JC14)

JC14: JICA deleted related with JC12.

NK: Deleted.

4.1.2 Compliance Standards

(1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], the Contractor shall comply with the requirements of this Chapter, read jointly with and including the further technical requirements of the *HSE Provision and Use of Work Equipment Regulations 1998 (PUWER).*(JC15)

JC15: 正式に言えば、"The Provision and Use of Work Equipment Regulations 1998 (PUWER) under the HSE regulations in UK "では？法令の内容は一般的なので harmful ではないと思える。
Is the official title "The Provision and Use of Work Equipment Regulations 1998 (PUWER) under the HSE regulations in UK? It is considered that the regulations is general ones, so not harmful.

NK: Modified as commented.

(2) In accordance with these regulations, together with JSSS 1.34

referred to "Tools" in this Chapter") such as:

(a) Hand steered vibrating rollers;

(b) Plate compactors and vibratory rammers;

(c) Portable conveyors

(d) Pipe bending machines;

(e) Drills, hammers, breakers, compactors and compressors;

(f) Wood processing equipment;

(g) Independent concrete mixers;

(h) Air extract or blowing equipment for improving the working area environment;

(i) Jack hammers and drills;

(j) Chain saws;

(k) Hand operated equipment such as jacks, winches, lever hoists; and

(l) Hand tools such as wrenches, chisels, and saw, picks, hammers.

4.1.2 Compliance Standards

(1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], the Contractor shall comply with the requirements of this Chapter, read jointly with and including the further technical requirements of the *Provision and Use of Work Equipment Regulations 1998 (PUWER), HSE Guidance in UK.*

(2) In accordance with these regulations, together with JSSS 1.34 [*Contractor's Equipment, Temporary Works, Safety Equipment and*

Personal Protective Equipment] the Contractor shall ensure that all Contractor's Equipment provided for use upon the Works is:

(a) Suitable and fit for the purpose for which it is intended;

(b) Safe for use, maintained in a safe condition and inspected to ensure it is correctly installed and used and does not subsequently deteriorate;

(c) Used only by people who have received adequate information, instruction and training;

(d) Accompanied by suitable health and safety measures, such as protective devices and controls. These shall include emergency stop devices, adequate means of isolation from sources of energy, clearly visible markings and warning devices; and

(e) Used for the designed and intended purpose.

4.1.3 Instruction for Contractor's Personnel

Further to the requirements of JSSS 1.6 [*Contractor's Safety Plan*], JSSS 1.7 [*Contractor's Method Statements*] and JSSS 1.13.2 [*Contractor's Safety Management Activities*], the Contractor shall include details of the following in the Method Statement and Safety Plan for works involving the use of Contractor's Equipment and shall fully inform all Contractor's Personnel associated therewith of all requirements before the commencement of any such operations, including:

(1) The scope of work, locations and areas, work methods, dimensions, levels and quantities to be achieved.

(2) Types, capacities and numbers of units.

(3) Work places, area limits and operational routes, restricted areas, locations of caution signs and fences.

(4) The preservation of safe access, walkways and footpaths around the working areas and transportation areas.

(5) Identities, location and scope of Spotters.

(6) Environmental impact mitigation including required measures against vibration, noise, dust and the like.

[*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the Contractor shall ensure that all Contractor's Equipment provided for use upon the Works is:

(a) Suitable and fit for the purpose for which it is intended;

(b) Safe for use, maintained in a safe condition and inspected to ensure it is correctly installed and used and does not subsequently deteriorate;

(c) Used only by people who have received adequate information, instruction and training;

(d) Accompanied by suitable health and safety measures, such as protective devices and controls. These shall include emergency stop devices, adequate means of isolation from sources of energy, clearly visible markings and warning devices; and

(e) Used for the designed and intended purpose.

4.1.3 Instruction for Contractor's Personnel

Further to the requirements of JSSS 1.6 [*Contractor's Safety Plan*], JSSS 1.7 [*Contractor's Method Statements*] and JSSS 1.13.2 [*Contractor's Safety Management Activities*], the Contractor shall include details of the following in the Method Statement and Safety Plan for works involving the use of Contractor's Equipment and shall fully inform all Contractor's Personnel associated therewith of all requirements before the commencement of any such operations, including:

(1) Scope of work, locations and areas, work methods, dimensions, levels and quantities to be achieved.

(2) Types, capacities and numbers of units.

(3) Workplaces, ~~area limits and~~ (JC16) operational routes, restricted areas, locations of caution signs and fences.

JC16: Workplace の boundary という意味でつかわれているのであれば、workplace に含まれているので不要と考えます。
If the above workplace is used as meaning of boundary, it is not necessary because workplace include its boundary.
NK: The term of workplaces is used to mean workplaces where the Contractor's Equipment is used. Because of it is same as locations and areas stipulated in (1) above, deleted
To MD, please review this comment.

(4) ~~The~~ Preservation of safe access, walkways and footpaths around the working areas and transportation areas.

(5) Identities, location (JC17) and ~~scope~~ role of Spotters.

JC17: 4.1.5 の(1)の(d)では The identity of and location(s)となっているので 4.1.5 の表現に統一してください。
The 4.1.5 (1) (d) stipulate "The identity of and location(s). Please make (5) consistent expression same as 4.1.5.
4.1.5 (1)Operators shall be fully aware of the following:
(d) The identity of and location(s) for Spotters and the communication and signalling requirements including equipment to be used; and
NK: Modified as commented and added referring 4.1.5.

(6) Environmental impact mitigation (JC18) including required measures against vibration, noise, dust and the like.

JC18: これは環境のことを言っているのか、作業環境のことを示しているのか分からない。(多分作業環境のこと) であれば"Hazardous working conditions (if any)

Personal Protective Equipment] the Contractor shall ensure that all Contractor's Equipment provided for use upon the Works is:

(a) Suitable and fit for the purpose for which it is intended;

(b) Safe for use, maintained in a safe condition and inspected to ensure it is correctly installed and used and does not subsequently deteriorate;

(c) Used only by people who have received adequate information, instruction and training;

(d) Accompanied by suitable health and safety measures, such as protective devices and controls. These shall include emergency stop devices, adequate means of isolation from sources of energy, clearly visible markings and warning devices; and

(e) Used for the designed and intended purpose.

4.1.3 Instruction for Contractor's Personnel

Further to the requirements of JSSS 1.6 [*Contractor's Safety Plan*], JSSS 1.7 [*Contractor's Method Statements*] and JSSS 1.13.2 [*Contractor's Safety Management Activities*], the Contractor shall include details of the following in the Method Statement and Safety Plan for works involving the use of Contractor's Equipment and shall fully inform all Contractor's Personnel associated therewith of all requirements before the commencement of any such operations, including:

(1) Scope of work, locations and areas, work methods, dimensions, levels and quantities to be achieved.

(2) Types, capacities and numbers of units.

(3) ~~Workplaces.~~ Operational routes, restricted areas, locations of caution signs and fences.

(4) Preservation of safe access, walkways and footpaths around the working areas and transportation areas.

(5) Identities and roles of and location(s) for Spotters and the communication and signalling requirements including equipment to be used

(6) Environmental impact to third parties and workers including required measures against vibration, noise, dust and the like.

	including required mitigation measures …”ですよね？ “Environmental impact effects including required mitigation measures against …”では？ It is not clear for which environment or working environment this (5) stipulates. If this is for working environment, is this to be stipulated “Hazardous working conditions (if any) including required mitigation measures …” Is this “Environmental impact effects including required mitigation measures against …”？ NK: This can be read for both environment impact to third parties and working environment in the Site. Modified to make clear. To MD, please review the comment and modify (6).	
(7) Environmental conditions in the working area, nearby areas for storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, Operational Areas or areas where Dangerous Work is taking place.	(7) Environmental conditions in the working area, nearby areas for storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, Operational Areas or areas where Dangerous Work is taking place. (JC19) JC19: ここの部分は本当によく分からない。英語として羅列されている事項のつながりが・・・“Safety requirements of working near the storage of Dangerous Goods or Hazardous Substances or the areas where Dangerous Work is taking place.”??? This sentence cannot be really understood. The connection of matters listed in English are not understandable. Is this “Safety requirements of working near the storage of Dangerous Goods or Hazardous Substances or the areas where Dangerous Work is taking place.”? NK: Modified referring to the comment. To MD, please review the comment and modify (7).	(7) Safety measures for the environmental conditions in the working area and nearby areas for storage of Dangerous Goods or Hazardous Substances, in Hazardous Areas, and in operational areas ~~or areas~~ where Dangerous Work is taking place.
(8) The potential danger to other Contractor’s Personnel, Employer’s Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where Contractor’s Equipment is to be used and who may be affected by the use of Contractor’s Equipment and the required measures to avoid any risk accident or injury.	(8) The potential danger to ~~other~~ Contractor’s Personnel, Employer’s Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where Contractor’s Equipment is to be used and (JC20) who may be affected by the use of Contractor’s Equipment and the required measures to avoid any ~~risk~~ accident or injury. JC20 (= JC2): この Chapter で三箇所出てくるようなのでまとめましょう。(in this Chapter called as “Concerned Personnel”) There are same phrase in 3 locations in this Chapter, therefore it is better to define as (in this Chapter called as “Concerned Personnel”). NK: Modified as commented.	(8) Potential danger to Concerned Personnel who may be affected by the use of Contractor’s Equipment and the required measures to avoid any ~~risk~~ accident or injury.
(9) Any potential hazards in the use of Contractor’s Equipment including those which may create a risk of falling or overturning. (10) Restrictions to the movement and operation of Contractor’s Equipment such as existing structures, foundations, surfaces, underground or overhead services and dangerous goods storage. (11) Measures for breakdown, defect or fault in Contractor’s Equipment including location of areas for inspection and maintenance. (12) The name of the authorised operator for each unit of Contractor’s Equipment.	(9) Any potential hazards in the use of Contractor’s Equipment including those which may create a risk of falling or overturning. (10) Restrictions to the movement and operation of Contractor’s Equipment such as existing structures, foundations, surfaces, underground or overhead services and dangerous goods storage. (11) Measures to be taken in case of ~~for~~ breakdown, defect or fault in Contractor’s Equipment including location of areas for inspection and maintenance. (12) The name of the authorised operator for each unit of Contractor’s Equipment. (JC21) JC21 (=JC1): 全体を通して、特に Tools についてはすべての要求事項が適用されるわけではないと思います。したがって、適用除外される可能性を上手に書き分ける表現になるよう工夫していただけますでしょうか。 (Tools(器具工具)について 適用されない箇所が多くあるため。(例:Operatorの指名や責任者の掲示など)) Whole Provisions in this Chapter may not apply all to Tools, so please devise to stipulate possibility of exemption of some provisions.	(9) Any potential hazards in the use of Contractor’s Equipment including those which may create a risk of falling or overturning. (10) Restrictions to the movement and operation of Contractor’s Equipment such as existing structures, foundations, surfaces, underground or overhead services and dangerous goods storage. (11) Measures to be taken in case of ~~for~~ breakdown, defect or fault in Contractor’s Equipment including location of areas for inspection and maintenance. (12) ~~The~~ name of the authorised operator for each unit of Contractor’s Equipment, when authorised operator is necessary to be assigned.

(There are many provisions which will not apply to Tools for example, appointment of Operator, post of a label showing the name.)
NK: Modified as commented.

(13) The name and contact of the HSO to inform when there is any requirement for inspection, maintenance and repair of Contractor's Equipment.

4.1.4 Safety Training

The Contractor shall provide health and safety training in accordance with JSSS 1.19 [*Safety Training Generally*] taking account of the characteristics of the particular types of Contractor's Equipment.

The health and safety training shall be done to the personnel including the following items depending on the characteristics of the Contractor's Equipment with which the personnel will be engaged in works.

(1) Functions, performance, operation methods, inspection items, inspection method of safety device and emergency alarm device;

(2) Work procedure, signal and communication method at starting time of the operation, and daily inspection;

(3) Lockout and tagout procedures for shutting down operation, turning off the power, locking the starter and necessary measures for the time of cleaning and inspection of the Contractor's equipment;

(4) Stop of the operation and work with the Contractor's equipment when an abnormality occurs and report to the person in charge; and

(5) Prohibition from removing safety devices; and

(6) Risks during operation of the Contractor's Equipment..

Particular safety training for transportation operators shall also include prevention of traffic accidents on and off the Site for example including:

(1) Driving rules for prevention of traffic accidents;

(2) Compliance with speed limits, signs, alcohol use, drugs and all other requirements the Laws of the Country;

(3) Driving methods to prevent accidents including contact and collision with other persons, cycles, motorcycles and other

(13) The name and contact of the HSO to inform when there is any requirement for inspection, maintenance and repair of Contractor's Equipment.

4.1.4 Safety Training

The Contractor shall provide the Contractor's personnel with health and safety training in accordance with JSSS 1.19 [*Safety Training Generally*] taking account of the characteristics of the particular types of Contractor's Equipment.

The health and safety training shall be ~~done~~ provided to the personnel including the following items depending on the characteristics of the Contractor's Equipment ~~with which the personnel will be engaged in works.~~(JC22)

JC22: この部分は蛇足なので削除。This phrase is superfluity.
NK: Deleted.

(1) Functions, performance, operation methods, inspection items, inspection method of safety device and emergency alarm device;

(2) Work procedure, signal and communication method at starting time of the operation, and daily inspection;

(3) Lockout and tagout procedures for shutting down operation, turning off the power, locking the starter and necessary measures for the time of cleaning and inspection of the Contractor's equipment;

(4) Stop of the operation ~~and work with~~ of the Contractor's Equipment when an abnormality occurs and report to the person in charge;~~ and~~

(5) Prohibition ~~from~~ of removing safety devices; and

(6) Risks during operation of the Contractor's Equipment..

Particular safety training for transportation equipment operators shall for the purpose of prevention of traffic accidents on and off the Site, (JC23) ~~a~~lso include ~~prevention of traffic accidents on and off the Site for example including~~: (JC24)

JC23: 冒頭に交通事故の防止という言葉が入り、具体例においていちいち言わないように修正しています.
Phrase of prevention of traffic accidents is added to avoid necessity to stipulate repeatedly stipulate in each example.
NK: Modified.
JC 24: この下のナンバリングが変ではないでしょうか。
Is numbering below strange?
NK: Modified to that the above sentence is numbered as (7) and the clauses below are numbered (a) to (g).

(7) Particular safety training for transportation equipment operators for the purpose of prevention of traffic accidents on and off the Site including:

(a) Driving rules ~~for prevention of traffic accidents~~ in general;

(b) Compliance with speed limits, signs, alcohol use, drugs and all other requirements the Laws of the Country;

(c) Driving methods to ~~prevent accidents including~~ contact and collision with other persons, cycles, motorcycles and other

(13) The name and contact of the HSO to inform when there is any requirement for inspection, maintenance and repair of Contractor's Equipment.

4.1.4 Safety Training

The Contractor shall provide the Contractor's personnel with health and safety training in accordance with JSSS 1.19 [*Safety Training Generally*] taking account of the characteristics of the particular types of Contractor's Equipment.

The health and safety training shall be ~~done~~ provided to the personnel including the following items depending on the characteristics of the Contractor's Equipment ~~with which the personnel will be engaged in works.~~

(1) Functions, performance, operation methods, inspection items, inspection method of safety device and emergency alarm device;

(2) Work procedure, signal and communication method at starting time of the operation, and daily inspection;

(3) Lockout and tagout procedures for shutting down operation, turning off the power, locking the starter and necessary measures for the time of cleaning and inspection of the Contractor's equipment;

(4) Stop of the operation ~~and work with~~ of the Contractor's Equipment when an abnormality occurs and report to the person in charge;~~ and~~

(5) Prohibition ~~from~~ of removing safety devices; and

(6) Risks during operation of the Contractor's Equipment..

Particular safety training for transportation equipment operators shall for the purpose of prevention of traffic accidents on and off the Site, ~~also~~ include ~~prevention of traffic accidents on and off the Site for example including~~:

(7) Particular safety training for transportation equipment operators for the purpose of prevention of traffic accidents on and off the Site including:

(a) Driving rules ~~for prevention of traffic accidents~~ in general;

(b) Compliance with speed limits, signs, alcohol use, drugs and all other requirements the Laws of the Country;

(c) Driving methods to ~~prevent accidents including~~ contact and collision with other persons, cycles, motorcycles and other

vehicles;

(4) Driving methods to prevent accidents in overtaking other vehicles and undertaken by others;

(5) Driving methods to prevent accidents due to holes, bumps or obstacles on the road;

(6) Required inspection and maintenance before starting operation;

(7) Proper use of vehicles including behaviour and control of passengers, prevention of overcrowding, overloading and unauthorised passengers.

4.1.5 Requirements to Operators

Further to the requirements of JSSS 1.16 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that operators are appropriately qualified, skilled and experienced in operation of the Contractor's Equipment to which they are assigned and duly certified as such by the HSO. The Contractor shall also ensure that

(1) Operators shall be fully aware of the following:

(a) Work procedures, possible risks and operation methods;

(b) The need to stop all work when any defect or abnormality is detected;

(c) Prohibition of removing, interfering with or overriding any safety devices;

(d) The identity of and location(s) for Spotters and the communication and signalling requirements including equipment to be used and signals; and

(e) The procedures in case of emergency.

(2) In addition, operators shall:

(a) Safely and competently operate the Contractor's Equipment;

(b) Operate all safety devices including emergency alarm and stop devices; and

(c) Inspect, clean, service and maintain the unit of Contractor's Equipment under their responsibility. ~~and control or ensure that other qualified persons perform these operations.~~

4.1.6 Signalling

(1) Signalling between operators ~~and Spotters~~ and any associated workers shall only be carried out by the Spotters.

(2) ~~Signallers~~ Spotters shall be located in a safe place and where they can clearly see and be seen by the operator.

(3) When it is not possible for ~~Signallers~~ Spotters to give direct visible and audible signals to the operator, other systems including hand-held radios or ~~video cameras~~ videophone must be provided and used.

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vehicles;

(d) Driving methods to properly ~~prevent accidents in~~ overtake ~~ing~~ other vehicles and to be undertaken by others

(e) Driving methods ~~to prevent accidents due to~~ when encountering holes, bumps or obstacles on the road;

(f) Required inspection and maintenance before starting operation;

(g) Proper use of vehicles including behaviour and control of passengers, prevention of overcrowding, overloading and unauthorised passengers.

4.1.5 Requirements to Operators

Further to the requirements of JSSS 1.16 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that operators are appropriately qualified, skilled and experienced in operation of the Contractor's Equipment to which they are assigned and duly certified as such by the HSO. The Contractor shall also ensure that

(1) Operators shall safely and competently operate the Contractor's Equipment.

(2) Operators shall be fully aware of the following:

(a) Work procedures ~~possible risks~~ hazards and operation methods;

(b) The need to stop ~~all work~~ the operation when any defect or abnormality is detected;

(c) ~~Prohibition of removing, interfering with or overriding any safety devices;~~ (JC25)

JC25: 4.1.4 (5)に同じことが記載されているので削除します。
Deleted as same is stipulated in 4.1.4 (5).
NK: Deleted.

(d) The identity of and location(s) for Spotters and the communication and signalling requirements including equipment to be used ~~and signals~~; and

(e) The procedures in case of emergency.

(3) ~~In addition,~~ Operators shall:

(a) ~~Safely and competently operate the Contractor's Equipment;~~

(b) ~~Operate~~ Keep all safety devices including emergency alarm and stop devices activated; and

(c) Inspect, clean, service and maintain the unit of Contractor's Equipment under their responsibility.~~.~~

4.1.6 Signalling

(1) Signalling between operators and any associated workers shall only be carried out by the Spotters.

(2) Spotters shall be located in a safe place and where they can clearly see and be seen by the operator.

(3) When it is not possible for Spotters to give direct visible and audible signals to the operator, other systems including hand-held radios or videophone must be provided and used.

---

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(d) Driving methods to properly ~~prevent accidents in~~ overtake ~~ing~~ other vehicles and to be undertaken by others

(e) Driving methods ~~to prevent accidents due to~~ when encountering holes, bumps or obstacles on the road;

(f) Required inspection and maintenance before starting operation;

(g) Proper use of vehicles including behaviour and control of passengers, prevention of overcrowding, overloading and unauthorised passengers.

4.1.5 Requirements to Operators

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(1) Operators shall safely and competently operate the Contractor's Equipment.

(2) Operators shall be fully aware of the following:

(a) Work procedures, hazards and operation methods;

(b) The need to stop the operation when any defect or abnormality is detected;

(c) The identity of and location(s) for Spotters and the communication and signalling requirements including equipment to be used; and

(d) The procedures in case of emergency.

(3) Operators shall:

(a) Keep all safety devices including emergency alarm and stop devices activated; and

(b) Inspect, clean, service and maintain the unit of Contractor's Equipment under their responsibility.~~.~~

4.1.6 Signalling

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(2) Spotters shall be located in a safe place and where they can clearly see and be seen by the operator.

(3) When it is not possible for Spotters to give direct visible and audible signals to the operator, other systems including hand-held radios or videophone must be provided and used.

4.2 INSPECTION, MAINTENANCE AND REPAIR

4.2.1 Requirements Generally

(1) Further to the requirements of JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the HSO shall ensure that all Contractor's Equipment is inspected, fully maintained and operational when it is mobilised to the Site. Thereafter all Contractor's Equipment shall be inspected, maintained and repaired before the commencement of the first and of all subsequent days of operation.

(2) Inspections shall include all items necessary to ensure the safe performance of the Contractor's Equipment including the following examples and any further requirements due to the characteristics, capability and condition of the Contractor's Equipment and in compliance with the manufacturer's official maintenance and repair manual.

(3) Inspection at the time when Contractor's Equipment is mobilised to the Site and before commencement of operation, for which the Contractor shall:

(a) Inspect all units of Contractor's Equipment to ensure that

- all components are installed and functioning,
- all inspection and maintenance covers,
- safety guards to prevent contact with moving parts and the like are in place, adequate and fit for purpose, securely fixed, and
- ~~that~~ all such units of equipment are in the condition required by the Contract;

To MD: Please review the JICA comment and NK proposal above and make the items above to one sentence.

(b) Ensure as a minimum that the daily and periodical check items listed below in this Sub Clause, have already been inspected and recorded;

(c) Ensure that all inspection and maintenance records are available for inspection by the Engineer if and when may be required in compliance with JSSS; and

(d) If any inspection and maintenance records are incomplete or not available, the Contractor shall carry out inspections and maintenance to ensure that a full and acceptable record is available for all units of Contractor's Equipment.

In relation with the above, it should be noted that Contractor's Equipment shall be in a working and safe condition and fully compliant with the Contract when it is mobilised to the Site. The

4.2 INSPECTION, MAINTENANCE AND REPAIR

4.2.1 Requirements Generally

(1) Further to the requirements of JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective* Equipment] the HSO shall ensure that all Contractor's Equipment is inspected, fully maintained and operational when it is mobilised to the Site. Thereafter all Contractor's Equipment shall be inspected, maintained and repaired before the commencement of the first and of all subsequent days of operation.

(2) Inspections shall include all items necessary to ensure the safe performance of the Contractor's Equipment, taking account of the characteristics, capability and condition of the Contractor's Equipment, and in compliance with the manufacturer's official maintenance and repair manual.

(3) ~~Inspection at the time when Contractor's Equipment is mobilised~~ When mobilizing Contractor's Equipment to the Site and before commencement of operation, ~~for which~~ (JC26) the Contractor shall:

JC26: 文として完結していないので修正しました。The sentence is not completed, so modified.
NK: Modified as commented.

(a) Inspect all units of Contractor's Equipment to ensure that

(i) all components are installed and functioning,

~~• all inspection and maintenance covers,~~

(ii) safety guards to prevent contact with moving parts and the like are in place, adequate and fit for purpose, securely fixed, and

(iii) ~~that~~ all such units of equipment are in ~~the condition required by the Contract~~ proper condition ; (JC27)

JC27: "契約"が機械の状況について要求するのか？in proper condition で良いのでは.
Dose the Contract request the conditions of equipment? Can it be "proper condition"?
NK: Modified as commented.

(b) Ensure as a minimum that the daily and periodical check items ~~listed below in this Sub Clause~~ (JC28), have already been inspected and recorded;

JC28: 何を指すのか？不要ではないか。What do they mean? Is it necessary?
NK: Deleted as commented.

(c) Ensure that all inspection and maintenance records are available for inspection by the Engineer if and when ~~may be~~ (JC29) required in compliance with JSSS; and

JC29: 不要。Unnecessary.
NK: Deleted.

(d) If any inspection and maintenance records are incomplete or not available, the Contractor shall carry out inspections and maintenance to ensure that a full and acceptable record is available for all units of Contractor's Equipment.

In relation with the above, it should be noted that Contractor's Equipment shall be in a working and safe condition and fully

4.2 INSPECTION, MAINTENANCE AND REPAIR

4.2.1 Requirements Generally

(1) Further to the requirements of JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective* Equipment] the HSO shall ensure that all Contractor's Equipment is inspected, fully maintained and operational when it is mobilised to the Site. Thereafter all Contractor's Equipment shall be inspected, maintained and repaired before the commencement of the first and of all subsequent days of operation.

(2) Inspections shall include all items necessary to ensure the safe performance of the Contractor's Equipment, taking account of the characteristics, capability and condition of the Contractor's Equipment, and in compliance with the manufacturer's official maintenance and repair manual.

(3) When mobilizing Contractor's Equipment to the Site and before commencement of operation,

(a) Inspect all units of Contractor's Equipment to ensure that

(i) all components are installed and functioning,

(ii) safety guards to prevent contact with moving parts and the like are in place, adequate and fit for purpose, securely fixed, and

(iii) ~~that~~ all such units of equipment are in proper condition;

(b) Ensure as a minimum that the daily and periodical check items, have already been inspected and recorded;

(c) Ensure that all inspection and maintenance records are available for inspection by the Engineer if and required in compliance with JSSS; and

(d) If any inspection and maintenance records are incomplete or not available, the Contractor shall carry out inspections and maintenance to ensure that a full and acceptable record is available for all units of Contractor's Equipment.

In relation with the above, it should be noted that Contractor's Equipment shall be in a working and safe condition and fully

Engineer may refuse to accept delivery to the Site ~~and instruct the Contractor to remove from the Site of~~ any Contractor's Equipment ~~that is not in this condition.~~ which does not meet the requirements stipulated in the Contract.

(4) The Contractor shall undertake the following daily inspection items, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(a) Operating condition of engine, gearbox(s), drive shafts, pulleys and main components, emergency stop and safety devices, any defects or abnormalities in covers, doors and enclosures;

(b) Abnormal sounds, vibrations or smell;

(c) Leaks, levels and condition of lubricants, coolant, hydraulic fluid levels, and the like;

(d) Lights and indicators;

(e) Brakes, clutches, steering and operating devices and working devices;

(f) Cables, slings, ropes and chains;

(g) Protective covers are adequately provided over all rotating or moving parts;

(h) Attachments and tools such as buckets, grabs, etc.

(i) Cleanliness of each unit or item of Contractor's Equipment; and

(j) Cleanliness of each working area and removal of obstructions.

(k) Emergency kits such as warning flares and triangles, fire extinguisher, first aid kit and the like, as required by the Laws of the Country with the testing and expiration date clearly indicated.

(l) For other items not covered here, the inspection items stipulated in the manufacturer's official maintenance and repair manual shall be applied.

(5) The Contractor shall undertake the following periodic inspection items, (at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(a) Engine compression pressure, valve clearance and other relevant parts of prime energy unit;

(b) Gearbox, clutch, transmission, propeller shaft, differential and other parts of power transmission devices;

(c) Drive wheels, idling wheels, vertical trunk rollers, belts, tires, wheel bearings and other parts of traveling devices;

(d) Springs, shock absorbers and other parts of suspension

compliant with the Contract when it is mobilised to the Site. The Engineer may refuse to accept delivery to the Site any Contractor's Equipment which does not meet the requirements stipulated in the Contract.

(4) The Contractor shall undertake the following daily inspection items, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(a) Operating condition of engine, gearbox(s), drive shafts, pulleys and main components, emergency stop and safety devices, any defects or abnormalities in covers, doors and enclosures;

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(a) Engine compression pressure, valve clearance and other relevant parts of prime energy unit;

(b) Gearbox, clutch, transmission, propeller shaft, differential and other parts of power transmission devices;

(c) Drive wheels, idling wheels, vertical trunk rollers, belts, tires, wheel bearings and other parts of traveling devices;

(d) Springs, shock absorbers and other parts of suspension devices;

devices;

(e) Left and right rotation angle of steering wheel, knuckle, rod, arm and other parts of control devices;

(f) Brake capacity, brake drum, brake shoe and other parts of braking systems;

(g) Blades, booms, link mechanisms, buckets, wire ropes and other parts of work equipment;

(h) Hydraulic pump, hydraulic motor, cylinder, safety valve and other parts of hydraulic equipment;

(i) Voltage, amperage and relevant performance and components of electrical systems; and

(j) Body, operating devices, head guards, back stoppers, access doors, protective covers, ladders and steps, locking devices, warning alarm devices, direction indicators and lightning devices.

(k) For other items not covered here, the inspection items stipulated in the manufacturer's official maintenance and repair manual shall be applied.

(6) Operation of any unit of Contractor's Equipment shall not be allowed to commence until the HSO has certified that it is safe to do so.

(7) The Contractor shall prepare standard checklists for all inspections and the HSO shall ensure that these are complied with, completed and signed and kept as a record in accordance with JSSS 1.31 [*Health and Safety Records*].

4.2.2 Defects and Repair During Operation

(1) If an operator notices any defect or abnormality in the Contractor's Equipment during operation (such as abnormal noise, temperature, smell, etc.) the operator shall stop the operation immediately;

(2) The operator shall then identify the cause of the defect or abnormality and make necessary repairs by using authorised and qualified specialist mechanics, electricians or representative technical engineers authorised by the Contractor's Equipment manufacturer; and

(3) The HSO shall ensure that no further operation shall resume unless the above has been complied with and the Contractor's Equipment has been re-inspected by him and certified in accordance with JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*].

4.3 SAFETY REQUIREMENTS

(e) Left and right rotation angle of steering wheel, knuckle, rod, arm and other parts of control devices;

(f) Brake capacity, brake drum, brake shoe and other parts of braking systems;

(g) Blades, booms, link mechanisms, buckets, wire ropes and other parts of work equipment;

(h) Hydraulic pump, hydraulic motor, cylinder, safety valve and other parts of hydraulic equipment;

(i) Voltage, amperage and relevant performance and components of electrical systems; and

(j) Body, operating devices, head guards, back stoppers, access doors, protective covers, ladders and steps, locking devices, warning alarm devices, direction indicators, tires' air pressure and lightning devices.

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4.2.2 Defects and Repair During Operation

(1) If an operator notices any defect or abnormality in the Contractor's Equipment during operation (such as abnormal noise, temperature, smell, etc.) the operator shall stop the operation immediately and report to the person in charge;

(2) ~~The operator shall then identify the cause of the defect or abnormality and make necessary repairs by using authorised and qualified specialist mechanics, electricians or representative technical engineers authorised by the Contractor's Equipment manufacturer; and~~ Necessary repair shall be provided by qualified mechanics, electricians or engineers (JC30) ; and

JC30: オペレーターが不調の原因まで identify できるのでしょうか。また修理の主語がオペレーターになっていますがこれでよいのか？4.1.4(4)では不調の場合はストップして person in charge に報告することが想定されている。
Can operator identify causes? Is it correct that the main actor of repair is operator? The 4.1.4(4) stipulate *that Stop of the operation and work with of the Contractor's Equipment when an abnormality occurs and report to the person in charge;*

NK: Modified as commented.

(3) The HSO shall ensure that no further operation shall resume unless the above has been complied with and the Contractor's Equipment has been re-inspected by him and certified in accordance with JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*].

4.3 SAFETY REQUIREMENTS

(e) Left and right rotation angle of steering wheel, knuckle, rod, arm and other parts of control devices;

(f) Brake capacity, brake drum, brake shoe and other parts of braking systems;

(g) Blades, booms, link mechanisms, buckets, wire ropes and other parts of work equipment;

(h) Hydraulic pump, hydraulic motor, cylinder, safety valve and other parts of hydraulic equipment;

(i) Voltage, amperage and relevant performance and components of electrical systems; and

(j) Body, operating devices, head guards, back stoppers, access doors, protective covers, ladders and steps, locking devices, warning alarm devices, direction indicators, tires' air pressure and lightning devices.

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(1) If an operator notices any defect or abnormality in the Contractor's Equipment during operation (such as abnormal noise, temperature, smell, etc.) the operator shall stop the operation immediately and report to the person in charge;

(2) Necessary repair shall be provided by qualified mechanics, electricians or engineers; and

(3) The HSO shall ensure that no further operation shall resume unless the above has been complied with and the Contractor's Equipment has been re-inspected by him and certified in accordance with JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*].

4.3 SAFETY REQUIREMENTS

4.3.1 General Safety Measures

In addition to other safety and health requirements of JSSS, the Contractor shall:

(1) Ensure that there is sufficient lighting to perform all work safely and provide artificial lighting where necessary.

(2) Ensure that Contractor's Equipment is equipped with suitable protective safety devices such as covers, screens, guards, contact prevention devices, auto-stop devices, enclosures, barriers and the like all as necessary to prevent any risk of injury to personnel from equipment or parts of equipment, where:

(a) There may be any risk of persons being hit by, caught or injured or entangled in any ropes, cables, sheaves, moving or rotating parts; and

(b) There may be any risk of persons being hit by flying debris, offcuts, or the like produced by the equipment.

(3) Ensure that Contractor's Equipment is equipped with suitable ladders and steps for access to the operating cabin and also to all other levels and components to permit inspection, assembly, maintenance and repair of the equipment. ~~Inspection platforms and ladders on cranes and the like shall be fitted with cages.~~ When any Contractor's Personnel need to work at a height of 2 m or more, the Contractor shall take suitable measures in accordance with JSSS 2.5 [*Fall Prevention*], including the provision and use by all Contractor's Personnel of guide ropes and PFAS.

(4) Prohibit personnel other than operators, workers and other authorised personnel from entering the place where Contractor's Equipment is in use for the Works.

(5) Ensure that each unit of Contractor's Equipment is provided with appropriate numbers and types of fire extinguishing equipment and such other facilities ~~that are necessary to ensure safety~~ where such equipment is necessary and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and fire safety procedures.

(6) Ensure that each working area where Contractor's Equipment is in use, is provided with appropriate numbers and types of first-aid equipment and such other facilities that are necessary to ensure safety and treat accidents and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and first-aid procedures.

(7) Post a label clearly showing the name of the operator on each unit of Contractor's Equipment together with the name and contact of the HSO who shall be contacted in the event of breakdown or fault.

4.3.1 General Safety Measures

In addition to other safety and health requirements of JSSS, the Contractor shall:

(1) Ensure that there is sufficient lighting to perform all work safely and provide artificial lighting where necessary.

(2) Ensure that Contractor's Equipment is equipped with suitable protective safety devices such as covers, screens, guards, contact prevention devices, auto-stop devices, enclosures, barriers and the like, ~~all~~ as necessary to prevent ~~any risk of~~ injury to personnel from equipment or parts of equipment, where:

(a) There may be any risk of persons being hit by, caught or injured or entangled in any ropes, cables, sheaves, moving or rotating parts; and

(b) There may be any risk of persons being hit by flying debris, offcuts, or the like produced by the equipment.

(3) Ensure that Contractor's Equipment is equipped with suitable ladders and steps for access to the operating cabin and also to all other levels and components to permit inspection, assembly, maintenance and repair of the equipment. When any Contractor's Personnel need to work at a height of 2 m or more, the Contractor shall take suitable measures in accordance with JSSS 2.5 [*Fall Prevention*], including the provision and use by all Contractor's Personnel of guide ropes and PFAS.

(4) Prohibit personnel other than operators, workers and other authorised personnel from entering the place where Contractor's Equipment is in use for the Works.

(5) Ensure that each unit of Contractor's Equipment is provided with appropriate numbers and types of fire extinguishing equipment and such other facilities where such equipment is necessary and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and fire safety procedures.

(6) ~~Ensure that each working area where Contractor's Equipment is in use, is provided with appropriate numbers and types of first-aid equipment and such other facilities that are necessary to ensure safety and treat accidents and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and first-aid procedures.~~ (JC31)

JC31: 機械の safety requirement ではない。It is not the safety requirements for the Equipment.

NK: 機械を使っての作業場所に救急用具を設置することは、機械の安全措置ではないですが、作業員の安全措置ですので、このまま残します。
This clause is not safety requirement for Equipment but for workers in the working area with Equipment. Therefore this as left as it is.

(7) Post a label clearly showing the name of the operator on each unit of Contractor's Equipment together with the name and contact of the HSO (JC32) or a person in charge who shall be contacted in the event of breakdown or fault.

JC32: 4.1.4(4)では不調の場合はストップして person in charge に報告することが想定されているので、併記しておきます。
4.1.4(4) stipulate operator shall stop operation and inform person in charge of event of breakdown or fault, so added the person in charge.

4.3.1 General Safety Measures

In addition to other safety and health requirements of JSSS, the Contractor shall:

(1) Ensure that there is sufficient lighting to perform all work safely and provide artificial lighting where necessary.

(2) Ensure that Contractor's Equipment is equipped with suitable protective safety devices such as covers, screens, guards, contact prevention devices, auto-stop devices, enclosures, barriers and the like, as necessary to prevent injury to personnel from equipment or parts of equipment, where:

(a) There may be any risk of persons being hit by, caught or injured or entangled in any ropes, cables, sheaves, moving or rotating parts; and

(b) There may be any risk of persons being hit by flying debris, offcuts, or the like produced by the equipment.

(3) Ensure that Contractor's Equipment is equipped with suitable ladders and steps for access to the operating cabin and also to all other levels and components to permit inspection, assembly, maintenance and repair of the equipment. When any Contractor's Personnel need to work at a height of 2 m or more, the Contractor shall take suitable measures in accordance with JSSS 2.5 [*Fall Prevention*], including the provision and use by all Contractor's Personnel of guide ropes and PFAS.

(4) Prohibit personnel other than operators, workers and other authorised personnel from entering the place where Contractor's Equipment is in use for the Works.

(5) Ensure that each unit of Contractor's Equipment is provided with appropriate numbers and types of fire extinguishing equipment and such other facilities where such equipment is necessary and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and fire safety procedures.

(6) Ensure that each working area where Contractor's Equipment is in use, is provided with appropriate numbers and types of first-aid equipment and such other facilities that are necessary to ensure safety and treat accidents and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and first-aid procedures.

(7) Post a label clearly showing the name of the operator on each unit of Contractor's Equipment together with the name and contact of the HSO or a person in charge who shall be contacted in the event of breakdown or fault.

(8) Ensure that only the authorised operating, inspection and maintenance personnel access the mechanical, electrical and other components and systems of the Contractor's Equipment and prohibit all other persons from such access and prevent them from disabling any features and tampering with or removing any inspection and maintenance covers, safety guards to prevent contact with moving parts and the like.

(9) Ensure that installation, assembly, testing commissioning, operation and dismantling of all major equipment including static equipment, personnel and goods elevators and the like, is carried out under the direction of an Operation Leader appropriately qualified, skilled and experienced in such activities for the particular type and capacity of equipment and strictly in accordance with the manufacturer's written instructions.

~~4.3.2 Transportation to and Removal from Site~~

~~(1) When transporting heavy or long goods on public roads, select roads on which the transportation does not pose danger to general traffic, third parties, structures adjacent to the transportation route, obtain all necessary prior permission from the relevant authorities including police, road authority before commencement of transportation and comply with all requirements.~~

~~(2) When transporting heavy or long goods within the Site, select suitable route where the transportation does not pose danger to existing permanent or temporary buildings or structures or other works and obtain the consent of the Engineer before commencement of the transportation and comply with all requirements.~~

4.3.2 Safety Measures During Cleaning, Inspection and Maintenance

The Contractor shall take the following measures for safety of Contractor's Personnel during cleaning, inspection and maintenance. Until such measures are taken, the Contractor shall prohibit any inspection or maintenance personnel or other workers from entering the areas at risk.

(1) Perform inspection and maintenance work wherever possible on a

NK: Modified.

(8) Ensure that only the authorised operating, inspection and maintenance personnel access the mechanical, electrical and other components and systems of the Contractor's Equipment and prohibit all other persons from such access~~. and prevent them from disabling any features and tampering with or removing any inspection and maintenance covers, safety guards to prevent contact with moving parts and the like.~~ (JC33)

(9) Ensure that any inspection and maintenance covers, safety guards to prevent contact with moving parts and the like are not disabled, tampered with or removed except for repair, maintenance or any other justifiable reason.

JC33: 無関係な人間にアクセスを禁じるのは防護装置に悪さをさせないためだけではないし、関係者が防護装置に悪さをするかもしれない。従って、無関係者のアクセス禁止と防護装置の維持の話に分ける。
The prohibition of other persons from accessing to equipment is for avoiding them doing bad to protective device. On the other hand, there is possibility that workers related with the work do bad to the protective device. Therefore, the (8) is divided to two for(8) prohibition of other persons to access to equipment and (9) keeping the protective device function.

NK: Modified as commented.

(10) Ensure that installation, assembly, testing commissioning, operation and dismantling of all major equipment including static equipment, ~~personnel and goods~~ (JC34) elevators and (JC35)the like, is carried out under the direction of an Operation Leader appropriately qualified, skilled and experienced in such activities for the particular type and capacity of equipment and strictly in accordance with the manufacturer's written instructions.

JC34: 削除。単に elevators でいいのでは。
Deleted. It can be "elevators".

NK: Modified.

JC35: Is it "or".

NK: We think "and" can be left.

To MD, please advise to use "or" or "and".

4.3.2 Safety Measures During Cleaning, Inspection and Maintenance

The Contractor shall take the following measures for safety of Contractor's Personnel during cleaning, inspection and maintenance. Until such measures are taken, the Contractor shall prohibit any inspection or maintenance personnel or other workers from entering the areas ~~at risk~~.

(8) Ensure that only the authorised operating, inspection and maintenance personnel access the mechanical, electrical and other components and systems of the Contractor's Equipment and prohibit all other persons from such access.

(9) Ensure that any inspection and maintenance covers, safety guards to prevent contact with moving parts and the like are not disabled, tampered with or removed except for repair, maintenance or any other justifiable reason.

(10) Ensure that installation, assembly, testing commissioning, operation and dismantling of all major equipment including static equipment, ~~personnel and goods~~ elevators and the like, is carried out under the direction of an Operation Leader appropriately qualified, skilled and experienced in such activities for the particular type and capacity of equipment and strictly in accordance with the manufacturer's written instructions.

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The Contractor shall take the following measures for safety of Contractor's Personnel during cleaning, inspection and maintenance. Until such measures are taken, the Contractor shall prohibit any inspection or maintenance personnel or other workers from entering the areas ~~at risk~~.

(1) Perform inspection and maintenance work wherever possible on a

level surface. Where unavoidable ensure that wheels are securely chocked to prevent any movement of equipment.

(2) Provide safety blocks or supports under cargo bed of vehicles to prevent them descending unexpectedly during inspection and maintenance.

(3) Lower attachments (buckets and blades etc.) to the ground during any inspection and maintenance. Where unavoidable ensure that attachments are securely supported to prevent any fall or downward movement.

(4) Stop and isolate the functions completely, establish and implement lockout and tagout procedures to prevent accidents during inspection and maintenance. The lockout and tagout system shall fully isolate the starting system.

(5) Post warning signs to prohibit start-up or use of any Contractor's Equipment during inspection and maintenance.

(6) Assign a Spotter.

(7) Ensure that only authorised personnel have access to the inspection and maintenance area.

4.3.3 Safety Measures During Operation

(1) The Contractor shall ensure the safety of all Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where works are being executed and who may be affected by such work.

(2) Unless otherwise specifically permitted by the HSO, all work involving the use of Contractor's Equipment shall be designated as Dangerous Work and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [Prohibition of Entry - Dangerous Work].

(3) The Contractor shall also ensure that:

(a) All operators are able to clearly see and communicate effectively with Spotters and other relevant persons;

(b) No Contractor's Equipment shall be allowed to operate beyond the capacity or operational limits officially prescribed by the equipment manufacturer;

(c) The surfaces upon which the Contractor's Equipment is working, and any adjacent surfaces and areas over which access is required, are sound, safe and suitable to support the equipment and the Contractor shall provide any temporary foundations, hardstanding or other surfaces, sleepers or steel plates as are necessary to ensure safety and stability of the equipment at all times;

(d) Spotters shall always be provided to enable precise movement and positioning of Contractor's Equipment, particularly when reversing, loading and unloading, dangerous areas, areas where the operator's view is not clear and intersections with public roads.

(e) Where there is any risk of turnover, slippage, collapse or fall, Contractor's Equipment shall be equipped with seatbelts or safety harnesses and that such seatbelts and harnesses are

(1) Perform inspection and maintenance work wherever possible on a level surface. Where unavoidable ensure that wheels are securely chocked to prevent any movement of equipment.

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(c) The surfaces upon which the Contractor's Equipment is working, and any adjacent surfaces and areas over which access is required, are sound, safe and suitable to support the equipment and the Contractor shall provide any temporary foundations, hardstanding or other surfaces, sleepers or steel plates as are necessary to ensure safety and stability of the equipment at all times;

(d) Spotters shall always be provided to enable precise movement and positioning of Contractor's Equipment, particularly when reversing, loading and unloading, being at dangerous areas, ~~areas~~ where the operator's view is not clear and intersections with public roads.

To MD, please review the above deletion of areas is correct.

(e) Where there is any risk of turnover, slippage, collapse or fall,

level surface. Where unavoidable ensure that wheels are securely chocked to prevent any movement of equipment.

(2) Provide safety blocks or supports under cargo bed of vehicles to prevent them descending unexpectedly during inspection and maintenance.

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(a) All operators are able to clearly see and communicate effectively with Spotters and other relevant persons;

(b) No Contractor's Equipment shall be allowed to operate beyond the capacity or operational limits officially prescribed by the equipment manufacturer;

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(d) Spotters shall always be provided to enable precise movement and positioning of Contractor's Equipment, particularly when reversing, loading and unloading, being at dangerous areas, ~~areas~~ where the operator's view is not clear and intersections with public roads.

(e) Where there is any risk of turnover, slippage, collapse or fall, Contractor's Equipment shall be equipped with seatbelts or safety harnesses and that such seatbelts and harnesses are used;

used;

(f) Where there is any risk of turnover, slippage, collapse or fall, Contractor's Equipment shall be equipped with a "Roll-Over Protective Structure" (ROPS);

(g) Where there is any risk of injury to operators due to falling objects Contractor's Equipment shall be equipped with a "Falling Object Protective Structure" (FOPS);

(h) Operators shall pay careful and constant attention to the position of any workers near to the operating area and particularly when mobile equipment is reversing;

(i) Operators of excavating equipment shall ensure that excavator buckets never pass over the operator's seat of the other Contractor's Equipment; and

(j) Workers shall not enter under a bucket which is loading material and shall keep away from dump trucks when loading or unloading materials.

(k) No person shall ride on trucks, trailers or cargo bed other than cabin of vehicles unless permitted by the Law of the Country.

4.3.3 Safety Measures When ~~Equipment~~ Mobile Equipment Is Not in Use

(1) When ~~Contractor's Equipment~~ mobile equipment is not in use, the Contractor shall ensure that operators:

(a) Park on surfaces which are level, sound, safe and suitable to support the equipment;

(b) Securely chock all wheels to prevent any movement;

(c) Lower attachments (buckets and blades etc.) to the ground;

(d) Stop and isolate the functions completely, fully engage brakes and lock the brake pedal; and

(e) Lock the equipment and store the starter key in the designated place.

(2) The Contractor shall prohibit all persons other than authorised personnel from entering the area where Contractor's Equipment is parked.

4.3.5 Safety Measures During Connection of Attachments

The Contractor shall take the following measures when connecting and removing attachments (buckets, blades etc.) to Contractor's Equipment:

Contractor's Equipment shall be equipped with seatbelts or safety harnesses and that such seatbelts and harnesses are used;

(f) Where there is any risk of turnover, slippage, collapse or fall, Contractor's Equipment shall be equipped with a "Roll-Over Protective Structure" (ROPS);

(g) Where there is any risk of injury to operators due to falling objects Contractor's Equipment shall be equipped with a "Falling Object Protective Structure" (FOPS);

(h) Operators shall pay careful and constant attention to the position of any workers near to the operating area and particularly when mobile equipment is reversing;

(i) Operators of excavating equipment shall ensure that excavator buckets never pass over the operator's seat of ~~the other~~ another Contractor's Equipment nearby; and

(j) Workers shall not enter under a bucket which is loading material and shall keep away from dump trucks when loading or unloading materials.

(k) No person shall ride on trucks, trailers or cargo bed other than cabin of vehicles unless permitted by the Law of the Country.

4.3.4 Safety Measures When Mobile Equipment Is Not in Use

(1) When mobile equipment is not in use, the Contractor shall ensure that operators:

(a) Park on surfaces which are level, sound, safe and suitable to support the equipment;

(b) Securely chock all wheels to prevent any movement;

(c) Lower attachments (buckets and blades etc.) to the ground;

(d) Stop and isolate the functions completely, fully engage brakes and lock the brake pedal; and

(e) Lock the equipment and store the starter key in the designated place.

(2) The Contractor shall prohibit all persons other than authorised personnel from entering the area where Contractor's Equipment is parked.

4.3.5 Safety Measures During Connection of Attachments

The Contractor shall take the following measures when connecting and removing attachments (buckets, blades etc.) to Contractor's Equipment:(JC36)

JC36: こうした事態が発生するのを防ぐために具体的な記述を記載してください。
・安定したフレームにアタッチメントをおいて着脱する。
・エンジンを切る
その他、4.3.4 の(1)で参考になるようなことを具体的に記述してください。
Please stipulate concrete measures to avoid occurrence of accident mentioned in 81) and (2) for example,
- connecting and removing attachments which are located on stable frames,
- Put off engine
- Other concrete measures referring to 4.3.4 (1).

NK: added in (1) and (2).

(f) Where there is any risk of turnover, slippage, collapse or fall, Contractor's Equipment shall be equipped with a "Roll-Over Protective Structure" (ROPS);

(g) Where there is any risk of injury to operators due to falling objects Contractor's Equipment shall be equipped with a "Falling Object Protective Structure" (FOPS);

(h) Operators shall pay careful and constant attention to the position of any workers near to the operating area and particularly when mobile equipment is reversing;

(i) Operators of excavating equipment shall ensure that excavator buckets never pass over the operator's seat of ~~the other~~ another Contractor's Equipment nearby; and

(j) Workers shall not enter under a bucket which is loading material and shall keep away from dump trucks when loading or unloading materials.

(k) No person shall ride on trucks, trailers or cargo bed other than cabin of vehicles unless permitted by the Law of the Country.

4.3.4 Safety Measures When Mobile Equipment Is Not in Use

(1) When mobile equipment is not in use, the Contractor shall ensure that operators:

(a) Park on surfaces which are level, sound, safe and suitable to support the equipment;

(b) Securely chock all wheels to prevent any movement;

(c) Lower attachments (buckets and blades etc.) to the ground;

(d) Stop and isolate the functions completely, fully engage brakes and lock the brake pedal; and

(e) Lock the equipment and store the starter key in the designated place.

(2) The Contractor shall prohibit all persons other than authorised personnel from entering the area where Contractor's Equipment is parked.

4.3.5 Safety Measures During Connecting and Removing of Attachments

The Contractor shall take the following measures when connecting and removing attachments (buckets, blades etc.) to Contractor's Equipment:(JC36)

(1) Prevent any risk due to movement or fall of attachments.

(2) Prevent accidental movement or operation causing persons to be trapped.

4.3.6 Safety Measures during Loading and Transporting of Contactor's Equipment

(1) Select and use trailers, ramps, tracks and climbing equipment or other equipment which is suitable for the particular type, size and weight of the Contractor's Equipment and fit for the purpose for which they are intended.

(2) Select location and loading and unloading areas which have sufficient space and surfaces which are level, sound, safe and suitable to support all of the equipment.

(3) Securely chock all trailer wheels to prevent any movement.

(4) Stop and isolate the functions of trailer and load and fully engage brakes.

(5) Ensure trailers are equipped with tie down devices to allow secure fixing of load.

(6) Ensure that the weight and height of the loaded Contractor's Equipment does not exceed actually required or legal limits.

(7) Ensure that all lights, brakes, steering and safety devices are working properly.

(8) Ensure that ~~suitable load limit~~ authorized maximum loading capacity, height, speed limit and any other required signage is applied to the trailer.

(9) Ensure that Contractor's Equipment is braked, wedged, securely locked in position and tied to the trailer with adequately sized chains or other fixings and tensioned to prevent any movement during transit.

(10) Place any attachments on the trailer and securely tie down.

(11) Inspect the tie-down tensioning, before and at intervals during transportation of Contractor's Equipment to ensure that there is no slackening.

(1) Prevent any ~~risk~~ accident due to movement or fall of attachments.

(2) Prevent accidental movement or operation causing persons to be trapped.

4.3.6 Safety Measures during Loading and Transporting of Contactor's Equipment (JC37)

JC37: 4.3.6 では積み上げ・積み下ろし作業を論じている。輸送時のこととしてみると、おかしなことがある((3)とか)。

(1) Select and use trailers, ~~ramps~~, tracks, their accessary and/or ~~climbing equipment or~~ other equipment which is suitable for the particular type, size and weight of the Contractor's Equipment and fit for the purpose for which they are intended.

(2) Select location and ~~loading and unloading~~ areas for loading and unloading which have sufficient space and surfaces which are level, sound, safe and suitable to support all of the equipment.

(3) Securely chock all wheels of trailer/track ~~wheels~~ to prevent any movement.

NK: Added "during loading of Contactor's Equipment.

(4) Stop and isolate the functions of trailer/track and load and fully engage brakes.

(5) Ensure trailers/tracks are equipped with tie down devices to allow secure fixing of load.

(6) Ensure that the weight and height of the loaded Contractor's Equipment does not exceed actually required or legal limits.

(7) ~~Ensure that all lights, brakes, steering and safety devices of the trailer/track working properly.~~ (JC38)

JC38: これ、必要でしょうか？単に運ばれている時の話ですし、故障したから運ばれる場合もあるのでは？
Is (7) necessary? This is only for time of transporting equipment. May there be a case that Contactor's Equipment of out of order is transported?

NK: (7) specifies for trailer/track to transport Contactor's Equipment but not the Equipment of out of order.
This (7) will be deleted because the (7) is provisions for Safety Measures during Loading and Transporting

(8) Ensure that ~~suitable load limit~~ authorized maximum loading capacity, height, speed limit and any other required signage is applied to the trailer/track.

(9) Ensure that Contractor's Equipment is braked, wedged, securely locked in position and tied to the trailer with adequately sized chains or other fixings and tensioned to prevent any movement during transit.

(10) Place any attachments on the trailer/track and securely tie down.

(11) Inspect the tie-down tensioning, before and at intervals during transportation of Contractor's Equipment to ensure that there is no slackening.

(1) Prevent any accident due to movement or fall of attachments by taking safety measures for example, connecting and removing attachments after locating them on stable and sound frames or ground, and

(2) Prevent accidental movement or operation causing persons to be trapped attachments by taking safety measures for example, parking of the Contractor's Equipment not to move as mentioned in JSSS 4.3.4 (1) (a), (b) and (d), stop engine.

4.3.6 Safety Measures during Loading and Transporting of Contactor's Equipment

(1) Select and use trailers, tracks, their accessary and/or other equipment which is suitable for the particular type, size and weight of the Contractor's Equipment and fit for the purpose for which they are intended.

(2) Select location and areas for loading and unloading which have sufficient space and surfaces which are level, sound, safe and suitable to support all of the equipment.

(3) Securely chock all wheels of trailer/track to prevent any movement during loading of Contactor's Equipment.

(4) Stop and isolate the functions of trailer/track and load and fully engage brakes.

(5) Ensure trailers/tracks are equipped with tie down devices to allow secure fixing of load.

(6) Ensure that the weight and height of the loaded Contractor's Equipment does not exceed actually required or legal limits.

(7) Ensure that authorized maximum loading capacity, height, speed limit and any other required signage is applied to the trailer/track.

(8) Ensure that Contractor's Equipment is braked, wedged, securely locked in position and tied to the trailer with adequately sized chains or other fixings and tensioned to prevent any movement during transit.

(9) Place any attachments on the trailer/track and securely tie down.

(10) Inspect the tie-down tensioning, before and at intervals during transportation of Contractor's Equipment to ensure that there is no slackening.

4.3.7 Safety Measures During Loading and Transporting of Materials

(1) When transporting heavy or long goods on public roads, select roads on which the transportation does not pose danger to general traffic, third parties, structures adjacent to the transportation route, obtain all necessary prior permission from the relevant authorities including police, road authority before commencement of transportation and comply with all requirements.

(2) When transporting heavy or long goods within the Site, select suitable route where the transportation does not pose danger to existing permanent or temporary buildings or structures or other works and obtain the consent of the Engineer before commencement of the transportation and comply with all requirements.

(3) Ensure that materials are loaded evenly

(4) Secure all loads with adequate and tensioned slings and cover with protective sheets, to avoid any fall or collapse of the conveyed articles and prevent any risk to workers and third parties;

(5) Inspect slings for securing transported materials and if any abnormality is found, replace immediately.

4.3.8 ~~Access Roads~~ Roads in the Site

4.3.7 Safety Measures During Loading and Transporting of Materials

(1) When transporting heavy or long goods on public roads, select roads on which the transportation does not pose danger to general traffic (JC39), third parties, structures adjacent to the transportation route, obtain all necessary ~~prior~~ (JC40) permission from the relevant authorities including police, road authority before commencement of transportation and comply with all requirements.

JC39: general traffic?
To MD: Please review this change to public traffic.

JC40: Prior は後に before があるから不要。
"Prior" is not necessary as there is "before".
NK: Deleted as comented.

(2) When transporting heavy or long goods within the Site, select suitable route where the transportation does not pose danger to existing permanent or temporary buildings or structures or other works and obtain the consent of the Engineer before commencement of the transportation and comply with all requirements.

(3) Ensure that materials are loaded evenly

(4) Secure all loads with adequate and tensioned slings and cover with protective sheets, to avoid any fall or collapse of the conveyed articles and prevent any risk to workers and third parties;

(5) Inspect slings for securing transported materials and if any abnormality is found, replace immediately.

4.3.8 ~~Roads~~ Temporary Motor Way in the Site (JC40)

JC40: 仮設で作られる機械専用通路のことと理解していますが、英語の正しさについては MD 氏に確認願います。
We understood this Clause is for exclusive use roads temporary constrcuted.
Please ask MD to confirm the title and content.
NK: 和文では次のように作業環境と規定していました。

5.4.1 運搬車両の作業環境
請負者は、運搬車両を用いた作業を行う場合には、運搬作業における現場内での安全な作業環境を確保するために、次の措置を講じなければならない。
(1) 運行経路について必要な幅員を保持すること、…。
(2) 運行経路の必要と認められる箇所には、制限速度を示す標識…。
(3) 運搬車両の走路と歩行者の安全通路を明示し、…。
(4) 規模の大きな工事現場においては運搬専用道路を設け、…。
(5) 夜間の運搬作業時には、…。

Site 外の公道の安全措置は道路管理者が行うべきことのため、和文（案）を参考に、現場内の運搬道路の安全措置とタイトルを変更することを提案します。
Japanese JSSS stipulate as follows:
5.4 Transport Works by Transportation Vehicles
5.4.1 Work Environment
The Contractor shall take the following measures for the safety working environment in the Site for operation of transportation vehicles.
(1) Take measures for the transportation road …;
(2) Put signboards indicating speed limit …;
(3) Separate roads for vehicles and walkways…;
(4) In large construction site, provide exclusive transport roads …; and
(5) Provide sufficient lighting facilities …;.

4.3.7 Safety Measures During Loading and Transporting of Materials

(1) When transporting heavy or long goods on public roads, select roads on which the transportation does not pose danger to public traffic, third parties, structures adjacent to the transportation route, obtain all necessary permission from the relevant authorities including police, road authority before commencement of transportation and comply with all requirements.

(2) When transporting heavy or long goods within the Site, select suitable route where the transportation does not pose danger to existing permanent or temporary buildings or structures or other works and obtain the consent of the Engineer before commencement of the transportation and comply with all requirements.

(3) Ensure that materials are loaded evenly

(4) Secure all loads with adequate and tensioned slings and cover with protective sheets, to avoid any fall or collapse of the conveyed articles and prevent any risk to workers and third parties;

(5) Inspect slings for securing transported materials and if any abnormality is found, replace immediately.

4.3.8 Temporary Transporting Roads in the Site

(1) Take measures for ensuring that ~~access~~ roads in the Site are of suitable construction, ~~of~~ sufficient width, free from potholes, uneven settlement and collapse.

(2) Provide signs indicating height and weight restrictions, bends, speed limits, intersections, dangerous places and the like (road shoulders, cliff edges.).

(3) Separate roads for vehicles and walkways for workers and provide passing area for vehicles at places where the road is narrow.

(4) In large construction site, provide exclusive transport roads which are one-way if possible, and passing areas at narrow roads.

(5) Provide sufficient lighting facilities at necessary places along the roads when work operating in night.

4.3.9 Additional Requirements for Static Equipment

(1) The Contractor shall design and construct suitable foundations and support structures for static equipment with paved surfaces, screens, fencing and associated facilities for storage of material and product and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended.

Unless otherwise stated in the Contract, all such foundations, support structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works.

All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

(2) Unless otherwise stated in the Contract, all remaining aggregate, rock, cement, bitumen and the like used by or processed with the static equipment shall be removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works.

All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

Safety measures in public roads out side of the Site shall be taken by the road authority.

NK: We propose to revise the title to Safety Measures for Temporary Transporting Roads in the Site referring to Japanese JSSS.
To MD, please review the title.

(1) Take measures for ensuring that ~~access~~ roads in the Site (JC41)are of suitable construction, ~~of~~ sufficient width, free from potholes, uneven settlement and collapse.

JC41: 同上。Ditto
NK: Ditto.

(2) Provide signs indicating height and weight restrictions, bends, speed limits, intersections, dangerous places and the like (road shoulders, cliff edges.).

(3) Separate roads for vehicles and walkways for workers and provide passing area for vehicles at places where the road is narrow.

(4) In large construction site, provide exclusive transport roads which are one-way if possible, and passing areas at narrow roads.

(5) Provide sufficient lighting facilities at necessary places along the roads when work operating in night.

4.3.9 Additional Requirements for Static Equipment

(1) The Contractor shall design and construct suitable foundations and support structures for static equipment with solid surface (paved, graded or compacted as appropriate) , screens(JC42), fencing and associated facilities for storage of material and product and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended.

JC42: What is screen?
NK: It means fence screen such as shown in the photo below.

Unless otherwise stated in the Contract, all such foundations, support structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works.

All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

(2) Unless otherwise stated in the Contract, all remaining aggregate, rock, cement, bitumen and the like used by or processed with the static equipment shall be removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works.

All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

(1) Take measures for ensuring that Temporary Transporting Roads in the Site are of suitable construction, sufficient width, free from potholes, uneven settlement and collapse.

(2) Provide signs indicating height and weight restrictions, bends, speed limits, intersections, dangerous places and the like (road shoulders, cliff edges.).

(3) Separate roads for vehicles and walkways for workers and provide passing area for vehicles at places where the road is narrow.

(4) In large construction site, provide exclusive transport roads which are one-way if possible, and passing areas at narrow roads.

(5) Provide sufficient lighting facilities at necessary places along the roads when work operating in night.

4.3.9 Additional Requirements for Static Equipment

(1) The Contractor shall design and construct suitable foundations and support structures for static equipment with solid surface (paved, graded or compacted as appropriate) , screens(JC42), fencing and associated facilities for storage of material and product and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended.

Unless otherwise stated in the Contract, all such foundations, support structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works.

All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

(2) Unless otherwise stated in the Contract, all remaining aggregate, rock, cement, bitumen and the like used by or processed with the static equipment shall be removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works.

All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

4.3.10 Additional Requirements for Personnel and Goods Elevators and Material Conveyors

(1) General

(a) The Contractor shall undertake the ~~following additional~~ daily and periodical inspection ~~items~~ in addition to the items stipulated in JSSS 4.2 [INSPECTION, MAINTENANCE AND REPAIR], 4.2.1 [Requirements Generally], (4) and (5) as specified below, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(a) The Contractor shall undertake the following additional periodical inspection items, (at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(b) The Contractor shall post the maximum load capacity and any restrictions on the use.

(2) Personnel and Goods Elevators

(a) Additional daily inspection items

(i) Defects or operational faults in elevator enclosures, doors, guide-rails and runners;

(ii) Defects or operational faults in emergency stop and alarm systems;

(iii) Defects or operational faults in power, lighting and control systems;

(iv) Defects or operational faults with interphone systems;

(v) Defects or operational faults in brakes, clutches; and

(vi) Defects or operational faults of sheaves and pulleys.

(b) Additional periodical inspection items

(i) Defects or operational faults in daily inspection items;

(ii) Defects or operational faults in ~~supporting cables and~~ wire ropes;

4.3.10 Additional Requirements for Personnel and Goods Elevators and Material Conveyors (JC43)

JC43: ポータブルコンベヤーと違うことをどこかで記載する必要があるのでは。このスペックはポータブルコンベヤーには適用しない。
It is necessary to describe that the material conveyors does not include portable conveyors in JSSS, and the provisions for the material conveyors does not apply to the portable conveyors.
NK: Portable conveyors is added in 4.1.1 Scope (7) (c) and specified in (1) below as commneted.

(1) General

(a) The requirements for material conveyors stipulated in t4.3.10 does not apply to portable conveyors.

(b) The Contractor shall undertake the daily and periodical inspection in addition to the items stipulated in JSSS 4.2 [INSPECTION, MAINTENANCE AND REPAIR], 4.2.1 [Requirements Generally], (4) and (5) as specified below, (or at intervals required by the manufacturer's official maintenance and repair manual). The Contractor shall also carry out any maintenance and repair, and obtain re-certification of the HSO for further operation;

(c) The Contractor shall undertake the following additional periodical inspection items, (at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(d) The Contractor shall post the maximum load capacity and any restrictions on the use.

(2) Personnel and Goods Elevators (JC44)

JC44: 以下のように、(b)、(c)も同様に直してください。(3)も同様。
Please modify (b) (c) and (3) as below.
NK: Modified.

(a) Additional daily inspection items shall include to check defects or operational faults with respect to:

(i) ~~Defects or operational faults in~~ elevator enclosures, doors, guide-rails and runners;

(ii) ~~Defects or operational faults in~~ emergency stop and alarm systems;

(iii) ~~Defects or operational faults in~~ power, lighting and control systems;

(iv) ~~Defects or operational faults with~~ interphone systems;

(v) ~~Defects or operational faults in~~ brakes, clutches; and

(vi) ~~Defects or operational faults of~~ sheaves and pulleys.

(b) Additional periodical inspection items shall include to check defects or operational faults with respect to:

(i) ~~Defects or operational faults in~~ daily inspection items;

(ii) ~~Defects or operational faults in~~ wire ropes;

(iii) ~~Defects or operational faults in~~ winch and its foundation;

4.3.10 Additional Requirements for Personnel and Goods Elevators and Material Conveyors

(1) General

(a) The requirements for material conveyors stipulated in t4.3.10 does not apply to portable conveyors.

(b) The Contractor shall undertake the daily and periodical inspection in addition to the items stipulated in JSSS 4.2 [INSPECTION, MAINTENANCE AND REPAIR], 4.2.1 [Requirements Generally], (4) and (5) as specified below, (or at intervals required by the manufacturer's official maintenance and repair manual). The Contractor shall also carry out any maintenance and repair, and obtain re-certification of the HSO for further operation;

(c) The Contractor shall undertake the following additional periodical inspection items, (at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(d) The Contractor shall post the maximum load capacity and any restrictions on the use.

(2) Personnel and Goods Elevators

(a) Additional daily inspection items shall include to check defects or operational faults with respect to:

(i) elevator enclosures, doors, guide-rails and runners;

(ii) emergency stop and alarm systems;

(iii) power, lighting and control systems;

(iv) interphone systems;

(v) brakes, clutches; and

(vi) sheaves and pulleys.

(b) Additional periodical inspection items shall include to check defects or operational faults with respect to:

(i) daily inspection items;

(ii) ropes;

(iii) winch and its foundation; and

(iii) Defects or operational faults in winch and its foundation; and

(iv) Defects or operational faults in supporting structures, guy ropes, fixings and anchors.

(3) Belt Conveyors

(a) Additonal safety measures

(i) Conveyor systems shall be equipped with an audible warning signal to be sounded immediately before starting up the conveyor.

(ii) Means for stopping the motor or engine shall be provided at the motor or engine location.

(iii) Emergency stop switches shall be provided and be arranged so that the conveyor cannot be started again until the actuating stop switch has been reset to running or "on" position.

(iv) Where a conveyor passes over work areas, roads and walkways, suitable guards shall be provided to protect workers required to work below the conveyors.

(v) Riding of workers on the moving belts of the belt conveyors shall be prohibited.

(b) Additional daily inspection items

(i) Defects or operational faults in prevention devices against uncontrolled run and reverse run, and emergency stop switches; and

(ii) Defects or operational faults in guards.

(c) Additional periodical inspection items

Defects or operational faults in daily inspection items; and

~~(1) General Requirements~~

~~The Contractor shall post the maximum load capacity and any restrictions on the use.~~

~~(2) The Contractor shall undertake the following additional daily inspection items, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:~~

~~(a) Defects or operational faults in elevator enclosures, doors, guide rails and runners;~~

~~(b) Defects or operational faults in emergency stop and alarm systems;~~

~~(c) Defects or operational faults in power, lighting and control systems;~~

~~(d) Defects or operational faults with interphone systems;~~

~~(e) Defects or operational faults in brakes, clutches; and~~

and

(iv) ~~Defects or operational faults in~~ supporting structures, guy ropes, fixings and anchors.

(3) ~~Belt~~ Material Conveyors

(a) Additonal safety measures

(i) Conveyor systems shall be equipped with an audible warning signal to be sounded immediately before starting up the conveyor.

(ii) Means for stopping the motor or engine shall be provided at the motor or engine location.

(iii) Emergency stop switches shall be provided and be arranged so that the conveyor cannot be started again until the actuating stop switch has been reset to running or "on" position.

(iv) Where a conveyor passes over work areas, roads and walkways, suitable guards shall be provided ~~to protect workers required to work below the conveyors~~ to prevent fall of the materials being conveyed .

(v) Riding of workers on the moving belts ~~of the belt conveyors~~ shall be prohibited.

(b) Additional daily inspection items shall include to check defects or operational faults with respect to:

(i) ~~Defects or operational faults in~~ prevention devices against uncontrolled run and reverse run, and emergency stop switches; and

(ii) ~~Defects or operational faults in~~ guards.

(c) Additional periodical inspection items

Defects or operational faults in daily inspection items; ~~and~~(JC45)

JC45: There is no sentence after "and".
NK: Deleted.

~~(4) General Requirements~~

~~The Contractor shall post the maximum load capacity and any restrictions on the use.~~

~~(5) The Contractor shall undertake the following additional daily inspection items, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:~~

~~(g) Defects or operational faults in elevator enclosures, doors, guide rails and runners;~~

~~(h) Defects or operational faults in emergency stop and alarm systems;~~

~~(i) Defects or operational faults in power, lighting and control systems;~~

~~(j) Defects or operational faults with interphone systems;~~

(iv) supporting structures, guy ropes, fixings and anchors.

(3) Material Conveyors

(a) Additonal safety measures

(i) Conveyor systems shall be equipped with an audible warning signal to be sounded immediately before starting up the conveyor.

(ii) Means for stopping the motor or engine shall be provided at the motor or engine location.

(iii) Emergency stop switches shall be provided and be arranged so that the conveyor cannot be started again until the actuating stop switch has been reset to running or "on" position.

(iv) Where a conveyor passes over work areas, roads and walkways, suitable guards shall be provided to prevent fall of the materials being conveyed.

(v) Riding of workers on the moving belts shall be prohibited.

(b) Additional daily inspection items shall include to check defects or operational faults with respect to:

(i) prevention devices against uncontrolled run and reverse run, and emergency stop switches; and

(ii) guards.

(c) Additional periodical inspection items

Defects or operational faults in daily inspection items.)

~~(f) Defects or operational faults of sheaves and pulleys.~~

~~(3) The Contractor shall undertake the following additional periodical inspection items, (at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:~~

~~(a) Defects or operational faults in supporting cables and wire ropes; and~~

~~(b) Defects or operational faults in supporting structures, guy ropes, fixings and anchors.~~

4.3.11 Additional Requirements for Tools, Tackle and Small Equipment

(1) Accessories and attachments shall be the standard types obtained from or recommended by the manufacturer of the equipment to which they are connected.

(2) Any repairs shall be carried out by the manufacturers recommended repair agents and using the manufacturers genuine or recommended spare parts.

(3) All equipment shall be tested and re-certified by the HSO as safe for use after any repair or replacement of parts, before such equipment is put back into use.

4.3.12 Additional Requirements for Electric Powered Equipment

~~(k) Defects or operational faults in brakes, clutches; and~~

~~(l) Defects or operational faults of sheaves and pulleys.~~

~~(6) The Contractor shall undertake the following additional periodical inspection items, (at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:~~

~~(c) Defects or operational faults in supporting cables and wire ropes; and~~

~~(d) Defects or operational faults in supporting structures, guy ropes, fixings and anchors.~~

4.3.11 Additional Requirements for Small Equipment, Tools and Tackle (JC46)

JC46: これらを総称して Tools でいいのでは. Tools and Tackle can be called as "Tools".
NK: Defined "Tools2 in 4.1.1 (7) above.

(1) Accessories and attachments shall be the standard types obtained from or recommended by the manufacturer of the equipment to which they are connected.

(2) Any repairs shall be carried out by competent persons approved by the HSO ~~the manufacturers recommended repair agents and using the manufacturers genuine or recommended spare parts.~~ (JC47)

JC47: Tools の修理に代理店を使うことはレアー。所謂 competent person が HSO に指名されたものであればいいとしたい。
あくまでも理想論。僻地では無理 " as much as possible"を加えてみては
It is few for agents to repair them, so it is replaced with competent persons approved by the HSO.
It is ideal for agent to repair them, so how about to add "as much as possible".
NK: Modified as commented.

(3) All equipment (JC48), tools and tackle shall be tested by competent persons after any repair or replacement of parts, before such equipment is put back into use.

JC48: マイナーなものなので、re-certified まではしないと思います。
It may not be re-certified because they are minor equipment.
NK: We would like to stipulate test before use to avoid injury of workers but not request to be certified. Therefore, it is left with modification as it is.

4.3.12 Additional Requirements for Electric Powered Equipment (JC49) other than small equipment and tools

JC49: ここで規定する電動機械は何かを明確にしないと混乱してしまう。ポータブルのものや Tool の類は含まれないと理解しました。
It is confused because it is not clear what are Electric Powered Equipment. We undestood it does not include portable equipment and tools.
NK: The Electric Powered Equipment was defiend in 4.1.1 (8) in last draft R2 as follows:
(8) Electric powered equipment means portable electric powered mobile equipment or tools.
The (8) was deleted by JICA comment JC13 and 14.
NK: Definition is added in (1) below.

(1) Electric powered equipment specified in 4.3.12 is portable electric powered mobile equipment or tools among small equipment and Tools listed in 4.1.1 (7).

4.3.11 Additional Requirements for Small Equipment and Tools

(1) Accessories and attachments shall be the standard types obtained from or recommended by the manufacturer of the equipment to which they are connected.

(2) Any repairs shall be carried out by competent persons approved by the HSO.

(3) All small equipment and Tools shall be tested by competent persons after any repair or replacement of parts, before such equipment is put back into use.

4.3.12 Additional Requirements for Electric Powered Equipment

(1) Electric powered equipment specified in 4.3.12 is portable electric powered mobile equipment or tools among small equipment and

(1) The Contractor shall undertake the following additional daily inspection items, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(a) All equipment is provided with Earth Leakage Circuit Breakers (ELCB) and that these are working properly with no defects or operational faults;

(b) Defects or operational faults with grounding such as disconnection of grounding wire and insecure fixing of grounding electrodes; and

(c) Damage to insulation and protective coverings of all wires and cables including flexible cables

(d) Damage to plugs, sockets, transformers and all wiring fittings and appliances

(2) The Contractor shall comply with the following additional safety requirements:

(a) Use, ~~metal-clad~~ weatherproof switches with covers, securely fixed in accessible and dry places;

(b) Label and paint electrical power and switch boxes with warning signs and coloured hazard markings;

(c) Use rubber cabtyre cables for all electrical power equipment;

(d) Wherever possible provide an ELCB's to each item of electrical equipment.

(e) If for any reason, an ELCB cannot be provided, ensure that the metal exterior of the electrical power supply, metal outer casing of electric motors and the electrical equipment are all grounded.–

(f) Avoid hanging electric cables and wires directly on nails, reinforcing bars ~~or scaffolding tubes~~ and the like to prevent damage to the insulation and protective covering.

(g) Turn off the power before repairing, moving or maintaining electric power equipment;

(h) Replace fuses with correct type and rating, prohibit replacing fuses with a higher rating or with iron or copper wire;

(2) The Contractor shall undertake the following additional daily inspection items, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(a) ~~All equipment is provided with Earth Leakage Circuit Breakers (ELCB) and that these are working properly with no defects or operational faults;~~ Defects or operational faults of Earth Leakage Circuit Breakers (ELCB), if any; (JC50)

JC50: 表現の横並びをとるとこのようになるのではないか？
(2)(d)では ELCB なるものは必須ではない記述になっている
The sentence will be as modified to make same listing style below.
(2) (d) stipulates ELCB is not compulsory.
NK: Modified as commented.

(b) Defects or operational faults with grounding such as disconnection of grounding wire and insecure fixing of grounding electrodes; and

(c) Damage to insulation and protective coverings of all wires and cables including flexible cables

(d) Damage to plugs, sockets, transformers and all wiring fittings and appliances

(3) The Contractor shall comply with the following additional safety requirements:

(a) Use weatherproof switches (JC51) with covers, securely fixed in accessible and dry places;

JC51: 防爆タイプ(anti-explosion, if needed)が必要な場合も記載しては？
We propose to specify anti-explosion type, if needed.
NK: 防爆タイプの電動器具の配置が必要な場所は、可燃性のガスなどを取り扱っている工場などです。ODA 対象の工事現場では一般的な規定ではないため、追記しないことと致します。
参照：https://www.mars-tohken.co.jp/solution/model/detail/explosion-proof.html
Anti-exposition type equipment shall be provided at places such as factory to handle flammable gas. It is not general requirement in ODA construction sites, so not added it.

(b) Label and paint electrical power and switch boxes with warning signs and coloured hazard markings;

(c) Use rubber cabtyre cables for all electrical power equipment;

(d) Wherever possible provide an ELCB's to each item of electrical equipment.

(e) If for any reason, an ELCB cannot be provided, ensure that the metal exterior of the electrical power supply, metal outer casing of electric motors and the electrical equipment are all grounded.–

(f) Avoid hanging electric cables and wires directly on nails, reinforcing bars and the like to prevent damage to the insulation and protective covering.

(g) Turn off the power before repairing, moving or maintaining electric power equipment;

(h) Replace fuses with correct type and rating, prohibit replacing

Tools listed in 4.1.1 (7).

(2) The Contractor shall undertake the following additional daily inspection items, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(a) Defects or operational faults of Earth Leakage Circuit Breakers (ELCB), if any;

(b) Defects or operational faults with grounding such as disconnection of grounding wire and insecure fixing of grounding electrodes; and

(c) Damage to insulation and protective coverings of all wires and cables including flexible cables

(d) Damage to plugs, sockets, transformers and all wiring fittings and appliances

(3) The Contractor shall comply with the following additional safety requirements:

(a) Use weatherproof switches with covers, securely fixed in accessible and dry places;

(b) Label and paint electrical power and switch boxes with warning signs and coloured hazard markings;

(c) Use rubber cabtyre cables for all electrical power equipment;

(d) Wherever possible provide an ELCB's to each item of electrical equipment.

(e) If for any reason, an ELCB cannot be provided, ensure that the metal exterior of the electrical power supply, metal outer casing of electric motors and the electrical equipment are all grounded.

(f) Avoid hanging electric cables and wires directly on nails, reinforcing bars and the like to prevent damage to the insulation and protective covering.

(g) Turn off the power before repairing, moving or maintaining electric power equipment;

(i) Ensure that fuses are replaced by an authorised person;

(j) Prevent any use of electric power equipment from use in the rain, or when the user is wet, standing in water and not wearing rubber soled insulated footwear or when the electric power equipment is wet;

(k) When any operational fault is identified immediately turn off the power, unplug and stop using the equipment and advise (or hand to) the HSO;

(l) Ensure that workers using electric power equipment wear appropriate PPE suitable for the electric power equipment in use such as working clothes, protective helmets, safety shoes, eye and face protection, ear protection; and

(m) When electric shock accident occurs, unplug and stop using the equipment and advise (or hand to) the HSO and take measures in accordance with JSSS 1.21 [*Accident Response Plan*].

4.3.13 Additional Safety Measures during Adverse Weather

Further to the requirements of JSSS 2.7 [*Adverse Weather Requirements*], the Contractor shall ensure that Contractor's Equipment is parked in a stable and secure state by taking all necessary measures including:

(1) Dropping the jib, boom, arm and attachments to ground level and securing where necessary with adequate anchors and chains.

(2) If heavy rain and flooding can be anticipated, moving Contractor's Equipment to higher ground or to places where there is no risk of instability.

(3) Removing snow or ice.

4.4 ROPES, SLINGS AND CHAINS

4.4.1 Requirements Generally

(1) The Contractor shall ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

(2) Wire ropes, slings and chains shall have a safety factor recommended by the manufactures ~~of at least 6~~, obtained by dividing the breaking strength by the maximum applied load for each type.

(3) Requirements for Ropes, slings and chains shall be as required under JSSS 6.5 [*Rigging Equipment*].

4.5 ALTERNATIVE USE OF CONTRACTOR'S EQUIPMENT

4.5.1 Requirements Generally

The Contractor shall not use Contractor's Equipment for any other purpose than the purpose for which it is designed and other than the purpose recommended by the manufacturer.

If the manufacturer allows alternative use (for example bucket excavators used for lifting operations) then such alternative use shall be strictly in

fuses with a higher rating or with iron or copper wire;

(i) Ensure that fuses are replaced by an authorised person;

(j) Prevent any use of electric power equipment from use in the rain, or when the user is wet, standing in water ~~and not~~ without wearing rubber soled insulated footwear or when the electric power equipment is wet;

(k) When any operational fault is identified immediately turn off the power, unplug and stop using the equipment and advise (or hand to) the HSO;

(l) Ensure that workers using electric power equipment wear appropriate PPE suitable for the electric power equipment in use such as working clothes, protective helmets, safety shoes, eye and face protection, ear protection; and

(m) When electric shock accident occurs, unplug and stop using the equipment and advise (or hand to) the HSO and take measures in accordance with JSSS 1.21 [*Accident Response Plan*].

4.3.13 Additional Safety Measures during Adverse Weather

Further to the requirements of JSSS 2.7 [*Adverse Weather Requirements*], the Contractor shall ensure that Contractor's Equipment is parked in a stable and secure state by taking all necessary measures including:

(1) Dropping the jib, boom, arm and attachments to ground level and securing where necessary with adequate anchors and chains.

(2) If heavy rain and flooding can be anticipated, moving Contractor's Equipment to higher ground or to places where there is no risk of instability.

(3) Removing snow or ice.

4.4 ROPES, SLINGS AND CHAINS

4.4.1 Requirements Generally

(1) The Contractor shall ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

(2) Wire ropes, slings and chains shall have a safety factor recommended by the manufactures , obtained by dividing the breaking strength by the maximum applied load for each type.

(3) Requirements for Ropes, slings and chains shall be as required under JSSS 6.5 [*Rigging Equipment*].

4.5 ALTERNATIVE USE OF CONTRACTOR'S EQUIPMENT

4.5.1 Requirements Generally

The Contractor shall not use Contractor's Equipment for any other purpose than the purpose for which it is designed and other than the purpose recommended by the manufacturer.

~~If the manufacturer allows alternative use (for example bucket excavators used for lifting operations) then such alternative use shall be strictly in accordance with the manufacturer's written instructions and in any event~~

(h) Replace fuses with correct type and rating, prohibit replacing fuses with a higher rating or with iron or copper wire;

(i) Ensure that fuses are replaced by an authorised person;

(j) Prevent any use of electric power equipment from use in the rain, or when the user is wet, standing in water without wearing rubber soled insulated footwear or when the electric power equipment is wet;

(k) When any operational fault is identified immediately turn off the power, unplug and stop using the equipment and advise (or hand to) the HSO;

(l) Ensure that workers using electric power equipment wear appropriate PPE suitable for the electric power equipment in use such as working clothes, protective helmets, safety shoes, eye and face protection, ear protection; and

(m) When electric shock accident occurs, unplug and stop using the equipment and advise (or hand to) the HSO and take measures in accordance with JSSS 1.21 [*Accident Response Plan*].

4.3.13 Additional Safety Measures during Adverse Weather

Further to the requirements of JSSS 2.7 [*Adverse Weather Requirements*], the Contractor shall ensure that Contractor's Equipment is parked in a stable and secure state by taking all necessary measures including:

(1) Dropping the jib, boom, arm and attachments to ground level and securing where necessary with adequate anchors and chains.

(2) If heavy rain and flooding can be anticipated, moving Contractor's Equipment to higher ground or to places where there is no risk of instability.

(3) Removing snow or ice.

4.4 ROPES, SLINGS AND CHAINS

4.4.1 Requirements Generally

(1) The Contractor shall ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

(2) Wire ropes, slings and chains shall have a safety factor recommended by the manufactures , obtained by dividing the breaking strength by the maximum applied load for each type.

(3) Requirements for Ropes, slings and chains shall be as required under JSSS 6.5 [*Rigging Equipment*].

4.5 ALTERNATIVE USE OF CONTRACTOR'S EQUIPMENT

4.5.1 Requirements Generally

The Contractor shall not use Contractor's Equipment for any other purpose than the purpose for which it is designed and other than the purpose recommended by the manufacturer.

accordance with the manufacturer's written instructions and in any event within the designed operating capacity of the equipment.

When the manufacturer's written instructions and the Laws of the Country regarding alternative use, the safety of alternative use shall be approved by the HSO by checking for example the following items for lifting:

(1) Rigging Equipment such as hook attached on construction equipment such as arm or bucket are used;

(2) Arms, bucket, Rigging Equipment have enough strength to lift the load;

(3) There is no risk that the lifting devices such as hook and shackles will be detached from arm or bucket of the construction equipment;

(4) The lifting capacity for alternative use is confirmed by loading tests at the Site; and

(5) Operators engaged in lifting work with construction equipment such as excavators shall be licensed when necessary and trained for lifting work.

Under these circumstances the Contractor shall take account of the following:

(1) Ensure the Contractor's Equipment can safely handle the load without creating instability, tipping or loss of control and avoiding the resultant risk of injury or damage or stress to the equipment.

(2) Ensure that operators understand the equipment capability, are properly trained in the alternative use, are fully aware of and follow the manufacturer's written instructions and load charts.

(3) Ensure that operators have accurately determined the total weight of the load, taking account of the weight of any attachments, the reach and angle and configuration of the equipment and have informed the HSO of this and obtained his permission before

~~within the designed operating capacity of the equipment.~~ (JC52)

JC52: 製造者が目的外使用の書面でのインストラクションを出していることが想定できないので、いらないのではないでしょうか？
It cannot be considered that manufacturers issue instructions in writing for alternative use of equipment, therefore is this sentence not necessary?
NK: Agreed to delete.

Use of Contractor's Equipment for any other purpose than the originally intended purpose are allowed only if it is not prohibited by either of the Law the Country and the manufacturer's written instructions, and subject to HSO's approval after reviewing all the safety aspects.

In particular, when equipment for excavation is to be used for lifting, HSO shall confirm:

(1) ~~Rigging Equipment such as hook attached on construction equipment such as arm or bucket are used~~; Rigging Equipment such as hook is attached on an appropriate part of the excavation equipment (e.g. arm or bucket);

JC53: 下記の例示は全て掘削機械を揚貨のために用いる時の事項とみました。それであれば、修文案ような記述に修正した方がよいと思います.
The following examples are all lifting use of excavators, so the (1) above is better to revised as revised above.
NK: Modified as commented.

(2) Arms, bucket, Rigging Equipment have enough strength to lift the load;

(3) There is no risk that the lifting devices such as hook and shackles will be detached from arm or bucket of the ~~construction~~ equipment;

(4) The lifting capacity for alternative use is confirmed by loading tests at the Site; and

(5) ~~Operators engaged in lifting work with construction equipment such as excavators shall be licensed when necessary and trained for lifting work.~~ (JC54)

JC54: 揚貨作業をする時に揚貨の資格が必要であることは、揚貨の章に記述があるはず。不要。
The necessity of license is specified in the Chapter for lifting, so not necessary mention (5).
NK: Deleted.

~~Under these circumstances the Contractor shall take account of the following:~~ (JC55)

JC55: 用途外使用に対してこれほど詳細な注意書が必要ではないと思います。揚貨に必要なことは揚貨のところに書いてあるはずです。不要.
It is not necessary to specify in so details as bellow because requirement for hoisting works are specified in chapter 5Hoisting and Rigging.
NK: Deleted.

(1) ~~Ensure the Contractor's Equipment can safely handle the load without creating instability, tipping or loss of control and avoiding the resultant risk of injury or damage or stress to the equipment.~~

(2) ~~Ensure that operators understand the equipment capability, are properly trained in the alternative use, are fully aware of and follow the manufacturer's written instructions and load charts.~~

(3) ~~Ensure that operators have accurately determined the total weight of the load, taking account of the weight of any attachments, the reach and angle and configuration of the equipment and have informed~~

Use of Contractor's Equipment for any other purpose than the originally intended purpose are allowed only if it is not prohibited by either of the Law the Country and the manufacturer's written instructions, and subject to HSO's approval after reviewing all the safety aspects.

In particular, when equipment for excavation is to be used for lifting, HSO shall confirm:

(1) Rigging Equipment such as hook is attached on an appropriate part of the excavation equipment (e.g. arm or bucket);

(2) Arms, bucket, Rigging Equipment have enough strength to lift the load;

(3) There is no risk that the lifting devices such as hook and shackles will be detached from arm or bucket of the equipment;

(4) The lifting capacity for alternative use is confirmed by loading tests at the Site; and

commencing the operation.

(4) Check the working area and improve the ground surface as necessary to ensure the stability of the equipment.

~~(5) Ensure that manufacturer's genuine specialised accessories such as lifting hooks etc. are provided and used.~~

(6) Ensure that the equipment is stable, if provided lower stabilisers, if the equipment is equipped with a blade, lower the blade to the ground for added stability and ensure that necessary counterweights are in place.

(7) Check the rigging to ensure it is appropriate to the use and rated to handle the load. Inspect it before each use for any signs of damage or wear, and make sure it is properly secured to the machine and load.

(8) Ensure that the area is clear of any unnecessary personnel, Spotters should be the only individuals in the immediate area, and should be stationed clear of the lift area yet visible to the operator throughout the operation.

(9) Lift the load slowly, keep the lifting point directly over the centre of the load, keep the load as close to the machine and the ground as possible and position the equipment to hoist and lower end on not sideways.

(10) If there are any signs of instability or loss of control of the machine or load, discontinue the lift and lower the load to the ground.

4.6 HIRED/LEASED CONTRACTOR'S EQUIPMENT

4.6.1 Requirements Generally

(1) Contractor's Equipment from hire or lease companies shall comply with all of the requirements of the Contract and JSSS as if it were the Contractor's own property, in particular the Contractor shall ensure compliance with the requirements of JSSS 1.34 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*].

(2) The Contractor shall ensure that the hire/lease companies have performed all necessary inspection, maintenance and repair works before ~~the Contractor's Equipment~~ the equipment is mobilised to the Site and that the following is provided with the equipment to the Contractor upon mobilisation and is available for the inspection of the Engineer:

(a) Inspection and maintenance records;

(b) Operation, repair and maintenance manuals; and

(c) Spare and replacement parts, tools, maintenance equipment, lubricants, filters, hydraulic fluids and the like.

(3) The Contractor shall double-check to ensure that the inspection and maintenance has been carried out and if the Contractor has any doubt over the adequacy of such inspection or maintenance or if complete records are not made available, the Contractor shall not allow ~~this Contractor's Equipment~~ this equipment to be used upon the Works. The Contractor shall inspect and carry out full maintenance and repair on such equipment in compliance with the requirements of this Chapter before it is certified for use by the HSO and used upon the Works.

~~the HSO of this and obtained his permission before commencing the operation.~~

~~(4) Check the working area and improve the ground surface as necessary to ensure the stability of the equipment.~~

~~(5) Ensure that manufacturer's genuine specialised accessories such as lifting hooks etc. are provided and used.~~

~~(6) Ensure that the equipment is stable, if provided lower stabilisers, if the equipment is equipped with a blade, lower the blade to the ground for added stability and ensure that necessary counterweights are in place.~~

~~(7) Check the rigging to ensure it is appropriate to the use and rated to handle the load. Inspect it before each use for any signs of damage or wear, and make sure it is properly secured to the machine and load.~~

~~(8) Ensure that the area is clear of any unnecessary personnel, Spotters should be the only individuals in the immediate area, and should be stationed clear of the lift area yet visible to the operator throughout the operation.~~

~~(9) Lift the load slowly, keep the lifting point directly over the centre of the load, keep the load as close to the machine and the ground as possible and position the equipment to hoist and lower end on not sideways.~~

~~(10) If there are any signs of instability or loss of control of the machine or load, discontinue the lift and lower the load to the ground.~~

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(n) Inspection and maintenance records;

(o) Operation, repair and maintenance manuals; and

(p) Spare and replacement parts, tools, maintenance equipment, lubricants, filters, hydraulic fluids and the like.

(3) The Contractor shall double-check to ensure that the inspection and maintenance has been carried out and if the Contractor has any doubt over the adequacy of such inspection or maintenance or if complete records are not made available, the Contractor shall not allow this equipment to be used upon the Works. The Contractor shall inspect and carry out full maintenance and repair on such equipment in compliance with the requirements of this Chapter before it is certified for use by the HSO and used upon the Works.

requirements of this Chapter before it is certified for use by the HSO and used upon the Works.

(4) Operators from hire/lease companies are by definition Contractor's Personnel and they shall be treated as if they are employed by the Contractor, in terms of compliance with the Contract and JSSS.

Such operators shall be tested and certified by the HSO, shall receive safety training and shall perform all inspection, maintenance and other requirements fully in compliance with JSSS, in the same way as the Contractor's own employees.

4.7 TEMPORARY FUELLING FACILITIES

4.7.1 Requirements Generally

(1) Unless otherwise specified in the Contract, the Contractor shall design and construct temporary fuel storage and dispensing facilities at the Site for the use of Contractor's Equipment. These facilities shall be substantial and secure and capable of storing and dispensing fuel in a safe and environmentally acceptable manner all to the approval of the Engineer.

(2) The facility shall include storage tanks, suitable foundations, support or containment structures, protective bund walls as necessary, paved surfaces, screens, fencing and associated facilities for storage of separate fuels and lubricants and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended.

(3) Unless otherwise specified in the Contract, all such tanks, foundations, support and containment structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works. All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

(4) The Contractor must ensure that the temporary fuel storage and dispensing facility is operated and occupied at all time only by authorised personnel and that all unauthorised personnel are prohibited from entering such areas at all times. The Contractor shall be particularly careful and provide measures to prevent any unauthorised access, tampering, damage and theft at any time.

(5) All storage tanks shall be bunded either as jacketed tanks or by providing bunded enclosures, such that in the event of a catastrophic failure, the tank contents will be safely contained and shall not be allowed to run freely or enter the surface or ground water systems.

To MD, please review JICA comments and show us the source of these requirements.

(6) The Contractor is reminded of the requirements of JSSS 1.23 [*Fire Prevention*] and will be required to provide a comprehensive and a high standard of fire protection in fuel storage areas.

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(4) Operators from hire/lease companies are by definition Contractor's Personnel and they shall be treated as if they ~~are~~ were employed by the Contractor, in terms of compliance with the Contract and JSSS.

Such operators shall be tested and certified by the HSO, shall receive safety training and shall perform all inspection, maintenance and other requirements fully in compliance with JSSS, in the same way as the Contractor's own employees.

4.7 TEMPORARY FUELLING FACILITIES

4.7.1 Requirements Generally

(1) ~~Unless otherwise specified in the Contract,~~ the Contractor ~~shall~~ may (JC56) design and construct temporary fuel storage and dispensing facilities at the Site for the use of Contractor's Equipment after obtaining necessary permission required by the Law of the Country, if any. These facilities shall be substantial and secure and capable of storing and dispensing fuel in a safe and environmentally acceptable manner all to the approval of the Engineer.(JC57)

JC56: "shall"じゃなく"may"ぐらいでは？町中で station が近い場合には不要なはず。
It is not necessary to specify "shall" but "may" because fuelling facilities are not necessary where there are fuel stations in town or near the Site.
NK: Modified.

JC57: 法令上の許可が必要な場合は取得することを追記が必要と思量。
It is necessary to specify for the Contractor to get permission in accordance with the Law of the Country when necessary.
NK: Added.

(2) The facility shall include storage tanks, suitable foundations, support or containment structures, protective bund walls as necessary, paved surfaces, screens, fencing and associated facilities for storage of separate fuels and lubricants and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended.

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Such operators shall be tested and certified by the HSO, shall receive safety training and shall perform all inspection, maintenance and other requirements fully in compliance with JSSS, in the same way as the Contractor's own employees.

4.7 TEMPORARY FUELLING FACILITIES

4.7.1 Requirements Generally

(1) The Contractor ~~shall~~ may design and construct temporary fuel storage and dispensing facilities at the Site for the use of Contractor's Equipment after obtaining necessary permission required by the Law of the Country, if any. These facilities shall be substantial and secure and capable of storing and dispensing fuel in a safe and environmentally acceptable manner all to the approval of the Engineer.

(2) The facility shall include storage tanks, suitable foundations, support or containment structures, protective bund walls as necessary, paved surfaces, screens, fencing and associated facilities for storage of separate fuels and lubricants and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended.

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(5) All storage tanks shall be bunded either as jacketed tanks or by providing bunded enclosures, such that in the event of a catastrophic failure, the tank contents will be safely contained and shall not be allowed to run freely or enter the surface or ground water systems.

(6) The Contractor is reminded of the requirements of JSSS 1.23 [*Fire*

	(6) The Contractor is reminded of the requirements of JSSS 1.23 [*Fire Prevention*] and will be required to provide a comprehensive and a high standard of fire protection in fuel storage areas.	*Prevention*] and will be required to provide a comprehensive and a high standard of fire protection in fuel storage areas.

JSSS in English R3 for Issue 3（2020/5/27）(JICA Comments & NK Actions) Copied from C1	JSSS in English Issue 3 (2020/6/2 by MD)	JSSS in English Issue 3 (Clean Copy, Draft Final R0 2020/6/2 by MD)
4. CONTRACTOR'S EQUIPMENT **4.1 GENERAL REQUIREMENT** 4.1.1 Scope 4.1.2 Compliance Standards 4.1.3 Instruction for Contractor's Personnel 4.1.4 Safety Training 4.1.5 Requirements to Operators 4.1.6 Signaling **4.2 INSPECTION, MAINTENANCE AND REPAIR** 4.2.1 Requirements Generally 4.2.2 Defects and Repair during Operation **4.3 SAFETY REQUIREMENTS** 4.3.1 General Safety Measures 4.3.2 Safety Measures during Cleaning, Inspection and Maintenance 4.3.3 Safety Measures during Operation 4.3.4 Safety Measures When Mobile Equipment Is Not in Use 4.3.5 Safety Measures during Connecting and Removing of Attachment 4.3.6 Safety Measures during Loading and Transporting of Contactor's Equipment 4.3.7 Safety Measures During Loading and Transporting of Materials 4.3.8 Temporary Transporting Roads in the Site 4.3.9 Additional Requirements for Static Equipment 4.3.10 Additional Requirements for Personnel and Goods Elevators and Material Conveyors 4.3.11 Additional Requirements for Small Equipment and Tools 4.3.12 Additional Requirements for Electric Powered Equipment 4.3.13 Additional Safety Measures during Adverse Weather **4.4 ROPES, SLINGS AND CHAINS** 4.4.1 Requirement Generally 4.5 ALTERNATIVE USE OF CONTRACTORS'S EQUIPMENT 4.5.1 Requirement Generally **4.6 HIRED/LEASED CONTRACTORS'S EQUIPMENT** 4.6.1 Requirement Generally **4.7 TEMPORARY FUELLING FACILLITIES** 4.7.1 Requirement Generally	**4. CONTRACTOR'S EQUIPMENT** **4.1 GENERAL REQUIREMENTS 1** 4.1.1 Scope 1 4.1.2 Compliance Standards 6 4.1.3 Manufacturer's Documentation 7 4.1.4 Instruction for Contractor's Personnel 7 4.1.5 Safety Training 10 4.1.6 Qualification of Operators Requirements for Operators 11 4.1.7 Signalling 12 **4.2 INSPECTION, MAINTENANCE AND REPAIR 13** 4.2.1 Requirements Generally 13 4.2.2 Defects and Repair During Operation 17 **4.3 SAFETY REQUIREMENTS 17** 4.3.1 General Safety Measures 17 4.3.2 Transportation to and Removal from Site 20 4.3.2 Safety Measures During Cleaning, Inspection and Maintenance 20 4.3.3 Safety Measures During Operation 20 4.3.4 Safety Measures When Equipment Is Not In Use Safety Measures When Equipment Mobile Equipment Is Not in Use 22 4.3.5 Safety Measures During Connection Connecting and Removing of Attachments 23 4.3.6 Safety Measures During Loading and Transporting of Contractor's Equipment 23 4.3.7 Safety Measures During Loading and Transporting of Materials 25 4.3.7 Site Access Roads 26 4.3.8 Additional Requirements for Static Equipment 28 4.3.9 Additional Requirements for Personnel and Goods Elevators and Material Conveyors 28 4.3.10 Additional Requirements for Tools, Tackle and Small Equipment and Tools 31 4.3.11 Additional Requirements for Electric Powered Equipment 31 4.3.12 Additional Safety Measures during Adverse Weather 34 **4.4 ROPES, SLINGS AND CHAINS 35** 4.4.1 Requirements Generally 35 **4.5 ALTERNATIVE USE OF CONTRACTOR'S EQUIPMENT 35** 4.5.1 Requirements Generally 35 **4.6 HIRED/LEASED CONTRACTOR'S EQUIPMENT 37** 4.6.1 Requirements Generally 37 **4.7 TEMPORARY FUELLING FACILITIES 38** 4.7.1 Requirements Generally 38	**4. CONTRACTOR'S EQUIPMENT** **4.1 GENERAL REQUIREMENTS 1** 4.1.1 Scope 1 4.1.2 Compliance Standards 2 4.1.3 Manufacturer's Documentation 2 4.1.4 Instruction for Contractor's Personnel 2 4.1.5 Safety Training 3 4.1.6 Requirements for Operators 4 4.1.7 Signalling 4 **4.2 INSPECTION, MAINTENANCE AND REPAIR 4** 4.2.1 Requirements Generally 4 4.2.2 Defects and Repair During Operation 6 **4.3 SAFETY REQUIREMENTS 6** 4.3.1 General Safety Measures 6 4.3.2 Safety Measures During Cleaning, Inspection and Maintenance 7 4.3.3 Safety Measures During Operation 8 4.3.4 Safety Measures When Mobile Equipment Is Not in Use 9 4.3.5 Safety Measures During Connecting and Removing of Attachments 9 4.3.6 Safety Measures During Loading and Transporting of Contractor's Equipment 9 4.3.7 Safety Measures During Loading and Transporting of Goods 10 4.3.8 Site Access Roads 10 4.3.9 Additional Requirements for Static Equipment 10 4.3.10 Additional Requirements for Personnel and Goods Elevators and Material Conveyors 10 4.3.11 Additional Requirements for Small Equipment and Tools 12 4.3.12 Additional Requirements for Electric Powered Equipment 12 4.3.13 Additional Safety Measures during Adverse Weather 13 **4.4 ROPES, SLINGS AND CHAINS 13** 4.4.1 Requirements Generally 13 **4.5 ALTERNATIVE USE OF CONTRACTOR'S EQUIPMENT 13** 4.5.1 Requirements Generally 13 **4.6 HIRED/LEASED CONTRACTOR'S EQUIPMENT 14** 4.6.1 Requirements Generally 14 **4.7 TEMPORARY FUELLING FACILITIES 15** 4.7.1 Requirements Generally 15

土方様
(1) 原稿から直接コピーしていますので、フォントや様式が違っていますが、時間節約のために、フォントや様式の変更は不要です。
(2) 番号が乱れていますので、番号だけを修正願います。
(3) 左欄と中央欄は色網掛とコメント付き、右欄は Issue 3 の色網掛とコメントを削除したクリーンコピーとしております。
上記よろしくお願いいたします。

4. CONTRACTOR'S EQUIPMENT **GENERAL REQUIREMENTS (JCB1)** JC1: 全体を通して、特に Tools についてはすべての要求事項が適用されるわけではないと思います。したがって、適用除外される可能性を上手に書き分ける表現に	**4.** **4.1 GENERAL REQUIREMENTS** (JCB1) JC1: 全体を通して、特に Tools についてはすべての要求事項が適用されるわけでは	**4. GENERAL REQUIREMENTS** 4.1.3 Scope (7) This Chapter specifies the safety requirements for Contractor's Equipment which shall include mobile equipment, static

なるよう工夫していただけますでしょうか。
(Tools(器具工具)について 適用されない箇所が多くあるため。(例:Operator の指名や責任者の掲示など))
Whole Provisions in this Chapter may not apply all to Tools, so please devise to stipulate possibility of exemption of some provisions.
(There are many provisions which will not apply to Tools for example, appointment of Operator, post of a label showing the name.)
NK: We will review and modify provisions as commented.

11.1.1 Scope

(1) This Chapter specifies the safety requirements for Contractor's Equipment which shall include mobile equipment, static equipment, tools, tackle and small equipment and electric power equipment as further described in the following paragraphs.

(1) ~~The requirements of this Chapter shall apply to Contractor's Personnel, Employer's Personnel and any other persons (JCB2) that are on the Site, adjacent to the Site (JCB3) and other places (if any) where works are being executed and who may be affected by such work. (JCB4):~~ The requirements of this Chapter shall apply to Contractor's Personnel, Employer's Personnel and any other persons (in this Chapter called as "Concerned Personnel") who are on or adjacent to the Site and any other places where and other places (if any) where works are being executed.

JCB2: この Chapter で三箇所出てくるようなのでまとめましょう。(in this Chapter called as "Concerned Personnel")
There are same phrase in 3 locations in this Chapter, therefore it is better to define as (in this Chapter called as "Concerned Personnel").
NK: Modified as commented.

JCB3: "who are on or adjacent to the Site and any other places where…でいいのでは can this be "who are on or adjacent to the Site and any other places where…"?
NK: Modified as commented.

JCB4: 英語のつながりが悪いし、影響を受ける人に対する requirement ではないので削除します。
The sentences connection is not good and this is not requirement for persons to be affected.
NK: Modified as commented.

(2) For additional requirements for hoisting, rigging and cranes, refer to JSSS 6.0 [*Hoisting and Rigging*].(JCA1)

JCA1: 必ず 6 章(5 章に変更)に含めるようにしてください。
Be sure to include it in section 6 (now section 5).
NK: 第 5 章に揚重、玉掛について十分規定済み。
Section 5 stipulates regarding hoisting and rigging in detail.

~~*Not sure that the following is necessary, coordinate later*~~

~~(3) For additional requirements for transportation, refer to JSSS 5.0 [Transportation].~~

(4) ~~Operators and signallers~~ (JCA2) Any reference to "operator" in this Chapter and elsewhere in JSSS shall be deemed to include "driver" also. (JCB5)

ないと思います。したがって、適用除外される可能性を上手に書き分ける表現になるよう工夫していただけますでしょうか。
(Tools(器具工具)について 適用されない箇所が多くあるため。(例:Operator の指名や責任者の掲示など))
Whole Provisions in this Chapter may not apply all to Tools, so please devise to stipulate possibility of exemption of some provisions.
(There are many provisions which will not apply to Tools for example, appointment of Operator, post of a label showing the name.)
NK: We will review and modify provisions as commented.

The specification is for general application and designed to apply to all types of project, and all types of equipment including various tools such as hand tools and hand operated tools including pneumatic drills etc., so the coverage needs to be as broad as possible to capture all types and give general rules. There is no need to be specific when something does not apply to any particular type, I suggest that the important aim is to make sure that all types and requirements are covered.

Contractor's Equipment is an all-embracing term, defined as such in the Contract.

4.1.3 Scope

(4) This Chapter specifies the safety requirements for Contractor's Equipment which shall include mobile equipment, static equipment, ~~tools, tackle and~~ small equipment, tools and electric power equipment as further described in the following paragraphs.

I suggest for clarity it is better to delete "tackle" as it is not such a common international term, it may have different meaning and there is little difference to tools. Also so that it is consistent with 4.3.10

~~(2) The requirements of this Chapter shall apply to Contractor's Personnel, Employer's Personnel and any other persons (JCB2) that are on the Site, adjacent to the Site (JCB3) and other places (if any) where works are being executed and who may be affected by such work. (JCB4):~~ The requirements of this Chapter shall apply to Contractor's Personnel, Employer's Personnel and any other persons (in this Chapter called as "Concerned Personnel") who are on or adjacent to the Site and any other places where and other places (if any) where works are being executed.

JCB2: この Chapter で三箇所出てくるようなのでまとめましょう。(in this Chapter called as "Concerned Personnel")
There are same phrase in 3 locations in this Chapter, therefore it is better to define as (in this Chapter called as "Concerned Personnel").
NK: Modified as commented.

JCB3: "who are on or adjacent to the Site and any other places where…でいいのでは can this be "who are on or adjacent to the Site and any other places where…"?
NK: Modified as commented.

JCB4: 英語のつながりが悪いし、影響を受ける人に対する requirement ではないので削除します。
The sentences connection is not good and this is not requirement for persons to be affected.
NK: Modified as commented.

The suggested new definition has been used in only one other location (4.1.4 (8)) and I suggest that such a definition applicable to one item in this chapter only, is therefore not really necessary.

equipment, small equipment, tools and electric power equipment as further described in the following paragraphs.

(8) The Contractor shall ensure the safety of all Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places where they may be affected by Contractor's Equipment in operation, standby or storage or when such equipment is being maintained or transported.

(9) For additional requirements for hoisting, rigging and cranes, refer to JSSS 5 [*Hoisting and Rigging*].

(10) Any reference to "operator" in this Chapter and elsewhere in JSSS shall be deemed to include "driver" also.

(11) Mobile equipment including wheeled or tracked, self-propelled construction machinery such as:

(y) Surface excavation and spoil movement equipment for bulk excavation, grading and levelling, such as bulldozers, graders and tractor excavators;

(z) Excavators such as backhoes, face shovels, power shovels;

(aa) Loaders such as payloaders and face shovels;

(bb) Dump trucks for removal or importation of spoil;

(cc) Specialist foundation equipment such as pile driving and boring equipment;

(dd) Compaction and surface treatment equipment such as smooth or sheepsfoot rollers, pneumatic and vibration rollers, asphalt finishers;

(ee) Mobile cranes;

(ff) Piling equipment

(gg) Concreting equipment such as ready-mixed concrete trucks and pump trucks;

(hh) Demolition equipment such as breakers, concrete crushers and demolition grippers;

(ii) Transportation Equipment, such as cars and buses for Contractor's Personnel and trucks and trailers for transporting Goods to, around and from the Site;

(jj) Workboat for diving works; and

JCA2: “Spotters”に修正してください。 Please change to “Spotters”
NK: Spotters は次項目の対応の通り削除しました。
“Spotters” is deleted as explained in the next clause.

(a) ~~Any reference to “operator” in this Chapter and elsewhere in JSSS shall be deemed to include “driver” also;~~(JCA3)

JCA3: この operator は小文字にされていますが、全体を通してこの使い方とするか否かについては章ごとの整合性の観点から検討してください。
This "operator" is used lower case. It should be considered whether it is proper to use lower case as a whole of JSSS.
NK: “operator”という用語は JSSS では定義していません。第 9 章等他章でも小文字で表現しております。このままとします。
The term “operator” in not defined in JSSS. In other Chapters such as Chapter 9 [Concrete Works], the word “operator” is used in lower case. Left as it is.

(b) ~~Any reference to “Spotter” in this Chapter shall be deemed to include “flagman” and “signaller” also.~~ (JCA4)

JCA4: この Spotter については総則で定義されていますが、signaller を含めるという意図で敢えてこの記述としているのでしょうか。
This “Spotter” is defined in the Chapter1, [General], but is it meant to include signaller?
NK: 総則の定義で”Spotter”は、下記のように定義しています。ここで繰り返す必要はないと考えます。(b)は削除し、(4)の構成を右のように修正します。
(24) “Spotter” means a member of the Contractor’s Personnel who is generally responsible for warning other Contractor’s and Employer’s Personnel and other persons and keeping them away from working operations and areas, for assisting drivers of trucks and operators of other Contractor’s Equipment in positioning their vehicles and equipment particularly when reversing, positioning or hoisting, and such further duties as are assigned to them in JSSS Section 2.4 [Spotters Flagmen and the Like].
Any reference to a “Spotter” in JSSS shall also be deemed to include a reference to a banksman, flagman or signaller.
Any reference to a “Spotter” in JSSS shall also be deemed to include a reference to a banksman, flagman or signaller.
As “Spotter” is defied in Chapter 1 as above, it is unnecessary to repeat here.
Therefore, (b) is deleted and clause (4) is modified as right.

JCB5: 少しシンプルに。 is synonymous with “driver”の方が MDB 版の表現でもありますし、それが通常だと思います。全体のバージョンで出していただく際に、synonymous の表現に合わせて全体を調整してください。
Please make phrases simple a little. The phrase of “is synonymous with “driver”” is one used in FIDIC MDB version and normal.
When all JSSS Chapters are submitted, please adjust all document to use this phrase.
NK: FIDIC MDB uses this as follows:
1.2 Interpretation (e)the word “tender” is synonymous with “bid”, and “tenderer” with “bidder” and the words “tender documents” with “bidding documents
日本語では、Operator は操作者、操縦者、Driver は運転手、運転士、運転者、機関士が類義語辞典に記載があります。
(4)では、Operator の用語にはに Driver も含まれると規定し、これは、Operator と Driver が synonymous（同義語）との規定ではなく、他の呼び名の機械を操作・運転する者がいることと示しています。
別の Spotter でも次のように同様に規定しています。
(b) Any reference to “Spotter” in this Chapter shall be deemed to include “flagman” and “signaller” also.

The reference to “other persons” in this sense is however used in one other instance in 4.3.4 in a slightly different way.

I understand the point but suggest it is better to slightly modify the text of your above suggested clause as follows, and modify or delete the two later references, which I have now done

(5) The Contractor shall ensure the safety of all Contractor’s Personnel, Employer’s Personnel and any other persons that are on the Site, adjacent to the Site and other places where they may be affected by Contractor’s Equipment in operation, standby or storage or when such equipment is being maintained or transported.

See also change in 4.1.4 (8) and deletion of 4.3.4

(6) For additional requirements for hoisting, rigging and cranes, refer to JSSS 5 [*Hoisting and Rigging*].

JCA1: 必ず 6 章(5 章に変更)に含めるようにしてください。
Be sure to include it in section 6 (now section 5).
NK: 第 5 章に揚重、玉掛について十分規定済み。
Section 5 stipulates regarding hoisting and rigging in detail.

(9) ~~Operators and signallers~~ (JCA2) Any reference to “operator” in this Chapter and elsewhere in JSSS shall be deemed to include “driver” also. (JCB5)

JCA2: “Spotters”に修正してください。 Please change to “Spotters”
NK: Spotters は次項目の対応の通り削除しました。
“Spotters” is deleted as explained in the next clause.

(c) ~~Any reference to “operator” in this Chapter and elsewhere in JSSS shall be deemed to include “driver” also;~~(JCA3)

JCA3: この operator は小文字にされていますが、全体を通してこの使い方とするか否かについては章ごとの整合性の観点から検討してください。
This "operator" is used lower case. It should be considered whether it is proper to use lower case as a whole of JSSS.
NK: “operator”という用語は JSSS では定義していません。第 9 章等他章でも小文字で表現しております。このままとします。
The term “operator” in not defined in JSSS. In other Chapters such as Chapter 9 [Concrete Works], the word “operator” is used in lower case. Left as it is.

No change is necessary

(d) ~~Any reference to “Spotter” in this Chapter shall be deemed to include “flagman” and “signaller” also.~~ (JCA4)

JCA4: この Spotter については総則で定義されていますが、signaller を含めるという意図で敢えてこの記述としているのでしょうか。
This “Spotter” is defined in the Chapter1, [General], but is it meant to include signaller?
NK: 総則の定義で”Spotter”は、下記のように定義しています。ここで繰り返す必要はないと考えます。(b)は削除し、(4)の構成を右のように修正します。
(24) “Spotter” means a member of the Contractor’s Personnel who is generally responsible for warning other Contractor’s and Employer’s Personnel and other persons and keeping them away from working operations and areas, for assisting

(kk) Tunnel Boring Machine (TBM).

(14) Static equipment includes powered stationary equipment such as:

(o) Stone crushing plants and screening equipment;

(p) Concrete and asphalt concrete batching plants;

(q) Tower cranes, derrick cranes;

(r) Elevators;

(s) Material conveyors;

(t) Air compressors;

(u) Engine Generators, submersible pumps and engine pumps; and

(v) Reinforcement, cutting and bending machines.

(15) Small equipment and tools such as:

(aa) Hand steered vibrating rollers;

(bb) Plate compactors and vibratory rammers;

(cc) Portable conveyors;

(dd) Pipe bending machines;

(ee) Drills, hammers, breakers, compactors and compressors;

(ff) Wood processing equipment;

(gg) Independent concrete mixers;

(hh) Air extract or blowing equipment for improving the working area environment;

(ii) Jack hammers, drills;

(jj) Chain saws;

(kk) Hand operated equipment such as jacks, winches, lever hoists; and

(ll) Hand tools such as wrenches, chisels, hand saw, picks, hammers.

4.1.4 Compliance Standards

(5) By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*], the Contractor shall comply with the requirements of this Chapter, read jointly with and including the further technical requirements of the Provision and Use of Work Equipment

上記の理由で(4)はこのままとします。同様の文章があればそれを見直し、必要があれば変更します。
The operators include pilots, etc. The drivers include engine driver, motorman, etc.
The (3) states "operator" includes "driver" but not that "operator" is synonymous with "driver".
The same expression is made for the Spotter as below.
(b) Any reference to "Spotter" in this Chapter shall be deemed to include "flagman" and "signaller" also.
With the above reason, the (4) is not modified. Other sentences as above will be reviewed and modified when necessary.

To MD: Please review NK reply above.

(5) Mobile equipment including wheeled or tracked, self-propelled construction machinery such as:

(a) Surface excavation and spoil movement equipment for bulk excavation, grading and levelling, such as bulldozers, graders and tractor excavators;

(b) Excavators such as backhoes, face shovels, power shovels;

(c) Loaders such as payloaders and face shovels;

(d) Dump trucks for removal or importation of spoil;

(e) Specialist foundation equipment such as pile driving and boring machines; (JCB6)

JCB6: equipment に修正. Revise to equipment.
NK: JICA has commented same in Chap. 6 TW that "replace machine with equipment?"
BS 8081 Code of practice for grouted anchors use the terms as follows:
Machine: drilling machine, Equipment: mixers, pumps.
Following the BS, Boring machine is left as it is.
To MD, please review my answer above.

(f) Compaction and surface treatment equipment such as smooth or sheepsfoot rollers, pneumatic and vibration rollers; (JCB7) asphalt finisher;

JCB7: Asphalt finisher も入れてほしい。Please add Asphalt finisher.
NK: Added.

(g) Mobile cranes ~~and other hoisting equipment~~ (JCB8);

JCB8: Mobile ではない。This is not mobile equipment.
NK: Mobile means able to be moved from one place to another. It seems there are other hoisting equipment than mobile cranes, however NK cannot show examples so far. Deleted it..

(h) Concreting equipment such as concrete mixer trucks, agitator trucks, pump trucks;

(i) Demolition equipment such as breakers, concrete crushers and demolition grippers; and

(j) Transportation Equipment, such as cars and buses for Contractor's Personnel and trucks and trailers for *drivers of trucks and operators of other Contractor's Equipment in positioning their vehicles and equipment particularly when reversing, positioning or hoisting, and such further duties as are assigned to them in JSSS Section 2.4 [Spotters Flagmen and the Like].*
Any reference to a "Spotter" in JSSS shall also be deemed to include a reference to a banksman, flagman or signaller.
Any reference to a "Spotter" in JSSS shall also be deemed to include a reference to a banksman, flagman or signaller.
As "Spotter" is defied in Chapter 1 as above, it is unnecessary to repeat here.
Therefore, (b) is deleted and clause (4) is modified as right.

The clause can now be deleted

JCB5: 少しシンプルに。 is synonymous with "driver"の方が MDB 版の表現でもありますし、それが通常だと思います。全体のバージョンで出していただく際に、synonymous の表現に合わせて全体を調整してください。
Please make phrases simple a little. The phrase of "is synonymous with "driver"" is one used in FIDIC MDB version and normal.
When all JSSS Chapters are submitted, please adjust all document to use this phrase.
NK: FIDIC MDB uses this as follows:
1.2 Interpretation (e)the word "tender" is synonymous with "bid", and "tenderer" with "bidder" and the words "tender documents" with "bidding documents
日本語では、Operator は操作者、操縦者、Driver は運転手、運転士、運転者、機関士が類義語辞典に記載があります。
(4)では、Operator の用語にはに Driver も含まれると規定し、これは、Operator と Driver が synonymous（同義語）との規定ではなく、他の呼び名の機械を操作・運転する者がいることと示しています。
別の Spotter でも次のように同様に規定しています。
(b) Any reference to "Spotter" in this Chapter shall be deemed to include "flagman" and "signaller" also.
上記の理由で(4)はこのままとします。同様の文章があればそれを見直し、必要があれば変更します。
The operators include pilots, etc. The drivers include engine driver, motorman, etc.
The (3) states "operator" includes "driver" but not that "operator" is synonymous with "driver".
The same expression is made for the Spotter as below.
(b) Any reference to "Spotter" in this Chapter shall be deemed to include "flagman" and "signaller" also.
With the above reason, the (4) is not modified. Other sentences as above will be reviewed and modified when necessary.

To MD: Please review NK reply above.

I think that there is no need to change this wording; it is now consistently used throughout the various chapters of JSSS. It is simple and more understandable than "synonymous" and will not require dictionary reference by many readers as may not be the case with FIDIC.

The need for definition is a partial consequence of your original draft which uses diverse expressions.

(10) Mobile equipment including wheeled or tracked, self-propelled construction machinery such as:

(m) Surface excavation and spoil movement equipment for bulk excavation, grading and levelling, such as bulldozers, graders and tractor excavators;

Regulations

(6) In accordance with these regulations, together with JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*] the Contractor shall ensure that all Contractor's Equipment provided for use upon the Works is:

(k) Suitable and fit for the purpose for which it is intended;

(l) Safe for use, maintained in a safe condition and inspected to ensure it is correctly installed and used and does not subsequently deteriorate;

(m) Used only by people who have received adequate information, instruction and training;

(n) Accompanied by suitable health and safety measures, such as protective devices and controls. These shall include emergency stop devices, adequate means of isolation from sources of energy, clearly visible markings and warning devices; and

(o) Used for the designed and intended purpose.

4.1.5 Manufacturer's Documentation

The Contractor shall obtain a copy of the following official Manufacturer's documentation for all units of Contractor's Equipment:

(3) Safety instructions and recommendations.

(4) Operation, maintenance and repair manual

The Contractor shall inform all Contractor's Personnel of the content of same, provide further safety training as necessary and ensure full compliance by all Contractor's Personnel with such instructions and recommendations to assist in enforcing the safe use of Contractor's Equipment.

4.1.6 Instruction for Contractor's Personnel

Further to the requirements of JSSS 1.7 [*Contractor's Safety Plans*], JSSS 1.8 [*Contractor's Method Statements*] and JSSS 1.15.2 [*Contractor's Safety Management Activities*], the Contractor shall include details of the following in the Method Statement and Safety Plan for works involving the use of Contractor's Equipment and shall fully inform all Contractor's Personnel associated therewith of all requirements before the commencement of any such operations, including:

transporting Contractor's Equipment (JCA6) and materials to, around and from the Site.

(k) Workboat for diving works

(l) Tunnel Boring Machine (TBM) . (JCB9)

JCA6: 運ぶものは equipment だけではないため、"& materials"を挿入してください。
"Material" should be added because only equipment are not transported.
NK: コメントの通り追加しました。
"Material" is added as commented.
NK: By the comments on Chap 10 Diving Works, (k) Workboat is added.

JCB9: JICA added. EPB: Earth pressure balance type TBM
NK: TBM is added but Slurry and EPB are not because they are too detail to be referred to.

(6) Static equipment includes powered stationary equipment such as: (JCA7)

(a) Stone crushing plants and screening equipment;

(b) Concrete and asphalt concrete batching plants.

(c) Tower cranes, derrick cranes;

(d) ~~Personnel and Goods~~ Elevators; (JC10) and

JCB10: 今更かも知れませんが。 Personnel and Goods Elevator は単純に Elevator ではダメなんでしたっけ？特段問題なければこれでよいと思います。
Is there any reasons to stipulate Personnel and Goods Elevator in stead of Elevator? If no special reason, Elevator can be use.
NK: 日本の安衛則に準じて分けていました。まとめて良いと考えます。
We specified it following Japanese regulation. They can be Elevator.

(e) Material conveyors.

(f) Air compressors. .(JCB11)

JCA7: エアコンプレッサーを追加してください。
Please add air compressors.
NK: (f)にエアコンプレッサーを追加しました。
Air compressor is added as (f).

JCB11: Engine Generator も追加しましょう。Submersible pump, engine pump も加えたい。 Please add Engine Generator, Submersible pump, engine pump
NK: Added.

(7) ~~Tools, tackle(JCB46) and small equipment such as:~~ Small equipment, tools and tackle (tools and tackle are collectively referred to "Tools" in this Chapter") such as:

JCB46: (JICA comment to 4.3.11) これらを総称して Tools でいいのでは. Tools and Tackle can be called as "Tools".
NK: Defied "Tools" in (7) here.

(a) Hand steered vibrating rollers;

(b) Plate compactors and vibratory rammers;

(c) Portable conveyors

(n) Excavators such as backhoes, face shovels, power shovels;

(o) Loaders such as payloaders and face shovels;

(p) Dump trucks for removal or importation of spoil;

(q) Specialist foundation equipment such as pile driving and boring machines; (JCB6)

JCB6: equipment に修正. Revise to equipment.
NK: JICA has commented same in Chap. 6 TW that "replace machine with equipment?"
BS 8081 Code of practice for grouted anchors use the terms as follows:
Machine: drilling machine, Equipment: mixers, pumps.
Following the BS, Boring machine is left as it is.
To MD, please review my answer above.

It doesn't really matter as both meanings are clear and understandable, however I understood that the rule was generally to use BS 8081.

(r) Compaction and surface treatment equipment such as smooth or sheepsfoot rollers, pneumatic and vibration rollers; (JCB7) asphalt finisher;

JCB7: Asphalt finisher も入れてほしい。Please add Asphalt finisher.
NK: Added.

No comment

(s) Mobile cranes ~~and other hoisting equipment~~ (JCB8);

JCB8: Mobile ではない。This is not mobile equipment.
NK: Mobile means able to be moved from one place to another. It seems there are other hoisting equipment than mobile cranes, however NK cannot show examples so far. Deleted it..

Mobile gantries, mobile "A" frame cranes, piling equipment; otherwise no comment

(t) Concreting equipment such as ~~concrete mixer trucks~~ ready-mixed concrete trucks, ~~agitator trucks,~~ pump trucks;

In Chapter 8, the comment required concrete mixer trucks and agitator trucks to be replaced by "ready-mixed concrete truck". This therefore requires change here.

(u) Demolition equipment such as breakers, concrete crushers and demolition grippers; and

(v) Transportation Equipment, such as cars and buses for Contractor's Personnel and trucks and trailers for transporting Goods to, around and from the Site.

JCA6: 運ぶものは equipment だけではないため、"& materials"を挿入してください。
"Material" should be added because only equipment are not transported.
NK: コメントの通り追加しました。
"Material" is added as commented.

I suggest that this is changed to "Goods" which is defined in FIDIC and is more inclusive

(w) Workboat for diving works

(28) Scope of work, locations and areas, work methods, dimensions, levels and quantities to be achieved.

(29) Types, capacities and numbers of units.

(30) Workplaces, area limits and operational routes, restricted areas, locations of caution signs and fences.

(31) Preservation of safe access, walkways and footpaths around the working areas and transportation areas.

(32) Identities and roles of and location(s) for Spotters and the communication and signalling requirements, including equipment to be used.

(33) Environmental impact including required measures for workers and any other persons against vibration, noise, dust and the like.

(34) Safety measures for the environmental conditions in the working area, any nearby areas for storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, operational areas or areas where Dangerous Work is taking place.

(35) Potential danger to any persons who may be affected by the use of Contractor's Equipment and the required measures to avoid any accident or injury.

(36) Any potential hazards in the use of Contractor's Equipment including those which may create a risk of falling or overturning.

(37) Restrictions to the movement and operation of Contractor's Equipment such as existing structures, foundations, surfaces, underground or overhead services and dangerous goods storage.

(38) Measures to be taken in case of breakdown, defect or fault in Contractor's Equipment including location of areas for inspection and maintenance.

(39) Name of the authorised operator for each unit of Contractor's Equipment when authorised operator is necessary to be assigned.

(40) The name and contact of the HSO to inform when there is any requirement for inspection, maintenance and repair of Contractor's Equipment.

4.1.7 Safety Training

(3) The Contractor shall provide the Contractor's Personnel with health and safety training in accordance with JSSS 1.19 [*Safety Training*

(d) ~~Reinforcement, cutting and bending machines;~~ (JCB12)

JCB12: これらは tool, tackle and small equipment としては大きすぎるのでは →(6)に移動してください。
Please move these to (6) as they are too large as tool, tackle and small equipment.
NK: Moved to (6)(g)

(e) Pipe bending machines;

(f) ~~Pneumatic~~ drills, hammers, breakers, compactors and compressors;

(g) Wood processing equipment;

(h) Independent concrete mixers;

(i) Air extract or blowing equipment for improving the working area environment;

(j) ~~Pneumatic power tools such as~~ jack hammers, drills, (JCB13)

(k) ~~Engine driven~~ chain saws; (JCB13)

JCB13: 電動も含まれるようにして下記の(8)は削除しています。
Modified to include electric power equipment and deleted (8) below.
NK: Modified.

(l) Hand operated equipment such as jacks, winches, lever hoists; and

(m) Hand tools such as wrenches, chisels, hand saw, picks, hammers.

(8) ~~Electric powered equipment means portable electric powered mobile equipment or tools such as: (JCA7a) (JCB14)~~

(a) ~~Pumps and small conveyors;~~

(b) ~~Angle grinders, drills, circular saws and planers.~~

JCA7a: 特に(8)にも電動の equipment が多数含まれているので、独立させておく必要があるでしょうか。
Is it necessary to independently define as (8) contains lots of electric power equipment?
NK: It is left as it is without (a) and (b)because it needs to specify requirements for portable electric powered mobile equipment or tools.

JCB14: JICA deleted related with JCB12.
NK: Deleted.

11.1.2 Compliance Standards

(1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], the Contractor shall comply with the requirements of this Chapter, read jointly with and including the further technical requirements of ~~*the HSE Provision and Use of Work Equipment Regulations 1998 (PUWER).*~~ (JCB15) the *Provision and Use of Work Equipment*

NK: By the comments on Chap 10 Diving Works, (k) Workboat is added.

No need because no requirements are stated here but otherwise no comment

(x) Tunnel Boring Machine (TBM) . (JCB9)

JCB9: JICA added. EPB: Earth pressure balance type TBM
NK: TBM is added but Slurry and EPB are not because they are too detail to be referred to.

I understood that Tunnelling was not part of the scope of JSSS and this is confirmed in the Index in Chapter one

Please note that there are although it may be listed here, there are no particular requirements included in this chapter and it is possible that some requirements here may be incompatible with this equipment. I suggest add this later in future issues as stated in the Overall Document Index of Chapter 1, against future Chapter 17?

(11) Static equipment includes powered stationary equipment such as: (JCA7)

(g) Stone crushing plants and screening equipment;

(h) Concrete and asphalt concrete batching plants;

(i) Tower cranes, derrick cranes;

(j) ~~Personnel and Goods~~ Elevators; (JC10)

JCB10: 今更かも知れませんが。 Personnel and Goods Elevator は単純に Elevator ではダメなんでしたっけ？特段問題なければこれでよいと思います。
Is there any reasons to stipulate Personnel and Goods Elevator in stead of Elevator? If no special reason, Elevator can be use.
NK: 日本の安衛則に準じて分けていました。まとめて良いと考えます。
We specified it following Japanese regulation. They can be Elevator.

I had specified because they are two different types usually with slightly different separate descriptions (material hoists or lifts) but I have no comment.

(k) Material conveyors;

(l) Air compressors;(JCB11)

JCA7: エアコンプレッサーを追加してください。
Please add air compressors.
NK: (f)にエアコンプレッサーを追加しました。
Air compressor is added as (f).

No comment

JCB11: Engine Generator も追加しましょう。Submersible pump, engine pump も加えたい。 Please add Engine Generator, Submersible pump, engine pump
NK: Added.

Where? Suggest simply as follows:

(m) Engine Generators, submersible pumps and engine pumps; and

Generally] taking account of the characteristics of the particular types of Contractor's Equipment and including:

(g) Functions, performance, operation methods, inspection items, inspection method of safety and emergency alarm devices;

(h) Work procedure, signal and communication method at starting time of the operation, and daily inspection;

(i) Lockout and tagout procedures for shutting down operation, turning off the power, locking the starter and necessary measures for the time of cleaning and inspection of the Contractor's Equipment;

(j) Stop of the operation of the Contractor's Equipment when an abnormality occurs and report to the person in charge;

(k) Prohibit removal or isolation of safety devices; and

(l) Risks during operation of the Contractor's Equipment.

(4) Particular safety training for transportation equipment operators shall be for the purpose of preventing of traffic accidents on and off the Site and shall include:

(h) Driving rules in general;

(i) Compliance with speed limits, signs, alcohol use, drugs and all other requirements the Laws of the Country;

(j) Driving methods to contact and collision with other persons, cycles, motorcycles and other vehicles;

(k) Driving methods to properly overtake other vehicles and to be undertaken by others;

(l) Driving methods when encountering holes, bumps or obstacles on the road;

(m) Required inspection and maintenance before starting operation; and

(n) Proper use of vehicles including behaviour and control of passengers, prevention of overcrowding, overloading and unauthorised passengers.

4.1.8 Requirements for Operators

Further to the requirements of JSSS 1.18 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that operators are

Regulations 1998 (PUWER), HSE Guidance in UK.

JCB15: 正式に言えば、“The Provision and Use of Work Equipment Regulations 1998 (PUWER) under the HSE regulations in UK “では？法令の内容は一般的なので harmful ではないと思える。
Is the official title “The Provision and Use of Work Equipment Regulations 1998 (PUWER) under the HSE regulations in UK? It is considered that the regulations is general ones, so not harmful.
NK: Modified as commented.

Please refer to potential copyright requirements

(2) In accordance with these regulations, together with JSSS 1.34 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the Contractor shall ensure that all Contractor's Equipment provided for use upon the Works is:

(a) Suitable and fit for the purpose for which it is intended;

(b) Safe for use, maintained in a safe condition and inspected to ensure it is correctly installed and used and does not subsequently deteriorate;

(c) Used only by people who have received adequate information, instruction and training;

(d) Accompanied by suitable health and safety measures, such as protective devices and controls. These shall include emergency stop devices, adequate means of isolation from sources of energy, clearly visible markings and warning devices; and

(e) Used for the designed and intended purpose.

11.1.3 Instruction for Contractor's Personnel

Further to the requirements of JSSS 1.6 [*Contractor's Safety Plan*], JSSS 1.7 [*Contractor's Method Statements*] and JSSS 1.13.2 [*Contractor's Safety Management Activities*], the Contractor shall include details of the following in the Method Statement and Safety Plan for works involving the use of Contractor's Equipment and shall fully inform all Contractor's Personnel associated therewith of all requirements before the commencement of any such operations, including:

(1) The scope of work, locations and areas, work methods, dimensions, levels and quantities to be achieved.

(2) Types, capacities and numbers of units.

(n) Reinforcement, cutting and bending machines.

Above is moved here from below as instructed

~~(7) Tools, tackle(JCB46) and small equipment such as:~~ Small equipment, tools and tackle (tools and tackle are collectively referred to “Tools” in this Chapter”) such as:

JCB46: (JICA comment to 4.3.11) これらを総称して Tools でいいのでは. Tools and Tackle can be called as “Tools”.
NK: Defied “Tools” in (7) here.

I suggest there is no need for a separate definition, if in doubt just delete “tackle”.

See notes above in 4.1.1 (1)

“Tools” perhaps are generally hand-held, please see examples of hand tools already given in (7) (m) below.

Suggest as follows:

(12) Small equipment and tools such as:

(n) Hand steered vibrating rollers;

(o) Plate compactors and vibratory rammers;

(p) Portable conveyors;

What exactly do you mean by “portable conveyors”? Hand portable? All conveyors are to some extent “portable” meaning “mobile”; this is not really clear.

(q) ~~Reinforcement, cutting and bending machines;~~ (JCB12)

JCB12: これらは tool, tackle and small equipment としては大きすぎるのでは →(6)に移動してください。
Please move these to (6) as they are too large as tool, tackle and small equipment.
NK: Moved to (6)(g)

See above (6) (h)

(r) Pipe bending machines;

(s) ~~Pneumatic~~ drills, hammers, breakers, compactors and compressors;

(t) Wood processing equipment;

(u) Independent concrete mixers;

(v) Air extract or blowing equipment for improving the working area environment;

(w) ~~Pneumatic power tools such as~~ jack hammers, drills, (JCB13)

(x) ~~Engine driven~~ chain saws; (JCB13)

JCB13: 電動も含まれるようにして下記の(8)は削除しています。
Modified to include electric power equipment and deleted (8) below.
NK: Modified.

appropriately qualified, skilled and experienced in operation of the Contractor's Equipment to which they are assigned and duly certified as such by the HSO.

(7) Operators shall safely and competently operate the Contractor's Equipment.

(8) Operators shall be fully aware of the following:

(i) Work procedures, hazards and operation methods;

(j) The need to stop the operation when any defect or abnormality is detected;

(k) The identity of and location(s) for Spotters and the communication and signalling requirements including equipment to be used; and

(l) The procedures in case of emergency.

(9) Operators shall:

(e) Keep all safety devices including emergency alarm and stop devices activated; and

(f) Inspect, clean, service and maintain the unit of Contractor's Equipment under their responsibility and control or ensure that other qualified persons perform these operations.

4.1.9 Signalling

(7) Signalling between operators and any associated workers shall only be carried out by designated personnel.

(8) Spotters shall be located in a safe place and where they can clearly see and be seen by the operator.

(9) When it is not possible for Spotters to give direct visible and audible signals to the operator, other systems including hand-held radios or videophone must be provided and

4.2 INSPECTION, MAINTENANCE AND REPAIR

4.2.3 Requirements Generally

(15) Further to the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*] the HSO shall ensure that all Contractor's Equipment is inspected, fully maintained and operational when it is mobilised to the Site. Thereafter all Contractor's Equipment shall be inspected,

(3) ~~Workplaces, area limits and~~ (JCB16) operational routes, restricted areas, locations of caution signs and fences.

JCB16: Workplace の boundary という意味でつかわれているのであれば、workplace に含まれているので不要と考えます。
If the above workplace is used as meaning of boundary, it is not necessary because workplace include its boundary.
NK: The term of workplaces is used to mean workplaces where the Contractor's Equipment is used. Because of it is same as locations and areas stipulated in (1) above, deleted
To MD, please review this comment.

(4) ~~The~~ preservation of safe access, walkways and footpaths around the working areas and transportation areas.

(5) ~~Identities, location (JCB17) and scope of Spotters.~~ Identities and roles of and location(s) for Spotters and the communication and signalling requirements including equipment to be used

JCB17: 4.1.5 の(1)の(d)では The identity of and location(s)となっているので 4.1.5 の表現に統一してください。
The 4.1.5 (1) (d) stipulate "The identity of and location(s). Please make (5) consistent expression same as 4.1.5.
4.1.5 (1)Operators shall be fully aware of the following:
(d) The identity of and location(s) for Spotters and the communication and signalling requirements including equipment to be used; and
NK: Modified as commented and added referring 4.1.5.

(6) ~~Environmental impact mitigation~~ (JCB18) Environmental impact to third parties and workers including required measures against vibration, noise, dust and the like.

JCB18: これは環境のことを言っているのか、作業環境のことを示しているのか分からない。(多分作業環境のこと) であれば"Hazardous working conditions (if any) including required mitigation measures …"ですよね？
"Environmental impact effects including required mitigation measures against …"では？
It is not clear for which environment or working environment this (5) stipulates. If this is for working environment, is this to be stipulated "Hazardous working conditions (if any) including required mitigation measures …"
Is this "Environmental impact effects including required mitigation measures against …"？
NK: This can be read for both environment impact to third parties and working environment in the Site.
Modified to make clear.
To MD, please review the comment and modify (6).

(7) ~~Safety measures for Environmental conditions in the working area, nearby areas for storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, Operational Areas or areas where Dangerous Work is taking place. (JCB19)~~ Safety measures for the environmental conditions in the working area and nearby areas for storage of Dangerous Goods or Hazardous Substances, in Hazardous Areas, and in operational areas ~~or areas~~ where Dangerous Work is taking place.

No comment

(y) Hand operated equipment such as jacks, winches, lever hoists; and

(z) Hand tools such as wrenches, chisels, hand saw, picks, hammers.

(13) ~~Electric powered equipment means portable electric powered mobile equipment or tools such as: (JCA7a) (JCB14)~~

(c) ~~Pumps and small conveyors;~~

(d) ~~Angle grinders, drills, circular saws and planers.~~

JCA7a: 特に(8)にも電動の equipment が多数含まれているので、独立させておく必要があるでしょうか。
Is it necessary to independently define as (8) contains lots of electric power equipment?
NK: It is left as it is without (a) and (b)because it needs to specify requirements for portable electric powered mobile equipment or tools.

JCB14: JICA deleted related with JCB12.
NK: Deleted.

4.1.4 Compliance Standards

(3) By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*], the Contractor shall comply with the requirements of this Chapter, read jointly with and including the further technical requirements of the Provision and Use of Work Equipment Regulations 1998 (PUWER), HSE Guidance in UK.

JCB15: 正式に言えば、"The Provision and Use of Work Equipment Regulations 1998 (PUWER) under the HSE regulations in UK "では？法令の内容は一般的なので harmful ではないと思える。
Is the official title "The Provision and Use of Work Equipment Regulations 1998 (PUWER) under the HSE regulations in UK? It is considered that the regulations is general ones, so not harmful.
NK: Modified as commented.

See above

Please refer to potential copyright requirements

(4) In accordance with these regulations, together with JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*] the Contractor shall ensure that all Contractor's Equipment provided for use upon the Works is:

(f) Suitable and fit for the purpose for which it is intended;

(g) Safe for use, maintained in a safe condition and inspected to maintained and repaired before the commencement of the first and of all subsequent days of operation.

(16) Inspections shall include all items necessary to ensure the safe performance of the Contractor's Equipment including the following examples and any further requirements due to the characteristics, capability and condition of the Contractor's Equipment and in compliance with the manufacturer's official operation, maintenance and repair manual.

(17) When mobilising Contractor's Equipment to the Site and before commencement of operation, the Contractor shall:

(c) Inspect all units of Contractor's Equipment to ensure that

(xxxvi)all components are installed and functioning; and

(xxxvii) adequate covers and safety guards (to prevent contact with moving parts) are provided and securely fixed.

(h) Ensure as a minimum that the daily and periodical check items have already been inspected and recorded;

(i) Ensure that all inspection and maintenance records are available for inspection by the Engineer if and when required in compliance with JSSS; and

(j) If any inspection and maintenance records are incomplete or not available, the Contractor shall carry out inspections and maintenance to ensure that a full and acceptable record is available for all units of Contractor's Equipment.

In relation with the above, it should be noted that Contractor's Equipment shall be in a working and safe condition and fully compliant with the Contract when it is mobilised to the Site. The Engineer may refuse to accept delivery to the Site any Contractor's Equipment which does not meet the requirements stipulated in the Contract.

(18) The Contractor shall undertake the following daily inspection items, (or at intervals required by the manufacturer's official operation, maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(y) Operating condition of engine, gearbox(s), drive shafts, pulleys and main components, emergency stop and safety devices, any defects or abnormalities in covers, doors and

JCB19: ここの部分は本当によく分からない。英語として羅列されている事項のつながりが・・・“Safety requirements of working near the storage of Dangerous Goods or Hazardous Substances or the areas where Dangerous Work is taking place.”???

This sentence cannot be really understood. The connection of matters listed in English are not understandable.
Is this “Safety requirements of working near the storage of Dangerous Goods or Hazardous Substances or the areas where Dangerous Work is taking place.”?
NK: Modified referring to the comment.
To MD, please review the comment and modify (7).

(8) ~~The potential danger to other Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where Contractor's Equipment is to be used and who may be affected by the use of Contractor's Equipment and the required measures to avoid any risk accident or injury.~~

~~The potential danger to other Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where Contractor's Equipment is to be used and (JCB20) who may be affected by the use of Contractor's Equipment and the required measures to avoid any risk accident or injury.~~

Potential danger to Concerned Personnel who may be affected by the use of Contractor's Equipment and the required measures to avoid any ~~risk~~ accident or injury.

JC20 (= JC2): この Chapter で三箇所出てくるようなのでまとめましょう。(in this Chapter called as “Concerned Personnel”)
There are same phrases in 3 locations in this Chapter, therefore it is better to define as (in this Chapter called as “Concerned Personnel”).
NK: Modified as commented.

(9) Any potential hazards in the use of Contractor's Equipment including those which may create a risk of falling or overturning.

(10) Restrictions to the movement and operation of Contractor's Equipment such as existing structures, foundations, surfaces, underground or overhead services and dangerous goods storage.

(11) Measures to be taken in case of ~~for~~ breakdown, defect or fault in Contractor's Equipment including location of areas for inspection and maintenance..

(12) ~~The~~ name of the authorised operator for each unit of Contractor's Equipment. (JCB21) when authorised operator is necessary to be assigned.

JCB21 (=JCB1): 全体を通して、特に Tools についてはすべての要求事項が適用されるわけではないと思います。したがって、適用除外される可能性を上手に書き分ける表現になるよう工夫していただけますでしょうか。

ensure it is correctly installed and used and does not subsequently deteriorate;

(h) Used only by people who have received adequate information, instruction and training;

(i) Accompanied by suitable health and safety measures, such as protective devices and controls. These shall include emergency stop devices, adequate means of isolation from sources of energy, clearly visible markings and warning devices; and

(j) Used for the designed and intended purpose.

4.1.5 Manufacturer's Documentation

The Contractor shall obtain a copy of the following official Manufacturer's documentation for all units of Contractor's Equipment:

(1) Safety instructions and recommendations.

(2) Operation, maintenance and repair manual

The Contractor shall inform all Contractor's Personnel of the content of same, provide further safety training as necessary and ensure full compliance by all Contractor's Personnel with such instructions and recommendations to assist in enforcing the safe use of Contractor's Equipment.

I suggest the addition of the above clause to your draft.

4.1.6 Instruction for Contractor's Personnel

Further to the requirements of JSSS 1.7 [*Contractor's Safety Plans*], JSSS 1.8 [*Contractor's Method Statements*] and JSSS 1.15.2 [*Contractor's Safety Management Activities*], the Contractor shall include details of the following in the Method Statement and Safety Plan for works involving the use of Contractor's Equipment and shall fully inform all Contractor's Personnel associated therewith of all requirements before the commencement of any such operations, including:

(14) ~~The~~ Scope of work, locations and areas, work methods, dimensions, levels and quantities to be achieved.

(15) Types, capacities and numbers of units.

(16) ~~Workplaces,~~ ~~area limits and~~ (JCB16) operational routes, restricted areas, locations of caution signs and fences.

JCB16: Workplace の boundary という意味でつかわれているのであれば、workplace

enclosures;

(z) Abnormal sounds, vibrations or smell;

(aa) Leaks, levels and condition of lubricants, coolant, hydraulic fluid levels, and the like;

(bb) Lights and indicators;

(cc) Brakes, clutches, steering and operating devices and working devices;

(dd) Cables, slings, ropes and chains;

(ee) Protective covers are adequately provided over all rotating or moving parts;

(ff) Attachments and tools such as buckets, grabs and the like;

(gg) Cleanliness of each unit or item of Contractor's Equipment;

(hh) Cleanliness of each working area and removal of obstructions;

(ii) Availability of emergency kits such as warning flares and triangles, fire extinguisher, first aid kit and the like, as required by the Laws of the Country with the testing and expiration date clearly indicated; and

(jj) Any additional inspection items stipulated in the manufacturer's official operation, maintenance and repair manual.

(19) The Contractor shall undertake the following periodic inspection items, (at intervals required by the manufacturer's official operation, maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(w) Engine compression pressure, valve clearance and other relevant parts of prime energy unit;

(x) Gearbox, clutch, transmission, propeller shaft, differential and other parts of power transmission devices;

(y) Drive wheels, idling wheels, vertical trunk rollers, belts, tires, wheel bearings and other parts of traveling devices;

(z) Springs, shock absorbers and other parts of suspension

(Tools(器具工具)について 適用されない箇所が多くあるため。(例:Operator の指名や責任者の掲示など))
Whole Provisions in this Chapter may not apply all to Tools, so please devise to stipulate possibility of exemption of some provisions.
(There are many provisions which will not apply to Tools for example, appointment of Operator, post of a label showing the name.)
NK: Modified as commented.

(13) The name and contact of the HSO to inform when there is any requirement for inspection, maintenance and repair of Contractor's Equipment.

11.1.4 Safety Training

The Contractor shall provide the Contractor's personnel with health and safety training in accordance with JSSS 1.17 [*Safety Training Generally*] taking account of the characteristics of the particular types of Contractor's Equipment. (JCA8)

JCA8: 1.19 に equipment に必要なトレーニングが追加される形で総則が修正されているということでしょうか。
Does this mean that 1.19 [Safety Training Generally] has been revised to accommodate the necessary training for equipment operators?
NK: 1.19 (Issue 7)は次のように安全衛生の教育訓練の義務、各分野に関する詳細は安全計画書に示すことを一般規定して規定しています。そのため、1.19 は原案通りと致します。
The 1.19 (Issue 7) stipulates the responsibility of H&S education and training as general requirement, and details to be described in the Safety Plan. Therefore, 1.19 is left as it is.

1.19 Safety Training Generally
1.19.1 The Contractor shall conduct health and safety education and training for all the Contractor's Personnel.
1.19.2 The Contractor shall describe in the Safety Plan the outline of the health and safety training plans describing participants, time, teaching materials, policy for selecting trainers, etc. In addition, the Contractor shall submit full details of all health and safety training to the Engineer for information before the start of any training.

The health and safety training shall be ~~done~~ provided to the personnel including the following items depending on the characteristics of the Contractor's Equipment ~~with which the personnel will be engaged in works~~. (JCB22)

JCB22: この部分は蛇足なので削除。This phrase is superfluity.
NK: Deleted.

(1) Functions, performance, operation methods, inspection items, inspection method of safety device and emergency alarm device;

(2) Work procedure, signal and communication method at starting time of the operation, and daily inspection;

(3) Lockout and tagout procedures for shutting down operation, turning off the power, locking the starter and necessary measures for the time of cleaning and inspection of the Contractor's equipment;

(4) Stop of the operation ~~and work with~~ of the Contractor's equipment when an abnormality occurs and report to the person in charge; ~~and~~

(5) Prohibition ~~from~~ of removing safety devices; and

(6) Risks during operation of the Contractor's Equipment.

に含まれているので不要と考えます。
If the above workplace is used as meaning of boundary, it is not necessary because workplace include its boundary.
NK: The term of workplaces is used to mean workplaces where the Contractor's Equipment is used. Because of it is same as locations and areas stipulated in (1) above, deleted
To MD, please review this comment.

Draft states "work places"
I recommend to maintain the original wording, it is clear and unambiguous.

(17) ~~The~~ Preservation of safe access, walkways and footpaths around the working areas and transportation areas.

(18) ~~Identities, location (JCB17) and scope of Spotters.~~ Identities and roles of and location(s) for Spotters and the communication and signalling requirements, including equipment to be used.

JCB17: 4.1.5 の(1)の(d)では The identity of and location(s)となっているので 4.1.5 の表現に統一してください。
The 4.1.5 (1) (d) stipulate "The identity of and location(s). Please make (5) consistent expression same as 4.1.5.
4.1.5 (1)Operators shall be fully aware of the following:
(d) The identity of and location(s) for Spotters and the communication and signalling requirements including equipment to be used; and
NK: Modified as commented and added referring 4.1.5.

(19) ~~Environmental impact mitigation (JCB18) Environmental impact to third parties and workers including required measures against vibration, noise, dust and the like.~~

JCB18: これは環境のことを言っているのか、作業環境のことを示しているのか分からない。(多分作業環境のこと) であれば"Hazardous working conditions (if any) including required mitigation measures …"ですよね？
"Environmental impact effects including required mitigation measures against …"では？
It is not clear for which environment or working environment this (5) stipulates. If this is for working environment, is this to be stipulated "Hazardous working conditions (if any) including required mitigation measures …"
Is this "Environmental impact effects including required mitigation measures against …"？
NK: This can be read for both environment impact to third parties and working environment in the Site.
Modified to make clear.
To MD, please review the comment and modify (6).

Modify as follows:

(20) Environmental impact including required measures for workers and third parties against vibration, noise, dust and the like.

(21) ~~Safety measures for Environmental conditions in the working area, nearby areas for storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, Operational Areas or areas where Dangerous Work is taking place. (JCB19)~~ Safety measures for the devices;

(aa) Left and right rotation angle of steering wheel, knuckle, rod, arm and other parts of control devices;

(bb) Brake capacity, brake drum, brake shoe and other parts of braking systems;

(cc) Blades, booms, link mechanisms, buckets, wire ropes and other parts of work equipment;

(dd) Hydraulic pump, hydraulic motor, cylinder, safety valve and other parts of hydraulic equipment;

(ee) Voltage, amperage and relevant performance and components of electrical systems;

(ff) Body, operating devices, head guards, back stoppers, access doors, protective covers, ladders and steps, locking devices, warning alarm devices, direction indicators, tyre air pressures and lightning devices; and

(gg) Any additional inspection items stipulated in the manufacturer's official operation, maintenance and repair manual.

(20) Operation of any unit of Contractor's Equipment shall not be allowed to commence until the HSO has certified that it is safe to do so.

(21) The Contractor shall prepare standard checklists for all inspections and the HSO shall ensure that these are complied with, completed and signed and kept as a record in accordance with JSSS 1.33 [*Health and Safety Records*].

4.2.4 Defects and Repair During Operation

(7) If an operator notices any defect or abnormality in the Contractor's Equipment during operation (such as abnormal noise, temperature, smell, etc.) the operator shall stop the operation immediately.

(8) Necessary repair shall be provided by qualified mechanics, electricians or engineers.

(9) The HSO shall ensure that no further operation shall resume unless the above has been complied with and the Contractor's Equipment has been re-inspected by him and certified in accordance with JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment*

Imported from Transportation

~~Particular safety training for transportation operators shall also include prevention of traffic accidents on and off the Site for example including:~~

(JCA9) (JCB23)

Particular safety training for transportation equipment operators shall for the purpose of prevention of traffic accidents on and off the Site, ~~also~~ include ~~prevention of traffic accidents on and off the Site for example including~~:

JCB23: 冒頭に交通事故の防止という言葉が入り、具体例においていちいち言わないように修正しています.
Phrase of prevention of traffic accidents is added to avoid necessity to stipulate repeatedly stipulate in each example.
NK: Modified.

JCB24: この下のナンバリングが変ではないでしょうか。
Is numbering below strange?
NK: Modified to that the above sentence is numbered as (7) and the clauses below are numbered (a) to (g).

(1) Driving rules ~~for prevention of traffic accidents~~ in general;~~:~~

(2) Compliance with speed limits, signs, alcohol use, drugs and all other requirements the Laws of the Country;

(3) Driving methods to ~~prevent accidents including~~ contact and collision with other persons, cycles, motorcycles and other vehicles;

(4) Driving methods to properly ~~prevent accidents in~~ overtake ~~ing~~ other vehicles and to be undertaken by others;

(5) Driving methods ~~to prevent accidents due to~~ when encountering holes, bumps or obstacles on the road;

(6) Required inspection and maintenance before starting operation;

(7) Proper use of vehicles including behaviour and control of passengers, prevention of overcrowding, overloading and unauthorised passengers.

JCA9: ここの transportation に関するトレーニングの内容がかなり詳細なので、この内容と 1.19 の記述のバランスが取れているかを確認のうえ調整願います。
The provisions of the training for "transportation" here are quite detailed, so please make sure that this is harmonized with the description of 1.19.?
NK: 本款の(1)~(7)の項目は、特に事故が多い交通事故の防止に関する教育に注力して規定しています。
The items (1) ~ (7) in this clause is emphasized to focus on education and training for prevention of traffic accidents which is very important.
NK: 技能のある者を雇用し、請負者が機器を使用した作業に従事させるとの前提で、機械の特性に応じて行うべき教育と指導すべき事項を前半の(1)~(6)に追記致します。

environmental conditions in the working area and nearby areas for storage of Dangerous Goods or Hazardous Substances, in Hazardous Areas, and in operational areas ~~or areas~~ where Dangerous Work is taking place.

JCB19: ここの部分は本当によく分からない。英語として羅列されている事項のつながりが・・・"Safety requirements of working near the storage of Dangerous Goods or Hazardous Substances or the areas where Dangerous Work is taking place."???

This sentence cannot be really understood. The connection of matters listed in English are not understandable.
Is this "Safety requirements of working near the storage of Dangerous Goods or Hazardous Substances or the areas where Dangerous Work is taking place."?
NK: Modified referring to the comment.
To MD, please review the comment and modify (7).

Please read conjointly; with the heading paragraph of this clause. The Contractor shall include details of the above in the Method Statement and Safety Plan for works involving the use of Contractor's Equipment and shall fully inform all Contractor's Personnel associated therewith of all requirements before the commencement of any such work. This clause lists information to be provided for environmental conditions and I suggest that no change to the original wording is necessary

~~9 The potential danger to other Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where Contractor's Equipment is to be used and who may be affected by the use of Contractor's Equipment and the required measures to avoid any risk accident or injury.~~

~~The potential danger to other Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where Contractor's Equipment is to be used and (JCB20) who may be affected by the use of Contractor's Equipment and the required measures to avoid any risk accident or injury.~~

~~Potential danger to Concerned Personnel who may be affected by the use of Contractor's Equipment and the required measures to avoid any risk accident or injury.~~

JC20 (= JC2): この Chapter で三箇所出てくるようなのでまとめましょう。(in this Chapter called as "Concerned Personnel")
There are same phrases in 3 locations in this Chapter, therefore it is better to define as (in this Chapter called as "Concerned Personnel").
NK: Modified as commented.

Please refer to notes and suggested new clause in 4.1.1.

A new definition is not necessary but I do agree that rewording the above could be beneficial and suggest the simplest solution is as follows:

(22) Potential danger to any persons who may be affected by the use of Contractor's Equipment and the required measures to avoid any accident or injury.

(23) Any potential hazards in the use of Contractor's Equipment

and PPP].

4.3 SAFETY REQUIREMENTS

4.3.3 General Safety Measures

In addition to other safety and health requirements of JSSS, the Contractor shall:

(22) Ensure that there is sufficient lighting to perform all work safely and provide artificial lighting where necessary.

(23) Ensure that Contractor's Equipment is equipped with suitable protective safety devices such as covers, screens, guards, contact prevention devices, auto-stop devices, enclosures, barriers and the like as necessary to prevent injury to personnel from equipment or parts of equipment, where:

(e) There may be any risk of persons being hit by, caught or injured or entangled in any ropes, cables, sheaves, moving or rotating parts; and

(f) There may be any risk of persons being hit by flying debris, offcuts, or the like produced by the equipment.

(24) Ensure that Contractor's Equipment is equipped with suitable ladders and steps for access to the operating cab and also to all other levels and components to permit inspection, assembly, maintenance and repair of the equipment. When any Contractor's Personnel need to work at a height of 2 m or more, the Contractor shall take suitable measures in accordance with JSSS 2.5 [*Fall Prevention*], including the provision and use by all Contractor's Personnel of guide ropes and PFAS.

(25) Prohibit personnel other than operators, workers and other authorised personnel from entering the place where Contractor's Equipment is in use for the Works.

(26) Ensure that each unit of Contractor's Equipment is provided with appropriate numbers and types of fire extinguishing equipment (where such equipment is necessary) and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and in fire safety procedures.–

(27) Ensure that each working area where Contractor's Equipment is in use, is provided with appropriate numbers and types of first-aid

The items (1)~(6) for education and training to the worker who is employed as qualified, skilled and experienced person are added at the beginning of this clause as stipulated in Japanese draft.

11.1.5 ~~Qualification of Operators~~ (JCA10) Requirements to Operators

Further to the requirements of JSSS 1.16 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that operators are appropriately qualified, skilled and experienced in operation of the Contractor's Equipment to which they are assigned and duly certified as such by the HSO.

JCA10: 内容は qualification のことではないようです。workmanship ではないでしょうか。
The content is not about the qualification. Isn't it about workmanship?
NK: 資格だけの規定ではないので、提案された workmanship は、辞書では何かを作る技術とありますので、款名は Requirements to Operators ではいかがでしょうか？MD 氏へ相談します。
Because the content of this Clause is not only qualification, we propose the title of the clause to be "Requirements to Operators" as the "workmanship" proposed by JICA means the skill with which something was made or done in the dictionary.

(1) Operators shall safely and competently operate the Contractor's Equipment.

(2) Operators shall be fully aware of the following:

(a) Work procedures, ~~possible risks~~ hazards and operation methods;

(b) The need to stop ~~all work~~ the operation when any defect or abnormality is detected;

~~(c) Not to remove, interfere with or override any safety devices; (JCA11) Prohibition of removing, interfering with or overriding any safety devices;~~ (JCB25)

JCA11: ここだけ動詞形 Only (c) is the verb form.
NK: 名詞とします。 Modified to noun form as right.

JCB25: 4.1.4 (5)に同じことが記載されているので削除します。
Deleted as same is stipulated in 4.1.4 (5).
NK: Deleted.

(c) The identity of and location(s) for Spotters and the communication and signalling requirements including equipment to be used ~~and signals~~; and

(d) The procedures in case of emergency.

(3) ~~In addition,~~ operators shall:

~~(a) Safely and competently operate the Contractor's Equipment;~~

(a) ~~Operate~~ Keep all safety devices including emergency alarm and stop devices activated; and

including those which may create a risk of falling or overturning.

(24) Restrictions to the movement and operation of Contractor's Equipment such as existing structures, foundations, surfaces, underground or overhead services and dangerous goods storage.

(25) Measures to be taken in case of ~~for~~ breakdown, defect or fault in Contractor's Equipment including location of areas for inspection and maintenance.

No comment

(26) ~~The~~ Name of the authorised operator for each unit of Contractor's Equipment. (JCB21) when authorised operator is necessary to be assigned.

JCB21 (=JCB1): 全体を通して、特に Tools についてはすべての要求事項が適用されるわけではないと思います。したがって、適用除外される可能性を上手に書き分ける表現になるよう工夫していただけますでしょうか。
(Tools(器具工具)について 適用されない箇所が多くあるため。(例:Operator の指名や責任者の掲示など))
Whole Provisions in this Chapter may not apply all to Tools, so please devise to stipulate possibility of exemption of some provisions.
(There are many provisions which will not apply to Tools for example, appointment of Operator, post of a label showing the name.)
NK: Modified as commented.

No comment

(27) The name and contact of the HSO to inform when there is any requirement for inspection, maintenance and repair of Contractor's Equipment.

4.1.7 Safety Training

(1) The Contractor shall provide the Contractor's Personnel with health and safety training in accordance with JSSS 1.19 [*Safety Training Generally*] taking account of the characteristics of the particular types of Contractor's Equipment and including:

Because of your insertion and changes below, the above clause needs to be renumbered as (1) and the added clauses numbered as (a) etc. and the wording"and incluyded is added

JCA8: 1.19 に equipment に必要なトレーニングが追加される形で総則が修正されているということでしょうか。
Does this mean that 1.19 [Safety Training Generally] has been revised to accommodate the necessary training for equipment operators?
NK: 1.19 (Issue 7)は次のように安全衛生の教育訓練の義務、各分野に関する詳細は安全計画書に示すことを一般規定して規定しています。そのため、1.19 は原案通りと致します。
The 1.19 (Issue 7) stipulates the responsibility of H&S education and training as general requirement, and details to be described in the Safety Plan. Therefore, 1.19 is left as it is.

equipment and such other facilities that are necessary to ensure safety and treat accidents and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and first-aid procedures.

(28) Post a label clearly showing the name of the operator on each unit of Contractor's Equipment together with the name and contact number of the HSO or a person in charge who shall be contacted in the event of breakdown or fault.

(29) Ensure that only the authorised operating, inspection and maintenance personnel access the mechanical, electrical and other components and systems of the Contractor's Equipment and prohibit all other persons from such access.

(30) Ensure that any inspection and maintenance covers, safety guards to prevent contact with moving parts and the like are not disabled, tampered with or removed except for repair, maintenance or any other justifiable reason.

(31) Ensure that installation, assembly, testing commissioning, operation and dismantling of all Contractor's Equipment is carried out under the direction of an Operation Leader, appropriately qualified, skilled and experienced in such activities for the particular type and capacity of equipment and in accordance with the manufacturer's operation, maintenance and repair manual.

4.3.4 Safety Measures During Cleaning, Inspection and Maintenance

The Contractor shall take the following measures for safety of Contractor's Personnel during cleaning, inspection and maintenance. Until such measures are taken, the Contractor shall prohibit any inspection or maintenance personnel or other workers from entering the areas.

(15) Perform inspection and maintenance work wherever possible on a level surface. Where unavoidable ensure that wheels are securely chocked to prevent any movement of equipment.

(16) Provide safety blocks or supports under cargo bed of vehicles to prevent them descending unexpectedly during inspection and maintenance.

(17) Lower attachments (buckets and blades etc.) to the ground during any inspection and maintenance. Where unavoidable ensure that attachments are securely supported to prevent any fall or downward movement.

(b) Inspect, clean, service and maintain the unit of Contractor's Equipment under their responsibility ~~and control or ensure that other qualified persons perform these operations~~. (JCA12)

JCA12: operators の責任？機械責任者の仕事では？要修正。
Isn't this the operator's responsibility but equipment supervisor?
NK: コメントの通り、これらは管理者の責務である。削除。
As commented, it is supervisor's duty to control these aspects. Deleted.

11.1.6 Signalling

(1) Signalling between operators ~~and Spotters~~ and any associated workers shall only be carried out by designated personnel (hereinafter referred to as signallers).

(2) ~~Signallers~~ Spotters shall be located in a safe place and where they can clearly see and be seen by the operator. (JCA13)

JCA13: 冒頭で Spotters に signallers も含まれる旨定義されているので、ここで signallers が出るのは違和感があります。以下、signallers が出てくる場合も同様です。
As the top of this section, it is defined that Spotter is deemed to include signaller, it seems strange to use "signaller" here.
NK: 4.1.1 (4) での signaller の定義は削除しました。
2.4 で次のように Signallers を含めた Spotters の責務を規定しています。そのため、本款では Signallers は、Spotters に変更します。
The definition of "Signaller" in 4.1.1 (4) is deleted.
2.4 is specified the duties of the Spotters including Signallers as below. Therefore, Signallers are replaced with Spotters in this Section.

2.4 SPOTTERS, FLAGMEN AND THE LIKE
2.4.1 Definitions
In accordance with the definition provided in JSSS Annex1.1 [Definitions and Abbreviations], a reference to either of Spotter or Flagman in JSSS shall be deemed to include a reference to the other or both and therefore references in this Chapter are to Spotters, which shall be deemed to include both.
2.4.2 Duties
Duties include for example:
(1) Preventing unauthorised personnel from entering areas where Dangerous Work is being carried out.
(2) Giving appropriate guidance and signals during operation of Contractor's Equipment to prevent the equipment tipping, overturning or falling.
(3) Giving appropriate guidance and signals to prevent Contractor's Personnel from being struck or pinned by Contractor's Equipment.
(4) Assisting drivers of vehicles including trucks and operators of other Contractor's Equipment in positioning their vehicles particularly when manoeuvring.

(3) When it is not possible for ~~Signallers~~ Spotters to give direct visible and audible signals to the operator, other systems including hand-held radios or ~~video cameras~~ videophone must be provided and used.. (JCA14)

JCA14: 何故？Video Camera?? 監視カメラのことを言いたいのであれば別の表現が適切ではないでしょうか。
Why does it need to be a video camera? "Monitoring camera" would be better.
NK : ビデオカメラとビデオモニターを組み合わせテレビ（ビデオ)電話のことを

1.19 Safety Training Generally
1.19.1 The Contractor shall conduct health and safety education and training for all the Contractor's Personnel.
1.19.2 The Contractor shall describe in the Safety Plan the outline of the health and safety training plans describing participants, time, teaching materials, policy for selecting trainers, etc. In addition, the Contractor shall submit full details of all health and safety training to the Engineer for information before the start of any training.

~~The health and safety training shall be provided to the personnel including the following items depending on the characteristics of the Contractor's Equipment. (JCB22)~~

JCB22: この部分は蛇足なので削除。This phrase is superfluity.
NK: Deleted.

I do not understand the above comment but assume that the above added clause is not necessary because of duplication, I have therefore deleted

Where is the following transferred from?

(a) Functions, performance, operation methods, inspection items, inspection method of safety and emergency alarm devices;

(b) Work procedure, signal and communication method at starting time of the operation, and daily inspection;

(c) Lockout and tagout procedures for shutting down operation, turning off the power, locking the starter and necessary measures for the time of cleaning and inspection of the Contractor's Equipment;

(d) Stop of the operation of the Contractor's Equipment when an abnormality occurs and report to the person in charge;

(e) Prohibit removal or isolation of safety devices; and

(f) Risks during operation of the Contractor's Equipment.

~~Particular safety training for transportation operators shall also include prevention of traffic accidents on and off the Site for example including:~~ (JCA9) (JCB23)

(2) Particular safety training for transportation equipment operators shall for the purpose of prevention of traffic accidents on and off the Site, including:

JCB23: 冒頭に交通事故の防止という言葉が入り、具体例においていちいち言わないように修正しています.
Phrase of prevention of traffic accidents is added to avoid necessity to stipulate repeatedly stipulate in each example.
NK: Modified.

Modification is OK

JCB24: この下のナンバリングが変ではないでしょうか。

(18) Stop and isolate the functions completely, establish and implement lockout and tagout procedures to prevent accidents during inspection and maintenance. The lockout and tagout system shall fully isolate the starting system.

(19) Post warning signs to prohibit start-up or use of any Contractor's Equipment during inspection and maintenance.

(20) Assign a Spotter.

(21) Ensure that only authorised personnel have access to the inspection and maintenance area.

4.3.5 Safety Measures During Operation

(4) Unless otherwise specifically permitted by the HSO, all work involving the use of Contractor's Equipment shall be designated as Dangerous Work and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(5) The Contractor shall also ensure that:

(x) All operators are able to clearly see and communicate effectively with Spotters and other relevant persons;

(y) No Contractor's Equipment is operating beyond the capacity or operational limits officially prescribed by the equipment manufacturer;

(z) The surfaces upon which the Contractor's Equipment is working, and any adjacent surfaces and areas over which access is required, are sound, safe and suitable to support the equipment and the Contractor shall provide any temporary foundations, hardstanding or other surfaces, sleepers or steel plates as are necessary to ensure safety and stability of the equipment at all times;

(aa) Spotters are always be provided to enable precise movement and positioning of Contractor's Equipment, particularly when reversing, loading and unloading, in dangerous areas or when the operator's view is not clear and at intersections with public roads;

(bb) Where there is any risk of turnover, slippage, collapse or fall, Contractor's Equipment is equipped with seatbelts or safety

指していると考えます。OSHA の下記の記述を参考に、videotelephone への変更を提案します。
The term of video cameras means videophone system consisting of video camera and monitor. We propose to replace it with videophone.

§1926.1419 Signals—general requirements.
(e) Suitability. The signals used (hand, voice, audible, or new), and means of transmitting the signals to the operator (such as direct line of sight, video, radio, etc.), must be appropriate for the site conditions.
§1926.1420 Signals—radio, telephone or other electronic transmission of signals.
(a) The device(s) used to transmit signals must be tested on site

11.2 INSPECTION, MAINTENANCE AND REPAIR

11.2.3 Requirements Generally

(1) Further to the requirements of JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the HSO shall ensure that all Contractor's Equipment is inspected, fully maintained and operational when it is mobilised to the Site. Thereafter all Contractor's Equipment shall be inspected, maintained and repaired before the commencement of the first and of all subsequent days of operation.

(2) Inspections shall include all items necessary to ensure the safe performance of the Contractor's Equipment including the following examples and any further requirements due to the characteristics, capability and condition of the Contractor's Equipment and in compliance with the manufacturer's official maintenance and repair manual.

(3) ~~Inspection at the time when Contractor's Equipment is mobilised~~ When mobilizing Contractor's Equipment to the Site and before commencement of operation, ~~for which~~ (JCB26) the Contractor shall:

JCB26: 文として完結していないので修正しました。The sentence is not completed, so modified.
NK: Modified as commented.

~~(a) Inspect all units of Contractor's Equipment to ensure that all components are installed and functioning, all inspection and maintenance covers, (JCA15) safety guards to prevent contact with moving parts, and the like are in place, adequate and fit for purpose, securely fixed and that all such units of equipment are in the condition required by the Contract;~~

(a) Inspect all units of Contractor's Equipment to ensure that

- all components are installed and functioning,
- ~~all inspection and maintenance covers,~~
- safety guards to prevent contact with moving parts and the like are in place, adequate and fit for purpose, securely fixed, and

Is numbering below strange?
NK: Modified to that the above sentence is numbered as (7) and the clauses below are numbered (a) to (g).

Numbering requires correcting above and below because of your additional text.

(a) Driving rules in general;

(b) Compliance with speed limits, signs, alcohol use, drugs and all other requirements the Laws of the Country;

(c) Driving methods to contact and collision with other persons, cycles, motorcycles and other vehicles;

(d) Driving methods to properly overtake other vehicles and to be undertaken by others;

(e) Driving methods when encountering holes, bumps or obstacles on the road;

(f) Required inspection and maintenance before starting operation; and

(g) Proper use of vehicles including behaviour and control of passengers, prevention of overcrowding, overloading and unauthorised passengers.

JCA9: ここの transportation に関するトレーニングの内容がかなり詳細なので、この内容と 1.19 の記述のバランスが取れているかを確認のうえ調整願います。
The provisions of the training for "transportation" here are quite detailed, so please make sure that this is harmonized with the description of 1.19.?
NK: 本款の(1)~(7)の項目は、特に事故が多い交通事故の防止に関する教育に注力して規定しています。
The items (1) ~ (7) in this clause is emphasized to focus on education and training for prevention of traffic accidents which is very important.
NK: 技能のある者を雇用し、請負者が機器を使用した作業に従事させるとの前提で、機械の特性に応じて行うべき教育と指導すべき事項を前半の(1)~(6)に追記致します。
The items (1)~(6) for education and training to the worker who is employed as qualified, skilled and experienced person are added at the beginning of this clause as stipulated in Japanese draft.

4.1.8 ~~Qualification of Operators~~ Requirements for Operators

Further to the requirements of JSSS 1.18 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that operators are appropriately qualified, skilled and experienced in operation of the Contractor's Equipment to which they are assigned and duly certified as such by the HSO.

JCA10: 内容は qualification のことではないようです。workmanship ではないでしょうか。
The content is not about the qualification. Isn't it about workmanship?
NK: 資格だけの規定ではないので、提案された workmanship は、辞書では何かを作る技術とありますので、款名は Requirements to Operators ではいかがでしょうか？MD 氏へ相談します。

harnesses and that such seatbelts and harnesses are used;

(cc) Where there is any risk of turnover, slippage, collapse or fall, Contractor's Equipment is equipped with a "Roll-Over Protective Structure" (ROPS);

(dd) Where there is any risk of injury to operators due to falling objects Contractor's Equipment is equipped with a "Falling Object Protective Structure" (FOPS);

(ee) Operators are aware that they shall pay careful and constant attention to the position of any workers near to the operating area and particularly when mobile equipment is reversing;

(ff) Operators of excavating equipment are aware that excavator buckets shall never pass over the operator's seat of Contractor's Equipment;

(gg) Workers shall not enter under a bucket which is loading material and shall keep away from dump trucks when loading or unloading materials; and

(hh) No person shall ride on trucks, trailers or cargo bed other than cabin of vehicles unless permitted by the Law of the Country.

4.3.6 Safety Measures When Mobile Equipment Is Not in Use

(5) When mobile equipment is not in use, the Contractor shall ensure that operators:

(k) Park on surfaces which are level, sound, safe and suitable to support the equipment;

(l) Securely chock all wheels to prevent any movement;

(m) Lower attachments (buckets and blades etc.) to the ground;

(n) Stop and isolate the functions completely, fully engage brakes and lock the brake pedal; and

(o) Lock the equipment and store the starter key in the designated place.

(6) The Contractor shall prohibit all persons other than authorised personnel from entering the area where Contractor's Equipment is parked.

4.3.7 Safety Measures During Connecting and Removing of Attachments

The Contractor shall take the following measures when connecting and

- ~~that~~ all such units of equipment are in ~~the condition required by the Contract~~ proper condition ~~required by the Contract~~; (JCB27)

JCA15: 何のことを指しているのかが分かりません。
This "all inspection and maintenance covers," is not understandable.
NK: MD 氏に記述の見直しと変更を依頼します。
We will ask MD to review and modify this sentence referring to the items separated in (a).
To MD: Please review the JICA comment and NK proposal above and make the items above to one sentence.

JCB27: "契約"が機械の状況について要求するのか？in proper condition で良いのでは.
Dose the Contract request the conditions of equipment? Can it be "proper condition"?
NK: Modified as commented.

(b) Ensure as a minimum that the daily and periodical check items ~~listed below in this Sub Clause~~ (JCB28) have already been inspected and recorded;

JCB28: 何を指すのか？不要ではないか。What do they mean? Is it necessary?
NK: Deleted as commented.

(c) Ensure that all inspection and maintenance records are available for inspection by the Engineer if and when ~~may be~~ (JCB29)required in compliance with JSSS; and

JCB29: 不要。Unnecessary.
NK: Deleted.

(d) If any inspection and maintenance records are incomplete or not available, the Contractor shall carry out inspections and maintenance to ensure that a full and acceptable record is available for all units of Contractor's Equipment. (JCA16)

JCA16: 上記(b), (c), (d)の記録をエンジニアが求めた場合の提出義務を追記しては？
Obligation of submittal of the record in (b), (c) and (d) should be added.
NK: (c)でエンジニアによる閲覧が保証されているので、提出義務は必要ないと考えます。
As inspection of all records by the Engineer is stipulated in (c), it is deemed that stipulating submittal of inspection and maintenance records to the Engineer is not necessary.

~~In relation with the above, it should be noted that Contractor's Equipment shall be in a working and safe condition and fully compliant with the Contract when it is mobilised to the Site and other than initial assembly and set up, no repair or maintenance is expected. The Engineer may refuse to accept delivery to the Site of any Contractor's Equipment that is not in this condition.~~ (JCA17)

In relation with the above, it should be noted that Contractor's Equipment shall be in a working and safe condition and fully compliant with the Contract when it is mobilised to the Site. The Engineer may refuse to accept delivery to the Site any Contractor's

Because the content of this Clause is not only qualification, we propose the title of the clause to be "Requirements to Operators" as the "workmanship" proposed by JICA means the skill with which something was made or done in the dictionary.

(4) Operators shall safely and competently operate the Contractor's Equipment.

No comment

(5) Operators shall be fully aware of the following:

(e) Work procedures, hazards and operation methods;

(f) The need to stop the operation when any defect or abnormality is detected;

~~(e) Not to remove, interfere with or override any safety devices; (JCA11) Prohibition of removing, interfering with or overriding any safety devices;~~ (JCB25)

JCA11: ここだけ動詞形 Only (e) is the verb form.
NK: 名詞とします。 Modified to noun form as right.

JCB25: 4.1.4 (5)に同じことが記載されているので削除します。
Deleted as same is stipulated in 4.1.4 (5).
NK: Deleted.

(g) The identity of and location(s) for Spotters and the communication and signalling requirements including equipment to be used ~~and signals~~; and

(h) The procedures in case of emergency.

(6) ~~In addition,~~ Operators shall:

~~(a) Safely and competently operate the Contractor's Equipment;~~

(c) ~~Operate~~ Keep all safety devices including emergency alarm and stop devices activated; and

(d) Inspect, clean, service and maintain the unit of Contractor's Equipment under their responsibility ~~and control or ensure that other qualified persons perform these operations~~. (JCA12)

JCA12: operators の責任？機械責任者の仕事では？要修正。
Isn't this the operator's responsibility but equipment supervisor?
NK: コメントの通り、これらは管理者の責務である。削除。
As commented, it is supervisor's duty to control these aspects. Deleted.

Do not agree. The supervisor (whoever he is) may be responsible for managing servicing and maintenance but the operator is the primary person, he should not start or continue to use any equipment that he knows requires repair, service or maintenance.

4.1.9 Signalling

(4) Signalling between operators ~~and Spotters~~ and any associated

removing attachments (buckets, blades etc.) to Contractor's Equipment:

(5) Prevent any accident due to movement or fall of attachments by taking safety measures for example, connecting and removing attachments after locating them on stable and sound frames or on the ground.

(6) Prevent accidental movement or operation causing persons to be trapped attachments by taking safety measures for example, parking of the Contractor's Equipment such that it cannot move (as mentioned in JSSS 4.3.4 (1) (a), (b) and (d)) and stop the engine.

4.3.8 Safety Measures During Loading and Transporting of Contractor's Equipment

(17) Select and use trailers with associated ramps, other loading equipment and restraints which are suitable for the particular type, size and weight of the Contractor's Equipment and fit for the purpose for which they are intended.

(18) Select location and areas for loading and unloading which have sufficient space and surfaces which are level, sound, safe and suitable to support all of the equipment.

(19) Securely chock all wheels of trailers to prevent any movement.

(20) Stop and isolate the functions of trailers and load and fully engage brakes.

(21) Ensure trailers are equipped with tie down devices to allow secure fixing of load.

(22) Ensure that the weight and height of the loaded Contractor's Equipment does do not exceed actually required or legal limits.

(23) Ensure that all lights, brakes, steering and safety devices are working properly.

(24) Ensure that suitable, clear and legally compliant signage is attached to the trailer visibly indicating the maximum safe loading capacity, height of load, width, speed limits and any other restrictions or required information.

(25) Ensure that trailers are loaded evenly.

(26) Ensure that Contractor's Equipment loaded onto trailers is braked, wedged, securely locked in position and tied to the trailer with adequately sized chains, slings and other fixings and tensioned to prevent any movement during transit.

(27) Place any attachments on trailers and securely tie down.

(28) Inspect the tie-down tensioning, before and at intervals during

Equipment which does not meet the requirements stipulated in the Contract.

JCA17: 分かりにくい、かつ前文が満たされれば OK ということで削除します。
This part is difficult to understand and when the requirement in the first sentence is fulfilled, the second sentence is unnecessary. Deleted.
NK: In stead of deletion of the sentence, we propose to modify to make clear the Engineer's action

(4) The Contractor shall undertake the following daily inspection items, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted: (JCA18)

JCA18: (c)以下は建設機械に関係するものが中心であって、4.1.1 の(6)以下で列挙されているすべての機械の点検項目として網羅できているでしょうか。していないのであれば、例示としての記述が適切ではないでしょうか。
または、「製造者のマニュアルに従った点検項目」といった形での記述が考えられます。
Do the inspection items in (c) to (k) which are mainly for construction equipment, cover all inspection items enumerated in 4.1.1 (6), etc. If not, it may be appropriate to describe as examples.
Or a description such as "inspection items in accordance with the manufacturer's manual" may works.
NK: 列挙した項目のみでは不足する可能性があります。製造者のマニュアルを引用する項目(l)を追加します。
There is a possibility that the lists cannot cover all items. Added the item (l) regarding the items stipulated in the manufacturer's official maintenance and repair manual.

(a) Operating condition of engine, gearbox(s), drive shafts, pulleys and main components, emergency stop and safety devices, any defects or abnormalities in covers, doors and enclosures;

(b) Abnormal sounds, vibrations or smell;

(c) Leaks, levels and condition of lubricants, coolant, hydraulic fluid levels, and the like;

(d) Lights and indicators;

(e) Brakes, clutches, steering and operating devices and working devices;

(f) Cables, slings, ropes and chains;

(g) Protective covers are adequately provided over all rotating or moving parts;

(h) Attachments and tools such as buckets, grabs, etc.

(i) Cleanliness of each unit or item of Contractor's Equipment;

workers shall only be carried out by designated personnel (hereinafter referred to as signallers).

(5) ~~Signallers~~ Spotters shall be located in a safe place and where they can clearly see and be seen by the operator. (JCA13)

JCA13: 冒頭で Spotters に signallers も含まれる旨定義されているので、ここで signallers が出るのは違和感があります。以下、signallers が出てくる場合も同様です。
As the top of this section, it is defined that Spotter is deemed to include signaller, it seems strange to use "signaller" here.
NK: 4.1.1 (4) での signaller の定義は削除しました。
2.4 で次のように Signallers を含めた Spotters の責務を規定しています。そのため、本款では Signallers は、Spotters に変更します。
The definition of "Signaller" in 4.1.1 (4) is deleted.
2.4 is specified the duties of the Spotters including Signallers as below. Therefore, Signallers are replaced with Spotters in this Section.

2.4 SPOTTERS, FLAGMEN AND THE LIKE
2.4.1 Definitions
In accordance with the definition provided in JSSS Annex1.1 [Definitions and Abbreviations], a reference to either of Spotter or Flagman in JSSS shall be deemed to include a reference to the other or both and therefore references in this Chapter are to Spotters, which shall be deemed to include both.
2.4.2 Duties
Duties include for example:
(1) Preventing unauthorised personnel from entering areas where Dangerous Work is being carried out.
(2) Giving appropriate guidance and signals during operation of Contractor's Equipment to prevent the equipment tipping, overturning or falling.
(3) Giving appropriate guidance and signals to prevent Contractor's Personnel from being struck or pinned by Contractor's Equipment.
(4) Assisting drivers of vehicles including trucks and operators of other Contractor's Equipment in positioning their vehicles particularly when manoeuvring.

No comment

(6) When it is not possible for ~~Signallers~~ Spotters to give direct visible and audible signals to the operator, other systems including hand-held radios or ~~video cameras~~ videophone must be provided and used..(JCA14)

JCA14: 何故？Video Camera?? 監視カメラのことを言いたいのであれば別の表現が適切ではないでしょうか。
Why does it need to be a video camera? "Monitoring camera" would be better.
NK : ビデオカメラとビデオモニターを組み合わせテレビ（ビデオ)電話のことを指していると考えます。OSHA の下記の記述を参考に、videotelephone への変更を提案します。
The term of video cameras means videophone system consisting of video camera and monitor. We propose to replace it with videophone.
§1926.1419 Signals—general requirements.
(e) Suitability. The signals used (hand, voice, audible, or new), and means of transmitting the signals to the operator (such as direct line of sight, video, radio, etc.), must be appropriate for the site conditions.
§1926.1420 Signals—radio, telephone or other electronic transmission of signals.
(a) The device(s) used to transmit signals must be tested on site

It can also mean video reversing camera however no comment

transportation of Contractor's Equipment to ensure that there is no slackening.

(29) Inspect chains, slings and other fixings for securing transported Contractor's Equipment and if any abnormality is found, replace immediately.

4.3.9 Safety Measures During Loading and Transporting of Goods

(2) When transporting heavy or long Goods on public roads, select roads on which the transportation does not pose danger to other traffic, third parties, structures adjacent to the transportation route, obtain all necessary permission from the relevant authorities including police and road authority before commencement of transportation and comply with all requirements.

(3) When transporting heavy or long mateerial Goods within the Site, select suitable routes where the transportation does not pose danger to existing permanent or temporary buildings or structures or other works and obtain the consent of the HSO before commencement of the transportation and comply with all requirements.

(4) Ensure that Goods are loaded evenly.

(5) Secure all loads with adequate and tensioned slings and cover with protective sheets, to avoid any fall or collapse of the conveyed articles and prevent any risk to workers and third parties.

(6) Inspect slings for securing transported materials and if any abnormality is found, replace immediately.

4.3.10 Site Access Roads

(11) Take measures for ensuring that Site access roads are of suitable construction, of sufficient width, free from potholes, uneven settlement and collapse.

(12) Provide signs indicating height and weight restrictions, bends, speed limits, intersections, dangerous places and the like (road shoulders, cliff edges.).

(13) Separate roads for vehicles and walkways for workers and provide passing area for vehicles at places where the road is narrow.

(14) In large construction sites, provide exclusive transport roads which are one-way if possible and provide passing areas on narrow roads.

(15) Provide sufficient lighting facilities at necessary places along roads when work operating in night.

4.3.11 Additional Requirements for Static Equipment

(5) The Contractor shall design and construct suitable foundations and support structures for static equipment with paved surfaces, screens, fencing and associated facilities for storage of material and product and for offices, access and the like all of which shall be

and

(j) Cleanliness of each working area and removal of obstructions.

Imported from Transportation

(k) Availability of emergency kits (JC18a)such as warning flares and triangles, fire extinguisher, first aid kit and the like, as required by the Laws of the Country with the testing and expiration date clearly indicated.

(l) For other items not covered here, the inspection items stipulated in the manufacturer's official maintenance and repair manual shall be applied.

JCA18a: この項目だけ機械のメンテナンスの話ではないので、たとえば 4.3.7 に移動されてはいかがでしょうか。
This(k) only is not item for maintenance, so it is suggested to move this to 4.3.7(?).
NK: It is better to specify this in daily inspection items to make the Contractor's attention and check to items, so it is left here.
NK: Added (l) to specify the items stipulated by the manufacturer.

(5) The Contractor shall undertake the following periodic inspection items, (at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted: (JCA19)

JCA19: (4)のコメントに同じ。Same comment as (4).
NK: (4)と同様に(k)を追加。Same as (4), added (k).

(a) Engine compression pressure, valve clearance and other relevant parts of prime energy unit;

(b) Gearbox, clutch, transmission, propeller shaft, differential and other parts of power transmission devices;

(c) Drive wheels, idling wheels, vertical trunk rollers, belts, tires, wheel bearings and other parts of traveling devices;

(d) Springs, shock absorbers and other parts of suspension devices;

(e) Left and right rotation angle of steering wheel, knuckle, rod, arm and other parts of control devices;

(f) Brake capacity, brake drum, brake shoe and other parts of braking systems;

(g) Blades, booms, link mechanisms, buckets, wire ropes and

4.2 INSPECTION, MAINTENANCE AND REPAIR

4.2.3 Requirements Generally

(8) Further to the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*] the HSO shall ensure that all Contractor's Equipment is inspected, fully maintained and operational when it is mobilised to the Site. Thereafter all Contractor's Equipment shall be inspected, maintained and repaired before the commencement of the first and of all subsequent days of operation.

(9) Inspections shall include all items necessary to ensure the safe performance of the Contractor's Equipment including the following examples and any further requirements due to the characteristics, capability and condition of the Contractor's Equipment and in compliance with the manufacturer's official operation, maintenance and repair manual.

(10) ~~Inspection at the time when Contractor's Equipment is mobilised~~ When mobilizing Contractor's Equipment to the Site and before commencement of operation, ~~for which~~ (JCB26) the Contractor shall:

JCB26: 文として完結していないので修正しました。The sentence is not completed, so modified.
NK: Modified as commented.

No comment

~~(a) Inspect all units of Contractor's Equipment to ensure that all components are installed and functioning, all inspection and maintenance covers, (JCA15) safety guards to prevent contact with moving parts, and the like are in place, adequate and fit for purpose, securely fixed and that all such units of equipment are in the condition required by the Contract;~~

(b) Inspect all units of Contractor's Equipment to ensure that

- all components are installed and functioning; and
- adequate covers and safety guards (to prevent contact with moving parts) are provided and securely fixed.

JCA15: 何のことを指しているのかが分かりません。
This "all inspection and maintenance covers," is not understandable.

NK: MD 氏に記述の見直しと変更を依頼します。

suitable and fit for the purpose for which they are intended. Unless otherwise stated in the Contract, all such foundations, support structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works. All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

(6) Unless otherwise stated in the Contract, all remaining aggregate, rock, cement, bitumen and the like used by or processed with the static equipment shall be removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

4.3.12 Additional Requirements for Personnel and Goods Elevators and Material Conveyors

(1) General

(i) The requirements for material conveyors stipulated in this clause does not apply to portable conveyors.

(j) The Contractor shall undertake the daily and periodical inspection in addition to the items stipulated in JSSS 4.2 [*Inspection, Maintenance And Repair*], 4.2.1 [*Requirements Generally*], (4) and (5) as specified below, (or at intervals required by the manufacturer's official operation, maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(k) The Contractor shall post the maximum load capacity and any restrictions on the use.

(2) Personnel and Goods Elevators

(a) Additional daily inspection items shall include checking for defects or operational faults with the following:

(xxxviii) Elevator enclosures, doors, guide-rails and runners;

(xxxix) Emergency stop and alarm systems;

(xl) Power, lighting and control systems;

(xli) Interphone systems;

(xlii) Brakes, clutches; and

(xliii) Sheaves and pulleys.

(b) Additional periodical inspection items shall include checking for defects or operational faults with the following:

other parts of work equipment;

(h) Hydraulic pump, hydraulic motor, cylinder, safety valve and other parts of hydraulic equipment;

(i) Voltage, amperage and relevant performance and components of electrical systems; and

(j) Body, operating devices, head guards, back stoppers, access doors, protective covers, ladders and steps, locking devices, warning alarm devices, direction indicators, tires' air pressure and lightning devices.

(k) For other items not covered here, the inspection items stipulated in the manufacturer's official maintenance and repair manual shall be applied.

(6) Operation of any unit of Contractor's Equipment shall not be allowed to commence until the HSO has certified that it is safe to do so.

(7) The Contractor shall prepare standard checklists for all inspections and the HSO shall ensure that these are complied with, completed and signed and kept as a record in accordance with JSSS 1.31 [*Health and Safety Records*].

11.2.4 Defects and Repair During Operation

(1) If an operator notices any defect or abnormality in the Contractor's Equipment during operation (such as abnormal noise, temperature, smell, etc.) the operator shall stop the operation immediately;

(2) ~~The operator shall then identify the cause of the defect or abnormality and make necessary repairs by using authorised and qualified specialist mechanics, electricians or representative technical engineers authorised by the Contractor's Equipment manufacturer; and~~ Necessary repair shall be provided by qualified mechanics, electricians or engineers (JCB30) ; and

JCB30: オペレーターが不調の原因まで identify できるのでしょうか。また修理の主語がオペレーターになっていますがこれでよいのか？4.1.4(4)では不調の場合はストップして person in charge に報告することが想定されている。
Can operator identify causes? Is it correct that the main actor of repair is operator? The 4.1.4(4) stipulate *that Stop of the operation and work with of the Contractor's Equipment when an abnormality occurs and report to the person in charge;*
NK: Modified as commented.

(3) The HSO shall ensure that no further operation shall resume unless the above has been complied with and the Contractor's Equipment has been re-inspected by him and certified in accordance with JSSS

We will ask MD to review and modify this sentence referring to the items separated in (a).
To MD: Please review the JICA comment and NK proposal above and make the items above to one sentence.

"Covers" is from your draft and it is a usual and common term for inspection and maintenance covers that are usually screwed in position to allow access for inspection and maintenance. Equipment is not safe if these are missing which is frequently the case.

Otherwise no comment, edited as instructed

JCB27: "契約"が機械の状況について要求するのか？in proper condition で良いのでは.
Dose the Contract request the conditions of equipment? Can it be "proper condition"?
NK: Modified as commented.

(e) Ensure as a minimum that the daily and periodical check items ~~listed below in this Sub Clause~~ (JCB28) have already been inspected and recorded;

JCB28: 何を指すのか？不要ではないか。What do they mean? Is it necessary?
NK: Deleted as commented.

No comment

(f) Ensure that all inspection and maintenance records are available for inspection by the Engineer if and when ~~may be~~ (JCB29)required in compliance with JSSS; and

JCB29: 不要。Unnecessary.
NK: Deleted.

No comment

(g) If any inspection and maintenance records are incomplete or not available, the Contractor shall carry out inspections and maintenance to ensure that a full and acceptable record is available for all units of Contractor's Equipment. (JCA16)

JCA16: 上記(b), (c), (d)の記録をエンジニアが求めた場合の提出義務を追記しては？
Obligation of submittal of the record in (b), (c) and (d) should be added.
NK: (c)でエンジニアによる閲覧が保証されているので、提出義務は必要ないと考えます。
As inspection of all records by the Engineer is stipulated in (c), it is deemed that stipulating submittal of inspection and maintenance records to the Engineer is not necessary.

~~In relation with the above, it should be noted that Contractor's Equipment shall be in a working and safe condition and fully compliant with the Contract when it is mobilised to the Site and other than initial assembly and set up, no repair or maintenance is expected. The Engineer may refuse to accept delivery to the Site of~~

(xliv) Daily inspection items;

(xlv) Wire ropes;

(xlvi) Winch and its foundation; and

(xlvii) Supporting structures, guy ropes, fixings and anchors.

(3) Material Conveyors

(a) Additonal safety measures:

(xlviii) Conveyor systems shall be equipped with an audible warning signal to be sounded immediately before starting up the conveyor;

(xlix) Means for stopping the motor or engine shall be provided at the motor or engine location;

(l) Emergency stop switches shall be provided and be arranged so that the conveyor cannot be started again until the actuating stop switch has been reset to running or "on" position;

(li) Where a conveyor passes over work areas, roads and walkways, suitable guards shall be provided to prevent fall of the materials being conveyed; and

(lii) Riding of workers on the moving belts shall be prohibited.

(b) Additional daily inspection items shall include checking for defects or operational faults with the following:

(liii) Overrun and reverse run prevention devices;

(liv) Emergency stop switches; and

(lv) Guards.

(c) Additional periodical inspection items, shall include for checking for defects or operational faults with daily inspection items.

4.3.13 Additional Requirements for Small Equipment and Tools

(7) Accessories and attachments shall be the standard types obtained from or recommended by the manufacturer of the equipment to which they are connected.

(8) Any repairs shall be carried out by competent persons approved by the HSO and using the manufacturer's genuine or recommended spare parts.

(9) All small equipment and tools shall be tested and re-certified by the HSO as safe for use after any repair or replacement of parts, before such equipment is put back into use.

4.3.14 Additional Requirements for Electric Powered Equipment

(7) Electric powered equipment specified in this clause shall include portable electric powered mobile equipment or tools and shall form

1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*].

11.3 SAFETY REQUIREMENTS

11.3.3 General Safety Measures

In addition to other safety and health requirements of JSSS, the Contractor shall:

(1) Ensure that there is sufficient lighting to perform all work safely and provide artificial lighting where necessary.

(2) Ensure that Contractor's Equipment is equipped with suitable protective safety devices such as covers, screens, guards, contact prevention devices, auto-stop devices, enclosures, barriers and the like ~~all~~ as necessary to prevent ~~any risk of~~ injury to personnel from equipment or parts of equipment, where:

(a) There may be any risk of persons being hit by, caught or injured or entangled in any ropes, cables, sheaves, moving or rotating parts; and

(b) There may be any risk of persons being hit by flying debris, offcuts, or the like produced by the equipment.

(3) Ensure that Contractor's Equipment is equipped with suitable ladders and steps for access to the operating cab and also to all other levels and components to permit inspection, assembly, maintenance and repair of the equipment. ~~Inspection platforms and ladders on cranes and the like shall be fitted with cages.~~ When any Contractor's Personnel need to work at a height of 2 m or more, the Contractor shall take suitable measures in accordance with JSSS 2.5 [*Fall Prevention*], including the provision and use by all Contractor's Personnel of guide ropes and PFAS.

JCA20: (3)はクレーンを強くイメージして書いていると思われるので、クレーンである旨記載願います。そのうえで必要であるならば後述の additional requirement に記載ください。もしくは 6 章。
This clause seems to be written imaging the case of cranes. Therefore, it should be described clearly as regarding crane. If necessary, stipulate it in the additional requirement later or in Chapter 6.
NK: 本項目は特にクレーンに注目しているものではなく、建設機械一般の点検時の安全について規定しているものです。クレーンについて記述している“Inspection platforms and ladders on cranes and the like shall be fitted with cages.”の文は、特に必要ないので削除します。
This clause is not highlighting to cranes, rather those requirements in (3) are general for various construction equipment except for the sentence “Inspection platforms and ladders on cranes and the like shall be fitted with cages.”

~~any Contractor's Equipment that is not in this condition.~~ (JCA17)

In relation with the above, it should be noted that Contractor's Equipment shall be in a working and safe condition and fully compliant with the Contract when it is mobilised to the Site. The Engineer may refuse to accept delivery to the Site any Contractor's Equipment which does not meet the requirements stipulated in the Contract.

JCA17: 分かりにくい、かつ前文が満たされれば OK ということで削除します。
This part is difficult to understand and when the requirement in the first sentence is fulfilled, the second sentence is unnecessary. Deleted.
NK: In stead of deletion of the sentence, we propose to modify to make clear the Engineer's action

No further comment

(11) The Contractor shall undertake the following daily inspection items, (or at intervals required by the manufacturer's official operation, maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted: (JCA18)

JCA18: (c)以下は建設機械に関係するものが中心であって、4.1.1 の(6)以下で列挙されているすべての機械の点検項目として網羅できているでしょうか。していないのであれば、例示としての記述が適切ではないでしょうか。
または、「製造者のマニュアルに従った点検項目」といった形での記述が考えられます。
Do the inspection items in (c) to (k) which are mainly for construction equipment, cover all inspection items enumerated in 4.1.1 (6), etc. If not, it may be appropriate to describe as examples.
Or a description such as “inspection items in accordance with the manufacturer's manual” may works.
NK: 列挙した項目のみでは不足する可能性があります。製造者のマニュアルを引用する項目(l)を追加します。
There is a possibility that the lists cannot cover all items. Added the item (l) regarding the items stipulated in the manufacturer's official maintenance and repair manual.

(m) Operating condition of engine, gearbox(s), drive shafts, pulleys and main components, emergency stop and safety devices, any defects or abnormalities in covers, doors and enclosures;

(n) Abnormal sounds, vibrations or smell;

(o) Leaks, levels and condition of lubricants, coolant, hydraulic fluid levels, and the like;

(p) Lights and indicators;

(q) Brakes, clutches, steering and operating devices and working devices;

a part of the small equipment and tools listed in JSSS 4.1.1 (7).

(8) The Contractor shall undertake the following additional daily inspection items, (or at intervals required by the manufacturer's official operation, maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(i) Defects or operational faults with grounding such as disconnection of grounding wire and insecure fixing of grounding electrodes;

(j) Damage to insulation and protective coverings of all wires and cables including flexible cables; and

(k) Damage to plugs, sockets, transformers and all wiring fittings and appliances.

(9) The Contractor shall comply with the following additional safety requirements:

(aa) Use waterproof switches and socket outlets with covers, securely fixed and located in accessible and dry places;

(bb) Label and paint electrical power and switch boxes with warning signs and coloured hazard markings;

(cc) Use rubber cabtyre cables for all electrical power equipment;

(dd) Wherever possible provide an ELCB or RCD in the electrical supply to each item of electrical equipment;

(ee) If for any reason, an ELCB or RCD cannot be provided, ensure that the metal exterior of the electrical power supply, metal outer casing of electric motors and the electrical equipment are all grounded;

(ff) Avoid hanging electric cables and wires directly on nails, reinforcement or scaffolding and the like to prevent damage to the insulation and protective covering;

(gg) Turn off the power before repairing, moving or maintaining electric power equipment;

(hh) Replace fuses with correct type and rating, prohibit replacing fuses with a higher rating or with iron or copper wire;

(ii) Ensure that fuses are replaced by an authorised person;

The sentence is deleted.

(4) Prohibit personnel other than operators, workers and other authorised personnel from entering the place where Contractor's Equipment is in use for the Works.

~~(5) Prohibit all personnel from accessing spoil heaps, stone, aggregate, sand and other material stock pile areas where there is any risk of material slippage and consequent injury.~~ (JCA20a)

JCA20a: コンクリート・骨材プラント特有の問題を一般化すると唐突感。equipment と関係ないと思われるため削除してください。
Particular requirements related with concrete/crushing plants are specified in general requirements for equipment. It seems strange, so please delete (5).
NK: Deleted.

(5) Ensure that each unit of Contractor's Equipment is provided with appropriate numbers and types of fire extinguishing equipment (JCA21) and such other facilities ~~that are necessary to ensure safety~~ where such equipment is necessary and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and fire safety procedures.

JCA21: 本当？→全部には備え付けないものと考えますので、必要なものに備え付けるという旨に記述を修正願います。
Really? Fire extinguishing equipment would not be provided all Equipment. Please modify the stipulation to provide it when necessary.
NK: We will modify it referring to the following clause of OSHA:
1926.601 Motor vehicles.
(14) All vehicles in use shall be checked … These requirements also apply to equipment such as …, fire extinguishers, etc., where such equipment is necessary.

(6) Ensure that each working area where Contractor's Equipment is in use, is provided with appropriate numbers and types of first-aid equipment and such other facilities that are necessary to ensure safety and treat accidents and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and first-aid procedures. (JCB31)

JCB31: 機械の safety requirement ではない。It is not the safety requirements for the Equipment.
NK: 機械を使っての作業場所に救急用具を設置することは、機械の安全措置ではないですが、作業員の安全措置ですので、このまま残します。
This clause is not safety requirement for Equipment but for workers in the working area with Equipment. Therefore this as left as it is.

(7) Post a label clearly showing the name of the operator on each unit of Contractor's Equipment together with the name and contact number of the HSO (JCB32) or a person in charge who shall be contacted in the event of breakdown or fault.

JC32: 4.1.4(4)では不調の場合はストップして person in charge に報告することが想定されているので、併記しておきます。

(r) Cables, slings, ropes and chains;

(s) Protective covers are adequately provided over all rotating or moving parts;

(t) Attachments and tools such as buckets, grabs and the like;

(u) Cleanliness of each unit or item of Contractor's Equipment;

(v) Cleanliness of each working area and removal of obstructions;

(w) Availability of emergency kits such as warning flares and triangles, fire extinguisher, first aid kit and the like, as required by the Laws of the Country with the testing and expiration date clearly indicated; and

JCA18a: この項目だけ機械のメンテナンスの話ではないので、たとえば 4.3.7 に移動されてはいかがでしょうか。
This(k) only is not item for maintenance, so it is suggested to move this to 4.3.7(?).
NK: It is better to specify this in daily inspection items to make the Contractor's attention and check to items, so it is left here.

(x) Any additional inspection items stipulated in the manufacturer's official operation, maintenance and repair manual.

NK: Added (l) to specify the items stipulated by the manufacturer.
Edited

(12) The Contractor shall undertake the following periodic inspection items, (at intervals required by the manufacturer's official operation, maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted: (JCA19)

JCA19: (4)のコメントに同じ。Same comment as (4).
NK: (4)と同様に(k)を追加。Same as (4), added (k).

(l) Engine compression pressure, valve clearance and other relevant parts of prime energy unit;

(m) Gearbox, clutch, transmission, propeller shaft, differential and other parts of power transmission devices;

(n) Drive wheels, idling wheels, vertical trunk rollers, belts, tires, wheel bearings and other parts of traveling devices;

(o) Springs, shock absorbers and other parts of suspension

(jj) Prevent any use of electric power equipment from use in the rain, or when the user is wet, standing in water or is not wearing rubber soled insulated footwear or when the electric power equipment is wet;

(kk) When any operational fault is identified immediately turn off the power, unplug and stop using the equipment and advise (or hand to) the HSO;

(ll) Ensure that workers using electric power equipment wear appropriate PPE suitable for the electric power equipment in use such as working clothes, protective helmets, safety shoes, eye and face protection, ear protection; and

(mm) When electric shock accident occurs, unplug and stop using the equipment and advise (or hand to) the HSO and take measures in accordance with JSSS 1.24 [*Accident Response Plan*].

4.3.15 Additional Safety Measures during Adverse Weather

Further to the requirements of JSSS 2.7 [*Adverse Weather Requirements*], the Contractor shall ensure that Contractor's Equipment is parked in a stable and secure state by taking all necessary measures including:

(7) Dropping the jib, boom, arm and attachments to ground level and securing where necessary with adequate anchors and chains.

(8) If heavy rain and flooding can be anticipated, moving Contractor's Equipment to higher ground or to places where there is no risk of instability.

(9) Removing snow or ice.

4.4 ROPES, SLINGS AND CHAINS

4.4.3 Requirements Generally

(1) The Contractor shall ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

(2) The safety factor for wire ropes, slings and chains shall be as recommended by the manufacturer of each type.

(3) Wire ropes and slings shall not be fabricated at the Site but shall be obtained only from sources approved by the HSO.

(4) Requirements for Ropes, slings and chains shall be as specified in

4.1.4(4) stipulate operator shall stop operation and inform person in charge of event of breakdown or fault, so added the person in charge.
NK: Modified.

(8) Ensure that only the authorised operating, inspection and maintenance personnel access the mechanical, electrical and other components and systems of the Contractor's Equipment and prohibit all other persons from such access ~~. and prevent them from disabling any features and tampering with or removing any inspection and maintenance covers, safety guards to prevent contact with moving parts and the like.~~ (JCB33).

(9) Ensure that any inspection and maintenance covers, safety guards to prevent contact with moving parts and the like are not disabled, tampered with or removed except for repair, maintenance or any other justifiable reason.

JCB33: 無関係な人間にアクセスを禁じるのは防護装置に悪さをさせないためだけではないし、関係者が防護装置に悪さをするかもしれない。従って、無関係者のアクセス禁止と防護装置の維持の話に分ける。
The prohibition of other persons from accessing to equipment is for avoiding them doing bad to protective device. On the other hand, there is possibility that workers related with the work do bad to the protective device. Therefore, the (8) is divided to two for(8) prohibition of other persons to access to equipment and (9) keeping the protective device function.
NK: Modified as commented.

(10) Ensure that installation, assembly, testing commissioning, operation and dismantling of all major equipment including static equipment, ~~personnel and goods~~ (JCB34) elevators and or (JCB35) the like, is carried out under the direction of an Operation Leader appropriately qualified, skilled and experienced in such activities for the particular type and capacity of equipment and strictly in accordance with the manufacturer's printed instructions.

JCB34: 削除。単に elevators でいいのでは。
Deleted. It can be "elevators".
NK: Modified.

JCB35: Is it "or".
NK: We think "and" can be left.
To MD, please advise to use "or" or "and".

Following is imported from Foundation Piling:

11.3.4 ~~Transportation to and Removal from Site~~(JCA22)

(1) ~~When transporting heavy or long goods on public roads, select roads on which the transportation does not pose danger to general traffic, third parties, structures adjacent to the transportation route, obtain all necessary prior permission from the relevant authorities~~

devices;

(p) Left and right rotation angle of steering wheel, knuckle, rod, arm and other parts of control devices;

(q) Brake capacity, brake drum, brake shoe and other parts of braking systems;

(r) Blades, booms, link mechanisms, buckets, wire ropes and other parts of work equipment;

(s) Hydraulic pump, hydraulic motor, cylinder, safety valve and other parts of hydraulic equipment;

(t) Voltage, amperage and relevant performance and components of electrical systems;

(u) Body, operating devices, head guards, back stoppers, access doors, protective covers, ladders and steps, locking devices, warning alarm devices, direction indicators, tyre air pressures and lightning devices; and

(v) Any additional inspection items stipulated in the manufacturer's official operation, maintenance and repair manual.

(13) Operation of any unit of Contractor's Equipment shall not be allowed to commence until the HSO has certified that it is safe to do so.

(14) The Contractor shall prepare standard checklists for all inspections and the HSO shall ensure that these are complied with, completed and signed and kept as a record in accordance with JSSS 1.33 [*Health and Safety Records*].

4.2.4 Defects and Repair During Operation

(4) If an operator notices any defect or abnormality in the Contractor's Equipment during operation (such as abnormal noise, temperature, smell, etc.) the operator shall stop the operation immediately.

(5) ~~The operator shall then identify the cause of the defect or abnormality and make necessary repairs by using authorised and qualified specialist mechanics, electricians or representative technical engineers authorised by the Contractor's Equipment manufacturer; and~~ Necessary repair shall be provided by qualified mechanics, electricians or engineers.

JCB30: オペレーターが不調の原因まで identify できるのでしょうか。また修理の主語がオペレーターになっていますがこれでよいのか？4.1.4(4)では不調の場合は

JSSS 5.4 [*Rigging Equipment*].

4.5 ALTERNATIVE USE OF CONTRACTOR'S EQUIPMENT

4.5.3 Requirements Generally

The Contractor shall not use Contractor's Equipment for any other purpose than the purpose for which it is designed and other than the purpose recommended by the manufacturer.

Use of Contractor's Equipment for any other purpose than the originally intended purpose are allowed only if it is not prohibited by either of the Law the Country and the manufacturer's official operation, maintenance and repair manual and subject to HSO's approval after reviewing all the safety aspects.

In particular, when equipment for excavation is to be used for lifting, the HSO shall confirm:

(1) Rigging Equipment such as hook is attached on an appropriate part of the excavation equipment (e.g. arm or bucket).

(2) Arms, bucket, Rigging Equipment have enough strength to lift the load.

(3) There is no risk that the lifting devices such as hook and shackles will be detached from arm or bucket of the equipment.

(4) The lifting capacity for alternative use is confirmed by loading tests at the Site.

(5) Ensure that operators understand the equipment capability, are properly trained in the alternative use, are fully aware of and follow the manufacturer's written instructions and load charts.

(6) Ensure that operators have accurately determined the total weight of the load, taking account of the weight of any attachments, the reach and angle and configuration of the equipment and have informed the HSO of this and obtained his permission before commencing the operation.

(7) Check the working area and improve the ground surface as necessary to ensure the stability of the equipment.

(8) Ensure that the equipment is stable, if provided lower stabilisers, if the equipment is equipped with a blade, lower the blade to the ground for added stability and ensure that necessary counterweights

~~including police, road authority before commencement of transportation and comply with all requirements.~~

(2) ~~When transporting heavy or long goods within the Site, select suitable route where the transportation does not pose danger to existing permanent or temporary buildings or structures or other works and obtain the consent of the Engineer before commencement of the transportation and comply with all requirements.~~

Imported from Transportation:

JCA22: 4.3.4 の operation のところに入れてください。
Please move these (1) and (2) to 4.3.4 [Safety Measures During Operation].
NK: 4.3.7 (1) & (2)に移動しました。章番号を繰り上げます。
Moved to 4.3.7 (1) & (2) and Clause Nos are changed.

11.3.5 Safety Measures During Cleaning, Inspection and Maintenance

The Contractor shall take the following measures for safety of Contractor's Personnel during cleaning, inspection and maintenance. Until such measures are taken, the Contractor shall prohibit any inspection or maintenance personnel or other workers from entering the areas ~~at risk.~~

(1) Perform inspection and maintenance work wherever possible on a level surface. Where unavoidable ensure that wheels are securely chocked to prevent any movement of equipment.

Imported from Transportation:

(2) Provide safety blocks or supports under cargo bed of vehicles to prevent them descending unexpectedly during inspection and maintenance.

(3) Lower attachments (buckets and blades etc.) to the ground during any inspection and maintenance. Where unavoidable ensure that attachments are securely supported to prevent any fall or downward movement.

(4) Stop and isolate the functions completely, establish and implement lockout and tagout procedures to prevent accidents during inspection and maintenance. The lockout and tagout system shall fully isolate the starting system.

(5) Post warning signs to prohibit start-up or use of any Contractor's Equipment during inspection and maintenance.

(6) Assign a Spotter.

(7) Ensure that only authorised personnel have access to the inspection

ストップして person in charge に報告することが想定されている。
Can operator identify causes? Is it correct that the main actor of repair is operator?
The 4.1.4(4) stipulate *that Stop of the operation and work with of the Contractor's Equipment when an abnormality occurs and report to the person in charge;*
NK: Modified as commented.

(6) The HSO shall ensure that no further operation shall resume unless the above has been complied with and the Contractor's Equipment has been re-inspected by him and certified in accordance with JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPP*].

4.3 SAFETY REQUIREMENTS

4.3.3 General Safety Measures

In addition to other safety and health requirements of JSSS, the Contractor shall:

(11) Ensure that there is sufficient lighting to perform all work safely and provide artificial lighting where necessary.

(12) Ensure that Contractor's Equipment is equipped with suitable protective safety devices such as covers, screens, guards, contact prevention devices, auto-stop devices, enclosures, barriers and the like ~~all~~ as necessary to prevent ~~any risk of~~ injury to personnel from equipment or parts of equipment, where:

(c) There may be any risk of persons being hit by, caught or injured or entangled in any ropes, cables, sheaves, moving or rotating parts; and

(d) There may be any risk of persons being hit by flying debris, offcuts, or the like produced by the equipment.

(13) Ensure that Contractor's Equipment is equipped with suitable ladders and steps for access to the operating cab and also to all other levels and components to permit inspection, assembly, maintenance and repair of the equipment. ~~Inspection platforms and ladders on cranes and the like shall be fitted with cages.~~ When any Contractor's Personnel need to work at a height of 2 m or more, the Contractor shall take suitable measures in accordance with JSSS 2.5 [*Fall Prevention*], including the provision and use by all Contractor's Personnel of guide ropes and PFAS.

JCA20: (3)はクレーンを強くイメージして書いていると思われるので、クレーンである旨記載願います。そのうえで必要であるならば後述の additional requirement に記

are in place.

(9) Check the rigging to ensure it is appropriate to the use and rated to handle the load. Inspect it before each use for any signs of damage or wear, and make sure it is properly secured to the machine and load.

(10) Ensure that the area is clear of any unnecessary personnel, Spotters should be the only individuals in the immediate area, and should be stationed clear of the lift area yet visible to the operator throughout the operation.

(11) Lift the load slowly, keep the lifting point directly over the centre of the load, keep the load as close to the machine and the ground as possible and position the equipment to hoist and lower end on, not sideways.

(12) If there are any signs of instability or loss of control of the machine or load, discontinue the lift and lower the load to the ground.

4.6 HIRED/LEASED CONTRACTOR'S EQUIPMENT

4.6.3 Requirements Generally

(9) Contractor's Equipment from hire or lease companies shall comply with all of the requirements of the Contract and JSSS as if it were the Contractor's own property, in particular the Contractor shall ensure compliance with the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*].

(10) The Contractor shall ensure that the hire/lease companies have performed all necessary inspection, maintenance and repair works before the Contractor's Equipment is mobilised to the Site and that the following is provided with the equipment to the Contractor upon mobilisation and is available for the inspection of the Engineer:

(g) Inspection and maintenance records;

(h) Operation, repair and maintenance manuals; and

(i) Spare and replacement parts, tools, maintenance equipment, lubricants, filters, hydraulic fluids and the like.

(11) The Contractor shall double-check to ensure that the inspection and maintenance has been carried out and if the Contractor has any doubt over the adequacy of such inspection or maintenance or if

and maintenance area.

11.3.6 Safety Measures During Operation

(1) The Contractor shall ensure the safety of all Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where works are being executed and who may be affected by such work.

(2) Unless otherwise specifically permitted by the HSO, (JCA23) all work involving the use of Contractor's Equipment shall be designated as Dangerous Work (JCA24) and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

JCA23: エンジニアではなく？
Shouldn't this be the Engineer?
NK: JC24 のコメントとおり、Contractor's Equipment の範囲が広いのためと現場の条件によっては、立入禁止措置がとれない場合もあります。その場合の判断は HSO が責任をもって行うものと考えます。
Because Contractor's Equipment are various types from heavy equipment to tools and small equipment, and depending on the site conditions, it may not be possible to take entry prevention measures. In such a case, the HSO is the one who has to make judgment and decision. Left as is.

JCA24: Contractor's Equipment の範囲が広いので、すべてを Dangerous Work とするのは間違いではないでしょうか。したがって、「Contractor's Equipment を用いる場合で unless it is not practicable な場合にはフェンスを設置する」という趣旨の文を記載願います。
It is not appropriate to designated all works as "Dangerous Work" because Contractor's Equipment includes various types. Please, stipulate such that When using Contractor's Equipment, unless it is not practicable, shall enclose the working area.
NK: Contractor's Equipment を用いる仕事は危険な作業とする原則を規定し、ただし、HSO が許可した場合は、危険な作業から除外できると、原案は規定しています。現場に判断を任せず、原則を規定することが事故の防止上必要と考えますので、原案通りとします。
This clause specify that the principle is the work using Contractor's Equipment shall be Dangerous Work, and the work which the HSO permits as not Dangerous Work.
This does not leave the judgement to the Contractor. The principle stipulation is important to prevent accident with Contractor's Equipment.
Therefore, (2) is left as it is.

(3) The Contractor shall also ensure that:

(a) All operators are able to clearly see and communicate effectively with Spotters and other relevant persons;

(b) No Contractor's Equipment shall be allowed to operate beyond the capacity or operational limits officially prescribed by the equipment manufacturer;

載ください。もしくは 6 章。
This clause seems to be written imaging the case of cranes. Therefore, it should be described clearly as regarding crane. If necessary, stipulate it in the additional requirement later or in Chapter 6.
NK: 本項目は特にクレーンに注目しているものではなく、建設機械一般の点検時の安全について規定しているものです。クレーンについて記述している "Inspection platforms and ladders on cranes and the like shall be fitted with cages." の文は、特に必要ないので削除します。
This clause is not highlighting to cranes, rather those requirements in (3) are general for various construction equipment except for the sentence "Inspection platforms and ladders on cranes and the like shall be fitted with cages."
The sentence is deleted.

No comment

(14) Prohibit personnel other than operators, workers and other authorised personnel from entering the place where Contractor's Equipment is in use for the Works.

~~(5) Prohibit all personnel from accessing spoil heaps, stone, aggregate, sand and other material stock pile areas where there is any risk of material slippage and consequent injury.~~ (JCA20a)

JCA20a: コンクリート・骨材プラント特有の問題を一般化すると唐突感。equipment と関係ないと思われるため削除してください。
Particular requirements related with concrete/crushing plants are specified in general requirements for equipment. It seems strange, so please delete (5).
NK: Deleted.

No comment

(15) ~~Ensure that each unit of Contractor's Equipment is provided with appropriate numbers and types of fire extinguishing equipment (JCA21) and such other facilities that are necessary to ensure safety where such equipment is necessary and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and fire safety procedures.~~

JCA21: 本当？→全部には備え付けないものと考えますので、必要なものに備え付けるという旨に記述を修正願います。
Really? Fire extinguishing equipment would not be provided all Equipment.
Please modify the stipulation to provide it when necessary.
NK: We will modify it referring to the following clause of OSHA:
1926.601 Motor vehicles.
(14) All vehicles in use shall be checked … These requirements also apply to equipment such as …, fire extinguishers, etc., where such equipment is necessary.

The original text was fine.

Your added text is edited as follows:

(16) Ensure that each unit of Contractor's Equipment is provided with appropriate numbers and types of fire extinguishing equipment ~~and~~

complete records are not made available, the Contractor shall not allow this Contractor's Equipment to be used upon the Works. The Contractor shall inspect and carry out full maintenance and repair on such equipment in compliance with the requirements of this Chapter before it is certified for use by the HSO and used upon the Works.

(12) Operators from hire/lease companies are by definition Contractor's Personnel and they shall be treated as if they are employed by the Contractor, in terms of compliance with the Contract and JSSS.

(13) Operators shall be tested and certified by the HSO, shall receive safety training and shall perform all inspection, maintenance and other requirements fully in compliance with JSSS, in the same way as the Contractor's own employees.

4.7 TEMPORARY FUELLING FACILITIES

4.7.3 Requirements Generally

(13) Unless otherwise specified in the Particular Safety Specification, the Contractor shall design and construct temporary fuel storage and dispensing facilities at the Site for the use of Contractor's Equipment. These facilities shall be substantial and secure and capable of storing and dispensing fuel in a safe and environmentally acceptable manner all to the approval of the Engineer.

(14) The facility shall include storage tanks, suitable foundations, support or containment structures, protective bund walls as necessary, paved surfaces, screens, fencing and associated facilities for storage of separate fuels and lubricants and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended.

(15) Unless otherwise specified in the Contract, all such tanks, foundations, support and containment structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works. All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

(16) The Contractor must ensure that the temporary fuel storage and

(c) The surfaces upon which the Contractor's Equipment is working, and any adjacent surfaces and areas over which access is required, are sound, safe and suitable to support the equipment and the Contractor shall provide any temporary foundations, hardstanding or other surfaces, sleepers or steel plates as are necessary to ensure safety and stability of the equipment at all times;

Imported from Transportation (above also):

(d) Spotters shall always be provided to enable precise movement and positioning of Contractor's Equipment, particularly when reversing, loading and unloading, being at dangerous areas, ~~areas~~ where the operator's view is not clear and a intersections with public roads.

To MD, please review the above deletion of areas is correct.

(e) Where there is any risk of turnover, slippage, collapse or fall, ~~All~~ Contractor's Equipment ~~is~~ shall be equipped with seatbelts or safety harnesses (JCA25) and that such seatbelts and harnesses are used;

JCA25: 建設機械だけを意味してはいないので、それは違うのでは？mobile equipment として記述するか、主語はこのままにして適切に範囲を絞るような表現をするか((f)のような書き方)、いずれかで適切に書き換えをお願いします。
This is not correct because Contractor's Equipment includes various equipment including construction equipment. Please modify the stipulation by using "mobile equipment" or applying a phrase such as "where there is any risk, etc."
NK: 追記しました。Added as commented.

(f) Where there is any risk of turnover, slippage, collapse or fall, Contractor's Equipment shall be equipped with a "Roll-Over Protective Structure" (ROPS);

(g) Where there is any risk of injury to operators due to falling objects Contractor's Equipment shall be equipped with a "Falling Object Protective Structure" (FOPS);

(h) Operators shall pay careful and constant attention to the position of any workers near to the operating area and particularly when mobile equipment is reversing; (JCA25a)

(i) Operators of excavating equipment shall ensure that excavator buckets never pass over the operator's seat of ~~other~~ Contractor's Equipment; and (JCA25a)

(j) Workers shall not enter under a bucket which is loading material and shall keep away from dump trucks when loading ~~such other facilities~~ where such equipment is necessary and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and in fire safety procedures.

(17) Ensure that each working area where Contractor's Equipment is in use, is provided with appropriate numbers and types of first-aid equipment and such other facilities that are necessary to ensure safety and treat accidents and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and first-aid procedures. (JCB31)

JCB31: 機械の safety requirement ではない。It is not the safety requirements for the Equipment.
NK: 機械を使っての作業場所に救急用具を設置することは、機械の安全措置ではないですが、作業員の安全措置ですので、このまま残します。
This clause is not safety requirement for Equipment but for workers in the working area with Equipment. Therefore this as left as it is.

(18) Post a label clearly showing the name of the operator on each unit of Contractor's Equipment together with the name and contact number of the HSO (JCB32) or a person in charge who shall be contacted in the event of breakdown or fault.

JC32: 4.1.4(4)では不調の場合はストップして person in charge に報告することが想定されているので、併記しておきます。
4.1.4(4) stipulate operator shall stop operation and inform person in charge of event of breakdown or fault, so added the person in charge.
NK: Modified.

No comment

(19) Ensure that only the authorised operating, inspection and maintenance personnel access the mechanical, electrical and other components and systems of the Contractor's Equipment and prohibit all other persons from such access ~~. and prevent them from disabling any features and tampering with or removing any inspection and maintenance covers, safety guards to prevent contact with moving parts and the like.~~ (JCB33).

(20) Ensure that any inspection and maintenance covers, safety guards to prevent contact with moving parts and the like are not disabled, tampered with or removed except for repair, maintenance or any other justifiable reason.

JCB33: 無関係な人間にアクセスを禁じるのは防護装置に悪さをさせないためだけではないし、関係者が防護装置に悪さをするかもしれない。従って、無関係者のアクセス禁止と防護装置の維持の話に分ける。
The prohibition of other persons from accessing to equipment is for avoiding them doing bad to protective device. On the other hand, there is possibility that workers related with the work do bad to the protective device. Therefore, the (8) is divided to two for(8) prohibition of other persons to access to equipment and (9) keeping the protective device function.

dispensing facility is operated and occupied at all time only by authorised personnel and that all unauthorised personnel are prohibited from entering such areas at all times. The Contractor shall be particularly careful and provide measures to prevent any unauthorised access, tampering, damage and theft at any time.

(17) All storage tanks shall be bunded either as jacketed tanks or by providing bunded enclosures, such that in the event of a catastrophic failure, the tank contents will be safely contained and shall not be allowed to run freely or enter the surface or ground water systems.

(18) The Contractor is reminded of the requirements of JSSS 2.8 [*Fire Prevention*] and will be required to provide a comprehensive and a high standard of fire protection in fuel storage areas.

or unloading materials.

JCA25a: (comment is not shown.)
NK: A phrase is added to clarify the kind of operators.
Imported from Transportation:

(k) No person shall ride on trucks, trailers or cargo bed other than cabin of vehicles unless permitted by the Law of the Country.

4.3.2 ~~Safety Measures When Equipment Is Not In Use~~ (JCA26) Safety Measures When ~~Equipment~~ Mobile Equipment Is Not in Use

JCA26: Contractor's Equipment とするか mobile とするか
Please consider to change it to "Contractor's Equipment" or "mobile"?
NK: 内容が移動機械のものであるため"Mobile Equipment"に修正しました。下の(1)も同様。
As the provisions are regarding to mobile equipment, modified to "Mobile Equipment". (1) below also is modified.

(1) When ~~Contractor's Equipment~~ mobile equipment (JCA26a) is not in use, the Contractor shall ensure that operators:

JCA26a: この辺りも建設機械に特化した記述かと
This is also stipulation particularly for construction equipment.
NK: Modified to mobile equipment.

(a) Park on surfaces which are level, sound, safe and suitable to support the equipment;

(b) Securely chock all wheels to prevent any movement;

(c) Lower attachments (buckets and blades etc.) to the ground;

(d) Stop and isolate the functions completely, fully engage brakes and lock the brake pedal; and

(e) Lock the equipment and store the starter key in the designated place.

(2) The Contractor shall prohibit all persons other than authorised personnel from entering the area where Contractor's Equipment is parked.

11.3.7 Safety Measures During ~~Connection~~ Connecting and Removing of Attachments

The Contractor shall take the following measures when connecting and removing attachments (buckets, blades etc.) to Contractor's Equipment: (JCB36)

JCB36: こうした事態が発生するのを防ぐために具体的な記述を記載してください。
・安定したフレームにアタッチメントをおいて着脱する。
・エンジンを切る
その他、4.3.4 の(1)で参考になるようなことを具体的に記述してください。
Please stipulate concrete measures to avoid occurrence of accident mentioned in 81) and (2) for example,

NK: Modified as commented.

No comment

~~(11) Ensure that installation, assembly, testing commissioning, operation and dismantling of all major equipment including static equipment, personnel and goods (JCB34) elevators and or (JCB35) the like, is carried out under the direction of an Operation Leader appropriately qualified, skilled and experienced in such activities for the particular type and capacity of equipment and strictly in accordance with the manufacturer's printed instructions.~~

JCB34: 削除。単に elevators でいいのでは。
Deleted. It can be "elevators".
NK: Modified.

JCB35: Is it "or".
NK: We think "and" can be left.
To MD, please advise to use "or" or "and".

I suggest editing in total as follows:

(21) Ensure that installation, assembly, testing commissioning, operation and dismantling of all Contractor's Equipment is carried out under the direction of an Operation Leader, appropriately qualified, skilled and experienced in such activities for the particular type and capacity of equipment and in accordance with the manufacturer's operation, maintenance and repair manual.

Following is imported from Foundation Piling:

~~4.3.2 Transportation to and Removal from Site~~(JCA22)

~~(3) When transporting heavy or long goods on public roads, select roads on which the transportation does not pose danger to general traffic, third parties, structures adjacent to the transportation route, obtain all necessary prior permission from the relevant authorities including police, road authority before commencement of transportation and comply with all requirements.~~

~~(4) When transporting heavy or long goods within the Site, select suitable route where the transportation does not pose danger to existing permanent or temporary buildings or structures or other works and obtain the consent of the Engineer before commencement of the transportation and comply with all requirements.~~

JCA22: 4.3.4 の operation のところに入れてください。
Please move these (1) and (2) to 4.3.4 [Safety Measures During Operation].
NK: 4.3.7 (1) & (2)に移動しました。章番号を繰り上げます。

- connecting and removing attachments which are located on stable frames,
- Put off engine
- Other concrete measures referring to 4.3.4 (1).

NK: added in (1) and (2).

(1) Prevent any accident due to movement or fall of attachments by taking safety measures for example, connecting and removing attachments after locating them on stable and sound frames or ground, and

(2) Prevent accidental movement or operation causing persons to be trapped attachments by taking safety measures for example, parking of the Contractor's Equipment not to move as mentioned in JSSS 4.3.4 (1) (a), (b) and (d), stop engine.

11.3.8 Safety Measures During Loading and Transporting (JCA27) of Contactor's Equipment (JCB37)

JCA27: タイトル要修正。場合によっては要分割・統合。
・Contractor's Equipment を運ぶときの話
・Contractor's Equipment で材料等を運ぶときの話
・Contractor's Equipment でその他のことをする場合の話
が混在しています。
Contractor's Equipment で輸送・荷卸しする時ではなくて、Contractor's Equipment を輸送・荷卸しする時なので、このタイトルは Loading and Transporting of Contractor's Equipment では.でないと、ここで勘違いして？？？になる
It is necessary to modify the title or divide/merge contents, because the contents are mixed with transporting equipment, transporting materials with equipment and others.

NK: 本章の題を[Safety Measures during Loading and Transporting of Contractor's Equipment]に変更し、新たに 4.3.7 [Safety Measures during Loading and Transporting of Materials]を加え、その中に 4.3.2 (1), (2)及び本章の材料等の運搬に係わる(9), (13), (14)を移動しました。
Changed the title to [Safety Measures during Loading and Transporting of Contractor's Equipment], and added a new Clause 4.3.7 [Safety Measures during Loading and Transporting of Materials], which contains measures for transporting materials from 4.3.2 (1) & (2) and 4.3.7 (9), (13) and 14.

JCB37: 4.3.6 では積み上げ・積み下ろし作業を論じている。輸送時のこととしてみると、おかしなことがある((3)とか)。
4.3.6 stipulates loadinga nd transporting. It is starange such as (3) if it is in transporting time.

NK: Review and revise if any strange.

Some added measure imported from Transportation

(1) Select and use trailers, ~~ramps~~, tracks, their accessary and/or ~~climbing equipment or~~ other equipment which is suitable for the particular type, size and weight of the Contractor's Equipment and fit for the purpose for which they are intended.

To MD, may we know this track is truck. It seems JICA misunderstood and revised to trailer/track. If misunderstood the original shall be used.

(2) Select location and ~~loading and unloading~~ areas for loading and unloading which have sufficient space and surfaces which are level, sound, safe and suitable to support all of the equipment.

Moved to 4.3.7 (1) & (2) and Clause Nos are changed.

No comment

4.3.4 Safety Measures During Cleaning, Inspection and Maintenance

The Contractor shall take the following measures for safety of Contractor's Personnel during cleaning, inspection and maintenance. Until such measures are taken, the Contractor shall prohibit any inspection or maintenance personnel or other workers from entering the areas ~~at risk.~~

(8) Perform inspection and maintenance work wherever possible on a level surface. Where unavoidable ensure that wheels are securely chocked to prevent any movement of equipment.

(9) Provide safety blocks or supports under cargo bed of vehicles to prevent them descending unexpectedly during inspection and maintenance.

(10) Lower attachments (buckets and blades etc.) to the ground during any inspection and maintenance. Where unavoidable ensure that attachments are securely supported to prevent any fall or downward movement.

(11) Stop and isolate the functions completely, establish and implement lockout and tagout procedures to prevent accidents during inspection and maintenance. The lockout and tagout system shall fully isolate the starting system.

(12) Post warning signs to prohibit start-up or use of any Contractor's Equipment during inspection and maintenance.

(13) Assign a Spotter.

(14) Ensure that only authorised personnel have access to the inspection and maintenance area.

4.3.5 Safety Measures During Operation

(1) ~~The Contractor shall ensure the safety of all Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where works are being executed and who may be affected by such work.~~

The above is similar to and partial duplication of 4.1.1 and can be deleted if 4.1.1 is reworded slightly, which I have done.

(2) Unless otherwise specifically permitted by the HSO, (JCA23) all work involving the use of Contractor's Equipment shall be designated as Dangerous Work (JCA24) and the Contractor shall

(3) Securely chock all wheels of trailer/track ~~wheels~~ to prevent any movement during loading of Contactor's Equipment.

NK: Added "during loading of Contactor's Equipment".

(4) Stop and isolate the functions of trailer/track and load and fully engage brakes.

(5) Ensure trailers/track are equipped with tie down devices to allow secure fixing of load.

(6) Ensure that the weight and height of the loaded Contractor's Equipment does do not exceed actually required or legal limits.

(7) ~~Ensure that all lights, brakes, steering and safety devices are working properly.~~ - (JCB38)

JCB38: これ、必要でしょうか？単に運ばれている時の話ですし、故障したから運ばれる場合もあるのでは？
Is (7) necessary? This is only for time of transporting equipment. May there be a case that Contactor's Equipment of out of order is transported?
NK: (7) specifies for trailer/track to transport Contactor's Equipment but not the Equipment of out of order.
This (7) will be deleted because the (7) is provisions for Safety Measures during Loading and Transporting

(8) Ensure that ~~suitable load limit~~ authorized maximum loading capacity (JCA28) load limit, height, speed limit and any other required signage is applied to the trailer/track.

JCA28: suitable で良いか確認ください。「定められた」といった概念の言葉が入るべきではないでしょうか。
Please check if it is proper to use "suitable" here. It should mean the concept of such as "legally determined."
NK: トレーラの積載荷重の表示のため"authorized maximum loading capacity" に変更します。
Modified to "authorized maximum loading capacity".

(9) ~~Ensure that materials are loaded evenly.~~ (JCA28a)

(10) Ensure that Contractor's Equipment is braked, wedged, securely locked in position and tied to the trailer with adequately sized chains or other fixings and tensioned to prevent any movement during transit.

(11) Place any attachments on the trailer/track. and securely tie down.

(12) Inspect the tie-down tensioning, before and at intervals during transportation of Contractor's Equipment to ensure that there is no slackening.

(13) ~~Secure all loads with adequate and tensioned slings and cover with protective sheets, to avoid any fall or collapse of the conveyed articles and prevent any risk to workers and third parties;~~ (JCA28a)

enclose the working area with temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

JCA23: エンジニアではなく？
Shouldn't this be the Engineer?
NK: JC24 のコメントとおり、Contractor's Equipment の範囲が広いのためと現場の条件によっては、立入禁止措置がとれない場合もあります。その場合の判断は HSO が責任をもって行うものと考えます。
Because Contractor's Equipment are various types from heavy equipment to tools and small equipment, and depending on the site conditions, it may not be possible to take entry prevention measures. In such a case, the HSO is the one who has to make judgment and decision. Left as is.

JCA24: Contractor's Equipment の範囲が広いので、すべてを Dangerous Work とするのは間違いではないでしょうか。したがって、「Contractor's Equipment を用いる場合で unless it is not practicable な場合にはフェンスを設置する」という趣旨の文を記載願います。
It is not appropriate to designated all works as "Dangerous Work" because Contractor's Equipment includes various types. Please, stipulate such that When using Contractor's Equipment, unless it is not practicable, shall enclose the working area.
NK: Contractor's Equipment を用いる仕事は危険な作業とする原則を規定し、ただし、HSO が許可した場合は、危険な作業から除外できると、原案は規定しています。現場に判断を任せず、原則を規定することが事故の防止上必要と考えますので、原案通りとします。
This clause specify that the principle is the work using Contractor's Equipment shall be Dangerous Work, and the work which the HSO permits as not Dangerous Work.
This does not leave the judgement to the Contractor. The principle stipulation is important to prevent accident with Contractor's Equipment.
Therefore, (2) is left as it is.

No further comment

(3) The Contractor shall also ensure that:

(l) All operators are able to clearly see and communicate effectively with Spotters and other relevant persons;

(m) No Contractor's Equipment shall be allowed to operate beyond the capacity or operational limits officially prescribed by the equipment manufacturer;

(n) The surfaces upon which the Contractor's Equipment is working, and any adjacent surfaces and areas over which access is required, are sound, safe and suitable to support the equipment and the Contractor shall provide any temporary foundations, hardstanding or other surfaces, sleepers or steel plates as are necessary to ensure safety and stability of the equipment at all times;

(o) ~~Spotters shall always be provided to enable precise~~

(14) ~~Inspect slings for securing transported materials and if any abnormality is found, replace immediately.~~ (JCA28a)

JCA28a: Contractor's Equipment で輸送することを言っているならあり、Contractor's Equipment を輸送するなら無し
(9)も(14)もそうで、安易に組み替えた感じあり。
NK: (9), (13) and (14) are deleted here and moved to 4.3.7.

4.3.7 Safety Measures During Loading and Transporting of Materials

(1) When transporting heavy or long goods on public roads, select roads on which the transportation does not pose danger to ~~general~~ public traffic (JCB39), third parties, structures adjacent to the transportation route, obtain all necessary ~~prior~~ (JCB40), permission from the relevant authorities including police, road authority before commencement of transportation and comply with all requirements.

JCB39: general traffic?
To MD: Please review this change to public traffic.

JCB40: Prior は後に before があるから不要。
"Prior" is not necessary as there is "before".
NK: Deleted as comented.

(2) When transporting heavy or long goods within the Site, select suitable route where the transportation does not pose danger to existing permanent or temporary buildings or structures or other works and obtain the consent of the Engineer before commencement of the transportation and comply with all requirements.

(3) Ensure that materials are loaded evenly

(4) Secure all loads with adequate and tensioned slings and cover with protective sheets, to avoid any fall or collapse of the conveyed articles and prevent any risk to workers and third parties;

(5) Inspect slings for securing transported materials and if any abnormality is found, replace immediately.

Imported from Transportation (above also):

11.3.9 ~~Access Roads (JCA29) Roads in the Site~~ (JCB40) Temporary Transporting Roads in the Site

JCA29: 違和感あり、この上でも混乱しているので輸送車両等の Additional Requirements for か輸送時の安全措置でまとめた方が良いかと。4.3.2 も改めてみると中途半端な感じ。
There is confusion, so it is better to specify requirements in Additional Requirements for transporting equipment or Safety measures during transportation. 4.3.2 seems something imperfect.
"Access Roads"はサイトの外をイメージさせますが、記述の内容はサイト内のことであるように思います。タイトルを適切に変更したうえで(transportation in the Site など)、すなおに理解できるようにしてください。場合によっては 2 章に移動させることも検討してください(risk control in the site という見出しを新たに作ってそこに入れるなど)
"Access Roads" would give an impression that means roads outside of the site, whereas the contents are regarding the roads inside of the site.
Please, change the title properly such as "Transportation in the Site" to make the clause easier to understand. If necessary, consider to move this to Chapter 2 making new clause, for example [Risk Control in the Site].

~~movement and positioning of Contractor's Equipment, particularly when reversing, loading and unloading, being at dangerous areas, areas where the operator's view is not clear and at intersections with public roads.~~

To MD, please review the above deletion of areas is correct.

I suggest editing as follows:

(p) Spotters shall always be provided to enable precise movement and positioning of Contractor's Equipment, particularly when reversing, loading and unloading, in dangerous areas or when the operator's view is not clear and at intersections with public roads;

(q) Where there is any risk of turnover, slippage, collapse or fall, ~~All~~ Contractor's Equipment ~~is~~ shall be equipped with seatbelts or safety harnesses and that such seatbelts and harnesses are used;

JCA25: 建設機械だけを意味してはいないので、それは違うのでは？mobile equipment として記述するか、主語はこのままにして適切に範囲を絞るような表現をするか((f)のような書き方)、いずれかで適切に書き換えをお願いします。
This is not correct because Contractor's Equipment includes various equipment including construction equipment. Please modify the stipulation by using "mobile equipment" or applying a phrase such as "where there is any risk, etc."
NK: 追記しました。Added as commented.

No comment

(r) Where there is any risk of turnover, slippage, collapse or fall, Contractor's Equipment shall be equipped with a "Roll-Over Protective Structure" (ROPS);

(s) Where there is any risk of injury to operators due to falling objects Contractor's Equipment shall be equipped with a "Falling Object Protective Structure" (FOPS);

(t) Operators shall pay careful and constant attention to the position of any workers near to the operating area and particularly when mobile equipment is reversing;

(u) Operators of excavating equipment shall ensure that excavator buckets never pass over the operator's seat of Contractor's Equipment;

(v) Workers shall not enter under a bucket which is loading material and shall keep away from dump trucks when loading or unloading materials; and

JCA25a: (comment is not shown.)

NK: タイトルを Roads in the Site に変更しました。
The title is changed to [Roads in the Site].

JCB40: 仮設で作られる機械専用通路のことと理解していますが、英語の正しさについては MD 氏に確認願います。
We understood this Clause is for exclusive use roads temporary constrcuted.
Please ask MD to confirm the title and content.
NK: 和文では次のように作業環境と規定していました。
5.4.1 運搬車両の作業環境
請負者は、運搬車両を用いた作業を行う場合には、運搬作業における現場内での安全な作業環境を確保するために、次の措置を講じなければならない。
(1) 運行経路について必要な幅員を保持すること、…。
(2) 運行経路の必要と認められる箇所には、制限速度を示す標識…。
(3) 運搬車両の走路と歩行者の安全通路を明示し、…。
(4) 規模の大きな工事現場においては運搬専用道路を設け、…。
(5) 夜間の運搬作業時には、…。
Site 外の公道の安全措置は道路管理者が行うべきことのため、和文（案）を参考に、現場内の運搬道路の安全措置とタイトルを変更することを提案します。
Japanese JSSS stipulate as follows:
5.4 Transport Works by Transportation Vehicles
5.4.1 Work Environment
The Contractor shall take the following measures for the safety working environment in the Site for operation of transportation vehicles.
(1) Take measures for the transportation road …;
(2) Put signboards indicating speed limit …;
(3) Separate roads for vehicles and walkways…;
(4) In large construction site, provide exclusive transport roads …; and
(5) Provide sufficient lighting facilities …;.
Safety measures in public roads out side of the Site shall be taken by the road authority.
NK: We propose to revise the title to Safety Measures for Temporary Transporting Roads in the Site referring to Japanese JSSS.
To MD, please review the title.

(1) Take measures for ensuring that ~~access roads in the Site~~ (JCB41) Temporary Transporting Roads in the Site are of suitable construction, ~~of~~ sufficient width, free from potholes, uneven settlement and collapse.

JCB41: 同上。Ditto
NK: Ditto.

(2) Provide signs indicating height and weight restrictions, bends, speed limits, intersections, dangerous places and the like (road shoulders, cliff edges.).

(3) Separate roads for vehicles and walkways for workers and provide passing area for vehicles at places where the road is narrow.

(4) In large construction site, provide exclusive transport roads which are one-way if possible, and passing areas at narrow roads.

(5) Provide sufficient lighting facilities at necessary places along the

NK: A phrase is added to clarify the kind of operators.

No comment

(w) No person shall ride on trucks, trailers or cargo bed other than cabin of vehicles unless permitted by the Law of the Country.

4.3.6 ~~Safety Measures When Equipment Is Not In Use~~ Safety Measures When ~~Equipment~~ Mobile Equipment Is Not in Use

JCA26: Contractor's Equipment とするか mobile とするか
Please consider to change it to "Contractor's Equipment" or "mobile"?
NK: 内容が移動機械のものであるため"Mobile Equipment"に修正しました。下の(1)も同様。
As the provisions are regarding to mobile equipment, modified to "Mobile Equipment". (1) below also is modified.

(3) When ~~Contractor's Equipment~~ mobile equipment is not in use, the Contractor shall ensure that operators:

JCA26a: この辺りも建設機械に特化した記述かと
This is also stipulation particularly for construction equipment.
NK: Modified to mobile equipment.

No comment

(f) Park on surfaces which are level, sound, safe and suitable to support the equipment;

(g) Securely chock all wheels to prevent any movement;

(h) Lower attachments (buckets and blades etc.) to the ground;

(i) Stop and isolate the functions completely, fully engage brakes and lock the brake pedal; and

(j) Lock the equipment and store the starter key in the designated place.

(4) The Contractor shall prohibit all persons other than authorised personnel from entering the area where Contractor's Equipment is parked.

4.3.7 Safety Measures During ~~Connection~~ Connecting and Removing of Attachments

The Contractor shall take the following measures when connecting and removing attachments (buckets, blades etc.) to Contractor's Equipment: (JCB36)

JCB36: こうした事態が発生するのを防ぐために具体的な記述を記載してください。
・安定したフレームにアタッチメントをおいて着脱する。
・エンジンを切る
その他、4.3.4 の(1)で参考になるようなことを具体的に記述してください。

roads when work operating in night.

11.3.10 Additional Requirements for Static Equipment (JCA30)

JCA30: 骨材プラント、コンクリートプラント、アスファルトプラントなどを明示してもいい。
It is better to exemplify such as aggregate plant, concrete plant, etc.?
NK: 定置機械については 4.1.1 (6)で例示しているので、ここでの改めての例示は不要と考えます。
Static equipment are exemplified in 4.1.1 (6). Thus, it is not necessary to mention again here.

(1) The Contractor shall design and construct suitable foundations and support structures for static equipment with paved surfaces, screens(JCB42), fencing and associated facilities for storage of material and product and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended. Unless otherwise stated in the Contract, all such foundations, support structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works. All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

JC42: What is screen?
NK: It means fence screen such as shown in the photo below.

(2) Unless otherwise stated in the Contract, all remaining aggregate, rock, cement, bitumen and the like used by or processed with the static equipment shall be removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

11.3.11 Additional Requirements for Personnel and Goods Elevators and Material Conveyors(JCA31) (JCB43)

JCA31: 定置機械にまとめた模様。
専門業者による組み立て、起動予告ブザー、連続装置設置(連続した非常停止スイッチ)、コンベア搭乗禁止とか削除されているので、復活させてください。エレベーターとコンベアを一緒にするか否かも要検討。
Please add the provisions of installation under the instruction of the experts, warning alarm system for start-up, emergency stop buttons for each necessary
Please stipulate concrete measures to avoid occurrence of accident mentioned in 81) and (2) for example,
- connecting and removing attachments which are located on stable frames,
- Put off engine
- Other concrete measures referring to 4.3.4 (1).

NK: added in (1) and (2).

(3) Prevent any accident due to movement or fall of attachments by taking safety measures for example, connecting and removing attachments after locating them on stable and sound frames or on the ground.

(4) Prevent accidental movement or operation causing persons to be trapped attachments by taking safety measures for example, parking of the Contractor's Equipment such that it cannot move (as mentioned in JSSS 4.3.4 (1) (a), (b) and (d)) and stop the engine.

4.3.8 Safety Measures During Loading and Transporting of Contractor's Equipment

JCA27: タイトル要修正。場合によっては要分割・統合。
・Contractor's Equipment を運ぶときの話
・Contractor's Equipment で材料等を運ぶときの話
・Contractor's Equipment でその他のことをする場合の話
が混在しています。
Contractor's Equipment で輸送・荷卸しする時ではなくて、Contractor's Equipment を輸送・荷卸しする時なので、このタイトルは Loading and Transporting of Contractor's Equipment では.でないと、ここで勘違いして？？？になる
It is necessary to modify the title or divide/merge contents, because the contents are mixed with transporting equipment, transporting materials with equipment and others.
NK: 本章の題を[Safety Measures during Loading and Transporting of Contractor's Equipment]に変更し、新たに 4.3.7 [Safety Measures during Loading and Transporting of Materials]を加え、その中に 4.3.2 (1), (2)及び本章の材料等の運搬に係わる(9), (13), (14)を移動しました。
Changed the title to [Safety Measures during Loading and Transporting of Contractor's Equipment], and added a new Clause 4.3.7 [Safety Measures during Loading and Transporting of Materials], which contains measures for transporting materials from 4.3.2 (1) & (2) and 4.3.7 (9), (13) and 14.

JCB37: 4.3.6 では積み上げ・積み下ろし作業を論じている。輸送時のこととしてみると、おかしなことがある((3)とか)。
4.3.6 stipulates loadinga nd transporting. It is starange such as (3) if it is in transporting time.
NK: Review and revise if any strange.

(15) Select and use trailers, ~~ramps~~, tracks, their accessary and/or ~~climbing equipment or~~ other equipment which is suitable for the particular type, size and weight of the Contractor's Equipment and fit for the purpose for which they are intended.

To MD, may we know this track is truck. It seems JICA misunderstood and revised to trailer/track. If misunderstood the original shall be used.

This is from your original transportation draft which stated – "Use vehicles with climbing equipment or special equipment when construction heavy equipment is transported by trailers or tracks".

It is correct as it was i.e. not "trucks" it is "tracks" and so is "ramps". This clause

point and prohibition of riding on conveyor, etc. stipulated in Japanese version. Please consider whether requirements for elevators and conveyers shall be specified together or separately.

NK: 追記・別々に規定しました。(組立てに関しては 4.3.1(9)に規定済です。)
Added and separately specified. (Installation under instruction by expert is specified in 4.3.1(9).) Provisions for conveyors are stipulated referring to OSHA 1926.555 Conveyors.

JCB43: ポータブルコンベヤーと違うことをどこかで記載する必要があるのでは。このスペックはポータブルコンベヤーには適用しない。
It is necessary to describe that the material conveyors does not include portable conveyors in JSSS, and the provisions for the material conveyors does not apply to the portable conveyors.

NK: Portable conveyors is added in 4.1.1 Scope (7) (c) and specified in (1) below as commneted.

(1) ~~General Requirements~~

~~The Contractor shall post the maximum load capacity and any restrictions on the use.~~

(2) ~~The Contractor shall undertake the following additional daily inspection items, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re certification of the HSO before any further operation of the Contractor's Equipment is permitted:~~

(a) ~~Defects or operational faults in elevator enclosures, doors, guide rails and runners;~~

(b) ~~Defects or operational faults in emergency stop and alarm systems;~~

(c) ~~Defects or operational faults in power, lighting and control systems;~~

(d) ~~Defects or operational faults with interphone systems;~~

(e) ~~Defects or operational faults in brakes, clutches; and~~

(f) ~~Defects or operational faults of sheaves and pulleys.~~

(3) ~~The Contractor shall undertake the following additional periodical inspection items, (at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and obtain re certification of the HSO before any further operation of the Contractor's Equipment is permitted:~~

(a) ~~Defects or operational faults in supporting cables and wire ropes; and~~

refers to selecting trailers and for getting equipment onto the trailers although "ramps" is more understandable than tracks.

I suggest minor editing as follows:

(1) Select and use trailers with associated ramps, other loading equipment and restraints which are suitable for the particular type, size and weight of the Contractor's Equipment and fit for the purpose for which they are intended.

(2) Select location and ~~loading and unloading~~ areas for loading and unloading which have sufficient space and surfaces which are level, sound, safe and suitable to support all of the equipment.

(3) Securely chock all wheels of trailer/~~track~~ ~~wheels~~ to prevent any movement ~~during loading of Contractor's Equipment.~~

NK: Added "during loading of Contactor's Equipment".

OK but no need to add as the clause heading describes this already

No need "track"

(4) Stop and isolate the functions of trailer/track and load and fully engage brakes.

No need "track"

(5) Ensure trailers/track are equipped with tie down devices to allow secure fixing of load.

No need "track"

(6) Ensure that the weight and height of the loaded Contractor's Equipment does do not exceed actually required or legal limits.

(7) ~~Ensure that all lights, brakes, steering and safety devices are working properly~~. - (JCB38)

JCB38: これ、必要でしょうか？単に運ばれている時の話ですし、故障したから運ばれる場合もあるのでは？
Is (7) necessary? This is only for time of transporting equipment. May there be a case that Contactor's Equipment of out of order is transported?

NK: (7) specifies for trailer/track to transport Contactor's Equipment but not the Equipment of out of order.
This (7) will be deleted because the (7) is provisions for Safety Measures during Loading and Transporting

Yes, I think it is necessary as trailers are very often old, not road-worthy, unsafe and commonly without operating electrics or lights or even brakes. I also suggest that it should stay here as it should be checked anyway when the Contractor's Equipment has been loaded.

(b) ~~Defects or operational faults in supporting structures, guy ropes, fixings and anchors.~~

(7) General

(a) The requirements for material conveyors stipulated in t4.3.10 does not apply to portable conveyors.

(b) The Contractor shall undertake the ~~following additional~~ daily and periodical inspection ~~items~~ in addition to the items stipulated in JSSS 4.2 [INSPECTION, MAINTENANCE AND REPAIR], 4.2.1 [Requirements Generally], (4) and (5) as specified below, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(c) ~~The Contractor shall undertake the following additional periodical inspection items, (at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted.~~

(d) The Contractor shall post the maximum load capacity and any restrictions on the use.

(8) Personnel and Goods Elevators (JCB44)

JCB44: 以下のように、(b)、(c)も同様に直してください。(3)も同様。
Please modify (b) (c) and (3) as below.
NK: Modified.

(a) Additional daily inspection items shall include to check defects or operational faults with respect to:

(i) ~~Defects or operational faults in~~ elevator enclosures, doors, guide-rails and runners;

(ii) ~~Defects or operational faults in~~ emergency stop and alarm systems;

(iii) ~~Defects or operational faults in~~ power, lighting and control systems;

(iv) ~~Defects or operational faults with~~ interphone systems;

(v) ~~Defects or operational faults in~~ brakes, clutches; and

(vi) ~~Defects or operational faults of~~ sheaves and pulleys.

(b) Additional periodical inspection items shall include to check defects or operational faults with respect to:

(vii) ~~Defects or operational faults in~~ daily inspection items;

(viii) ~~Defects or operational faults in~~ wire ropes;

(ix) ~~Defects or operational faults in~~ winch and its foundation; and

(x) ~~Defects or operational faults in~~ supporting structures, guy ropes, fixings and anchors.

(9) ~~Belt~~ Material Conveyors

Local law seems often to cover tractors but not detachable trailers

(8) ~~Ensure that suitable load limit authorized maximum loading capacity~~ (JCA28) ~~load limit, height, speed limit and any other required signage is applied to the trailer~~/~~track.~~

JCA28: suitable で良いか確認ください。「定められた」といった概念の言葉が入るべきではないでしょうか。
Please check if it is proper to use "suitable" here. It should mean the concept of such as "legally determined."
NK: トレーラの積載荷重の表示のため"authorized maximum loading capacity" に変更します。
Modified to "authorized maximum loading capacity".

I suggest edit as follows:

(8) Ensure that suitable, clear and legally compliant signage is attached to the trailer visibly indicating the maximum safe loading capacity, height of load, width, speed limits and any other restrictions or required information.

(9) ~~Ensure that materials are loaded evenly.~~ (JCA28a)

No problem to transfer above but suggest that the following modified clause is included here also:

(10) Ensure that trailers are loaded evenly.

(11) Ensure that Contractor's Equipment is braked, wedged, securely locked in position and tied to the trailer with adequately sized chains, slings and other fixings and tensioned to prevent any movement during transit.

(12) Place any attachments on the trailer/~~track.~~ and securely tie down.

No need "track"

(13) Inspect the tie-down tensioning, before and at intervals during transportation of Contractor's Equipment to ensure that there is no slackening.

No comment (but no need)

(14) ~~Secure all loads with adequate and tensioned slings and cover with protective sheets, to avoid any fall or collapse of the conveyed articles and prevent any risk to workers and third parties;~~ (JCA28a)

(15) ~~Inspect slings for securing transported materials and if any abnormality is found, replace immediately.~~ (JCA28a)

No problem to transfer above but suggest that the following modified clause is

(a) Additonal safety measures

(xi) Conveyor systems shall be equipped with an audible warning signal to be sounded immediately before starting up the conveyor.

(xii) Means for stopping the motor or engine shall be provided at the motor or engine location.

(xiii) Emergency stop switches shall be provided and be arranged so that the conveyor cannot be started again until the actuating stop switch has been reset to running or "on" position.

(xiv) Where a conveyor passes over work areas, roads and walkways, suitable guards shall be provided ~~to protect workers required to work below the conveyors~~ to prevent fall of the materials being conveyed .

(xv) Riding of workers on the moving belts ~~of the belt conveyors~~ shall be prohibited.

(b) Additional daily inspection items shall include to check defects or operational faults with respect to:

(xvi) ~~Defects or operational faults in~~ prevention devices against uncontrolled run and reverse run, and emergency stop switches; and

(xvii) ~~Defects or operational faults in~~ guards.

(c) Additional periodical inspection items

Defects or operational faults in daily inspection items~~; and~~ (JCB45)

JCB45: There is no sentence after "and".
NK: Deleted.

With regard to the following, please refer to Compliance standards above and can we discuss further:

To MD, The 4.1. General describes as follows:

The Contractor shall comply with "OHSA Part1926 Subpart N- Helicopters, Hoists, Elevators, and Conveyors, and Subpart I-Tools-and and Power" for the equipment, tools and stationary equipment which are not specified in (c), (d) and (e).

I do not think that this is necessary:

Do you think if we shall specify Subpart I, §1926.304 Woodworking tools again to specify more details for saws in 4.4.3 (2)?

11.3.12 Additional Requirements for ~~Tools, Tackle and~~ (JCB46)Small Equipment and Tools

JCB46: これらを総称して Tools でいいのでは. Tools and Tackle can be called as "Tools".
NK: Defined "Tools2 in 4.1.1 (7) above.

included here also:

(16) Inspect chains, slings and other fixings for securing transported Contractor's Equipment and if any abnormality is found, replace immediately.

JCA28a: Contractor's Equipment で輸送することを言っているならあり、Contractor's Equipment を輸送するなら無し
(9)も(14)もそうで、安易に組み替えた感じあり。
NK: (9), (13) and (14) are deleted here and moved to 4.3.7.

No problem

4.3.8 Safety Measures During Loading and Transporting of Materials

(1) When transporting heavy or long goods on public roads, select roads on which the transportation does not pose danger to ~~general~~ public traffic (JCB39), third parties, structures adjacent to the transportation route, obtain all necessary ~~prior~~ (JCB40), permission from the relevant authorities including police, road authority before commencement of transportation and comply with all requirements.

JCB39: general traffic?
To MD: Please review this change to public traffic.

Change is not necessary and has little or no meaning.

This is transportation on "public roads" anyway (which does have meaning) and any traffic thereon is covered by "general"

JCB40: Prior は後に before があるから不要。
"Prior" is not necessary as there is "before".
NK: Deleted as comented.

Agreed

(2) When transporting heavy or long goods within the Site, select suitable route where the transportation does not pose danger to existing permanent or temporary buildings or structures or other works and obtain the consent of the HSO ~~Engineer~~ before commencement of the transportation and comply with all requirements.

(3) Ensure that materials are loaded evenly

(4) Secure all loads with adequate and tensioned slings and cover with protective sheets, to avoid any fall or collapse of the conveyed articles and prevent any risk to workers and third parties.

(5) Inspect slings for securing transported materials and if any abnormality is found, replace immediately.

I think that the above should correctly be changed from Engineer to HSO. Contractor is responsible for all such arrangements.

4.3.7 ~~Access Roads (JCA29)~~ ~~Roads in the Site~~ ~~(JCB40)~~ Temporary Transporting Roads in the Site

(1) Accessories and attachments shall be the standard types obtained from or recommended by the manufacturer of the equipment to which they are connected.

(2) Any repairs shall be carried out by competent persons approved by the HSO. ~~the manufacturers recommended repair agents and using the manufacturers genuine or recommended spare parts.~~ (JCB47)

JCB47: Tools の修理に代理店を使うことはレアー。所謂 competent person が HSO に指名されたものであればいいとしたい。
あくまでも理想論。僻地では無理 " as much as possible"を加えてみては
It is few for agents to repair them, so it is replaced with competent persons approved by the HSO.
It is ideal for agent to repair them, so how about to add "as much as possible".
NK: Modified as commented.

(3) All small equipment (JCB48) and Tools shall be tested and re-certified by the HSO as safe for use after any repair or replacement of parts, before such equipment is put back into use.

JCB48: マイナーなものなので、re-certified まではしないと思います。
It may not be re-certified because they are minor equipment.
NK: We would like to stipulate test before use to avoid injury of workers but not request to be certified. Therefore, it is left with modification as it is.

11.3.13 Additional Requirements for Electric Powered Equipment (JCB49)

JCB49: ここで規定する電動機械は何かを明確にしないと混乱してしまう。ポータブルのものや Tool の類は含まれないと理解しました。
It is confused because it is not clear what are Electric Powered Equipment. We undestood it does not include portable equipment and tools.
NK: The Electric Powered Equipment was defiend in 4.1.1 (8) in last draft R2 as follows:
(8) Electric powered equipment means portable electric powered mobile equipment or tools.
The (8) was deleted by JICA comment JC13 and 14.
NK: Definition is added in (1) below.

(1) Electric powered equipment specified in 4.3.12 is portable electric powered mobile equipment or tools among small equipment and Tools listed in 4.1.1 (7).

(2) The Contractor shall undertake the following additional daily inspection items, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(a) ~~All equipment is provided with Earth Leakage Circuit Breakers (ELCB) and that these are working properly with no defects or operational faults;~~ Defects or operational faults of Earth Leakage Circuit Breakers (ELCB), if any; (JCB50)

4.3.9 Site Access Roads

See notes below

JCA29: 違和感あり、この上でも混乱しているので輸送車両等の Additional Requirements for か輸送時の安全措置でまとめた方が良いかと。4.3.2 も改めてみると中途半端な感じ。
There is confusion, so it is better to specify requirements in Additional Requirements for transporting equipment or Safety measures during transportation. 4.3.2 seems something imperfect.
"Access Roads"はサイトの外をイメージさせますが、記述の内容はサイト内のことであるように思います。タイトルを適切に変更したうえで(transportation in the Site など)、すなおに理解できるようにしてください。場合によっては 2 章に移動させることも検討してください(risk control in the site という見出しを新たに作ってそこに入れるなど)
"Access Roads" would give an impression that means roads outside of the site, whereas the contents are regarding the roads inside of the site.
Please, change the title properly such as "Transportation in the Site" to make the clause easier to understand. If necessary, consider to move this to Chapter 2 making new clause, for example [Risk Control in the Site].
NK: タイトルを Roads in the Site に変更しました。
The title is changed to [Roads in the Site].

JCB40: 仮設で作られる機械専用通路のことと理解していますが、英語の正しさについては MD 氏に確認願います。
We understood this Clause is for exclusive use roads temporary constrcuted.
Please ask MD to confirm the title and content.
NK: 和文では次のように作業環境と規定していました。
5.4.1 運搬車両の作業環境
請負者は、運搬車両を用いた作業を行う場合には、運搬作業における現場内での安全な作業環境を確保するために、次の措置を講じなければならない。
(1) 運行経路について必要な幅員を保持すること、…。
(2) 運行経路の必要と認められる箇所には、制限速度を示す標識…。
(3) 運搬車両の走路と歩行者の安全通路を明示し、…。
(4) 規模の大きな工事現場においては運搬専用道路を設け、…。
(5) 夜間の運搬作業時には、…。
Site 外の公道の安全措置は道路管理者が行うべきことのため、和文（案）を参考に、現場内の運搬道路の安全措置とタイトルを変更することを提案します。
Japanese JSSS stipulate as follows:
5.4 Transport Works by Transportation Vehicles
5.4.1 Work Environment
The Contractor shall take the following measures for the safety working environment in the Site for operation of transportation vehicles.
(1) Take measures for the transportation road …;
(2) Put signboards indicating speed limit …;
(3) Separate roads for vehicles and walkways…;
(4) In large construction site, provide exclusive transport roads …; and
(5) Provide sufficient lighting facilities …;.
Safety measures in public roads out side of the Site shall be taken by the road authority.
NK: We propose to revise the title to Safety Measures for Temporary Transporting Roads in the Site referring to Japanese JSSS.
To MD, please review the title.

"Access Roads" is the correct title and is the correct expression to use.

An "access road" is not specific as you suggest it is any road which enables traffic

JCB50: 表現の横並びをとるとこのようになるのではないか？
(2)(d)では ELCB なるものは必須ではない記述になっている
The sentence will be as modified to make same listing style below.
(2) (d) stipulates ELCB is not compulsory.
NK: Modified as commented.

(b) Defects or operational faults with grounding such as disconnection of grounding wire and insecure fixing of grounding electrodes; and

(c) Damage to insulation and protective coverings of all wires and cables including flexible cables

(d) Damage to plugs, sockets, transformers and all wiring fittings and appliances

(3) The Contractor shall comply with the following additional safety requirements:

(a) Use ~~metal clad~~ weatherproof switches (JCB51) with covers, securely fixed in accessible and dry places; (JCA32)

JCA32: metalclad 形式に限定され他のタイプを排除することになりませんか。用語の意味を再度確認してください。これに限定するということでしょうか。途上国の現場で見たことがない気がします。
Doesn't it limit only to the metal clad type and eliminate other types? Please reconfirm the meaning of the term of metal clad. Does it mean to limit metal-clad? I feel I have not seen this in the developing countries.
https://www.google.co.jp/search?q=metalclad&source=lnms&tbm=isch&sa=X&ved=2ahUKEwi9jc-hm6rnAhVQw4sBHSlXCx8Q_AUoAXoECA4QAw&biw=1567&bih=748#spf=1580349127635
NK: 和文の規定を参考に変更します。
Modified referring to Japanese version "Use switches with covers for electrical power equipment, place them in a metal box, etc."

JCB51: 防爆タイプ(anti-explosion, if needed)が必要な場合も記載しては？
We propose to specify anti-explosion type, if needed.
NK: 防爆タイプの電動器具の配置が必要な場所は、可燃性のガスなどを取り扱っている工場などです。ODA 対象の工事現場では一般的な規定ではないため、追記しないことと致します。
参照：https://www.mars-tohken.co.jp/solution/model/detail/explosion-proof.html
Anti-exposition type equipment shall be provided at places such as factory to handle flammable gas. It is not general requirement in ODA construction sites, so not added it.

(b) Label and paint electrical power and switch boxes with warning signs and coloured hazard markings;

(c) Use rubber cabtyre cables for all electrical power equipment;

(d) Wherever possible provide an ELCB's to each item of electrical equipment.

(e) If for any reason, an ELCB cannot be provided, ensure that the metal exterior of the electrical power supply, metal outer casing of electric motors and the electrical equipment are all

to reach (access) a particular place or area. It is a common and correct expression for use in construction.

It is an expression that needs to be general also and may actually cover roads outside the Site also as these are still within the Contractor's responsibility. FIDIC refers to "access routes" outside the site (which are still the contractor's responsibility) generally meaning routes over existing roads. The use of "access roads" does not conflict with FIDIC or with any other part of JSSS.

Your statement that the road authority shall take "safety measures in public roads out side of the site" is not completely correct within the context of this clause and is not necessary.

Also, these are not just "temporary roads", they may also be:

Permanent existing roads within the Site (outside is covered by FIDIC)

New permanent roads within the Site to be constructed under the contract.

Semi-completed new permanent roads within the Site

Temporary roads, temporary routes or tracks.

Dirt roads or tracks

As there is obviously some lack of clarity or misunderstanding, and whilst there is no real need for any change to the original text of this clause I suggest changing it to "Site Access Roads".

There is no need to change any of the content of the clause.

~~(1) Take measures for ensuring that access roads in the Site (JCB41) Temporary Transporting Roads in the Site are of suitable construction, of sufficient width, free from potholes, uneven settlement and collapse.~~

JCB41: 同上。Ditto
NK: Ditto.

See above, ntes:

(6) Take measures for ensuring that Site access roads are of suitable construction, of sufficient width, free from potholes, uneven settlement and collapse.

(7) Provide signs indicating height and weight restrictions, bends, speed limits, intersections, dangerous places and the like (road shoulders, cliff edges.).

(8) Separate roads for vehicles and walkways for workers and provide passing area for vehicles at places where the road is narrow.

grounded.–

To MD,

Please coordinate 7.7 Temporary Elect. Installations.

MD reply: is this part necessary? It seems that it is better covered by 7.7

Electric leakage prevention and disconnection device is important device.

*MD - Yes I am aware of that but please note that **ELCB** is the old name and refers to voltage operated devices that may no longer be available, it is advised these are replaced if found.*

***RCD** is specified in Chapter 7.7, please advise what you want to use??*

(f) Avoid hanging electric cables and wires directly on nails, reinforcing ~~or scaffolding tubes~~ and the like (JCA33) to prevent damage to the insulation and protective covering.

JCA33: 日本語の丸太足場を鋼管に替えているようですが、妥当性を再度確認願います(scaffolding tubes は削除でも良い)。
←被覆材保護のために摩擦係数の大きい丸太足場にひっかけないように、というのが原文の意味ではなかったのですか。(以下、日本語版)
移動して使用するケーブル、電線等は、被覆材の保護のため、直接、釘や鉄筋・丸太足場等に掛けないこと。
It looks that log scaffolding has been changed to scaffolding tubes. Please, check its compatibility. Wasn't the original concept that the cables and wires shall not be hanged on log scaffoldings of large friction factor in order to prevent damage to the insulation?
NK: コメントに従い、"scaffolding tubes"を削除しました。
As commented, "scaffolding tubes" is deleted and "and the like" is added..

(g) Turn off the power before repairing, moving or maintaining electric power equipment;

(h) Replace fuses with correct type and rating, prohibit replacing fuses with a higher rating or with iron or copper wire;

(i) Ensure that fuses are replaced by an authorised person;

(j) Prevent any use of electric power equipment from use in the rain, or when the user is wet, standing in water or ~~is not~~ without wearing rubber soled insulated footwear or when the electric power equipment is wet;

(k) When any operational fault ~~or abnormality~~ is identified immediately turn off the power, unplug and stop using the equipment and advise (or hand to) the HSO;

(l) ~~Ensure that workers using electric power equipment wear appropriate PPE such as working clothes, protective helmets, safety shoes; and~~ (JCA34) Ensure that workers using electric power equipment wear appropriate PPE suitable for the electric power equipment in use such as working clothes,

(9) In large construction sites, provide exclusive transport roads which are one-way if possible and provide passing areas on narrow roads.

(10) Provide sufficient lighting facilities at necessary places along roads when work operating in night.

4.3.10 Additional Requirements for Static Equipment

(JCA30)

JCA30: 骨材プラント、コンクリートプラント、アスファルトプラントなどを明示してもいい。
It is better to exemplify such as aggregate plant, concrete plant, etc.?
NK: 定置機械については 4.1.1 (6)で例示しているので、ここでの改めての例示は不要と考えます。
Static equipment are exemplified in 4.1.1 (6). Thus, it is not necessary to mention again here.

(3) The Contractor shall design and construct suitable foundations and support structures for static equipment with paved surfaces, screens(JCB42), fencing and associated facilities for storage of material and product and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended. Unless otherwise stated in the Contract, all such foundations, support structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works. All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

JC42: What is screen?
NK: It means fence screen such as shown in the photo below.

(4) Unless otherwise stated in the Contract, all remaining aggregate, rock, cement, bitumen and the like used by or processed with the static equipment shall be removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

No comment, no change necessary

4.3.11 Additional Requirements for Personnel and Goods Elevators and Material

protective helmets, safety shoes, eye and face protection, ear protection; and

JCA34: electric power equipment の定義と照らし合わせて適切でしょうか。
Is this clause appropriate against the definition of electric power equipment?
NK: 4.1.1.(8)で持ち運びできる電動機械もしくは工具と定義しています。これらを使用する場合に当然適した保護具を使用することが求められます。器具により必要な保護具も変わりますので右のように修正します。
Electric power equipment is defined in 4.1.1 (8) that electric power equipment means portable electric powered mobile equipment or tools. When using these, it is necessary to use appropriate protective equipment which vary according to the type of equipment. The clause is modified.

(m) When electric shock accident occurs, unplug and stop using the equipment and advise (or hand to) the HSO and take measures in accordance with JSSS 1.21 [*Accident Response Plan*].

11.3.14 Additional Safety Measures during Adverse Weather ここから

Further to the requirements of JSSS 2.7 [*Adverse Weather Requirements*], the Contractor shall ensure that Contractor's Equipment is parked in a stable and secure state by taking all necessary measures including:

(1) Dropping the jib, boom, arm and attachments to ground level and securing where necessary with adequate anchors and chains.

(2) If heavy rain and flooding can be anticipated, moving Contractor's Equipment to higher ground or to places where there is no risk of instability.

(3) Removing snow or ice.

11.4 ROPES, SLINGS AND CHAINS

11.4.3 Requirements Generally

(1) The Contractor shall ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

(2) Wire ropes, slings and chains shall have safety factor recommended by the manufactures ~~of at least 6~~, (JCA35), obtained by dividing the breaking strength by the maximum applied load for each type.

JCA35: マニュファクチャーズレコメンデーションに従う旨の記載に代えてください。(ワイヤーロープやスリングは現場では作らず専門業者から調達することを想定)
Please change this part as to comply with the recommendation by the manufacturer. (It is assumed that wire ropes and slings shall not be fabricated at the site but procured from the vendors.)
NK: コメントに従い、右のように修正しました。

Conveyors

JCA31: 定置機械にまとめた模様。
専門業者による組み立て、起動予告ブザー、連続装置設置(連続した非常停止スイッチ)、コンベア搭乗禁止とか削除されているので、復活させてください。エレベーターとコンベアを一緒にするか否かも要検討。
Please add the provisions of installation under the instruction of the experts, warning alarm system for start-up, emergency stop buttons for each necessary point and prohibition of riding on conveyor, etc. stipulated in Japanese version. Please consider whether requirements for elevators and conveyers shall be specified together or separately.
NK: 追記・別々に規定しました。(組立てに関しては 4.3.1(9)に規定済です。)
Added and separately specified. (Installation under instruction by expert is specified in 4.3.1(9).) Provisions for conveyors are stipulated referring to OSHA 1926.555 Conveyors.

JCB43: ポータブルコンベヤーと違うことをどこかで記載する必要があるのでは。このスペックはポータブルコンベヤーには適用しない。
It is necessary to describe that the material conveyors does not include portable conveyors in JSSS, and the provisions for the material conveyors does not apply to the portable conveyors.
NK: Portable conveyors is added in 4.1.1 Scope (7) (c) and specified in (1) below as commneted.

What exactly do you mean by "portable conveyors" for use in construction?

Why are they so different in a safety sense to any other type of temporary mobile conveyor?

~~(4) General Requirements~~

~~The Contractor shall post the maximum load capacity and any restrictions on the use~~

~~(5) The Contractor shall undertake the following additional daily inspection items, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re certification of the HSO before any further operation of the Contractor's Equipment is permitted:~~

~~(g) Defects or operational faults in elevator enclosures, doors, guide rails and runners;~~

~~(h) Defects or operational faults in emergency stop and alarm systems;~~

~~(i) Defects or operational faults in power, lighting and control systems;~~

~~(j) Defects or operational faults with interphone systems;~~

~~(k) Defects or operational faults in brakes, clutches; and~~

As commented, the clause is changed as right.

(3) Requirements for Ropes, slings and chains shall be as required under JSSS 6.5 [*Rigging Equipment*].

11.5 ALTERNATIVE USE OF CONTRACTOR'S EQUIPMENT

11.5.3 Requirements Generally

The Contractor shall not use Contractor's Equipment for any other purpose than the purpose for which it is designed and other than the purpose recommended by the manufacturer.

~~If the manufacturer allows alternative use (for example bucket excavators used for lifting operations) then such alternative use shall be strictly in accordance with the manufacturer's written instructions (JCA36) and in any event within the designed operating capacity of the equipment.~~

(JCB52)

JCA36: 用途外使用の際の使用方法に関する書面でのマニュアルを本当にメーカーが出している事例があるのでしょうか。具体例を複数確認して提示願います。ないようであれば、この記述は修正が必要です。
Is there really any example that manufacturer of equipment issues written manual which contains usage for the purpose other than that of intended?
Please, present at least examples for such usage. If there is no such example, the description has to be changed.
NK: 下記サイトに用途外使用に関する情報がありましたが、あくまで安衛法の基づいた注意書に過ぎません。
There is one site in Japan that explains use of equipment for purpose other than one for which it is designed, however it is only points to care based on the Occupational Safety and Health Regulations of Japan.
the clause is change to comply with the Law.
https://www.taiyokenki.co.jp/rental/tidbits/post_13.html
In USA, there is the following information how to use lifting by excavator following the manufacturer's Excavator Lift Capacity Chart :
https://www.forconstructionpros.com/equipment/earthmoving/backhoe-loaders/article/11416879/interpret-the-surprises-in-your-backhoes-lift-chart-to-place-big-loads-safely
http://zoskin.praysafeconsulting.com/excavator-lift-capacity-chart/tips-for-using-earthmoving-equipment-for-lifting-equipment.html
Additional stipulation is added regarding the regulation and confirmation by the HSO.

JCB52: 製造者が目的外使用の書面でのインストラクションを出していることが想定できないので、いらないのではないでしょうか？
It cannot be considered that manufacturers issue instructions in writing for alternative use of equipment, therefore is this sentence not necessary?
NK: Agreed to delete.

Use of Contractor's Equipment for any other purpose than the originally intended purpose are allowed only if it is not prohibited by either of the Law the Country and the manufacturer's written instructions, and subject to HSO's approval after reviewing all the safety aspects.

In particular, when equipment for excavation is to be used for lifting, HSO shall confirm:

(10) Rigging Equipment such as hook is attached on an appropriate part

~~(l) Defects or operational faults of sheaves and pulleys.~~

~~(6) The Contractor shall undertake the following additional periodical inspection items, (at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:~~

~~(c) Defects or operational faults in supporting cables and wire ropes; and~~

~~(d) Defects or operational faults in supporting structures, guy ropes, fixings and anchors.~~

(16) General

(e) The requirements for material conveyors stipulated in t4.3.10 does not apply to portable conveyors.

Why not? What are the requirements for "portable conveyors" and where are they specified?

(f) The Contractor shall undertake the ~~following additional~~ daily and periodical inspection ~~items~~ in addition to the items stipulated in JSSS 4.2 [INSPECTION, MAINTENANCE AND REPAIR], 4.2.1 [Requirements Generally], (4) and (5) as specified below, (or at intervals required by the manufacturer's official operation, maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

~~(g) The Contractor shall undertake the following additional periodical inspection items, (at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:~~

(h) The Contractor shall post the maximum load capacity and any restrictions on the use.

(17) Personnel and Goods Elevators

JCB44: 以下のように、(b)、(c)も同様に直してください。(3)も同様。
Please modify (b) (c) and (3) as below.
NK: Modified.

(c) Additional daily inspection items shall include checking for defects or operational faults with the following:

(xviii) ~~Defects or operational faults in~~ elevator enclosures, doors, guide-rails and runners;

(xix) ~~Defects or operational faults in~~ emergency stop and alarm systems;

(xx) ~~Defects or operational faults in~~ power, lighting and control systems;

of the excavation equipment (e.g. arm or bucket);

~~When the manufacturer's written instructions and the Laws of the Country regarding alternative use, the safety of alternative use shall be approved by the HSO by checking for example the following items for lifting:~~

(11) ~~Rigging Equipment such as hook attached on construction equipment such as arm or bucket are used;~~

(12) Arms, bucket, Rigging Equipment have enough strength to lift the load;

(13) There is no risk that the lifting devices such as hook and shackles will be detached from arm or bucket of the ~~construction~~ equipment;

(14) The lifting capacity for alternative use is confirmed by loading tests at the Site; and

(15) ~~Operators engaged in lifting work with construction equipment such as excavators shall be licensed when necessary and trained for lifting work.~~ (JCB54)

JCB54: 揚貨作業をする時に揚貨の資格が必要であることは、揚貨の章に記述があるはず。不要。
The necessity of license is specified in the Chapter for lifting, so not necessary mention (5).
NK: Deleted.

~~Under these circumstances the Contractor shall take account of the following:~~ (JCB55)

JCB55: 用途外使用に対してこれほど詳細な注意書が必要ではないと思います。揚貨に必要なことは揚貨のところに書いてあるはずです。不要.
It is not necessary to specify in so details as bellow because requirement for hoisting works are specified in chapter 5Hoisting and Rigging.
NK: Deleted.

(1) ~~Ensure the Contractor's Equipment can safely handle the load without creating instability, tipping or loss of control and avoiding the resultant risk of injury or damage or stress to the equipment.~~

(2) ~~Ensure that operators understand the equipment capability, are properly trained in the alternative use, are fully aware of and follow the manufacturer's written instructions and load charts.~~

(3) ~~Ensure that operators have accurately determined the total weight of the load, taking account of the weight of any attachments, the reach and angle and configuration of the equipment and have informed the HSO of this and obtained his permission before commencing the operation.~~

(4) ~~Check the working area and improve the ground surface as necessary to ensure the stability of the equipment.~~

(5) ~~Ensure that manufacturer's genuine specialised accessories such as lifting hooks etc. are provided and used.~~ .(JCA37)

(xxi) ~~Defects or operational faults with~~ interphone systems;

(xxii) ~~Defects or operational faults in~~ brakes, clutches; and

(xxiii) ~~Defects or operational faults of~~ sheaves and pulleys.

(d) Additional periodical inspection items shall include checking for defects or operational faults with the following:

(xxiv) ~~Defects or operational faults in~~ daily inspection items;

(xxv) ~~Defects or operational faults in~~ wire ropes;

(xxvi) ~~Defects or operational faults in~~ winch and its foundation; and

(xxvii) ~~Defects or operational faults in~~ supporting structures, guy ropes, fixings and anchors.

(18) ~~Belt~~ Material Conveyors

(d) Additonal safety measures

(xxviii) Conveyor systems shall be equipped with an audible warning signal to be sounded immediately before starting up the conveyor;

(xxix) Means for stopping the motor or engine shall be provided at the motor or engine location;

(xxx) Emergency stop switches shall be provided and be arranged so that the conveyor cannot be started again until the actuating stop switch has been reset to running or "on" position;

(xxxi) Where a conveyor passes over work areas, roads and walkways, suitable guards shall be provided ~~to protect workers required to work below the conveyors~~ to prevent fall of the materials being conveyed; and

(xxxii) Riding of workers on the moving belts ~~of the belt conveyors~~ shall be prohibited.

(e) Additional daily inspection items shall include checking for defects or operational faults with the following:

(xxxiii) ~~Defects or operational faults in~~ overrun and reverse run prevention devices; ~~against uncontrolled run and reverse run;~~

(xxxiv) emergency stop switches; and

(xxxv) ~~Defects or operational faults in~~ guards.

(f) Additional periodical inspection items, shall include for checking for defects or operational faults with daily inspection items. ~~and~~ (JCB45)

JCB45: There is no sentence after "and".
NK: Deleted.

I have deleted the following notes from the last draft as they are no longer

JCA37: 本節は用途外使用を規定しています。用途外使用をするための genuine accessories というのが存在するのでしょうか。
Is there any “genuine accessory” for purpose other than one for which it is designed?
NK: バケットに取り付けるフックなどは、重機のメーカーではなく、部品メーカーが多種の製品を製造しています。純正となると、バケットに収納できる特殊フックしかないようです。本項目は削除します。
Accessories such as hooks for lifting are produced by suppliers not by the equipment manufacturer. A hook as a genuine accessory was found only in a special type bucket which can store the hook when it is not in use. This clause is deleted.

~~(6) Ensure that the equipment is stable, if provided lower stabilisers, if the equipment is equipped with a blade, lower the blade to the ground for added stability and ensure that necessary counterweights are in place.~~

~~(7) Check the rigging to ensure it is appropriate to the use and rated to handle the load. Inspect it before each use for any signs of damage or wear, and make sure it is properly secured to the machine and load.~~

~~(8) Ensure that the area is clear of any unnecessary personnel, Spotters should be the only individuals in the immediate area, and should be stationed clear of the lift area yet visible to the operator throughout the operation.~~

~~(9) Lift the load slowly, keep the lifting point directly over the centre of the load, keep the load as close to the machine and the ground as possible and position the equipment to hoist and lower end on not sideways.~~

~~(10) If there are any signs of instability or loss of control of the machine or load, discontinue the lift and lower the load to the ground.~~

11.6 HIRED/LEASED CONTRACTOR'S EQUIPMENT

11.6.3 Requirements Generally

(1) Contractor's Equipment from hire or lease companies shall comply with all of the requirements of the Contract and JSSS as if it were the Contractor's own property, in particular the Contractor shall ensure compliance with the requirements of JSSS 1.34 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*].

(2) The Contractor shall ensure that the hire/lease companies have performed all necessary inspection, maintenance and repair works

applicable:

~~*With regard to the following, please refer to Compliance standards above and can we discuss further:*~~

~~*To MD, The 4.1. General describes as follows:*~~

~~*The Contractor shall comply with "OHSA Part1926 Subpart N- Helicopters, Hoists, Elevators, and Conveyors, and Subpart I Tools and and Power" for the equipment, tools and stationary equipment which are not specified in (c), (d) and (e).*~~

~~*I do not think that this is necessary:*~~

~~*Do you think if we shall specify Subpart I, §1926.304 Woodworking tools again to specify more details for saws in 4.4.3 (2)?*~~

4.3.12 Additional Requirements for ~~Tools, Tackle and~~ Small Equipment and Tools

JCB46: これらを総称して Tools でいいのでは. Tools and Tackle can be called as “Tools”.
NK: Defined “Tools2 in 4.1.1 (7) above.

See 4.1.1 and 4.1.1 (7), this change is fine.

(4) Accessories and attachments shall be the standard types obtained from or recommended by the manufacturer of the equipment to which they are connected.

(2) Any repairs shall be carried out by competent persons approved by the HSO. ~~the manufacturers recommended repair agents and using the manufacturers genuine or recommended spare parts.~~ (JCB47)

JCB47: Tools の修理に代理店を使うことはレアー。所謂 competent person が HSO に指名されたものであればいいとしたい。
あくまでも理想論。僻地では無理 “ as much as possible”を加えてみては
It is few for agents to repair them, so it is replaced with competent persons approved by the HSO.
It is ideal for agent to repair them, so how about to add “as much as possible”.
NK: Modified as commented.

Change to repair agents may be OK however it now ignores any mention of the use of genuine spare parts which I suggest is important even though it may not always be followed! I suggest the following be added in place of the above

(5) Any repairs shall be carried out by competent persons approved by the HSO and using the manufacturer's genuine or recommended spare parts.

(6) All small equipment (JCB48) and Tools shall be tested and re-certified by the HSO as safe for use after any repair or replacement

before ~~the Contractor's Equipment~~ .(JCA38) the equipment is mobilised to the Site and that the following is provided with the equipment to the Contractor upon mobilisation and is available for the inspection of the Engineer:

JCA38: この表現でいい？ 例えば Rental or Lease equipment の方が素直に読めますがいかがでしょうか。そのうえで 4.6 内での表現を統一してください。

Is this a proper expression? It would be better to use, for example, "rental and lease equipment". And please unify the expression in 4.6.

NK: (2)及び(3)で使用されている" the Contractor's Equipment"は単に"equipment"で明確に意味が通じるので、"equipment"に変更します。

The term "the Contractor's Equipment" used in (2) & (3) can be replaced simply with "equipment", by which the meaning of this clause become clearer.

(a) Inspection and maintenance records;

(b) Operation, repair and maintenance manuals; and

(c) Spare and replacement parts, tools, maintenance equipment, lubricants, filters, hydraulic fluids and the like.

(3) The Contractor shall double-check to ensure that the inspection and maintenance has been carried out and if the Contractor has any doubt over the adequacy of such inspection or maintenance or if complete records are not made available, the Contractor shall not allow this ~~Contractor's Equipment~~ equipment to be used upon the Works. The Contractor shall inspect and carry out full maintenance and repair on such equipment in compliance with the requirements of this Chapter before it is certified for use by the HSO and used upon the Works.

(4) Operators from hire/lease companies are by definition Contractor's Personnel and they shall be treated as if they ~~are~~ were employed by the Contractor, in terms of compliance with the Contract and JSSS.

Such operators shall be tested and certified by the HSO, shall receive safety training and shall perform all inspection, maintenance and other requirements fully in compliance with JSSS, in the same way as the Contractor's own employees.

11.7 TEMPORARY FUELLING FACILITIES

11.7.3 Requirements Generally

(1) ~~Unless otherwise specified in the Contract,~~ the Contractor ~~shall~~ may (JCB56) design and construct temporary fuel storage and dispensing facilities at the Site for the use of Contractor's Equipment after obtaining necessary permission required by the Law of the Country, if any. These facilities shall be substantial and secure and capable of storing and

of parts, before such equipment is put back into use.

JCB48: マイナーなものなので、re-certified まではしないと思います。

It may not be re-certified because they are minor equipment.

NK: We would like to stipulate test before use to avoid injury of workers but not request to be certified. Therefore, it is left with modification as it is.

This is OK

4.3.13 Additional Requirements for Electric Powered Equipment

(JCB49)

JCB49: ここで規定する電動機械は何かを明確にしないと混乱してしまう。ポータブルのものや Tool の類は含まれないと理解しました。

It is confused because it is not clear what are Electric Powered Equipment. We undestood it does not include portable equipment and tools.

NK: The Electric Powered Equipment was defiend in 4.1.1 (8) in last draft R2 as follows:

(8) Electric powered equipment means portable electric powered mobile equipment or tools.

The (8) was deleted by JICA comment JC13 and 14.

NK: Definition is added in (1) below.

(4) Electric powered equipment specified in 4.3.12 ~shall include portable electric powered mobile equipment or tools and shall comprise a part of the small equipment and tools listed in 4.1.1 (7).

(5) The Contractor shall undertake the following additional daily inspection items, (or at intervals required by the manufacturer's official operation, maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(e) ~~All equipment is provided with Earth Leakage Circuit Breakers (ELCB) and that these are working properly with no defects or operational faults;~~ Defects or operational faults of Earth Leakage Circuit Breakers (ELCB), if any; (JCB50)

JCB50: 表現の横並びをとるとこのようになるのではないか？

(2)(d)では ELCB なるものは必須ではない記述になっている

The sentence will be as modified to make same listing style below.

(2) (d) stipulates ELCB is not compulsory.

NK: Modified as commented.

Note to NK:

I strongly recommend that this entire subclause be reviewed from the electrical safety perspective by your professional electrical specialist.

I had also previously requested that this part be coordinated with JSSS 6.7 Temporary Electrical Installations but this does not appear to have happened and I again repeat this request as the two sections are not currently coordinated from

dispensing fuel in a safe and environmentally acceptable manner all to the approval of the Engineer.(JCB57)

JCB56: “shall”じゃなく”may”ぐらいでは？町中で station が近い場合には不要なはず。
It is not necessary to specify “shall” but “may” because fuelling facilities are not necessary where there are fuel stations in town or near the Site.
NK: Modified.

JCB57: 法令上の許可が必要な場合は取得することを追記が必要と思量。
It is necessary to specify for the Contractor to get permission in accordance with the Law of the Country when necessary.
NK: Added.

(2) The facility shall include storage tanks, suitable foundations, support or containment structures, protective bund walls as necessary, paved surfaces, screens, fencing and associated facilities for storage of separate fuels and lubricants and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended.

(3) Unless otherwise specified in the Contract, all such tanks, foundations, support and containment structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works. All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

(4) The Contractor must ensure that the temporary fuel storage and dispensing facility is operated and occupied at all time only by authorised personnel and that all unauthorised personnel are prohibited from entering such areas at all times. The Contractor shall be particularly careful and provide measures to prevent any unauthorised access, tampering, damage and theft at any time.

(5) All storage tanks shall be bunded either as jacketed tanks or by providing bunded enclosures.(JCA39, such that in the event of a catastrophic failure, the tank contents will be safely contained and shall not be allowed to run freely or enter the surface or ground water systems.

JCA39: 単純に英語の意味がわからない
bund: A secondary enclosure, typically consisting of a wall or berm, which surrounds a tank or fluid-handling mechanism, intended to contain any spills or leaks.
ex.) Plant room floors are generally bunded and/or waterproofed to contain any leaks or spillages of liquids and fluids from faulty tanks, plant or pipe work.

the electrical safety aspect.

I suggest that the above reference to ELCB (unless changed to RCD) should not be changed, and preferably 3(d) and 3(e) below should be changed as for safety purposes as either ELCB, RCD or other safety measures are essential.

The fact that many JICA works are being executed in developing countries in my opinion should not in any way affect the specified level of safety in JSSS.

(f) Defects or operational faults with grounding such as disconnection of grounding wire and insecure fixing of grounding electrodes;

(g) Damage to insulation and protective coverings of all wires and cables including flexible cables; and

(h) Damage to plugs, sockets, transformers and all wiring fittings and appliances.

(6) The Contractor shall comply with the following additional safety requirements:

(n) Use ~~metal clad~~ waterproof ~~weatherproof~~ switches and socket outlets with covers, securely fixed and located in accessible and dry places;

JCA32: metalclad 形式に限定され他のタイプを排除することになりませんか。用語の意味を再度確認してください。これに限定するということでしょうか。途上国の現場で見たことがない気がします。
Doesn’t it limit only to the metal clad type and eliminate other types? Please reconfirm the meaning of the term of metal clad. Does it mean to limit metal-clad? I feel I have not seen this in the developing countries.
https://www.google.co.jp/search?q=metalclad&source=lnms&tbm=isch&sa=X&ved=2ahUKEwi9jc-hm6rnAhVQw4sBHSlXCx8Q_AUoAXoECA4QAw&biw=1567&bih=748#spf=1580349127635
NK: 和文の規定を参考に変更します。
Modified referring to Japanese version “Use switches with covers for electrical power equipment, place them in a metal box, etc.”

JCB51: 防爆タイプ(anti-explosion, if needed)が必要な場合も記載しては？
We propose to specify anti-explosion type, if needed.
NK: 防爆タイプの電動器具の配置が必要な場所は、可燃性のガスなどを取り扱っている工場などです。ODA 対象の工事現場では一般的な規定ではないため、追記しないことと致します。
参照：https://www.mars-tohken.co.jp/solution/model/detail/explosion-proof.html
Anti-exposition type equipment shall be provided at places such as factory to handle flammable gas. It is not general requirement in ODA construction sites, so not added it.

No comment, however “metal clad switches” are an understandable construction term for metal faced heavy duty fittings commonly used for external and temporary works.

Maybe also change “weatherproof” to “waterproof”

NK: 貯蔵タンクの燃料流出防止のために、2 重タンク又は流出防止壁の設置を規定していると解釈します。MD 氏に表現の再検討及び出典の提示を依頼します。
We will transfer the above comment and request to make it easy to understand and show the source of these requirements.

(6) The Contractor is reminded of the requirements of JSSS 1.23 [*Fire Prevention*] and will be required to provide a comprehensive and a high standard of fire protection in fuel storage areas.

NK please can you provide a reference standard for storage tanks.

Please also advise of regulations that should apply and any further technical requirements.

We will edit and develop.

Please refer to my recommendation above regarding review by electrical specialist

(o) Label and paint electrical power and switch boxes with warning signs and coloured hazard markings;

(p) Use rubber cabtyre cables for all electrical power equipment;

(q) Wherever possible provide an ELCB's to each item of electrical equipment;

(r) If for any reason, an ELCB cannot be provided, ensure that the metal exterior of the electrical power supply, metal outer casing of electric motors and the electrical equipment are all grounded;

Please refer to my recommendation above regarding review by electrical specialist and coordinate (d) and (e) above.

ELCB or RCD?

Previous issue MD notes:

Please coordinate 7.7 Temporary Elect. Installations.

MD reply: is this part necessary? It seems that it is better covered by 7.7 (6.7)

Electric leakage prevention and disconnection device is important device.

*MD - Yes I am aware of that but please note that **ELCB** is the old name and refers to voltage operated devices that may no longer be available, it is advised these are replaced if found.*

***RCD** is specified in Chapter 7.7, please advise what you want to use??*

(s) Avoid hanging electric cables and wires directly on nails, reinforcement ~~or scaffolding tubes~~ and the like to prevent damage to the insulation and protective covering;

JCA33: 日本語の丸太足場を鋼管に替えているようですが、妥当性を再度確認願います(scaffolding tubes は削除でも良い)。
←被覆材保護のために摩擦係数の大きい丸太足場にひっかけないように、というのが原文の意味ではなかったのですか。(以下、日本語版)
移動して使用するケーブル、電線等は、被覆材の保護のため、直接、釘や鉄筋・丸太足場等に掛けないこと。
It looks that log scaffolding has been changed to scaffolding tubes. Please, check its compatibility. Wasn't the original concept that the cables and wires shall not be hanged on log scaffoldings of large friction factor in order to prevent damage to the insulation?
NK: コメントに従い、"scaffolding tubes"を削除しました。
As commented, "scaffolding tubes" is deleted and "and the like" is added..

"Log scaffolding" has no meaning, scaffolding has meaning.

(t) Turn off the power before repairing, moving or maintaining

electric power equipment;

(u) Replace fuses with correct type and rating, prohibit replacing fuses with a higher rating or with iron or copper wire;

(v) Ensure that fuses are replaced by an authorised person;

(w) Prevent any use of electric power equipment from use in the rain, or when the user is wet, standing in water or ~~is not~~ without wearing rubber soled insulated footwear or when the electric power equipment is wet;

Your change is not grammatically correct, the original wording is correct.

(x) When any operational fault is identified immediately turn off the power, unplug and stop using the equipment and advise (or hand to) the HSO;

(y) ~~Ensure that workers using electric power equipment wear appropriate PPE such as working clothes, protective helmets, safety shoes; and~~ (JCA34) Ensure that workers using electric power equipment wear appropriate PPE suitable for the electric power equipment in use such as working clothes, protective helmets, safety shoes, eye and face protection, ear protection; and

JCA34: electric power equipment の定義と照らし合わせて適切でしょうか。
Is this clause appropriate against the definition of electric power equipment?
NK: 4.1.1.(8)で持ち運びできる電動機械もしくは工具と定義しています。これらを使用する場合に当然適した保護具を使用することが求められます。器具により必要な保護具も変わりますので右のように修正します。
Electric power equipment is defined in 4.1.1 (8) that electric power equipment means portable electric powered mobile equipment or tools. When using these, it is necessary to use appropriate protective equipment which vary according to the type of equipment. The clause is modified.

I think it is relevant

(z) When electric shock accident occurs, unplug and stop using the equipment and advise (or hand to) the HSO and take measures in accordance with JSSS 1.24 [*Accident Response Plan*].

4.3.14 Additional Safety Measures during Adverse Weather

ここから

Further to the requirements of JSSS 2.7 [*Adverse Weather Requirements*], the Contractor shall ensure that Contractor's Equipment is parked in a

stable and secure state by taking all necessary measures including:

(4) Dropping the jib, boom, arm and attachments to ground level and securing where necessary with adequate anchors and chains.

(5) If heavy rain and flooding can be anticipated, moving Contractor's Equipment to higher ground or to places where there is no risk of instability.

(6) Removing snow or ice.

4.4 ROPES, SLINGS AND CHAINS

4.4.3 Requirements Generally

(4) The Contractor shall ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

(2) Wire ropes, slings and chains shall have safety factor recommended by the manufactures ~~of at least 6~~, (JCA35), obtained by dividing the breaking strength by the maximum applied load for each type.

JCA35: マニュファクチャーズレコメンデーションに従う旨の記載に代えてください。(ワイヤーロープやスリングは現場では作らず専門業者から調達することを想定)
Please change this part as to comply with the recommendation by the manufacturer. (It is assumed that wire ropes and slings shall not be fabricated at the site but procured from the vendors.)
NK: コメントに従い、右のように修正しました。
As commented, the clause is changed as right.

I suggest that no extensive change is necessary here as all is specified in JSSS 5.4 as referenced below.

If you require this change, I suggest as follows:

(5) The safety factor for wire ropes, slings and chains shall be as recommended by the manufacturer of each type.

(6) Wire ropes and slings shall not be fabricated at the Site but shall be obtained only from sources approved by the HSO.

(7) Requirements for Ropes, slings and chains shall be as specified in JSSS 5.4 [*Rigging Equipment*].

4.5 ALTERNATIVE USE OF CONTRACTOR'S EQUIPMENT

4.5.3 Requirements Generally

The Contractor shall not use Contractor's Equipment for any other

purpose than the purpose for which it is designed and other than the purpose recommended by the manufacturer.

~~If the manufacturer allows alternative use (for example bucket excavators used for lifting operations) then such alternative use shall be strictly in accordance with the manufacturer's written instructions (JCA36) and in any event within the designed operating capacity of the equipment.~~ (JCB52)

JCA36: 用途外使用の際の使用方法に関する書面でのマニュアルを本当にメーカーが出している事例があるのでしょうか。具体例を複数確認して提示願います。ないようであれば、この記述は修正が必要です。
Is there really any example that manufacturer of equipment issues written manual which contains usage for the purpose other than that of intended?
Please, present at least examples for such usage. If there is no such example, the description has to be changed.
NK: 下記サイトに用途外使用に関する情報がありましたが、あくまで安衛法の基づいた注意書に過ぎません。
There is one site in Japan that explains use of equipment for purpose other than one for which it is designed, however it is only points to care based on the Occupational Safety and Health Regulations of Japan.
the clause is change to comply with the Law.
https://www.taiyokenki.co.jp/rental/tidbits/post_13.html
In USA, there is the following information how to use lifting by excavator following the manufacturer's Excavator Lift Capacity Chart :
https://www.forconstructionpros.com/equipment/earthmoving/backhoe-loaders/article/11416879/interpret-the-surprises-in-your-backhoes-lift-chart-to-place-big-loads-safely
http://zoskin.praysafeconsulting.com/excavator-lift-capacity-chart/tips-for-using-earthmoving-equipment-for-lifting-equipment.html
Additional stipulation is added regarding the regulation and confirmation by the HSO.

JCB52: 製造者が目的外使用の書面でのインストラクションを出していることが想定できないので、いらないのではないでしょうか？
It cannot be considered that manufacturers issue instructions in writing for alternative use of equipment, therefore is this sentence not necessary?
NK: Agreed to delete.

Using bucket excavators for example for hoisting lighter loads (e.g. steel pipes and drainage components) is a common and convenient practice. It is recognised as such by manufacturers and their equipment is designed for this.

Use of Contractor's Equipment for any other purpose than the originally intended purpose are allowed only if it is not prohibited by either of the Law the Country and the manufacturer's official operation, maintenance and repair manual and subject to HSO's approval after reviewing all the safety aspects.

In particular, when equipment for excavation is to be used for lifting, HSO shall confirm:

(19) Rigging Equipment such as hook is attached on an appropriate part of the excavation equipment (e.g. arm or bucket).

~~When the manufacturer's written instructions and the Laws of the Country regarding alternative use, the safety of alternative use shall be approved by the HSO by checking for example the following items for lifting:~~

(20) ~~Rigging Equipment such as hook attached on construction equipment such as arm or bucket are used;~~

(21) Arms, bucket, Rigging Equipment have enough strength to lift the load.

(22) Arms, bucket, Rigging Equipment have enough strength to lift the load.

(23) There is no risk that the lifting devices such as hook and shackles will be detached from arm or bucket of the ~~construction e~~quipment.

(24) The lifting capacity for alternative use is confirmed by loading tests at the Site.

(25) ~~Operators engaged in lifting work with construction equipment such as excavators shall be licensed when necessary and trained for lifting work. (JCB54)~~

JCB54: 揚貨作業をする時に揚貨の資格が必要であることは、揚貨の章に記述があるはず。不要。
The necessity of license is specified in the Chapter for lifting, so not necessary mention (5).
NK: Deleted.

~~Under these circumstances the Contractor shall take account of the following:~~ (JCB55)

JCB55: 用途外使用に対してこれほど詳細な注意書が必要ではないと思います。揚貨に必要なことは揚貨のところに書いてあるはずです。不要.
It is not necessary to specify in so details as bellow because requirement for hoisting works are specified in chapter 5Hoisting and Rigging.
NK: Deleted.

I think that this should remain, it is a secondary usage for example of an excavating machine for lifting light loads. It is not likely that the operator will be trained as a rigger and the following clauses are recommended to be included.

(11) ~~Ensure the Contractor's Equipment can safely handle the load without creating instability, tipping or loss of control and avoiding the resultant risk of injury or damage or stress to the equipment.~~

(12) ~~Ensure that operators understand the equipment capability, are properly trained in the alternative use, are fully aware of and follow the manufacturer's written instructions and load charts.~~

(13) ~~Ensure that operators have accurately determined the total weight of the load, taking account of the weight of any attachments, the reach and angle and configuration of the equipment and have informed the HSO of this and obtained his permission before commencing the operation.~~

(14) ~~Check the working area and improve the ground surface as necessary to ensure the stability of the equipment.~~

(15) ~~Ensure that manufacturer's genuine specialised accessories such as~~

~~lifting hooks etc. are provided and used.~~ .(JCA37)

JCA37: 本節は用途外使用を規定しています。用途外使用をするための genuine accessories というのが存在するのでしょうか。
Is there any “genuine accessory” for purpose other than one for which it is designed?

NK: バケットに取り付けるフックなどは、重機のメーカーではなく、部品メーカーが多種の製品を製造しています。純正となると、バケットに収納できる特殊フックしかないようです。本項目は削除します。
Accessories such as hooks for lifting are produced by suppliers not by the equipment manufacturer. A hook as a genuine accessory was found only in a special type bucket which can store the hook when it is not in use. This clause is deleted.

Lifting hook are common however excavators can hoist light loads e.g. drainage pipes, using the bucket and slings without hooks and are designed for this. I suggest that these clauses should remain as they are likely to apply.

(16) ~~Ensure that the equipment is stable, if provided lower stabilisers, if the equipment is equipped with a blade, lower the blade to the ground for added stability and ensure that necessary counterweights are in place.~~

(17) ~~Check the rigging to ensure it is appropriate to the use and rated to handle the load. Inspect it before each use for any signs of damage or wear, and make sure it is properly secured to the machine and load.~~

(18) ~~Ensure that the area is clear of any unnecessary personnel, Spotters should be the only individuals in the immediate area, and should be stationed clear of the lift area yet visible to the operator throughout the operation.~~

(19) ~~Lift the load slowly, keep the lifting point directly over the centre of the load, keep the load as close to the machine and the ground as possible and position the equipment to hoist and lower end on not sideways.~~

(20) ~~If there are any signs of instability or loss of control of the machine or load, discontinue the lift and lower the load to the ground.~~

4.6 HIRED/LEASED CONTRACTOR'S EQUIPMENT

4.6.3 Requirements Generally

(5) Contractor’s Equipment from hire or lease companies shall comply with all of the requirements of the Contract and JSSS as if it were the Contractor’s own property, in particular the Contractor shall ensure compliance with the requirements of JSSS 1.35

[*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*].

(6) The Contractor shall ensure that the hire/lease companies have performed all necessary inspection, maintenance and repair works before ~~the Contractor's Equipment~~ .(JCA38) the equipment is mobilised to the Site and that the following is provided with the equipment to the Contractor upon mobilisation and is available for the inspection of the Engineer:

JCA38: この表現でいい？ 例えば Rental or Lease equipment の方が素直に読めますがいかがでしょうか。そのうえで 4.6 内での表現を統一してください。

Is this a proper expression? It would be better to use, for example, "rental and lease equipment". And please unify the expression in 4.6.

NK: (2)及び(3)で使用されている" the Contractor's Equipment"は単に"equipment"で明確に意味が通じるので、"equipment"に変更します。

The term "the Contractor's Equipment" used in (2) & (3) can be replaced simply with "equipment", by which the meaning of this clause become clearer.

There is nothing wrong with the original wording, it is "Contractor's Equipment" as defined in the Contract whether rented, leased or owned.

"equipment" in this usage, should only follow in a sentence which already contains the term "Contractor's Equipment" and is therefore connected in meaning.

The changed wording introduces unnecessary duplication "equipment" and "equipment".

(d) Inspection and maintenance records;

(e) Operation, repair and maintenance manuals; and

(f) Spare and replacement parts, tools, maintenance equipment, lubricants, filters, hydraulic fluids and the like.

(7) The Contractor shall double-check to ensure that the inspection and maintenance has been carried out and if the Contractor has any doubt over the adequacy of such inspection or maintenance or if complete records are not made available, the Contractor shall not allow this ~~Contractor's Equipment~~ equipment to be used upon the Works. The Contractor shall inspect and carry out full maintenance and repair on such equipment in compliance with the requirements of this Chapter before it is certified for use by the HSO and used upon the Works.

The suggested change is correct nor necessary

(8) Operators from hire/lease companies are by definition Contractor's

Personnel and they shall be treated as if they ~~are~~ were employed by the Contractor, in terms of compliance with the Contract and JSSS.

The suggested change is not correct nor necessary

Such operators shall be tested and certified by the HSO, shall receive safety training and shall perform all inspection, maintenance and other requirements fully in compliance with JSSS, in the same way as the Contractor's own employees.

4.7 TEMPORARY FUELLING FACILITIES

4.7.3 Requirements Generally

(7) ~~Unless otherwise specified in the Contract,~~ the Contractor ~~shall~~ may (JCB56) design and construct temporary fuel storage and dispensing facilities at the Site for the use of Contractor's Equipment after obtaining necessary permission required by the Law of the Country, if any. These facilities shall be substantial and secure and capable of storing and dispensing fuel in a safe and environmentally acceptable manner all to the approval of the Engineer.(JCB57)

JCB56: "shall"じゃなく"may"ぐらいでは？町中で station が近い場合には不要なはず。
It is not necessary to specify "shall" but "may" because fuelling facilities are not necessary where there are fuel stations in town or near the Site.
NK: Modified.

The comment is understood but generally it will not apply on JICA projects and is not a recommended basis for a safety specification.

In the majority of cases, mobile Contractor's Equipment will not be registered or insured for use on public roads and fuel for such equipment (together with fuel for static equipment and all other site equipment) will usually need to be brought safely to the Site and safely stored and dispensed for Site use.

Also, with normal high consumption requirements (and even for tax and duty reasons), fuel is usually delivered to the Site and stored separately.

It is dangerous to obtain and transport and dispense manually in frequent and small quantities.

It is not necessary to state that the Contractor must obtain "necessary permission required by the Law of the Country"; the Contractor must in any event comply with the Law under GC 1.4 and such permission, etc., would be an automatic requirement.

Fuel storage at Site will usually be required on most JICA projects and proper safety control is essential.

I have already included a clause in the latest issue of the User Guide to cover this and suggest therefore that no change is necessary to the original text.

JCB57: 法令上の許可が必要な場合は取得することを追記が必要と思量。
It is necessary to specify for the Contractor to get permission in accordance with the Law of the Country when necessary.
NK: Added.

Not necessary see note above.

(8) The facility shall include storage tanks, suitable foundations, support or containment structures, protective bund walls as necessary, paved surfaces, screens, fencing and associated facilities for storage of separate fuels and lubricants and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended.

(9) Unless otherwise specified in the Contract, all such tanks, foundations, support and containment structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works. All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

(10) The Contractor must ensure that the temporary fuel storage and dispensing facility is operated and occupied at all time only by authorised personnel and that all unauthorised personnel are prohibited from entering such areas at all times. The Contractor shall be particularly careful and provide measures to prevent any unauthorised access, tampering, damage and theft at any time.

(11) All storage tanks shall be bunded either as jacketed tanks or by providing bunded enclosures.(JCA39, such that in the event of a catastrophic failure, the tank contents will be safely contained and shall not be allowed to run freely or enter the surface or ground water systems.

JCA39: 単純に英語の意味がわからない
bund: A secondary enclosure, typically consisting of a wall or berm, which surrounds a tank or fluid-handling mechanism, intended to contain any spills or leaks.
ex.) Plant room floors are generally bunded and/or waterproofed to contain any leaks or spillages of liquids and fluids from faulty tanks, plant or pipe work.

NK: 貯蔵タンクの燃料流出防止のために、2 重タンク又は流出防止壁の設置を規定していると解釈します。MD 氏に表現の再検討及び出典の提示を依頼し

	ます。 We will transfer the above comment and request to make it easy to understand and show the source of these requirements. *Note to NK, what does your comment mean? Are you adding a description?* *A "bunded" tank is either a jacketed tank or a tank in an enclosure with bunds or walls and meaning is clear. I think no change is necessary.* (12)The Contractor is reminded of the requirements of JSSS 2.8 [*Fire Prevention*] and will be required to provide a comprehensive and a high standard of fire protection in fuel storage areas. *NK in the previous draft I had requested your assistance to fins a reference standard for fuel storage tanks, please advise if you have found one.* *Previous note:* *NK please can you provide a reference standard for storage tanks.* *Please also advise of regulations that should apply and any further technical requirements.* *We will edit and develop.*	

JSSS in English R3 for Issue 3（2020/5/27）(JICA Comments & NK Actions) Copied from C1	JSSS in English Issue 3 (2020/6/2 by MD) *MD Comments* NK: Comment	JSSS in English NK R3 for Issue 4 DFR on Issue 3 of 2020/6/2 NK: Comment and Revision
4. CONTRACTOR'S EQUIPMENT **4.1 GENERAL REQUIREMENT** 4.1.1 Scope 4.1.2 Compliance Standards 4.1.3 Instruction for Contractor's Personnel 4.1.4 Safety Training 4.1.5 Requirements to Operators 4.1.6 Signaling **4.2 INSPECTION, MAINTENANCE AND REPAIR** 4.2.1 Requirements Generally 4.2.2 Defects and Repair during Operation **4.3 SAFETY REQUIREMENTS** 4.3.1 General Safety Measures 4.3.2 Safety Measures during Cleaning, Inspection and Maintenance 4.3.3 Safety Measures during Operation 4.3.4 Safety Measures When Mobile Equipment Is Not in Use 4.3.5 Safety Measures during Connecting and Removing of Attachment 4.3.6 Safety Measures during Loading and Transporting of Contactor's Equipment 4.3.7 Safety Measures During Loading and Transporting of Materials 4.3.8 Temporary Transporting Roads in the Site 4.3.9 Additional Requirements for Static Equipment 4.3.10 Additional Requirements for Personnel and Goods Elevators and Material Conveyors 4.3.11 Additional Requirements for Small Equipment and Tools 4.3.12 Additional Requirements for Electric Powered Equipment 4.3.13 Additional Safety Measures during Adverse Weather **4.4 ROPES, SLINGS AND CHAINS** 4.4.1 Requirement Generally 4.5 ALTERNATIVE USE OF CONTRACTORS'S EQUIPMENT 4.5.1 Requirement Generally **4.6 HIRED/LEASED CONTRACTORS'S EQUIPMENT** 4.6.1 Requirement Generally **4.7 TEMPORARY FUELLING FACILLITIES** 4.7.1 Requirement Generally	**4. CONTRACTOR'S EQUIPMENT** **4.1 GENERAL REQUIREMENTS** 4.1.1 Scope 4.1.2 Compliance Standards 4.1.3 Manufacturer's Documentation 4.1.4 Instruction for Contractor's Personnel 4.1.5 Safety Training 4.1.6 Qualification of Operators Requirements for Operators 4.1.7 Signalling **4.2 INSPECTION, MAINTENANCE AND REPAIR** 4.2.1 Requirements Generally 4.2.2 Defects and Repair During Operation **4.3 SAFETY REQUIREMENTS** 4.3.1 General Safety Measures 4.3.2 Transportation to and Removal from Site 4.3.2 Safety Measures During Cleaning, Inspection and Maintenance 4.3.3 Safety Measures During Operation 4.3.4 Safety Measures When Equipment Is Not In Use Safety Measures When Equipment Mobile Equipment Is Not in Use 4.3.5 Safety Measures During Connection Connecting and Removing of Attachments 4.3.6 Safety Measures During Loading and Transporting of Contractor's Equipment 4.3.7 Safety Measures During Loading and Transporting of Materials 4.3.7 Site Access Roads 4.3.8 Additional Requirements for Static Equipment 4.3.9 Additional Requirements for Personnel and Goods Elevators and Material Conveyors 4.3.10 Additional Requirements for Tools, Tackle and Small Equipment and Tools 4.3.11 Additional Requirements for Electric Powered Equipment 4.3.12 Additional Safety Measures during Adverse Weather **4.4 ROPES, SLINGS AND CHAINS** 4.4.1 Requirements Generally **4.5 ALTERNATIVE USE OF CONTRACTOR'S EQUIPMENT** 4.5.1 Requirements Generally **4.6 HIRED/LEASED CONTRACTOR'S EQUIPMENT** 4.6.1 Requirements Generally **4.7 TEMPORARY FUELLING FACILITIES** 4.7.1 Requirements Generally	**4. CONTRACTOR'S EQUIPMENT** **4.1 GENERAL REQUIREMENTS** 4.1.1 Scope 4.1.2 Compliance Standards 4.1.3 Manufacturer's Documentation 4.1.4 Instruction for Contractor's Personnel 4.1.5 Safety Training 4.1.6 Requirements for Operators 4.1.7 Signalling **4.2 INSPECTION, MAINTENANCE AND REPAIR** 4.2.1 Requirements Generally 4.2.2 Defects and Repair During Operation **4.3 SAFETY REQUIREMENTS** 4.3.1 General Safety Measures 4.3.2 Safety Measures During Cleaning, Inspection and Maintenance 4.3.3 Safety Measures During Operation 4.3.4 Safety Measures When Mobile Equipment Is Not in Use 4.3.5 Safety Measures During Connecting and Removing of Attachments 4.3.6 Safety Measures During Loading and Transporting of Contractor's Equipment 4.3.7 Safety Measures During Loading and Transporting of Goods 4.3.8 Site Access Roads 4.3.9 Additional Requirements for Static Equipment 4.3.10 Additional Requirements for Personnel and Goods Elevators and Material Conveyors 4.3.11 Additional Requirements for Small Equipment and Tools 4.3.12 Additional Requirements for Electric Powered Equipment 4.3.13 Additional Safety Measures during Adverse Weather **4.4 ROPES, SLINGS AND CHAINS** 4.4.1 Requirements Generally **4.5 ALTERNATIVE USE OF CONTRACTOR'S EQUIPMENT** 4.5.1 Requirements Generally **4.6 HIRED/LEASED CONTRACTOR'S EQUIPMENT** 4.6.1 Requirements Generally **4.7 TEMPORARY FUELLING FACILITIES** 4.7.1 Requirements Generally
4. CONTRACTOR'S EQUIPMENT **4.1 GENERAL REQUIREMENTS (JCB1)** JC1: 全体を通して、特に Tools についてはすべての要求事項が適用されるわけではないと思います。したがって、適用除外される可能性を上手に書き分ける表現になるよう工夫していただけますでしょうか。 (Tools(器具工具)について 適用されない箇所が多くあるため。(例:Operator の指名や責任者の掲示など)) Whole Provisions in this Chapter may not apply all to Tools, so please devise to stipulate possibility of exemption of some provisions. (There are many provisions which will not apply to Tools for example, appointment of Operator, post of a label showing the name.)	**4. CONTRACTOR'S EQUIPMENT** **4.1 GENERAL REQUIREMENTS** (JCB1) JC1: 全体を通して、特に Tools についてはすべての要求事項が適用されるわけではないと思います。したがって、適用除外される可能性を上手に書き分ける表現になるよう工夫していただけますでしょうか。 (Tools(器具工具)について 適用されない箇所が多くあるため。(例:Operator の指名や責任者の掲示など)) Whole Provisions in this Chapter may not apply all to Tools, so please devise to stipulate possibility of exemption of some provisions.	**4. CONTRACTOR'S EQUIPMENT** **4.1 GENERAL REQUIREMENTS**

NK: We will review and modify provisions as commented.

4.1.1 Scope

(1) This Chapter specifies the safety requirements for Contractor's Equipment which shall include mobile equipment, static equipment, tools, tackle and small equipment and electric power equipment as further described in the following paragraphs.

(2) The requirements of this Chapter shall apply to Contractor's Personnel, Employer's Personnel and any other persons (JCB2) that are on the Site, adjacent to the Site (JCB3) and other places (if any) where works are being executed and who may be affected by such work. (JCB4): The requirements of this Chapter shall apply to Contractor's Personnel, Employer's Personnel and any other persons (in this Chapter called as "Concerned Personnel") who are on or adjacent to the Site and any other places where and other places (if any) where works are being executed.

JCB2: この Chapter で三箇所出てくるようなのでまとめましょう。(in this Chapter called as "Concerned Personnel")
There are same phrases in 3 locations in this Chapter, therefore it is better to define as (in this Chapter called as "Concerned Personnel").
NK: Modified as commented.

JCB3: "who are on or adjacent to the Site and any other places where…でいいのでは can this be "who are on or adjacent to the Site and any other places where…"?
NK: Modified as commented.

JCB4: 英語のつながりが悪いし、影響を受ける人に対する requirement ではないので削除します。
The sentences connection is not good and this is not requirement for persons to be affected.
NK: Modified as commented.

(3) For additional requirements for hoisting, rigging and cranes, refer to ISSS 6.0 [*Hoisting and Rigging*].(JCA1)

JCA1: 必ず 6 章(5 章に変更)に含めるようにしてください。
Be sure to include it in section 6 (now section 5).
NK: 第 5 章に揚重、玉掛について十分規定済み。
Section 5 stipulates regarding hoisting and rigging in detail.

~~*Not sure that the following is necessary, coordinate later*~~

(There are many provisions which will not apply to Tools for example, appointment of Operator, post of a label showing the name.)
NK: We will review and modify provisions as commented.

The specification is for general application and designed to apply to all types of project, and all types of equipment including various tools such as hand tools and hand operated tools including pneumatic drills etc., so the coverage needs to be as broad as possible to capture all types and give general rules. There is no need to be specific when something does not apply to any particular type, I suggest that the important aim is to make sure that all types and requirements are covered.

Contractor's Equipment is an all-embracing term, defined as such in the Contract.

NK: Understood.

4.1.1 Scope

(1) This Chapter specifies the safety requirements for Contractor's Equipment which shall include mobile equipment, static equipment, ~~tools, tackle and~~ small equipment, tools and electric power equipment as further described in the following paragraphs.

I suggest for clarity it is better to delete "tackle" as it is not such a common international term, it may have different meaning and there is little difference to tools. Also so that it is consistent with 4.3.10

(2) The requirements of this Chapter shall apply to Contractor's Personnel, Employer's Personnel and any other persons (JCB2) that are on the Site, adjacent to the Site (JCB3) and other places (if any) where works are being executed and who may be affected by such work. (JCB4):

(3) The requirements of this Chapter shall apply to Contractor's Personnel, Employer's Personnel and any other persons (in this Chapter called as "Concerned Personnel") who are on or adjacent to the Site and any other places where and other places (if any) where works are being executed.

JCB2: この Chapter で三箇所出てくるようなのでまとめましょう。(in this Chapter called as "Concerned Personnel")
There are same phrases in 3 locations in this Chapter, therefore it is better to define as (in this Chapter called as "Concerned Personnel").
NK: Modified as commented.

JCB3: "who are on or adjacent to the Site and any other places where…でいいのでは can this be "who are on or adjacent to the Site and any other places where…"?
NK: Modified as commented.

JCB4: 英語のつながりが悪いし、影響を受ける人に対する requirement ではないので削除します。
The sentences connection is not good and this is not requirement for persons to be affected.
NK: Modified as commented.

The suggested new definition has been used in only one other location (4.1.4 (8)) and I suggest that such a definition applicable to one item in this chapter only, is therefore not really necessary.

The reference to "other persons" in this sense is however used in one other instance in 4.3.4 in a slightly different way.

I understand the point but suggest it is better to slightly modify the text of your above suggested clause as follows, and modify or delete the two later references, which I have now done

(2) The Contractor shall ensure the safety of all Contractor's

4.1.1 Scope

(1) This Chapter specifies the safety requirements for Contractor's Equipment which shall include mobile equipment, static equipment, small equipment, tools and electric power equipment as further described in the following paragraphs.

(4) ~~For additional requirements for transportation, refer to JSSS 5.0 [Transportation].~~

(5) ~~Operators and signallers~~ (JCA2) Any reference to "operator" in this Chapter and elsewhere in JSSS shall be deemed to include "driver" also. (JCB5)

JCA2: "Spotters"に修正してください。 Please change to "Spotters"
NK: Spotters は次項目の対応の通り削除しました。
"Spotters" is deleted as explained in the next clause.

(a) ~~Any reference to "operator" in this Chapter and elsewhere in JSSS shall be deemed to include "driver" also;~~(JCA3)

JCA3: この operator は小文字にされていますが、全体を通してこの使い方とするか否かについては章ごとの整合性の観点から検討してください。
This "operator" is used lower case. It should be considered whether it is proper to use lower case as a whole of JSSS.
NK: "operator"という用語は JSSS では定義していません。第 9 章等他章でも小文字で表現しております。このままとします。
The term "operator" in not defined in JSSS. In other Chapters such as Chapter 9 [Concrete Works], the word "operator" is used in lower case. Left as it is.

(b) ~~Any reference to "Spotter" in this Chapter shall be deemed to include "flagman" and "signaller" also.~~ (JCA4)

JCA4: この Spotter については総則で定義されていますが、signaller を含めるという意図で敢えてこの記述としているのでしょうか。
This "Spotter" is defined in the Chapter1, [General], but is it meant to include signaller?
NK: 総則の定義で"Spotter"は、下記のように定義しています。ここで繰り返す必要はないと考えます。(b)は削除し、(4)の構成を右のように修正します。
(24) "Spotter" means a member of the Contractor's Personnel who is generally responsible for warning other Contractor's and Employer's Personnel and other persons and keeping them away from working operations and areas, for assisting drivers of trucks and operators of other Contractor's Equipment in positioning their vehicles and equipment particularly when reversing, positioning or hoisting, and such further duties as are assigned to them in JSSS Section 2.4 [Spotters Flagmen and the Like].
Any reference to a "Spotter" in JSSS shall also be deemed to include a reference to a banksman, flagman or signaller.
Any reference to a "Spotter" in JSSS shall also be deemed to include a reference to a banksman, flagman or signaller.

Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places where they may be affected by Contractor's Equipment in operation, standby or storage or when such equipment is being maintained or transported.

See also change in 4.1.4 (8) and deletion of 4.3.4

(4) For additional requirements for hoisting, rigging and cranes, refer to JSSS 5 [*Hoisting and Rigging*].

JCA1: 必ず 6 章(5 章に変更)に含めるようにしてください。
Be sure to include it in section 6 (now section 5).
NK: 第 5 章に揚重、玉掛について十分規定済み。
Section 5 stipulates regarding hoisting and rigging in detail.

(5) ~~Operators and signallers~~ (JCA2) Any reference to "operator" in this Chapter and elsewhere in JSSS shall be deemed to include "driver" also. (JCB5)

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NK: Spotters は次項目の対応の通り削除しました。
"Spotters" is deleted as explained in the next clause.

(a) ~~Any reference to "operator" in this Chapter and elsewhere in JSSS shall be deemed to include "driver" also;~~(JCA3)

JCA3: この operator は小文字にされていますが、全体を通してこの使い方とするか否かについては章ごとの整合性の観点から検討してください。
This "operator" is used lower case. It should be considered whether it is proper to use lower case as a whole of JSSS.
NK: "operator"という用語は JSSS では定義していません。第 9 章等他章でも小文字で表現しております。このままとします。
The term "operator" in not defined in JSSS. In other Chapters such as Chapter 9 [Concrete Works], the word "operator" is used in lower case. Left as it is.

No change is necessary

(b) ~~Any reference to "Spotter" in this Chapter shall be deemed to include "flagman" and "signaller" also.~~ (JCA4)

JCA4: この Spotter については総則で定義されていますが、signaller を含めるという意図で敢えてこの記述としているのでしょうか。
This "Spotter" is defined in the Chapter1, [General], but is it meant to include signaller?
NK: 総則の定義で"Spotter"は、下記のように定義しています。ここで繰り返す必要はないと考えます。(b)は削除し、(4)の構成を右のように修正します。
(24) "Spotter" means a member of the Contractor's Personnel who is generally responsible for warning other Contractor's and Employer's Personnel and other persons and keeping them away from working operations and areas, for assisting drivers of trucks and operators of other Contractor's Equipment in positioning their vehicles and equipment particularly when reversing, positioning or hoisting, and such further duties as are assigned to them in JSSS Section 2.4 [Spotters Flagmen and the Like].
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Any reference to a "Spotter" in JSSS shall also be deemed to include a reference to a banksman, flagman or signaller.
As "Spotter" is defied in Chapter 1 as above, it is unnecessary to repeat here.
Therefore, (b) is deleted and clause (4) is modified as right.

(2) The Contractor shall ensure the safety of all Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places where they may be affected by Contractor's Equipment in operation, standby or storage or when such equipment is being maintained or transported.

(3) For additional requirements for hoisting, rigging and cranes, refer to JSSS 5 [*Hoisting and Rigging*].

(4) Any reference to "operator" in this Chapter and elsewhere in JSSS shall be deemed to include "driver" also.

As “Spotter” is defied in Chapter 1 as above, it is unnecessary to repeat here.
Therefore, (b) is deleted and clause (4) is modified as right.

JCB5: 少しシンプルに。 is synonymous with “driver”の方が MDB 版の表現でもありますし、それが通常だと思います。全体のバージョンで出していただく際に、synonymous の表現に合わせて全体を調整してください。
Please make phrases simple a little. The phrase of “is synonymous with “driver”” is one used in FIDIC MDB version and normal.
When all JSSS Chapters are submitted, please adjust all document to use this phrase.

NK: FIDIC MDB uses this as follows:
1.2 Interpretation (e)the word “tender” is synonymous with “bid”, and “tenderer” with “bidder” and the words “tender documents” with “bidding documents
日本語では、Operator は操作者、操縦者、Driver は運転手、運転士、運転者、機関士が類義語辞典に記載があります。
(4)では、Operator の用語にはに Driver も含まれると規定し、これは、Operator と Driver が synonymous（同義語）との規定ではなく、他の呼び名の機械を操作・運転する者がいることと示しています。
別の Spotter でも次のように同様に規定しています。
(b) Any reference to “Spotter” in this Chapter shall be deemed to include “flagman” and “signaller” also.
上記の理由で(4)はこのままとします。同様の文章があればそれを見直し、必要があれば変更します。
The operators include pilots, etc. The drivers include engine driver, motorman, etc.
The (3) states “operator” includes “driver” but not that “operator” is synonymous with “driver”.
The same expression is made for the Spotter as below.
(b) Any reference to “Spotter” in this Chapter shall be deemed to include “flagman” and “signaller” also.
With the above reason, the (4) is not modified. Other sentences as above will be reviewed and modified when necessary.

To MD: Please review NK reply above.

(6) Mobile equipment including wheeled or tracked, self-propelled construction machinery such as:

(a) Surface excavation and spoil movement equipment for bulk excavation, grading and levelling, such as bulldozers, graders and tractor excavators;

(b) Excavators such as backhoes, face shovels, power shovels;

(c) Loaders such as payloaders and face shovels;

The clause can now be deleted

NK: confirmed.

JCB5: 少しシンプルに。 is synonymous with “driver”の方が MDB 版の表現でもありますし、それが通常だと思います。全体のバージョンで出していただく際に、synonymous の表現に合わせて全体を調整してください。
Please make phrases simple a little. The phrase of “is synonymous with “driver”” is one used in FIDIC MDB version and normal.
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NK: FIDIC MDB uses this as follows:
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日本語では、Operator は操作者、操縦者、Driver は運転手、運転士、運転者、機関士が類義語辞典に記載があります。
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The operators include pilots, etc. The drivers include engine driver, motorman, etc.
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With the above reason, the (4) is not modified. Other sentences as above will be reviewed and modified when necessary.

To MD: Please review NK reply above.

I think that there is no need to change this wording; it is now consistently used throughout the various chapters of JSSS. It is simple and more understandable than “synonymous” and will not require dictionary reference by many readers as may not be the case with FIDIC.

The need for definition is a partial consequence of your original draft which uses diverse expressions.

NK: agreed.

(6) Mobile equipment including wheeled or tracked, self-propelled construction machinery such as:

(a) Surface excavation and spoil movement equipment for bulk excavation, grading and levelling, such as bulldozers, graders and tractor excavators;

(b) Excavators such as backhoes, face shovels, power shovels;

(c) Loaders such as payloaders and face shovels;

(d) Dump trucks for removal or importation of spoil;

(e) Specialist foundation equipment such as pile driving and boring machines; (JCB6)

(5) Mobile equipment including wheeled or tracked, self-propelled construction machinery such as:

(a) Surface excavation and spoil movement equipment for bulk excavation, grading and levelling, such as bulldozers, graders and tractor excavators;

(b) Excavators such as backhoes, face shovels, power shovels;

(c) Loaders such as payloaders and face shovels;

(d) Dump trucks for removal or importation of spoil;

(e) Specialist foundation equipment such as pile driving and

(d) Dump trucks for removal or importation of spoil;

(e) Specialist foundation equipment such as pile driving and boring machines; (JCB6)

JCB6: equipment に修正. Revise to equipment.
NK: JICA has commented same in Chap. 6 TW that “replace machine with equipment?”
BS 8081 Code of practice for grouted anchors use the terms as follows:
Machine: drilling machine, Equipment: mixers, pumps.
Following the BS, Boring machine is left as it is.
To MD, please review my answer above.

(f) Compaction and surface treatment equipment such as smooth or sheepsfoot rollers, pneumatic and vibration rollers; (JCB7) asphalt finisher;

JCB7: Asphalt finisher も入れてほしい。Please add Asphalt finisher.
NK: Added.

(g) Mobile cranes ~~and other hoisting equipment~~ (JCB8);

JCB8: Mobile ではない。This is not mobile equipment.
NK: Mobile means able to be moved from one place to another. It seems there are other hoisting equipment than mobile cranes, however NK cannot show examples so far. Deleted it..

(h) Concreting equipment such as concrete mixer trucks, agitator trucks, pump trucks;

(i) Demolition equipment such as breakers, concrete crushers and demolition grippers; and

(j) Transportation Equipment, such as cars and buses for Contractor’s Personnel and trucks and trailers for transporting Contractor’s Equipment (JCA6) and materials to, around and from the Site.

(k) Workboat for diving works

JCB6: equipment に修正. Revise to equipment.
NK: JICA has commented same in Chap. 6 TW that “replace machine with equipment?”
BS 8081 Code of practice for grouted anchors use the terms as follows:
Machine: drilling machine, Equipment: mixers, pumps.
Following the BS, Boring machine is left as it is.
To MD, please review my answer above.

It doesn’t really matter as both meanings are clear and understandable, however I understood that the rule was generally to use BS 8081.

NK: agreed to use equipment as JICA requested.

(f) Compaction and surface treatment equipment such as smooth or sheepsfoot rollers, pneumatic and vibration rollers; (JCB7) asphalt finisher;

JCB7: Asphalt finisher も入れてほしい。Please add Asphalt finisher.
NK: Added.

No comment

(g) Mobile cranes ~~and other hoisting equipment~~ (JCB8);

JCB8: Mobile ではない。This is not mobile equipment.
NK: Mobile means able to be moved from one place to another. It seems there are other hoisting equipment than mobile cranes, however NK cannot show examples so far. Deleted it..

Mobile gantries, mobile “A” frame cranes, piling equipment; otherwise no comment

(h) Concreting equipment such as ~~concrete mixer trucks~~ ready-mixed concrete trucks, ~~agitator trucks,~~ pump trucks;

In Chapter 8, the comment required concrete mixer trucks and agitator trucks to be replaced by “ready-mixed concrete truck”. This therefore requires change here.

NK: Agreed.

(i) Demolition equipment such as breakers, concrete crushers and demolition grippers; and

(j) Transportation Equipment, such as cars and buses for Contractor’s Personnel and trucks and trailers for transporting Goods to, around and from the Site.

JCA6: 運ぶものは equipment だけではないため、”& materials“を挿入してください。
“Material” should be added because only equipment is not transported.
NK: コメントの通り追加しました。
“Material” is added as commented.

I suggest that this is changed to “Goods” which is defined in FIDIC and is more inclusive.

NK: Agreed.

(k) Workboat for diving works
NK: By the comments on Chap 10 Diving Works, (k) Workboat is added.

No need because no requirements are stated here but otherwise no comment

(l) Tunnel Boring Machine (TBM) . (JCB9)

boring equipment;

(f) Compaction and surface treatment equipment such as smooth or sheepsfoot rollers, pneumatic and vibration rollers, asphalt finishers;

(g) Mobile cranes;

(h) Piling equipment

(i) Concreting equipment such as ready-mixed concrete trucks and pump trucks;

(j) Demolition equipment such as breakers, concrete crushers and demolition grippers;

(k) Transportation Equipment, such as cars and buses for Contractor’s Personnel and trucks and trailers for transporting Goods to, around and from the Site;

(l) Workboat for diving works; and

(l) Tunnel Boring Machine (TBM) . (JCB9)

JCA6: 運ぶものは equipment だけではないため、”& materials“を挿入してください。
“Material” should be added because only equipment is not transported.
NK: コメントの通り追加しました。
“Material” is added as commented.
NK: By the comments on Chap 10 Diving Works, (k) Workboat is added.

JCB9: JICA added. EPB: Earth pressure balance type TBM
NK: TBM is added but Slurry and EPB are not because they are too detail to be referred to.

(7) Static equipment includes powered stationary equipment such as: (JCA7)

(a) Stone crushing plants and screening equipment;

(b) Concrete and asphalt concrete batching plants.

(c) Tower cranes, derrick cranes;

(d) ~~Personnel and Goods~~ Elevators; (JC10) and

JCB10: 今更かも知れませんが。 Personnel and Goods Elevator は単純に Elevator ではダメなんでしたっけ？特段問題なければこれでよいと思います。
Are there any reasons to stipulate Personnel and Goods Elevator instead of Elevator? If no special reason, Elevator can be use.
NK: 日本の安衛則に準じて分けていました。まとめて良いと考えます。
We specified it following Japanese regulation. They can be Elevator.

(e) Material conveyors.

(f) Air compressors. .(JCB11)

JCA7: エアコンプレッサーを追加してください。
Please add air compressors.
NK: (f)にエアコンプレッサーを追加しました。
Air compressor is added as (f).

JCB11: Engine Generator も追加しましょう。Submersible pump, engine pump も加えたい。 Please add Engine Generator, Submersible pump, engine pump
NK: Added.

JCB9: JICA added. EPB: Earth pressure balance type TBM
NK: TBM is added but Slurry and EPB are not because they are too detail to be referred to.

I understood that Tunnelling was not part of the scope of JSSS and this is confirmed in the Index in Chapter one.

Please note that there are although it may be listed here, there are no particular requirements included in this chapter and it is possible that some requirements here may be incompatible with this equipment. I suggest adding this later in future issues as stated in the Overall Document Index of Chapter 1, against future Chapter 17?.

NK: understood. We added with note ‘to be added when Spec for tunnel is prepared.”

(7) Static equipment includes powered stationary equipment such as: (JCA7)

(a) Stone crushing plants and screening equipment;

(b) Concrete and asphalt concrete batching plants;

(c) Tower cranes, derrick cranes;

(d) ~~Personnel and Goods~~ Elevators; (JC10)

JCB10: 今更かも知れませんが。 Personnel and Goods Elevator は単純に Elevator ではダメなんでしたっけ？特段問題なければこれでよいと思います。
Are there any reasons to stipulate Personnel and Goods Elevator instead of Elevator? If no special reason, Elevator can be use.
NK: 日本の安衛則に準じて分けていました。まとめて良いと考えます。
We specified it following Japanese regulation. They can be Elevator.

I had specified because they are two different types usually with slightly different separate descriptions (material hoists or lifts) but I have no comment.

NK: confirmed.

(e) Material conveyors;

(f) Air compressors;(JCB11)

JCA7: エアコンプレッサーを追加してください。
Please add air compressors.
NK: (f)にエアコンプレッサーを追加しました。
Air compressor is added as (f).

No comment

NK: confirmed.

JCB11: Engine Generator も追加しましょう。Submersible pump, engine pump も加えたい。 Please add Engine Generator, Submersible pump, engine pump
NK: Added.

Where? Suggest simply as follows:

NK: confirmed.

(g) Engine Generators, submersible pumps and engine pumps; and

(h) Reinforcement, cutting and bending machines.

(m) Tunnel Boring Machine (TBM). (Note: TBM will be added in the Specification for Tunnel in future.)

(6) Static equipment includes powered stationary equipment such as:

(a) Stone crushing plants and screening equipment;

(b) Concrete and asphalt concrete batching plants;

(c) Tower cranes, derrick cranes;

(d) Elevators;

(e) Material conveyors;

(f) Air compressors;

(g) Engine Generators, submersible pumps and engine pumps; and

(8) ~~Tools, tackle(JCB46) – and small equipment such as:~~ Small equipment, tools and tackle (tools and tackle are collectively referred to "Tools" in this Chapter") such as:

JCB46: (JICA comment to 4.3.11) これらを総称して Tools でいいのでは. Tools and Tackle can be called as "Tools".
NK: Defied "Tools" in (7) here.

(a) Hand steered vibrating rollers;

(b) Plate compactors and vibratory rammers;

(c) Portable conveyor

(d) ~~Reinforcement, cutting and bending machines;~~ (JCB12)

JCB12: これらは tool, tackle and small equipment としては大きすぎるのでは →(6)に移動してください。
Please move these to (6) as they are too large as tool, tackle and small equipment.
NK: Moved to (6)(g)

(e) Pipe bending machines;

(f) ~~Pneumatic~~ drills, hammers, breakers, compactors and compressors;

(g) Wood processing equipment;

(h) Independent concrete mixers;

(i) Air extract or blowing equipment for improving the working

Above is moved here from below as instructed

NK: confirmed.

~~(7) Tools, tackle(JCB46) – and small equipment such as:~~ Small equipment, tools and tackle (tools and tackle are collectively referred to "Tools" in this Chapter") such as:

JCB46: (JICA comment to 4.3.11) これらを総称して Tools でいいのでは. Tools and Tackle can be called as "Tools".
NK: Defied "Tools" in (7) here.

I suggest there is no need for a separate definition, if in doubt just delete "tackle".

See notes above in 4.1.1 (1)

"Tools" perhaps are generally hand-held, please see examples of hand tools already given in (7) (m) below.

Suggest as follows:

(8) Small equipment and tools such as:

(a) Hand steered vibrating rollers;

(b) Plate compactors and vibratory rammers;

(c) Portable conveyors;

What exactly do you mean by "portable conveyors"? Hand portable? All conveyors are to some extent "portable" meaning "mobile"; this is not really clear.

NK: Both portable and movable conveyors are used as shown website:
https://www.google.co.jp/search?q=portable+movable+beltconveyor&tbm=isch&hl=ja&chips=q:portable+movable+beltconveyor&hl=ja&ved=2ahUKEwj3s6-D44zqAhVK6JQKHVX3BPIQ3VZ6BAgBEBU&biw=1228&bih=693
This (6) is for small equipment, so portable can be used.

(d) ~~Reinforcement, cutting and bending machines;~~ (JCB12)

JCB12: これらは tool, tackle and small equipment としては大きすぎるのでは →(6)に移動してください。
Please move these to (6) as they are too large as tool, tackle and small equipment.
NK: Moved to (6)(g)

See above (6) (h).

NK: confirmed.

(e) Pipe bending machines;

(f) ~~Pneumatic~~ drills, hammers, breakers, compactors and compressors;

(g) Wood processing equipment;

(h) Independent concrete mixers;

(i) Air extract or blowing equipment for improving the working area environment;

(j) ~~Pneumatic power tools such as~~ jack hammers, drills, (JCB13)

(h) Reinforcement, cutting and bending machines.

(7) Small equipment and tools such as:

(a) Hand steered vibrating rollers;

(b) Plate compactors and vibratory rammers;

(c) Portable conveyors;

(d) Pipe bending machines;

(e) Drills, hammers, breakers, compactors and compressors;

(f) Wood processing equipment;

(g) Independent concrete mixers;

(h) Air extract or blowing equipment for improving the working area environment;

(i) Jack hammers, drills;

area environment;

(j) ~~Pneumatic power tools such as~~ jack hammers, drills, (JCB13)

(k) ~~Engine driven~~ chain saws; (JCB13)

JCB13: 電動も含まれるようにして下記の(8)は削除しています。
Modified to include electric power equipment and deleted (8) below.
NK: Modified.

(l) Hand operated equipment such as jacks, winches, lever hoists; and

(m) Hand tools such as wrenches, chisels, hand saw, picks, hammers.

(9) ~~Electric powered equipment means portable electric powered mobile equipment or tools such as: (JCA7a) (JCB14)~~

(a) ~~Pumps and small conveyors;~~

(b) ~~Angle grinders, drills, circular saws and planers.~~

JCA7a: 特に(8)にも電動の equipment が多数含まれているので、独立させておく必要があるでしょうか。
Is it necessary to independently define as (8) contains lots of electric power equipment?
NK: It is left as it is without (a) and (b)because it needs to specify requirements for portable electric powered mobile equipment or tools.

JCB14: JICA deleted related with JCB12.
NK: Deleted.

4.1.2 Compliance Standards

(1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], the Contractor shall comply with the requirements of this Chapter, read jointly with and including the further technical requirements of ~~*the HSE Provision and Use of Work Equipment Regulations 1998 (PUWER).*~~ (JCB15) the *Provision and Use of Work Equipment Regulations 1998 (PUWER), HSE Guidance in UK*.

JCB15: 正式に言えば、“The Provision and Use of Work Equipment Regulations 1998 (PUWER) under the HSE regulations in UK“では？法令の内容は一般的なので harmful ではないと思える。
Is the official title “The Provision and Use of Work Equipment Regulations 1998 (PUWER) under the HSE regulations in UK? It is considered that the regulations are general ones, so not harmful.
NK: Modified as commented.
Please refer to potential copyright requirements.

(2) In accordance with these regulations, together with JSSS 1.34

(k) ~~Engine driven~~ chain saws; (JCB13)

JCB13: 電動も含まれるようにして下記の(8)は削除しています。
Modified to include electric power equipment and deleted (8) below.
NK: Modified.

No comment.

NK: confirmed.

(l) Hand operated equipment such as jacks, winches, lever hoists; and

(m) Hand tools such as wrenches, chisels, hand saw, picks, hammers.

(9) ~~Electric powered equipment means portable electric powered mobile equipment or tools such as: (JCA7a) (JCB14)~~

(c) ~~Pumps and small conveyors;~~

(d) ~~Angle grinders, drills, circular saws and planers.~~

JCA7a: 特に(8)にも電動の equipment が多数含まれているので、独立させておく必要があるでしょうか。
Is it necessary to independently define as (8) contains lots of electric power equipment?
NK: It is left as it is without (a) and (b)because it needs to specify requirements for portable electric powered mobile equipment or tools.

JCB14: JICA deleted related with JCB12.
NK: Deleted.

4.1.2 Compliance Standards

(1) By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*], the Contractor shall comply with the requirements of this Chapter, read jointly with and including the further technical requirements of the Provision and Use of Work Equipment Regulations 1998 (PUWER), HSE Guidance in UK.

JCB15: 正式に言えば、“The Provision and Use of Work Equipment Regulations 1998 (PUWER) under the HSE regulations in UK“では？法令の内容は一般的なので harmful ではないと思える。
Is the official title “The Provision and Use of Work Equipment Regulations 1998 (PUWER) under the HSE regulations in UK? It is considered that the regulations are general ones, so not harmful.
NK: Modified as commented.
Please refer to potential copyright requirements.

See above.

NK: Clean copy is different from the above. Is it necessary to add “1998 (PUWER), HSE Guidance in UK”?

(2) In accordance with these regulations, together with JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*] the Contractor shall ensure that all Contractor's Equipment

(j) Chain saws;

(k) Hand operated equipment such as jacks, winches, lever hoists; and

(l) Hand tools such as wrenches, chisels, hand saw, picks, hammers.

4.1.2 Compliance Standards

(1) By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*], the Contractor shall comply with the requirements of this Chapter, read jointly with and including the further technical requirements of the Provision and Use of Work Equipment Regulations 1998 (PUWER), HSE Guidance in UK.

(2) In accordance with these regulations, together with JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and*

[*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the Contractor shall ensure that all Contractor's Equipment provided for use upon the Works is:

(a) Suitable and fit for the purpose for which it is intended;

(b) Safe for use, maintained in a safe condition and inspected to ensure it is correctly installed and used and does not subsequently deteriorate;

(c) Used only by people who have received adequate information, instruction and training;

(d) Accompanied by suitable health and safety measures, such as protective devices and controls. These shall include emergency stop devices, adequate means of isolation from sources of energy, clearly visible markings and warning devices; and

(e) Used for the designed and intended purpose.

4.1.3 Instruction for Contractor's Personnel

Further to the requirements of JSSS 1.6 [*Contractor's Safety Plan*], JSSS 1.7 [*Contractor's Method Statements*] and JSSS 1.13.2 [*Contractor's Safety Management Activities*], the Contractor shall include details of the following in the Method Statement and Safety Plan for works involving the use of Contractor's Equipment and shall fully inform all Contractor's Personnel associated therewith of all requirements before the commencement of any such operations, including:

provided for use upon the Works is:

(a) Suitable and fit for the purpose for which it is intended;

(b) Safe for use, maintained in a safe condition and inspected to ensure it is correctly installed and used and does not subsequently deteriorate;

(c) Used only by people who have received adequate information, instruction and training;

(d) Accompanied by suitable health and safety measures, such as protective devices and controls. These shall include emergency stop devices, adequate means of isolation from sources of energy, clearly visible markings and warning devices; and

(e) Used for the designed and intended purpose.

4.1.3 Manufacturer's Documentation

The Contractor shall obtain a copy of the following official Manufacturer's documentation for all units of Contractor's Equipment:

(1) Safety instructions and recommendations.

(2) Operation, maintenance and repair manual

The Contractor shall inform all Contractor's Personnel of the content of same, provide further safety training as necessary and ensure full compliance by all Contractor's Personnel with such instructions and recommendations to assist in enforcing the safe use of Contractor's Equipment.

I suggest the addition of the above clause to your draft.

NK: Agreed as the instructions and manuals are specified at some provisions in the JSSS.

4.1.4 Instruction for Contractor's Personnel

Further to the requirements of JSSS 1.7 [*Contractor's Safety Plans*], JSSS 1.8 [*Contractor's Method Statements*] and JSSS 1.15.2 [*Contractor's Safety Management Activities*], the Contractor shall include details of the following in the Method Statement and Safety Plan for works involving the use of Contractor's Equipment and shall fully inform all Contractor's Personnel associated therewith of all requirements before the commencement of any such operations, including:

(1) ~~The~~ Scope of work, locations and areas, work methods, dimensions, levels and quantities to be achieved.

PPE] the Contractor shall ensure that all Contractor's Equipment provided for use upon the Works is:

(a) Suitable and fit for the purpose for which it is intended;

(b) Safe for use, maintained in a safe condition and inspected to ensure it is correctly installed and used and does not subsequently deteriorate;

(c) Used only by people who have received adequate information, instruction and training;

(d) Accompanied by suitable health and safety measures, such as protective devices and controls. These shall include emergency stop devices, adequate means of isolation from sources of energy, clearly visible markings and warning devices; and

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4.1.4 Instruction for Contractor's Personnel

Further to the requirements of JSSS 1.7 [*Contractor's Safety Plans*], JSSS 1.8 [*Contractor's Method Statements*] and JSSS 1.15.2 [*Contractor's Safety Management Activities*], the Contractor shall include details of the following in the Method Statement and Safety Plan for works involving the use of Contractor's Equipment and shall fully inform all Contractor's Personnel associated therewith of all requirements before the commencement of any such operations, including:

(1) Scope of work, locations and areas, work methods, dimensions, levels

(1) The scope of work, locations and areas, work methods, dimensions, levels and quantities to be achieved.

(2) Types, capacities and numbers of units.

(3) ~~Workplaces,~~ ~~area limits and~~ (JCB16) operational routes, restricted areas, locations of caution signs and fences.

JCB16: Workplace の boundary という意味でつかわれているのであれば、workplace に含まれているので不要と考えます。
If the above workplace is used as meaning of boundary, it is not necessary because workplace include its boundary.
NK: The term of workplaces is used to mean workplaces where the Contractor's Equipment is used. Because of it is same as locations and areas stipulated in (1) above, deleted
To MD, please review this comment.

(4) ~~The~~ preservation of safe access, walkways and footpaths around the working areas and transportation areas.

(5) ~~Identities, location~~ ~~(JCB17)~~ ~~and scope of Spotters.~~ Identities and roles of and location(s) for Spotters and the communication and signalling requirements including equipment to be used

JCB17: 4.1.5 の(1)の(d)では The identity of and location(s)となっているので 4.1.5 の表現に統一してください。
The 4.1.5 (1) (d) stipulate "The identity of and location(s). Please make (5) consistent expression same as 4.1.5.
4.1.5 (1)Operators shall be fully aware of the following:
(d) The identity of and location(s) for Spotters and the communication and signalling requirements including equipment to be used; and
NK: Modified as commented and added referring 4.1.5.

(6) ~~Environmental impact mitigation~~ (JCB18) Environmental impact to third parties and workers including required measures against vibration, noise, dust and the like.

JCB18: これは環境のことを言っているのか、作業環境のことを示しているのか分からない。(多分作業環境のこと) であれば"Hazardous working conditions (if any) including required mitigation measures …"ですよね？
"Environmental impact effects including required mitigation measures against …"では？
It is not clear for which environment or working environment this (5) stipulates. If this is for working environment, is this to be stipulated "Hazardous working conditions (if any) including required mitigation measures …"
Is this "Environmental impact effects including required mitigation measures against …"？
NK: This can be read for both environment impact to third parties and working environment in the Site.
Modified to make clear.
To MD, please review the comment and modify (6).

(2) Types, capacities and numbers of units.

(3) ~~Workplaces,~~ ~~area limits and~~ (JCB16) operational routes, restricted areas, locations of caution signs and fences.

JCB16: Workplace の boundary という意味でつかわれているのであれば、workplace に含まれているので不要と考えます。
If the above workplace is used as meaning of boundary, it is not necessary because workplace include its boundary.
NK: The term of workplaces is used to mean workplaces where the Contractor's Equipment is used. Because of it is same as locations and areas stipulated in (1) above, deleted
To MD, please review this comment.

Draft states "work places"

I recommend to maintain the original wording, it is clear and unambiguous.

NK: Agreed.

(4) ~~The~~ Preservation of safe access, walkways and footpaths around the working areas and transportation areas.

(5) ~~Identities, location~~ ~~(JCB17)~~ ~~and scope of Spotters.~~ Identities and roles of and location(s) for Spotters and the communication and signalling requirements, including equipment to be used.

JCB17: 4.1.5 の(1)の(d)では The identity of and location(s)となっているので 4.1.5 の表現に統一してください。
The 4.1.5 (1) (d) stipulate "The identity of and location(s). Please make (5) consistent expression same as 4.1.5.
4.1.5 (1)Operators shall be fully aware of the following:
(d) The identity of and location(s) for Spotters and the communication and signalling requirements including equipment to be used; and
NK: Modified as commented and added referring 4.1.5.

(6) ~~Environmental impact mitigation~~ ~~(JCB18)~~ ~~Environmental impact to third parties and workers~~ ~~including required measures against vibration, noise, dust and the like.~~

JCB18: これは環境のことを言っているのか、作業環境のことを示しているのか分からない。(多分作業環境のこと) であれば"Hazardous working conditions (if any) including required mitigation measures …"ですよね？
"Environmental impact effects including required mitigation measures against …"では？
It is not clear for which environment or working environment this (5) stipulates. If this is for working environment, is this to be stipulated "Hazardous working conditions (if any) including required mitigation measures …"
Is this "Environmental impact effects including required mitigation measures against …"？
NK: This can be read for both environment impact to third parties and working environment in the Site.
Modified to make clear.
To MD, please review the comment and modify (6).

Modify as follows:

(6) Environmental impact including required measures for workers and any other persons against vibration, noise, dust and the like.

and quantities to be achieved.

(2) Types, capacities and numbers of units.

(3) Workplaces, area limits and operational routes, restricted areas, locations of caution signs and fences.

(4) Preservation of safe access, walkways and footpaths around the working areas and transportation areas.

(5) Identities and roles of and location(s) for Spotters and the communication and signalling requirements, including equipment to be used.

(6) Environmental impact including required measures for workers and any other persons against vibration, noise, dust and the like.

(7) ~~Safety measures for Environmental conditions in the working area, nearby areas for storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, Operational Areas or areas where Dangerous Work is taking place.~~ (JCB19) Safety measures for the environmental conditions in the working area and nearby areas for storage of Dangerous Goods or Hazardous Substances, in Hazardous Areas, and in operational areas ~~or areas~~ where Dangerous Work is taking place.

JCB19: ここの部分は本当によく分からない。英語として羅列されている事項のつながりが・・・“Safety requirements of working near the storage of Dangerous Goods or Hazardous Substances or the areas where Dangerous Work is taking place.”???

This sentence cannot be really understood. The connection of matters listed in English are not understandable.
Is this “Safety requirements of working near the storage of Dangerous Goods or Hazardous Substances or the areas where Dangerous Work is taking place.”?
NK: Modified referring to the comment.
To MD, please review the comment and modify (7).

(8) ~~The potential danger to other Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where Contractor's Equipment is to be used and who may be affected by the use of Contractor's Equipment and the required measures to avoid any risk accident or injury.~~

The potential danger to other Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where Contractor's Equipment is to be used and (JCB20) who may be affected by the use of Contractor's Equipment and the required measures to avoid any risk accident or injury.

Potential danger to Concerned Personnel who may be affected by the use of Contractor's Equipment and the required measures to avoid any ~~risk~~ accident or injury.

JC20 (= JC2): この Chapter で三箇所出てくるようなのでまとめましょう。(in this Chapter called as “Concerned Personnel”)

third parties against vibration, noise, dust and the like.

NK: confirmed.

(7) ~~Safety measures for Environmental conditions in the working area, nearby areas for storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, Operational Areas or areas where Dangerous Work is taking place.~~ (JCB19) Safety measures for the environmental conditions in the working area and nearby areas for storage of Dangerous Goods or Hazardous Substances, in Hazardous Areas, and in operational areas ~~or areas~~ where Dangerous Work is taking place.

JCB19: ここの部分は本当によく分からない。英語として羅列されている事項のつながりが・・・“Safety requirements of working near the storage of Dangerous Goods or Hazardous Substances or the areas where Dangerous Work is taking place.”???

This sentence cannot be really understood. The connection of matters listed in English are not understandable.
Is this “Safety requirements of working near the storage of Dangerous Goods or Hazardous Substances or the areas where Dangerous Work is taking place.”?
NK: Modified referring to the comment.
To MD, please review the comment and modify (7).

Please read conjointly; with the heading paragraph of this clause. The Contractor shall include details of the above in the Method Statement and Safety Plan for works involving the use of Contractor's Equipment and shall fully inform all Contractor's Personnel associated therewith of all requirements before the commencement of any such work. This clause lists information to be provided for environmental conditions and I suggest that no change to the original wording is necessary.

NK: understood.

(8) ~~The potential danger to other Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where Contractor's Equipment is to be used and who may be affected by the use of Contractor's Equipment and the required measures to avoid any risk accident or injury.~~

The potential danger to other Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where Contractor's Equipment is to be used and (JCB20) who may be affected by the use of Contractor's Equipment and the required measures to avoid any risk accident or injury.

Potential danger to Concerned Personnel who may be affected by the use of Contractor's Equipment and the required measures to avoid any risk accident or injury.

JC20 (= JC2): この Chapter で三箇所出てくるようなのでまとめましょう。(in this Chapter called as “Concerned Personnel”)
There are same phrases in 3 locations in this Chapter, therefore it is better to define as (in this Chapter called as “Concerned Personnel”).
NK: Modified as commented.

Please refer to notes and suggested new clause in 4.1.1.

(7) Safety measures for the environmental conditions in the working area, any nearby areas for storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, operational areas or areas where Dangerous Work is taking place.

(8) Potential danger to any persons who may be affected by the use of Contractor's Equipment and the required measures to avoid any accident or injury.

There are same phrases in 3 locations in this Chapter, therefore it is better to define as (in this Chapter called as “Concerned Personnel”).
NK: Modified as commented.

(9) Any potential hazards in the use of Contractor’s Equipment including those which may create a risk of falling or overturning.

(10) Restrictions to the movement and operation of Contractor’s Equipment such as existing structures, foundations, surfaces, underground or overhead services and dangerous goods storage.

(11) Measures to be taken in case of ~~for~~ breakdown, defect or fault in Contractor’s Equipment including location of areas for inspection and maintenance..

(12) ~~The~~ name of the authorised operator for each unit of Contractor’s Equipment. (JCB21) when authorised operator is necessary to be assigned.

JCB21 (=JCB1): 全体を通して、特に Tools についてはすべての要求事項が適用されるわけではないと思います。したがって、適用除外される可能性を上手に書き分ける表現になるよう工夫していただけますでしょうか。
(Tools(器具工具)について 適用されない箇所が多くあるため。(例:Operator の指名や責任者の掲示など))
Whole Provisions in this Chapter may not apply all to Tools, so please devise to stipulate possibility of exemption of some provisions.
(There are many provisions which will not apply to Tools for example, appointment of Operator, post of a label showing the name.)
NK: Modified as commented.

(13) The name and contact of the HSO to inform when there is any requirement for inspection, maintenance and repair of Contractor’s Equipment.

4.1.4 Safety Training

The Contractor shall provide the Contractor’s personnel with health and safety training in accordance with JSSS 1.17 [*Safety Training Generally*] taking account of the characteristics of the particular types of Contractor’s Equipment. (JCA8)

A new definition is not necessary but I do agree that rewording the above could be beneficial and suggest the simplest solution is as follows:

(9) Potential danger to any persons who may be affected by the use of Contractor’s Equipment and the required measures to avoid any accident or injury.

NK: Confirmed.

(9) Any potential hazards in the use of Contractor’s Equipment including those which may create a risk of falling or overturning.

(10) Restrictions to the movement and operation of Contractor’s Equipment such as existing structures, foundations, surfaces, underground or overhead services and dangerous goods storage.

(11) Measures to be taken in case of ~~for~~ breakdown, defect or fault in Contractor’s Equipment including location of areas for inspection and maintenance.

No comment.

(12) ~~The~~ Name of the authorised operator for each unit of Contractor’s Equipment. (JCB21) when authorised operator is necessary to be assigned.

JCB21 (=JCB1): 全体を通して、特に Tools についてはすべての要求事項が適用されるわけではないと思います。したがって、適用除外される可能性を上手に書き分ける表現になるよう工夫していただけますでしょうか。
(Tools(器具工具)について 適用されない箇所が多くあるため。(例:Operator の指名や責任者の掲示など))
Whole Provisions in this Chapter may not apply all to Tools, so please devise to stipulate possibility of exemption of some provisions.
(There are many provisions which will not apply to Tools for example, appointment of Operator, post of a label showing the name.)
NK: Modified as commented.

No comment.

(13) The name and contact of the HSO to inform when there is any requirement for inspection, maintenance and repair of Contractor’s Equipment.

4.1.5 Safety Training

(1) The Contractor shall provide the Contractor’s Personnel with health and safety training in accordance with JSSS 1.19 [*Safety Training Generally*] taking account of the characteristics of the particular types of Contractor’s Equipment and including:

Because of your insertion and changes below, the above clause needs to be renumbered as (1) and the added clauses numbered as (a) etc. and the wording” and included is added

NK: Confirmed.

(9) Any potential hazards in the use of Contractor’s Equipment including those which may create a risk of falling or overturning.

(10) Restrictions to the movement and operation of Contractor’s Equipment such as existing structures, foundations, surfaces, underground or overhead services and dangerous goods storage.

(11) Measures to be taken in case of breakdown, defect or fault in Contractor’s Equipment including location of areas for inspection and maintenance.

(12) Name of the authorised operator for each unit of Contractor’s Equipment when authorised operator is necessary to be assigned.

(13) The name and contact of the HSO to inform when there is any requirement for inspection, maintenance and repair of Contractor’s Equipment.

4.1.5 Safety Training

(1) The Contractor shall provide the Contractor’s Personnel with health and safety training in accordance with JSSS 1.19 [*Safety Training Generally*] taking account of the characteristics of the particular types of Contractor’s Equipment and including:

JCA8: 1.19 に equipment に必要なトレーニングが追加される形で総則が修正されているということでしょうか。
Does this mean that 1.19 [Safety Training Generally] has been revised to accommodate the necessary training for equipment operators?
NK: 1.19 (Issue 7)は次のように安全衛生の教育訓練の義務、各分野に関する詳細は安全計画書に示すことを一般規定して規定しています。そのため、1.19 は原案通りと致します。
The 1.19 (Issue 7) stipulates the responsibility of H&S education and training as general requirement, and details to be described in the Safety Plan. Therefore, 1.19 is left as it is.

1.19 Safety Training Generally

1.19.1 The Contractor shall conduct health and safety education and training for all the Contractor's Personnel.

1.19.2 The Contractor shall describe in the Safety Plan the outline of the health and safety training plans describing participants, time, teaching materials, policy for selecting trainers, etc. In addition, the Contractor shall submit full details of all health and safety training to the Engineer for information before the start of any training.

The health and safety training shall be ~~done~~ provided to the personnel including the following items depending on the characteristics of the Contractor's Equipment ~~with which the personnel will be engaged in works~~. (JCB22)

JCB22: この部分は蛇足なので削除。This phrase is superfluity.
NK: Deleted.

(1) Functions, performance, operation methods, inspection items, inspection method of safety device and emergency alarm device;

(2) Work procedure, signal and communication method at starting time of the operation, and daily inspection;

(3) Lockout and tagout procedures for shutting down operation, turning off the power, locking the starter and necessary measures for the time of cleaning and inspection of the Contractor's equipment;

(4) Stop of the operation ~~and work with~~ of the Contractor's equipment when an abnormality occurs and report to the person in charge; ~~and~~

(5) Prohibition ~~from~~ of removing safety devices; and

(6) Risks during operation of the Contractor's Equipment.

Imported from Transportation.

~~Particular safety training for transportation operators shall also include prevention of traffic accidents on and off the Site for example including:~~ (JCA9) (JCB23)

Particular safety training for transportation equipment operators shall for

JCA8: 1.19 に equipment に必要なトレーニングが追加される形で総則が修正されているということでしょうか。
Does this mean that 1.19 [Safety Training Generally] has been revised to accommodate the necessary training for equipment operators?
NK: 1.19 (Issue 7)は次のように安全衛生の教育訓練の義務、各分野に関する詳細は安全計画書に示すことを一般規定して規定しています。そのため、1.19 は原案通りと致します。
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1.19.1 The Contractor shall conduct health and safety education and training for all the Contractor's Personnel.

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~~The health and safety training shall be provided to the personnel including the following items depending on the characteristics of the Contractor's Equipment. (JCB22)~~

JCB22: この部分は蛇足なので削除。This phrase is superfluity.
NK: Deleted.

I do not understand the above comment but assume that the above added clause is not necessary because of duplication, I have therefore deleted.

Where is the following transferred from?

(a) Functions, performance, operation methods, inspection items, inspection method of safety and emergency alarm devices;

(b) Work procedure, signal and communication method at starting time of the operation, and daily inspection;

(c) Lockout and tagout procedures for shutting down operation, turning off the power, locking the starter and necessary measures for the time of cleaning and inspection of the Contractor's Equipment;

(d) Stop of the operation of the Contractor's Equipment when an abnormality occurs and report to the person in charge;

(e) Prohibit removal or isolation of safety devices; and

(f) Risks during operation of the Contractor's Equipment.

~~Particular safety training for transportation operators shall also include prevention of traffic accidents on and off the Site for example including:~~ (JCA9) (JCB23)

(2) Particular safety training for transportation equipment operators

(a) Functions, performance, operation methods, inspection items, inspection method of safety and emergency alarm devices;

(b) Work procedure, signal and communication method at starting time of the operation, and daily inspection;

(c) Lockout and tagout procedures for shutting down operation, turning off the power, locking the starter and necessary measures for the time of cleaning and inspection of the Contractor's Equipment;

(d) Stop of the operation of the Contractor's Equipment when an abnormality occurs and report to the person in charge;

(e) Prohibit removal or isolation of safety devices; and

(f) Risks during operation of the Contractor's Equipment.

(2) Particular safety training for transportation equipment operators shall be for the purpose of preventing of traffic accidents on and off the Site and shall include:

the purpose of prevention of traffic accidents on and off the Site, ~~also~~ include ~~prevention of traffic accidents on and off the Site for example including~~:

JCB23: 冒頭に交通事故の防止という言葉が入り、具体例においていちいち言わないように修正しています.
Phrase of prevention of traffic accidents is added to avoid necessity to stipulate repeatedly stipulate in each example.
NK: Modified.

JCB24: この下のナンバリングが変ではないでしょうか。
Is numbering below strange?
NK: Modified to that the above sentence is numbered as (7) and the clauses below are numbered (a) to (g).

(1) Driving rules ~~for prevention of traffic accidents~~ in general;

(2) Compliance with speed limits, signs, alcohol use, drugs and all other requirements the Laws of the Country;

(3) Driving methods to ~~prevent accidents including~~ contact and collision with other persons, cycles, motorcycles and other vehicles;

(4) Driving methods to properly ~~prevent accidents in~~ overtake ~~ing~~ other vehicles and to be undertaken by others;

(5) Driving methods ~~to prevent accidents due to~~ when encountering holes, bumps or obstacles on the road;

(6) Required inspection and maintenance before starting operation;

(7) Proper use of vehicles including behaviour and control of passengers, prevention of overcrowding, overloading and unauthorised passengers.

JCA9: ここの transportation に関するトレーニングの内容がかなり詳細なので、この内容と 1.19 の記述のバランスが取れているかを確認のうえ調整願います。
The provisions of the training for “transportation” here are quite detailed, so please make sure that this is harmonized with the description of 1.19.?
NK: 本款の(1)~(7)の項目は、特に事故が多い交通事故の防止に関する教育に注力して規定しています。
The items (1) ~ (7) in this clause is emphasized to focus on education and training for prevention of traffic accidents which is very important.
NK: 技能のある者を雇用し、請負者が機器を使用した作業に従事させるとの前提で、機械の特性に応じて行うべき教育と指導すべき事項を前半の(1)~(6)に追記致します。
The items (1)~(6) for education and training to the worker who is employed as qualified, skilled and experienced person are added at the beginning of this clause as stipulated in Japanese draft.

4.1.5 ~~Qualification of Operators~~ (JCA10) Requirements to Operators

Further to the requirements of JSSS 1.16 [*Proper Placement of*

shall for the purpose of prevention of traffic accidents on and off the Site, including:

JCB23: 冒頭に交通事故の防止という言葉が入り、具体例においていちいち言わないように修正しています.
Phrase of prevention of traffic accidents is added to avoid necessity to stipulate repeatedly stipulate in each example.
NK: Modified.

Modification is OK

JCB24: この下のナンバリングが変ではないでしょうか。
Is numbering below strange?
NK: Modified to that the above sentence is numbered as (7) and the clauses below are numbered (a) to (g).

Numbering requires correcting above and below because of your additional text.

(a) Driving rules in general;

(b) Compliance with speed limits, signs, alcohol use, drugs and all other requirements the Laws of the Country;

(c) Driving methods to contact and collision with other persons, cycles, motorcycles and other vehicles;

(d) Driving methods to properly overtake other vehicles and to be undertaken by others;

(e) Driving methods when encountering holes, bumps or obstacles on the road;

(f) Required inspection and maintenance before starting operation; and

(g) Proper use of vehicles including behaviour and control of passengers, prevention of overcrowding, overloading and unauthorised passengers.

JCA9: ここの transportation に関するトレーニングの内容がかなり詳細なので、この内容と 1.19 の記述のバランスが取れているかを確認のうえ調整願います。
The provisions of the training for “transportation” here are quite detailed, so please make sure that this is harmonized with the description of 1.19.?
NK: 本款の(1)~(7)の項目は、特に事故が多い交通事故の防止に関する教育に注力して規定しています。
The items (1) ~ (7) in this clause is emphasized to focus on education and training for prevention of traffic accidents which is very important.
NK: 技能のある者を雇用し、請負者が機器を使用した作業に従事させるとの前提で、機械の特性に応じて行うべき教育と指導すべき事項を前半の(1)~(6)に追記致します。
The items (1)~(6) for education and training to the worker who is employed as qualified, skilled and experienced person are added at the beginning of this clause as stipulated in Japanese draft.

4.1.6 ~~Qualification of Operators~~ Requirements for Operators

Further to the requirements of JSSS 1.18 [*Proper Placement of*

(a) Driving rules in general;

(b) Compliance with speed limits, signs, alcohol use, drugs and all other requirements the Laws of the Country;

(c) Driving methods to contact and collision with other persons, cycles, motorcycles and other vehicles;

(d) Driving methods to properly overtake other vehicles and to be undertaken by others;

(e) Driving methods when encountering holes, bumps or obstacles on the road;

(f) Required inspection and maintenance before starting operation; and

(g) Proper use of vehicles including behaviour and control of passengers, prevention of overcrowding, overloading and unauthorised passengers.

4.1.6 Requirements for Operators

Further to the requirements of JSSS 1.18 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that operators are

Contractor's Personnel], the Contractor shall ensure that operators are appropriately qualified, skilled and experienced in operation of the Contractor's Equipment to which they are assigned and duly certified as such by the HSO.

JCA10: 内容は qualification のことではないようです。workmanship ではないでしょうか。
The content is not about the qualification. Isn't it about workmanship?
NK: 資格だけの規定ではないので、提案された workmanship は、辞書では何かを作る技術とありますので、款名は Requirements to Operators ではいかがでしょうか？MD 氏へ相談します。
Because the content of this Clause is not only qualification, we propose the title of the clause to be "Requirements to Operators" as the "workmanship" proposed by JICA means the skill with which something was made or done in the dictionary.

(1) Operators shall safely and competently operate the Contractor's Equipment.

(2) Operators shall be fully aware of the following:

(a) Work procedures, ~~possible risks~~ hazards and operation methods;

(b) The need to stop ~~all work~~ the operation when any defect or abnormality is detected;

~~(c) Not to remove, interfere with or override any safety devices; (JCA11) Prohibition of removing, interfering with or overriding any safety devices;~~ (JCB25)

JCA11: ここだけ動詞形 Only (c) is the verb form.
NK: 名詞とします。 Modified to noun form as right.

JCB25: 4.1.4 (5)に同じことが記載されているので削除します。
Deleted as same is stipulated in 4.1.4 (5).
NK: Deleted.

(c) The identity of and location(s) for Spotters and the communication and signalling requirements including equipment to be used ~~and signals~~; and

(d) The procedures in case of emergency.

(3) ~~In addition,~~ operators shall:

~~(a) Safely and competently operate the Contractor's Equipment;~~

(a) ~~Operate~~ Keep all safety devices including emergency alarm and stop devices activated; and

(b) Inspect, clean, service and maintain the unit of Contractor's Equipment under their responsibility ~~and control or ensure that other qualified persons perform these operations~~. (JCA12)

JCA12: operators の責任？機械責任者の仕事では？要修正。

Contractor's Personnel], the Contractor shall ensure that operators are appropriately qualified, skilled and experienced in operation of the Contractor's Equipment to which they are assigned and duly certified as such by the HSO.

JCA10: 内容は qualification のことではないようです。workmanship ではないでしょうか。
The content is not about the qualification. Isn't it about workmanship?
NK: 資格だけの規定ではないので、提案された workmanship は、辞書では何かを作る技術とありますので、款名は Requirements to Operators ではいかがでしょうか？MD 氏へ相談します。
Because the content of this Clause is not only qualification, we propose the title of the clause to be "Requirements to Operators" as the "workmanship" proposed by JICA means the skill with which something was made or done in the dictionary.

(1) Operators shall safely and competently operate the Contractor's Equipment.

No comment.

(2) Operators shall be fully aware of the following:

(a) Work procedures, hazards and operation methods;

(b) The need to stop the operation when any defect or abnormality is detected;

~~(c) Not to remove, interfere with or override any safety devices; (JCA11) Prohibition of removing, interfering with or overriding any safety devices;~~ (JCB25)

JCA11: ここだけ動詞形 Only (c) is the verb form.
NK: 名詞とします。 Modified to noun form as right.

JCB25: 4.1.4 (5)に同じことが記載されているので削除します。
Deleted as same is stipulated in 4.1.4 (5).
NK: Deleted.

(c) The identity of and location(s) for Spotters and the communication and signalling requirements including equipment to be used ~~and signals~~; and

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~~(a) Safely and competently operate the Contractor's Equipment;~~

(a) ~~Operate~~ Keep all safety devices including emergency alarm and stop devices activated; and

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appropriately qualified, skilled and experienced in operation of the Contractor's Equipment to which they are assigned and duly certified as such by the HSO.

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(c) The identity of and location(s) for Spotters and the communication and signalling requirements including equipment to be used; and

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(3) Operators shall:

(a) Keep all safety devices including emergency alarm and stop devices activated; and

(b) Inspect, clean, service and maintain the unit of Contractor's Equipment under their responsibility. ~~and control or ensure that other qualified persons perform these operations~~.

(c) Ensure that other qualified persons safely operate Contractor's Equipment.

Isn't this the operator's responsibility but equipment supervisor?
NK: コメントの通り、これらは管理者の責務である。削除。
As commented, it is supervisor's duty to control these aspects. Deleted.

4.1.6 Signalling

(1) Signalling between operators ~~and Spotters~~ and any associated workers shall only be carried out by designated personnel (hereinafter referred to as signallers).

(2) ~~Signallers~~ Spotters shall be located in a safe place and where they can clearly see and be seen by the operator. (JCA13)

JCA13: 冒頭で Spotters に signallers も含まれる旨定義されているので、ここで signallers が出るのは違和感があります。以下、signallers が出てくる場合も同様です。
As the top of this section, it is defined that Spotter is deemed to include signaller, it seems strange to use "signaller" here.
NK: 4.1.1 (4) での signaller の定義は削除しました。
2.4 で次のように Signallers を含めた Spotters の責務を規定しています。そのため、本款では Signallers は、Spotters に変更します。
The definition of "Signaller" in 4.1.1 (4) is deleted.
2.4 is specified the duties of the Spotters including Signallers as below. Therefore, Signallers are replaced with Spotters in this Section.

2.4 SPOTTERS, FLAGMEN AND THE LIKE
2.4.1 Definitions
In accordance with the definition provided in JSSS Annex1.1 [Definitions and Abbreviations], a reference to either of Spotter or Flagman in JSSS shall be deemed to include a reference to the other or both and therefore references in this Chapter are to Spotters, which shall be deemed to include both.
2.4.2 Duties
Duties include for example:
(1) Preventing unauthorised personnel from entering areas where Dangerous Work is being carried out.
(2) Giving appropriate guidance and signals during operation of Contractor's Equipment to prevent the equipment tipping, overturning or falling.
(3) Giving appropriate guidance and signals to prevent Contractor's Personnel from being struck or pinned by Contractor's Equipment.
(4) Assisting drivers of vehicles including trucks and operators of other Contractor's Equipment in positioning their vehicles particularly when manoeuvring.

(3) When it is not possible for ~~Signallers~~ Spotters to give direct visible and audible signals to the operator, other systems including hand-held radios or ~~video cameras~~ videophone must be provided and used.. (JCA14)

JCA14: 何故？Video Camera?? 監視カメラのことを言いたいのであれば別の表現が適切ではないでしょうか。

Isn't this the operator's responsibility but equipment supervisor?
NK: コメントの通り、これらは管理者の責務である。削除。
As commented, it is supervisor's duty to control these aspects. Deleted.

Do not agree. The supervisor (whoever he is) may be responsible for managing servicing and maintenance but the operator is the primary person, he should not start or continue to use any equipment that he knows requires repair, service or maintenance.

NK6/19: the last paragraph "that other qualified persons perform these operations" is difficult to understand. Does it mean Operators shall control performing each other's operation?
NK propose as follows: (c)Ensure that other qualified persons safely operate Contractor's Equipment.

4.1.7 Signalling

(1) Signalling between operators ~~and Spotters~~ and any associated workers shall only be carried out by designated personnel (hereinafter referred to as signallers).

(2) ~~Signallers~~ Spotters shall be located in a safe place and where they can clearly see and be seen by the operator. (JCA13)

JCA13: 冒頭で Spotters に signallers も含まれる旨定義されているので、ここで signallers が出るのは違和感があります。以下、signallers が出てくる場合も同様です。
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(4) Assisting drivers of vehicles including trucks and operators of other Contractor's Equipment in positioning their vehicles particularly when manoeuvring.

No comment.

(3) When it is not possible for ~~Signallers~~ Spotters to give direct visible and audible signals to the operator, other systems including hand-held radios or ~~video cameras~~ videophone must be provided and used..(JCA14)

JCA14: 何故？Video Camera?? 監視カメラのことを言いたいのであれば別の表現が適切ではないでしょうか。
Why does it need to be a video camera? "Monitoring camera" would be better.
NK : ビデオカメラとビデオモニターを組み合わせテレビ（ビデオ)電話のことを

4.1.7 Signalling

(1) Signalling between operators and any associated workers shall only be carried out by designated personnel.

(2) Spotters shall be located in a safe place and where they can clearly see and be seen by the operator.

(3) When it is not possible for Spotters to give direct visible and audible signals to the operator, other systems including hand-held radios or videophone must be provided and

Why does it need to be a video camera? “Monitoring camera” would be better.

NK : ビデオカメラとビデオモニターを組み合わせテレビ（ビデオ)電話のことを指していると考えます。OSHA の下記の記述を参考に、videotelephone への変更を提案します。

The term of video cameras means videophone system consisting of video camera and monitor. We propose to replace it with videophone.

§1926.1419 Signals—general requirements.

(e) Suitability. The signals used (hand, voice, audible, or new), and means of transmitting the signals to the operator (such as direct line of sight, video, radio, etc.), must be appropriate for the site conditions.

§1926.1420 Signals—radio, telephone or other electronic transmission of signals.

(a) The device(s) used to transmit signals must be tested on site

4.2 INSPECTION, MAINTENANCE AND REPAIR

4.2.1 Requirements Generally

(1) Further to the requirements of JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the HSO shall ensure that all Contractor's Equipment is inspected, fully maintained and operational when it is mobilised to the Site. Thereafter all Contractor's Equipment shall be inspected, maintained and repaired before the commencement of the first and of all subsequent days of operation.

(2) Inspections shall include all items necessary to ensure the safe performance of the Contractor's Equipment including the following examples and any further requirements due to the characteristics, capability and condition of the Contractor's Equipment and in compliance with the manufacturer's official maintenance and repair manual.

(3) ~~Inspection at the time when Contractor's Equipment is mobilised~~ When mobilizing Contractor's Equipment to the Site and before commencement of operation, ~~for which~~ (JCB26) the Contractor shall:

JCB26: 文として完結していないので修正しました。The sentence is not completed, so modified.

NK: Modified as commented.

~~(a) Inspect all units of Contractor's Equipment to ensure that all components are installed and functioning, all inspection and maintenance covers, (JCA15) safety guards to prevent contact with moving parts, and the like are in place, adequate and fit for purpose, securely fixed and that all such units of equipment are in the condition required by the Contract;~~

(a) Inspect all units of Contractor's Equipment to ensure that

- all components are installed and functioning,

指していると考えます。OSHA の下記の記述を参考に、videotelephone への変更を提案します。

The term of video cameras means videophone system consisting of video camera and monitor. We propose to replace it with videophone.

§1926.1419 Signals—general requirements.

(e) Suitability. The signals used (hand, voice, audible, or new), and means of transmitting the signals to the operator (such as direct line of sight, video, radio, etc.), must be appropriate for the site conditions.

§1926.1420 Signals—radio, telephone or other electronic transmission of signals.

(a) The device(s) used to transmit signals must be tested on site

It can also mean video reversing camera however no comment.

NK: confirmed.

4.2 INSPECTION, MAINTENANCE AND REPAIR

4.2.1 Requirements Generally

(1) Further to the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*] the HSO shall ensure that all Contractor's Equipment is inspected, fully maintained and operational when it is mobilised to the Site. Thereafter all Contractor's Equipment shall be inspected, maintained and repaired before the commencement of the first and of all subsequent days of operation.

(2) Inspections shall include all items necessary to ensure the safe performance of the Contractor's Equipment including the following examples and any further requirements due to the characteristics, capability and condition of the Contractor's Equipment and in compliance with the manufacturer's official operation, maintenance and repair manual.

(3) ~~Inspection at the time when Contractor's Equipment is mobilised~~ When mobilizing Contractor's Equipment to the Site and before commencement of operation, ~~for which~~ (JCB26) the Contractor shall:

JCB26: 文として完結していないので修正しました。The sentence is not completed, so modified.

NK: Modified as commented.

No comment

~~(a) Inspect all units of Contractor's Equipment to ensure that all components are installed and functioning, all inspection and maintenance covers, (JCA15) safety guards to prevent contact with moving parts, and the like are in place, adequate and fit for purpose, securely fixed and that all such units of equipment are in the condition required by the Contract;~~

(a) Inspect all units of Contractor's Equipment to ensure that

- all components are installed and functioning; and

4.2 INSPECTION, MAINTENANCE AND REPAIR

4.2.1 Requirements Generally

(1) Further to the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*] the HSO shall ensure that all Contractor's Equipment is inspected, fully maintained and operational when it is mobilised to the Site. Thereafter all Contractor's Equipment shall be inspected, maintained and repaired before the commencement of the first and of all subsequent days of operation.

(2) Inspections shall include all items necessary to ensure the safe performance of the Contractor's Equipment including the following examples and any further requirements due to the characteristics, capability and condition of the Contractor's Equipment and in compliance with the manufacturer's official operation, maintenance and repair manual.

(3) When mobilising Contractor's Equipment to the Site and before commencement of operation, the Contractor shall:

(a) Inspect all units of Contractor's Equipment to ensure that

(i) all components are installed and functioning; and

(ii) adequate covers and safety guards (to prevent contact with

- all inspection and maintenance covers,
- safety guards to prevent contact with moving parts and the like are in place, adequate and fit for purpose, securely fixed, and
- that all such units of equipment are in the condition required by the Contract proper condition required by the Contract; (JCB27)

JCA15: 何のことを指しているのかが分かりません。
This “all inspection and maintenance covers,” is not understandable.
NK: MD 氏に記述の見直しと変更を依頼します。
We will ask MD to review and modify this sentence referring to the items separated in (a).
To MD: Please review the JICA comment and NK proposal above and make the items above to one sentence.

JCB27: “契約”が機械の状況について要求するのか？in proper condition で良いのでは.
Dose the Contract request the conditions of equipment? Can it be “proper condition”?
NK: Modified as commented.

(b) Ensure as a minimum that the daily and periodical check items ~~listed below in this Sub Clause~~ (JCB28) have already been inspected and recorded;

JCB28: 何を指すのか？不要ではないか。What do they mean? Is it necessary?
NK: Deleted as commented.

(c) Ensure that all inspection and maintenance records are available for inspection by the Engineer if and when ~~may be~~ (JCB29)required in compliance with JSSS; and

JCB29: 不要。Unnecessary.
NK: Deleted.

(d) If any inspection and maintenance records are incomplete or not available, the Contractor shall carry out inspections and maintenance to ensure that a full and acceptable record is available for all units of Contractor’s Equipment. (JCA16)

JCA16: 上記(b), (c), (d)の記録をエンジニアが求めた場合の提出義務を追記しては？
Obligation of submittal of the record in (b), (c) and (d) should be added.
NK: (c)でエンジニアによる閲覧が保証されているので、提出義務は必要ないと考えます。
As inspection of all records by the Engineer is stipulated in (c), it is deemed that stipulating submittal of inspection and maintenance records to the Engineer is not necessary.

~~In relation with the above, it should be noted that Contractor’s Equipment shall be in a working and safe condition and fully compliant with the Contract when it is mobilised to the Site and other than initial assembly and set up, no repair or maintenance is expected. The Engineer may refuse to accept delivery to the Site of~~

- adequate covers and safety guards (to prevent contact with moving parts) are provided and securely fixed.

JCA15: 何のことを指しているのかが分かりません。
This “all inspection and maintenance covers,” is not understandable.
NK: MD 氏に記述の見直しと変更を依頼します。
We will ask MD to review and modify this sentence referring to the items separated in (a).
To MD: Please review the JICA comment and NK proposal above and make the items above to one sentence.

“Covers” is from your draft and it is a usual and common term for inspection and maintenance covers that are usually screwed in position to allow access for inspection and maintenance. Equipment is not safe if these are missing which is frequently the case.

Otherwise no comment, edited as instructed.

NK: confirmed.

JCB27: “契約”が機械の状況について要求するのか？in proper condition で良いのでは.
Dose the Contract request the conditions of equipment? Can it be “proper condition”?
NK: Modified as commented.

(b) Ensure as a minimum that the daily and periodical check items ~~listed below in this Sub Clause~~ (JCB28) have already been inspected and recorded;

JCB28: 何を指すのか？不要ではないか。What do they mean? Is it necessary?
NK: Deleted as commented.

No comment

(c) Ensure that all inspection and maintenance records are available for inspection by the Engineer if and when ~~may be~~ (JCB29)required in compliance with JSSS; and

JCB29: 不要。Unnecessary.
NK: Deleted.

No comment.

(d) If any inspection and maintenance records are incomplete or not available, the Contractor shall carry out inspections and maintenance to ensure that a full and acceptable record is available for all units of Contractor’s Equipment. (JCA16)

JCA16: 上記(b), (c), (d)の記録をエンジニアが求めた場合の提出義務を追記しては？
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As inspection of all records by the Engineer is stipulated in (c), it is deemed that stipulating submittal of inspection and maintenance records to the Engineer is not necessary.

~~In relation with the above, it should be noted that Contractor’s Equipment shall be in a working and safe condition and fully compliant with the Contract when it is mobilised to the Site and other than initial assembly and set up, no repair or maintenance is expected. The Engineer may refuse to accept delivery to the Site of any Contractor’s Equipment that is not in this condition.~~ (JCA17)

moving parts) are provided and securely fixed.

(b) Ensure as a minimum that the daily and periodical check items have already been inspected and recorded;

(c) Ensure that all inspection and maintenance records are available for inspection by the Engineer if and when required in compliance with JSSS; and

(d) If any inspection and maintenance records are incomplete or not available, the Contractor shall carry out inspections and maintenance to ensure that a full and acceptable record is available for all units of Contractor’s Equipment.

In relation with the above, it should be noted that Contractor’s

~~any Contractor's Equipment that is not in this condition.~~ (JCA17)

In relation with the above, it should be noted that Contractor's Equipment shall be in a working and safe condition and fully compliant with the Contract when it is mobilised to the Site. The Engineer may refuse to accept delivery to the Site any Contractor's Equipment which does not meet the requirements stipulated in the Contract.

JCA17: 分かりにくい、かつ前文が満たされれば OK ということで削除します。
This part is difficult to understand and when the requirement in the first sentence is fulfilled, the second sentence is unnecessary. Deleted.
NK: Instead of deletion of the sentence, we propose to modify to make clear the Engineer's action.

(4) The Contractor shall undertake the following daily inspection items, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted: (JCA18)

JCA18: (c)以下は建設機械に関係するものが中心であって、4.1.1 の(6)以下で列挙されているすべての機械の点検項目として網羅できているでしょうか。していないのであれば、例示としての記述が適切ではないでしょうか。
または、「製造者のマニュアルに従った点検項目」といった形での記述が考えられます。
Do the inspection items in (c) to (k) which are mainly for construction equipment, cover all inspection items enumerated in 4.1.1 (6), etc. If not, it may be appropriate to describe as examples.
Or a description such as "inspection items in accordance with the manufacturer's manual" may works.
NK: 列挙した項目のみでは不足する可能性があります。製造者のマニュアルを引用する項目(l)を追加します。
There is a possibility that the lists cannot cover all items. Added the item (l) regarding the items stipulated in the manufacturer's official maintenance and repair manual.

(a) Operating condition of engine, gearbox(s), drive shafts, pulleys and main components, emergency stop and safety devices, any defects or abnormalities in covers, doors and enclosures;

(b) Abnormal sounds, vibrations or smell;

(c) Leaks, levels and condition of lubricants, coolant, hydraulic fluid levels, and the like;

(d) Lights and indicators;

(e) Brakes, clutches, steering and operating devices and working devices;

(f) Cables, slings, ropes and chains;

(g) Protective covers are adequately provided over all rotating or moving parts;

(h) Attachments and tools such as buckets, grabs, etc.

(i) Cleanliness of each unit or item of Contractor's Equipment;

In relation with the above, it should be noted that Contractor's Equipment shall be in a working and safe condition and fully compliant with the Contract when it is mobilised to the Site. The Engineer may refuse to accept delivery to the Site any Contractor's Equipment which does not meet the requirements stipulated in the Contract.

JCA17: 分かりにくい、かつ前文が満たされれば OK ということで削除します。
This part is difficult to understand and when the requirement in the first sentence is fulfilled, the second sentence is unnecessary. Deleted.
NK: Instead of deletion of the sentence, we propose to modify to make clear the Engineer's action

No further comment.

(4) The Contractor shall undertake the following daily inspection items, (or at intervals required by the manufacturer's official operation, maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted: (JCA18)

JCA18: (c)以下は建設機械に関係するものが中心であって、4.1.1 の(6)以下で列挙されているすべての機械の点検項目として網羅できているでしょうか。していないのであれば、例示としての記述が適切ではないでしょうか。
または、「製造者のマニュアルに従った点検項目」といった形での記述が考えられます。
Do the inspection items in (c) to (k) which are mainly for construction equipment, cover all inspection items enumerated in 4.1.1 (6), etc. If not, it may be appropriate to describe as examples.
Or a description such as "inspection items in accordance with the manufacturer's manual" may works.
NK: 列挙した項目のみでは不足する可能性があります。製造者のマニュアルを引用する項目(l)を追加します。
There is a possibility that the lists cannot cover all items. Added the item (l) regarding the items stipulated in the manufacturer's official maintenance and repair manual.

(a) Operating condition of engine, gearbox(s), drive shafts, pulleys and main components, emergency stop and safety devices, any defects or abnormalities in covers, doors and enclosures;

(b) Abnormal sounds, vibrations or smell;

(c) Leaks, levels and condition of lubricants, coolant, hydraulic fluid levels, and the like;

(d) Lights and indicators;

(e) Brakes, clutches, steering and operating devices and working devices;

(f) Cables, slings, ropes and chains;

(g) Protective covers are adequately provided over all rotating or moving parts;

(h) Attachments and tools such as buckets, grabs and the like;

(i) Cleanliness of each unit or item of Contractor's Equipment;

(j) Cleanliness of each working area and removal of obstructions;

(k) Availability of emergency kits such as warning flares and triangles, fire extinguisher, first aid kit and the like, as required by the Laws of the Country with the testing and expiration date clearly indicated; and

Equipment shall be in a working and safe condition and fully compliant with the Contract when it is mobilised to the Site. The Engineer may refuse to accept delivery to the Site any Contractor's Equipment which does not meet the requirements stipulated in the Contract.

(4) The Contractor shall undertake the following daily inspection items, (or at intervals required by the manufacturer's official operation, maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(a) Operating condition of engine, gearbox(s), drive shafts, pulleys and main components, emergency stop and safety devices, any defects or abnormalities in covers, doors and enclosures;

(b) Abnormal sounds, vibrations or smell;

(c) Leaks, levels and condition of lubricants, coolant, hydraulic fluid levels, and the like;

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(g) Protective covers are adequately provided over all rotating or moving parts;

(h) Attachments and tools such as buckets, grabs and the like;

(i) Cleanliness of each unit or item of Contractor's Equipment;

(j) Cleanliness of each working area and removal of obstructions;

(k) Availability of emergency kits such as warning flares and triangles, fire extinguisher, first aid kit and the like, as required by the Laws of the Country with the testing and expiration date clearly indicated; and

and

(j) Cleanliness of each working area and removal of obstructions.

Imported from Transportation

(k) Availability of emergency kits (JC18a)such as warning flares and triangles, fire extinguisher, first aid kit and the like, as required by the Laws of the Country with the testing and expiration date clearly indicated.

(l) For other items not covered here, the inspection items stipulated in the manufacturer's official maintenance and repair manual shall be applied.

JCA18a: この項目だけ機械のメンテナンスの話ではないので、たとえば 4.3.7 に移動されてはいかがでしょうか。
This(k) only is not item for maintenance, so it is suggested to move this to 4.3.7(?).
NK: It is better to specify this in daily inspection items to make the Contractor's attention and check to items, so it is left here.
NK: Added (l) to specify the items stipulated by the manufacturer.

(5) The Contractor shall undertake the following periodic inspection items, (at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted: (JCA19)

JCA19: (4)のコメントに同じ。Same comment as (4).
NK: (4)と同様に(k)を追加。 Same as (4), added (k).

(a) Engine compression pressure, valve clearance and other relevant parts of prime energy unit;

(b) Gearbox, clutch, transmission, propeller shaft, differential and other parts of power transmission devices;

(c) Drive wheels, idling wheels, vertical trunk rollers, belts, tires, wheel bearings and other parts of traveling devices;

(d) Springs, shock absorbers and other parts of suspension devices;

(e) Left and right rotation angle of steering wheel, knuckle, rod, arm and other parts of control devices;

(f) Brake capacity, brake drum, brake shoe and other parts of braking systems;

(g) Blades, booms, link mechanisms, buckets, wire ropes and other parts of work equipment;

(h) Hydraulic pump, hydraulic motor, cylinder, safety valve and other parts of hydraulic equipment;

(i) Voltage, amperage and relevant performance and components of electrical systems; and

(j) Body, operating devices, head guards, back stoppers, access doors, protective covers, ladders and steps, locking devices, warning alarm devices, direction indicators, tires' air pressure and lightning devices.

by the Laws of the Country with the testing and expiration date clearly indicated; and

JCA18a: この項目だけ機械のメンテナンスの話ではないので、たとえば 4.3.7 に移動されてはいかがでしょうか。
This(k) only is not item for maintenance, so it is suggested to move this to 4.3.7(?).
NK: It is better to specify this in daily inspection items to make the Contractor's attention and check to items, so it is left here.

(l) Any additional inspection items stipulated in the manufacturer's official operation, maintenance and repair manual.

NK: Added (l) to specify the items stipulated by the manufacturer.

Edited.

NK: confirmed.

(5) The Contractor shall undertake the following periodic inspection items, (at intervals required by the manufacturer's official operation, maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted: (JCA19)

JCA19: (4)のコメントに同じ。Same comment as (4).
NK: (4)と同様に(k)を追加。 Same as (4), added (k).

(a) Engine compression pressure, valve clearance and other relevant parts of prime energy unit;

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(e) Left and right rotation angle of steering wheel, knuckle, rod, arm and other parts of control devices;

(f) Brake capacity, brake drum, brake shoe and other parts of braking systems;

(g) Blades, booms, link mechanisms, buckets, wire ropes and other parts of work equipment;

(h) Hydraulic pump, hydraulic motor, cylinder, safety valve and other parts of hydraulic equipment;

(i) Voltage, amperage and relevant performance and components of electrical systems;

(j) Body, operating devices, head guards, back stoppers, access doors, protective covers, ladders and steps, locking devices, warning alarm devices, direction indicators, tyre air pressures and lightning devices; and

(k) Any additional inspection items stipulated in the manufacturer's official operation, maintenance and repair manual.

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(a) Engine compression pressure, valve clearance and other relevant parts of prime energy unit;

(b) Gearbox, clutch, transmission, propeller shaft, differential and other parts of power transmission devices;

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(j) Body, operating devices, head guards, back stoppers, access doors, protective covers, ladders and steps, locking devices, warning alarm devices, direction indicators, tyre air pressures and lightning devices; and

(k) Any additional inspection items stipulated in the manufacturer's official operation, maintenance and repair manual.

(k) For other items not covered here, the inspection items stipulated in the manufacturer's official maintenance and repair manual shall be applied.

(6) Operation of any unit of Contractor's Equipment shall not be allowed to commence until the HSO has certified that it is safe to do so.

(7) The Contractor shall prepare standard checklists for all inspections and the HSO shall ensure that these are complied with, completed and signed and kept as a record in accordance with JSSS 1.31 [*Health and Safety Records*].

4.2.2 Defects and Repair During Operation

(1) If an operator notices any defect or abnormality in the Contractor's Equipment during operation (such as abnormal noise, temperature, smell, etc.) the operator shall stop the operation immediately;

(2) ~~The operator shall then identify the cause of the defect or abnormality and make necessary repairs by using authorised and qualified specialist mechanics, electricians or representative technical engineers authorised by the Contractor's Equipment manufacturer; and~~ Necessary repair shall be provided by qualified mechanics, electricians or engineers (JCB30) ; and

JCB30: オペレーターが不調の原因まで identify できるのでしょうか。また修理の主語がオペレーターになっていますがこれでよいのか？4.1.4(4)では不調の場合はストップして person in charge に報告することが想定されている。
Can operator identify causes? Is it correct that the main actor of repair is operator? The 4.1.4(4) stipulate *that Stop of the operation and work with of the Contractor's Equipment when an abnormality occurs and report to the person in charge;*
NK: Modified as commented.

(3) The HSO shall ensure that no further operation shall resume unless the above has been complied with and the Contractor's Equipment has been re-inspected by him and certified in accordance with JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*].

4.3 SAFETY REQUIREMENTS

4.3.1 General Safety Measures

In addition to other safety and health requirements of JSSS, the Contractor shall:

(1) Ensure that there is sufficient lighting to perform all work safely and provide artificial lighting where necessary.

(2) Ensure that Contractor's Equipment is equipped with suitable protective safety devices such as covers, screens, guards, contact prevention devices, auto-stop devices, enclosures, barriers and the like ~~all~~ as necessary to prevent ~~any risk of~~ injury to personnel from equipment or parts of equipment, where:

(a) There may be any risk of persons being hit by, caught or injured or entangled in any ropes, cables, sheaves, moving or rotating

manual.

(6) Operation of any unit of Contractor's Equipment shall not be allowed to commence until the HSO has certified that it is safe to do so.

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NK: Modified as commented.

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(a) There may be any risk of persons being hit by, caught or injured or entangled in any ropes, cables, sheaves, moving or rotating

(6) Operation of any unit of Contractor's Equipment shall not be allowed to commence until the HSO has certified that it is safe to do so.

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(a) There may be any risk of persons being hit by, caught or injured or entangled in any ropes, cables, sheaves, moving or rotating

equipment or parts of equipment, where:

(a) There may be any risk of persons being hit by, caught or injured or entangled in any ropes, cables, sheaves, moving or rotating parts; and

(b) There may be any risk of persons being hit by flying debris, offcuts, or the like produced by the equipment.

(3) Ensure that Contractor's Equipment is equipped with suitable ladders and steps for access to the operating cab and also to all other levels and components to permit inspection, assembly, maintenance and repair of the equipment. ~~Inspection platforms and ladders on cranes and the like shall be fitted with cages.~~ When any Contractor's Personnel need to work at a height of 2 m or more, the Contractor shall take suitable measures in accordance with JSSS 2.5 [*Fall Prevention*], including the provision and use by all Contractor's Personnel of guide ropes and PFAS.

JCA20: (3)はクレーンを強くイメージして書いていると思われるので、クレーンである旨記載願います。そのうえで必要であるならば後述の additional requirement に記載ください。もしくは 6 章。
This clause seems to be written imaging the case of cranes. Therefore, it should be described clearly as regarding crane. If necessary, stipulate it in the additional requirement later or in Chapter 6.
NK: 本項目は特にクレーンに注目しているものではなく、建設機械一般の点検時の安全について規定しているものです。クレーンについて記述している“Inspection platforms and ladders on cranes and the like shall be fitted with cages.”の文は、特に必要ないので削除します。
This clause is not highlighting to cranes, rather those requirements in (3) are general for various construction equipment except for the sentence “Inspection platforms and ladders on cranes and the like shall be fitted with cages.”
The sentence is deleted.

(4) Prohibit personnel other than operators, workers and other authorised personnel from entering the place where Contractor's Equipment is in use for the Works.

~~(5) Prohibit all personnel from accessing spoil heaps, stone, aggregate, sand and other material stock pile areas where there is any risk of material slippage and consequent injury.~~ (JCA20a)

JCA20a: コンクリート・骨材プラント特有の問題を一般化すると唐突感。equipment と関係ないと思われるため削除してください。
Particular requirements related with concrete/crushing plants are specified in general requirements for equipment. It seems strange, so please delete (5).
NK: Deleted.

parts; and

(b) There may be any risk of persons being hit by flying debris, offcuts, or the like produced by the equipment.

(3) Ensure that Contractor's Equipment is equipped with suitable ladders and steps for access to the operating cab and also to all other levels and components to permit inspection, assembly, maintenance and repair of the equipment. ~~Inspection platforms and ladders on cranes and the like shall be fitted with cages.~~ When any Contractor's Personnel need to work at a height of 2 m or more, the Contractor shall take suitable measures in accordance with JSSS 2.5 [*Fall Prevention*], including the provision and use by all Contractor's Personnel of guide ropes and PFAS.

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This clause is not highlighting to cranes, rather those requirements in (3) are general for various construction equipment except for the sentence “Inspection platforms and ladders on cranes and the like shall be fitted with cages.”
The sentence is deleted.

No comment.

(4) Prohibit personnel other than operators, workers and other authorised personnel from entering the place where Contractor's Equipment is in use for the Works.

~~(5) Prohibit all personnel from accessing spoil heaps, stone, aggregate, sand and other material stock pile areas where there is any risk of material slippage and consequent injury.~~ (JCA20a)

JCA20a: コンクリート・骨材プラント特有の問題を一般化すると唐突感。equipment と関係ないと思われるため削除してください。
Particular requirements related with concrete/crushing plants are specified in general requirements for equipment. It seems strange, so please delete (5).
NK: Deleted.

No comment.

(5) ~~Ensure that each unit of Contractor's Equipment is provided with appropriate numbers and types of fire extinguishing equipment (JCA21) and such other facilities that are necessary to ensure safety where such equipment is necessary and ensure that all operators and~~

parts; and

(b) There may be any risk of persons being hit by flying debris, offcuts, or the like produced by the equipment.

(3) Ensure that Contractor's Equipment is equipped with suitable ladders and steps for access to the operating cab and also to all other levels and components to permit inspection, assembly, maintenance and repair of the equipment. When any Contractor's Personnel need to work at a height of 2 m or more, the Contractor shall take suitable measures in accordance with JSSS 2.5 [*Fall Prevention*], including the provision and use by all Contractor's Personnel of guide ropes and PFAS.

(4) Prohibit personnel other than operators, workers and other authorised personnel from entering the place where Contractor's Equipment is in use for the Works.

(5) Ensure that each unit of Contractor's Equipment is provided with appropriate numbers and types of fire extinguishing equipment (JCA21) and such other facilities ~~that are necessary to ensure safety~~ where such equipment is necessary and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and fire safety procedures.

JCA21: 本当？→全部には備え付けないものと考えますので、必要なものに備え付けるという旨に記述を修正願います。
Really? Fire extinguishing equipment would not be provided all Equipment.
Please modify the stipulation to provide it when necessary.
NK: We will modify it referring to the following clause of OSHA:
1926.601 Motor vehicles.
(14) All vehicles in use shall be checked … These requirements also apply to equipment such as …, fire extinguishers, etc., where such equipment is necessary.

(6) Ensure that each working area where Contractor's Equipment is in use, is provided with appropriate numbers and types of first-aid equipment and such other facilities that are necessary to ensure safety and treat accidents and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and first-aid procedures. (JCB31)

JCB31: 機械の safety requirement ではない。It is not the safety requirements for the Equipment.
NK: 機械を使っての作業場所に救急用具を設置することは、機械の安全措置ではないですが、作業員の安全措置ですので、このまま残します。
This clause is not safety requirement for Equipment but for workers in the working area with Equipment. Therefore, this is left as it is.

(7) Post a label clearly showing the name of the operator on each unit of Contractor's Equipment together with the name and contact number of the HSO (JCB32) or a person in charge who shall be contacted in the event of breakdown or fault.

JC32: 4.1.4(4)では不調の場合はストップして person in charge に報告することが想定されているので、併記しておきます。
4.1.4(4) stipulate operator shall stop operation and inform person in charge of event of breakdown or fault, so added the person in charge.
NK: Modified.

~~other Contractor's Personnel are trained in the use of such equipment and fire safety procedures.~~

JCA21: 本当？→全部には備え付けないものと考えますので、必要なものに備え付けるという旨に記述を修正願います。
Really? Fire extinguishing equipment would not be provided all Equipment.
Please modify the stipulation to provide it when necessary.
NK: We will modify it referring to the following clause of OSHA:
1926.601 Motor vehicles.
(14) All vehicles in use shall be checked … These requirements also apply to equipment such as …, fire extinguishers, etc., where such equipment is necessary.
The original text was fine.
Your added text is edited as follows:

(5) Ensure that each unit of Contractor's Equipment is provided with appropriate numbers and types of fire extinguishing equipment ~~and such other facilities~~ where such equipment is necessary and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and in fire safety procedures.–

(6) Ensure that each working area where Contractor's Equipment is in use, is provided with appropriate numbers and types of first-aid equipment and such other facilities that are necessary to ensure safety and treat accidents and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and first-aid procedures. (JCB31)

JCB31: 機械の safety requirement ではない。It is not the safety requirements for the Equipment.
NK: 機械を使っての作業場所に救急用具を設置することは、機械の安全措置ではないですが、作業員の安全措置ですので、このまま残します。
This clause is not safety requirement for Equipment but for workers in the working area with Equipment. Therefore, this is left as it is.

(7) Post a label clearly showing the name of the operator on each unit of Contractor's Equipment together with the name and contact number of the HSO (JCB32) or a person in charge who shall be contacted in the event of breakdown or fault.

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4.1.4(4) stipulate operator shall stop operation and inform person in charge of event of breakdown or fault, so added the person in charge.
NK: Modified.

No comment.

(8) Ensure that only the authorised operating, inspection and maintenance personnel access the mechanical, electrical and other components and systems of the Contractor's Equipment and prohibit all other persons from such access ~~. and prevent them from disabling any features and tampering with or removing any~~

(5) Ensure that each unit of Contractor's Equipment is provided with appropriate numbers and types of fire extinguishing equipment (where such equipment is necessary) and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and in fire safety procedures.–

(6) Ensure that each working area where Contractor's Equipment is in use, is provided with appropriate numbers and types of first-aid equipment and such other facilities that are necessary to ensure safety and treat accidents and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and first-aid procedures.

(7) Post a label clearly showing the name of the operator on each unit of Contractor's Equipment together with the name and contact number of the HSO or a person in charge who shall be contacted in the event of breakdown or fault.

(8) Ensure that only the authorised operating, inspection and maintenance personnel access the mechanical, electrical and other components and systems of the Contractor's Equipment and prohibit all other persons from such access.

(8) Ensure that only the authorised operating, inspection and maintenance personnel access the mechanical, electrical and other components and systems of the Contractor's Equipment and prohibit all other persons from such access ~~, and prevent them from disabling any features and tampering with or removing any inspection and maintenance covers, safety guards to prevent contact with moving parts and the like.~~ (JCB33).

(9) Ensure that any inspection and maintenance covers, safety guards to prevent contact with moving parts and the like are not disabled, tampered with or removed except for repair, maintenance or any other justifiable reason.

JCB33: 無関係な人間にアクセスを禁じるのは防護装置に悪さをさせないためだけではないし、関係者が防護装置に悪さをするかもしれない。従って、無関係者のアクセス禁止と防護装置の維持の話に分ける。
The prohibition of other persons from accessing to equipment is for avoiding them doing bad to protective device. On the other hand, there is possibility that workers related with the work do bad to the protective device. Therefore, the (8) is divided to two for(8) prohibition of other persons to access to equipment and (9) keeping the protective device function.
NK: Modified as commented.

(10) Ensure that installation, assembly, testing commissioning, operation and dismantling of all major equipment including static equipment, ~~personnel and goods~~ (JCB34) elevators and or (JCB35) the like, is carried out under the direction of an Operation Leader appropriately qualified, skilled and experienced in such activities for the particular type and capacity of equipment and strictly in accordance with the manufacturer's printed instructions.

JCB34: 削除。単に elevators でいいのでは。
Deleted. It can be "elevators".
NK: Modified.

JCB35: Is it "or".
NK: We think "and" can be left.
To MD, please advise to use "or" or "and".

~~inspection and maintenance covers, safety guards to prevent contact with moving parts and the like.~~ (JCB33).

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The prohibition of other persons from accessing to equipment is for avoiding them doing bad to protective device. On the other hand, there is possibility that workers related with the work do bad to the protective device. Therefore, the (8) is divided to two for(8) prohibition of other persons to access to equipment and (9) keeping the protective device function.
NK: Modified as commented.

No comment

~~(11) Ensure that installation, assembly, testing commissioning, operation and dismantling of all major equipment including static equipment, personnel and goods (JCB34) elevators and or (JCB35) the like, is carried out under the direction of an Operation Leader appropriately qualified, skilled and experienced in such activities for the particular type and capacity of equipment and strictly in accordance with the manufacturer's printed instructions.~~

JCB34: 削除。単に elevators でいいのでは。
Deleted. It can be "elevators".
NK: Modified.

JCB35: Is it "or".
NK: We think "and" can be left.
To MD, please advise to use "or" or "and".

I suggest editing in total as follows:

(10) Ensure that installation, assembly, testing commissioning, operation and dismantling of all Contractor's Equipment is carried out under the direction of an Operation Leader, appropriately qualified, skilled and experienced in such activities for the particular type and capacity of equipment and in accordance with the manufacturer's operation, maintenance and repair manual.

NK: confirmed.

Following is imported from Foundation Piling:

~~**4.3.2 Transportation to and Removal from Site**~~**(JCA22)**

~~(1) When transporting heavy or long goods on public roads, select roads on which the transportation does not pose danger to general traffic, third parties, structures adjacent to the transportation route,~~

(9) Ensure that any inspection and maintenance covers, safety guards to prevent contact with moving parts and the like are not disabled, tampered with or removed except for repair, maintenance or any other justifiable reason.

(10) Ensure that installation, assembly, testing commissioning, operation and dismantling of all Contractor's Equipment is carried out under the direction of an Operation Leader, appropriately qualified, skilled and experienced in such activities for the particular type and capacity of equipment and in accordance with the manufacturer's operation, maintenance and repair manual.

Following is imported from Foundation Piling:

4.3.2 ~~Transportation to and Removal from Site~~(JCA22)

(1) ~~When transporting heavy or long goods on public roads, select roads on which the transportation does not pose danger to general traffic, third parties, structures adjacent to the transportation route, obtain all necessary prior permission from the relevant authorities including police, road authority before commencement of transportation and comply with all requirements.~~

(2) ~~When transporting heavy or long goods within the Site, select suitable route where the transportation does not pose danger to existing permanent or temporary buildings or structures or other works and obtain the consent of the Engineer before commencement of the transportation and comply with all requirements.~~

Imported from Transportation:

JCA22: 4.3.4 の operation のところに入れてください。
Please move these (1) and (2) to 4.3.4 [Safety Measures During Operation].
NK: 4.3.7 (1) & (2)に移動しました。章番号を繰り上げます。
Moved to 4.3.7 (1) & (2) and Clause Nos are changed.

4.3.3 Safety Measures During Cleaning, Inspection and Maintenance

The Contractor shall take the following measures for safety of Contractor's Personnel during cleaning, inspection and maintenance. Until such measures are taken, the Contractor shall prohibit any inspection or maintenance personnel or other workers from entering the areas ~~at risk.~~

(1) Perform inspection and maintenance work wherever possible on a level surface. Where unavoidable ensure that wheels are securely chocked to prevent any movement of equipment.

Imported from Transportation:

(2) Provide safety blocks or supports under cargo bed of vehicles to prevent them descending unexpectedly during inspection and maintenance.

(3) Lower attachments (buckets and blades etc.) to the ground during any inspection and maintenance. Where unavoidable ensure that attachments are securely supported to prevent any fall or downward movement.

(4) Stop and isolate the functions completely, establish and implement lockout and tagout procedures to prevent accidents during inspection and maintenance. The lockout and tagout system shall fully isolate the starting system.

(5) Post warning signs to prohibit start-up or use of any Contractor's Equipment during inspection and maintenance.

(6) Assign a Spotter.

~~obtain all necessary prior permission from the relevant authorities including police, road authority before commencement of transportation and comply with all requirements.~~

(2) ~~When transporting heavy or long goods within the Site, select suitable route where the transportation does not pose danger to existing permanent or temporary buildings or structures or other works and obtain the consent of the Engineer before commencement of the transportation and comply with all requirements.~~

JCA22: 4.3.4 の operation のところに入れてください。
Please move these (1) and (2) to 4.3.4 [Safety Measures During Operation].
NK: 4.3.7 (1) & (2)に移動しました。章番号を繰り上げます。
Moved to 4.3.7 (1) & (2) and Clause Nos are changed.

No comment.

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(5) Post warning signs to prohibit start-up or use of any Contractor's Equipment during inspection and maintenance.

(6) Assign a Spotter.

(7) Ensure that only authorised personnel have access to the inspection and maintenance area.

4.3.4 Safety Measures During Operation

(1) The Contractor shall ensure the safety of all Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where works are being executed and who may be affected by such work.

(2) Unless otherwise specifically permitted by the HSO, (JCA23) all work involving the use of Contractor's Equipment shall be designated as Dangerous Work (JCA24) and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

JCA23: エンジニアではなく？
Shouldn't this be the Engineer?

NK: JC24 のコメントとおり、Contractor's Equipment の範囲が広いのためと現場の条件によっては、立入禁止措置がとれない場合もあります。その場合の判断は HSO が責任をもって行うものと考えます。
Because Contractor's Equipment are various types from heavy equipment to tools and small equipment, and depending on the site conditions, it may not be possible to take entry prevention measures. In such a case, the HSO is the one who has to make judgment and decision. Left as is.

JCA24: Contractor's Equipment の範囲が広いので、すべてを Dangerous Work とするのは間違いではないでしょうか。したがって、「Contractor's Equipment を用いる場合で unless it is not practicable な場合にはフェンスを設置する」という趣旨の文を記載願います。
It is not appropriate to designated all works as "Dangerous Work" because Contractor's Equipment includes various types. Please, stipulate such that When using Contractor's Equipment, unless it is not practicable, shall enclose the working area.

NK: Contractor's Equipment を用いる仕事は危険な作業とする原則を規定し、ただし、HSO が許可した場合は、危険な作業から除外できると、原案は規定しています。現場に判断を任せず、原則を規定することが事故の防止上必要と考えますので、原案通りとします。
This clause specify that the principle is the work using Contractor's Equipment shall be Dangerous Work, and the work which the HSO permits as not Dangerous Work.

(6) Assign a Spotter.

(7) Ensure that only authorised personnel have access to the inspection and maintenance area.

4.3.3 Safety Measures During Operation

(1) ~~The Contractor shall ensure the safety of all Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where works are being executed and who may be affected by such work.~~

The above is similar to and partial duplication of 4.1.1 and can be deleted if 4.1.1 is reworded slightly, which I have done.

(2) Unless otherwise specifically permitted by the HSO, (JCA23) all work involving the use of Contractor's Equipment shall be designated as Dangerous Work (JCA24) and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

JCA23: エンジニアではなく？
Shouldn't this be the Engineer?

NK: JC24 のコメントとおり、Contractor's Equipment の範囲が広いのためと現場の条件によっては、立入禁止措置がとれない場合もあります。その場合の判断は HSO が責任をもって行うものと考えます。
Because Contractor's Equipment are various types from heavy equipment to tools and small equipment, and depending on the site conditions, it may not be possible to take entry prevention measures. In such a case, the HSO is the one who has to make judgment and decision. Left as is.

JCA24: Contractor's Equipment の範囲が広いので、すべてを Dangerous Work とするのは間違いではないでしょうか。したがって、「Contractor's Equipment を用いる場合で unless it is not practicable な場合にはフェンスを設置する」という趣旨の文を記載願います。
It is not appropriate to designated all works as "Dangerous Work" because Contractor's Equipment includes various types. Please, stipulate such that When using Contractor's Equipment, unless it is not practicable, shall enclose the working area.

NK: Contractor's Equipment を用いる仕事は危険な作業とする原則を規定し、ただし、HSO が許可した場合は、危険な作業から除外できると、原案は規定しています。現場に判断を任せず、原則を規定することが事故の防止上必要と考えますので、原案通りを提案します。
This clause specify that the principle is the work using Contractor's Equipment shall be Dangerous Work, and the work which the HSO permits as not Dangerous Work.
This does not leave the judgement to the Contractor. The principle stipulation is important to prevent accident with Contractor's Equipment.
Therefore, NK propose (2) is left as it is.

No further comment.

(7) Ensure that only authorised personnel have access to the inspection and maintenance area.

4.3.3 Safety Measures During Operation

(1) Unless otherwise specifically permitted by the HSO, all work involving the use of Contractor's Equipment shall be designated as Dangerous Work and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) The Contractor shall also ensure that:

This does not leave the judgement to the Contractor. The principle stipulation is important to prevent accident with Contractor's Equipment.
Therefore, (2) is left as it is.

(3) The Contractor shall also ensure that:

(a) All operators are able to clearly see and communicate effectively with Spotters and other relevant persons;

(b) No Contractor's Equipment shall be allowed to operate beyond the capacity or operational limits officially prescribed by the equipment manufacturer;

(c) The surfaces upon which the Contractor's Equipment is working, and any adjacent surfaces and areas over which access is required, are sound, safe and suitable to support the equipment and the Contractor shall provide any temporary foundations, hardstanding or other surfaces, sleepers or steel plates as are necessary to ensure safety and stability of the equipment at all times;

Imported from Transportation (above also):

(d) Spotters shall always be provided to enable precise movement and positioning of Contractor's Equipment, particularly when reversing, loading and unloading, being at dangerous areas, ~~areas~~ where the operator's view is not clear and an intersection with public roads.

To MD, please review the above deletion of areas is correct.

(e) Where there is any risk of turnover, slippage, collapse or fall, ~~All~~ Contractor's Equipment ~~is~~ shall be equipped with seatbelts or safety harnesses (JCA25) and that such seatbelts and harnesses are used;

JCA25: 建設機械だけを意味してはいないので、それは違うのでは？mobile equipment として記述するか、主語はこのままにして適切に範囲を絞るような表現をするか((f)のような書き方)、いずれかで適切に書き換えをお願いします。
This is not correct because Contractor's Equipment includes various equipment including construction equipment. Please modify the stipulation by using "mobile equipment" or applying a phrase such as "where there is any risk, etc."
NK: 追記しました。Added as commented.

(3) The Contractor shall also ensure that:

(a) All operators are able to clearly see and communicate effectively with Spotters and other relevant persons;

(b) No Contractor's Equipment shall be allowed to operate beyond the capacity or operational limits officially prescribed by the equipment manufacturer;

(c) The surfaces upon which the Contractor's Equipment is working, and any adjacent surfaces and areas over which access is required, are sound, safe and suitable to support the equipment and the Contractor shall provide any temporary foundations, hardstanding or other surfaces, sleepers or steel plates as are necessary to ensure safety and stability of the equipment at all times;

(d) ~~Spotters shall always be provided to enable precise movement and positioning of Contractor's Equipment, particularly when reversing, loading and unloading, being at dangerous areas, areas where the operator's view is not clear and at intersections with public roads.~~

To MD, please review the above deletion of areas is correct.

I suggest editing as follows:

(d) Spotters shall always be provided to enable precise movement and positioning of Contractor's Equipment, particularly when reversing, loading and unloading, in dangerous areas or when the operator's view is not clear and at intersections with public roads;

(e) Where there is any risk of turnover, slippage, collapse or fall, ~~All~~ Contractor's Equipment ~~is~~ shall be equipped with seatbelts or safety harnesses and that such seatbelts and harnesses are used;

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This is not correct because Contractor's Equipment includes various equipment including construction equipment. Please modify the stipulation by using "mobile equipment" or applying a phrase such as "where there is any risk, etc."
NK: 追記しました。Added as commented.

No comment.

(f) Where there is any risk of turnover, slippage, collapse or fall, Contractor's Equipment shall be equipped with a "Roll-Over Protective Structure" (ROPS);

(a) All operators are able to clearly see and communicate effectively with Spotters and other relevant persons;

(b) No Contractor's Equipment is operating beyond the capacity or operational limits officially prescribed by the equipment manufacturer;

(c) The surfaces upon which the Contractor's Equipment is working, and any adjacent surfaces and areas over which access is required, are sound, safe and suitable to support the equipment and the Contractor shall provide any temporary foundations, hardstanding or other surfaces, sleepers or steel plates as are necessary to ensure safety and stability of the equipment at all times;

(d) Spotters are always be provided to enable precise movement and positioning of Contractor's Equipment, particularly when reversing, loading and unloading, in dangerous areas or when the operator's view is not clear and at intersections with public roads;

(e) Where there is any risk of turnover, slippage, collapse or fall, Contractor's Equipment is equipped with seatbelts or safety harnesses and that such seatbelts and harnesses are used;

(f) Where there is any risk of turnover, slippage, collapse or fall, Contractor's Equipment is equipped with a "Roll-Over Protective Structure" (ROPS);

(f) Where there is any risk of turnover, slippage, collapse or fall, Contractor's Equipment shall be equipped with a "Roll-Over Protective Structure" (ROPS);

(g) Where there is any risk of injury to operators due to falling objects Contractor's Equipment shall be equipped with a "Falling Object Protective Structure" (FOPS);

(h) Operators shall pay careful and constant attention to the position of any workers near to the operating area and particularly when mobile equipment is reversing; (JCA25a)

(i) Operators of excavating equipment shall ensure that excavator buckets never pass over the operator's seat of ~~other~~ Contractor's Equipment; and (JCA25a)

(j) Workers shall not enter under a bucket which is loading material and shall keep away from dump trucks when loading or unloading materials.

JCA25a: (comment is not shown.)
NK: A phrase is added to clarify the kind of operators.

Imported from Transportation:

(k) No person shall ride on trucks, trailers or cargo bed other than cabin of vehicles unless permitted by the Law of the Country.

4.3.2 ~~Safety Measures When Equipment Is Not In Use~~ (JCA26) Safety Measures When ~~Equipment~~ Mobile Equipment Is Not in Use

JCA26: Contractor's Equipment とするか mobile とするか
Please consider to change it to "Contractor's Equipment" or "mobile"?
NK: 内容が移動機械のものであるため"Mobile Equipment"に修正しました。下の(1)も同様。
As the provisions are regarding to mobile equipment, modified to "Mobile Equipment". (1) below also is modified.

(1) When ~~Contractor's Equipment~~ mobile equipment (JCA26a) is not in use, the Contractor shall ensure that operators:

JCA26a: この辺りも建設機械に特化した記述かと
This is also stipulation particularly for construction equipment.
NK: Modified to mobile equipment.

(a) Park on surfaces which are level, sound, safe and suitable to support the equipment;

(g) Where there is any risk of injury to operators due to falling objects Contractor's Equipment shall be equipped with a "Falling Object Protective Structure" (FOPS);

(h) Operators shall pay careful and constant attention to the position of any workers near to the operating area and particularly when mobile equipment is reversing;

(i) Operators of excavating equipment shall ensure that excavator buckets never pass over the operator's seat of Contractor's Equipment;

(j) Workers shall not enter under a bucket which is loading material and shall keep away from dump trucks when loading or unloading materials; and

JCA25a: (comment is not shown.)
NK: A phrase is added to clarify the kind of operators.

No comment.

(k) No person shall ride on trucks, trailers or cargo bed other than cabin of vehicles unless permitted by the Law of the Country.

4.3.4 ~~Safety Measures When Equipment Is Not In Use~~ Safety Measures When ~~Equipment~~ Mobile Equipment Is Not in Use

JCA26: Contractor's Equipment とするか mobile とするか
Please consider to change it to "Contractor's Equipment" or "mobile"?
NK: 内容が移動機械のものであるため"Mobile Equipment"に修正しました。下の(1)も同様。
As the provisions are regarding to mobile equipment, modified to "Mobile Equipment". (1) below also is modified.

(1) When ~~Contractor's Equipment~~ mobile equipment is not in use, the Contractor shall ensure that operators:

JCA26a: この辺りも建設機械に特化した記述かと
This is also stipulation particularly for construction equipment.
NK: Modified to mobile equipment.

No comment

(a) Park on surfaces which are level, sound, safe and suitable to support the equipment;

(b) Securely chock all wheels to prevent any movement;

(c) Lower attachments (buckets and blades etc.) to the ground;

(d) Stop and isolate the functions completely, fully engage brakes and lock the brake pedal; and

(g) Where there is any risk of injury to operators due to falling objects Contractor's Equipment is equipped with a "Falling Object Protective Structure" (FOPS);

(h) Operators are aware that they shall pay careful and constant attention to the position of any workers near to the operating area and particularly when mobile equipment is reversing;

(i) Operators of excavating equipment are aware that excavator buckets shall never pass over the operator's seat of Contractor's Equipment;

(j) Workers shall not enter under a bucket which is loading material and shall keep away from dump trucks when loading or unloading materials; and

(k) No person shall ride on trucks, trailers or cargo bed other than cabin of vehicles unless permitted by the Law of the Country.

4.3.4 Safety Measures When Mobile Equipment Is Not in Use

(1) When mobile equipment is not in use, the Contractor shall ensure that operators:

(a) Park on surfaces which are level, sound, safe and suitable to support the equipment;

(b) Securely chock all wheels to prevent any movement;

(c) Lower attachments (buckets and blades etc.) to the ground;

(d) Stop and isolate the functions completely, fully engage brakes and lock the brake pedal; and

(e) Lock the equipment and store the starter key in the

(b) Securely chock all wheels to prevent any movement;

(c) Lower attachments (buckets and blades etc.) to the ground;

(d) Stop and isolate the functions completely, fully engage brakes and lock the brake pedal; and

(e) Lock the equipment and store the starter key in the designated place.

(2) The Contractor shall prohibit all persons other than authorised personnel from entering the area where Contractor's Equipment is parked.

4.3.5 Safety Measures During ~~Connection~~ Connecting and Removing of Attachments

The Contractor shall take the following measures when connecting and removing attachments (buckets, blades etc.) to Contractor's Equipment: (JCB36)

JCB36: こうした事態が発生するのを防ぐために具体的な記述を記載してください。
・安定したフレームにアタッチメントをおいて着脱する。
・エンジンを切る
その他、4.3.4 の(1)で参考になるようなことを具体的に記述してください。
Please stipulate concrete measures to avoid occurrence of accident mentioned in 81) and (2) for example,
- connecting and removing attachments which are located on stable frames,
- Put off engine
- Other concrete measures referring to 4.3.4 (1).

NK: added in (1) and (2).

(1) Prevent any accident due to movement or fall of attachments by taking safety measures for example, connecting and removing attachments after locating them on stable and sound frames or ground, and

(2) Prevent accidental movement or operation causing persons to be trapped attachments by taking safety measures for example, parking of the Contractor's Equipment not to move as mentioned in JSSS 4.3.4 (1) (a), (b) and (d), stop engine.

4.3.6 Safety Measures During Loading and Transporting (JCA27) of Contactor's Equipment (JCB37)

JCA27: タイトル要修正。場合によっては要分割・統合。
・Contractor's Equipment を運ぶときの話
・Contractor's Equipment で材料等を運ぶときの話
・Contractor's Equipment でその他のことをする場合の話
が混在しています。
Contractor's Equipment で輸送・荷卸しする時ではなくて、Contractor's Equipment を輸送・荷卸しする時なので、このタイトルは Loading and Transporting of Contractor's Equipment では.でないと、ここで勘違いして？？？になる
It is necessary to modify the title or divide/merge contents, because the contents are mixed with transporting equipment, transporting materials with equipment and

(e) Lock the equipment and store the starter key in the designated place.

(2) The Contractor shall prohibit all persons other than authorised personnel from entering the area where Contractor's Equipment is parked.

4.3.5 Safety Measures During ~~Connection~~ Connecting and Removing of Attachments

The Contractor shall take the following measures when connecting and removing attachments (buckets, blades etc.) to Contractor's Equipment: (JCB36)

JCB36: こうした事態が発生するのを防ぐために具体的な記述を記載してください。
・安定したフレームにアタッチメントをおいて着脱する。
・エンジンを切る
その他、4.3.4 の(1)で参考になるようなことを具体的に記述してください。
Please stipulate concrete measures to avoid occurrence of accident mentioned in 81) and (2) for example,
- connecting and removing attachments which are located on stable frames,
- Put off engine
- Other concrete measures referring to 4.3.4 (1).

NK: added in (1) and (2).

(1) Prevent any accident due to movement or fall of attachments by taking safety measures for example, connecting and removing attachments after locating them on stable and sound frames or on the ground.

(2) Prevent accidental movement or operation causing persons to be trapped attachments by taking safety measures for example, parking of the Contractor's Equipment such that it cannot move (as mentioned in JSSS 4.3.4 (1) (a), (b) and (d)) and stop the engine.

4.3.6 Safety Measures During Loading and Transporting of Contractor's Equipment

JCA27: タイトル要修正。場合によっては要分割・統合。
・Contractor's Equipment を運ぶときの話
・Contractor's Equipment で材料等を運ぶときの話
・Contractor's Equipment でその他のことをする場合の話
が混在しています。
Contractor's Equipment で輸送・荷卸しする時ではなくて、Contractor's Equipment を輸送・荷卸しする時なので、このタイトルは Loading and Transporting of Contractor's Equipment では.でないと、ここで勘違いして？？？になる
It is necessary to modify the title or divide/merge contents, because the contents are mixed with transporting equipment, transporting materials with equipment and others.

NK: 本章の題を[Safety Measures during Loading and Transporting of Contractor's Equipment]に変更し、新たに 4.3.7 [Safety Measures during Loading and Transporting of Materials]を加え、その中に 4.3.2 (1), (2)及び本章の材料等の運搬に係わる(9), (13), (14)を移動しました。
Changed the title to [Safety Measures during Loading and Transporting of Contractor's Equipment], and added a new Clause 4.3.7 [Safety Measures during

designated place.

(2) The Contractor shall prohibit all persons other than authorised personnel from entering the area where Contractor's Equipment is parked.

4.3.5 Safety Measures During Connecting and Removing of Attachments

The Contractor shall take the following measures when connecting and removing attachments (buckets, blades etc.) to Contractor's Equipment:

(1) Prevent any accident due to movement or fall of attachments by taking safety measures for example, connecting and removing attachments after locating them on stable and sound frames or on the ground.

(2) Prevent accidental movement or operation causing persons to be trapped attachments by taking safety measures for example, parking of the Contractor's Equipment such that it cannot move (as mentioned in JSSS 4.3.4 (1) (a), (b) and (d)) and stop the engine.

4.3.6 Safety Measures During Loading and Transporting of Contractor's Equipment

others.

NK: 本章の題を[Safety Measures during Loading and Transporting of Contractor's Equipment]に変更し、新たに 4.3.7 [Safety Measures during Loading and Transporting of Materials]を加え、その中に 4.3.2 (1), (2)及び本章の材料等の運搬に係わる(9), (13), (14)を移動しました。
Changed the title to [Safety Measures during Loading and Transporting of Contractor's Equipment], and added a new Clause 4.3.7 [Safety Measures during Loading and Transporting of Materials], which contains measures for transporting materials from 4.3.2 (1) & (2) and 4.3.7 (9), (13) and 14.

JCB37: 4.3.6 では積み上げ・積み下ろし作業を論じている。輸送時のこととしてみると、おかしなことがある((3)とか)。
4.3.6 stipulates loadinga nd transporting. It is starange such as (3) if it is in transporting time.

NK: Review and revise if any strange.

Some added measure imported from Transportation

(1) Select and use trailers, ~~ramps~~, tracks, their accessary and/or ~~climbing equipment or~~ other equipment which is suitable for the particular type, size and weight of the Contractor's Equipment and fit for the purpose for which they are intended.

To MD, may we know this track is truck. It seems JICA misunderstood and revised to trailer/track. If misunderstood the original shall be used.

(2) Select location and ~~loading and unloading~~ areas for loading and unloading which have sufficient space and surfaces which are level, sound, safe and suitable to support all of the equipment.

(3) Securely chock all wheels of trailer/track ~~wheels~~ to prevent any movement during loading of Contactor's Equipment.

NK: Added "during loading of Contactor's Equipment".

(4) Stop and isolate the functions of trailer/track and load and fully engage brakes.

Loading and Transporting of Materials], which contains measures for transporting materials from 4.3.2 (1) & (2) and 4.3.7 (9), (13) and 14.

JCB37: 4.3.6 では積み上げ・積み下ろし作業を論じている。輸送時のこととしてみると、おかしなことがある((3)とか)。
4.3.6 stipulates loadinga nd transporting. It is starange such as (3) if it is in transporting time.

NK: Review and revise if any strange.

(1) Select and use trailers, ~~ramps~~, tracks, their accessary and/or ~~climbing equipment or~~ other equipment which is suitable for the particular type, size and weight of the Contractor's Equipment and fit for the purpose for which they are intended.

To MD, may we know this track is truck. It seems JICA misunderstood and revised to trailer/track. If misunderstood the original shall be used.

This is from your original transportation draft which stated – "Use vehicles with climbing equipment or special equipment when construction heavy equipment is transported by trailers or tracks".

It is correct as it was i.e. not "trucks" it is "tracks" and so is "ramps". This clause refers to selecting trailers and for getting equipment onto the trailers although "ramps" is more understandable than tracks.

I suggest minor editing as follows:

(1) Select and use trailers with associated ramps, other loading equipment and restraints which are suitable for the particular type, size and weight of the Contractor's Equipment and fit for the purpose for which they are intended.

(2) Select location and ~~loading and unloading~~ areas for loading and unloading which have sufficient space and surfaces which are level, sound, safe and suitable to support all of the equipment.

(3) Securely chock all wheels of trailer/~~track~~ ~~wheels~~ to prevent any movement ~~during loading of Contractor's Equipment.~~

NK: Added "during loading of Contactor's Equipment".

OK but no need to add as the clause heading describes this already

No need "track"

(4) Stop and isolate the functions of trailer/track and load and fully engage brakes.

No need "track"

(5) Ensure trailers/track are equipped with tie down devices to allow secure fixing of load.

No need "track"

(6) Ensure that the weight and height of the loaded Contractor's

(1) Select and use trailers with associated ramps, other loading equipment and restraints which are suitable for the particular type, size and weight of the Contractor's Equipment and fit for the purpose for which they are intended.

(2) Select location and areas for loading and unloading which have sufficient space and surfaces which are level, sound, safe and suitable to support all of the equipment.

(3) Securely chock all wheels of trailers to prevent any movement.

(4) Stop and isolate the functions of trailers and load and fully engage brakes.

(5) Ensure trailers are equipped with tie down devices to allow secure fixing of load.

(6) Ensure that the weight and height of the loaded Contractor's

(5) Ensure trailers/track are equipped with tie down devices to allow secure fixing of load.

(6) Ensure that the weight and height of the loaded Contractor's Equipment does do not exceed actually required or legal limits.

(7) ~~Ensure that all lights, brakes, steering and safety devices are working properly.~~ - (JCB38)

JCB38: これ、必要でしょうか？単に運ばれている時の話ですし、故障したから運ばれる場合もあるのでは？
Is (7) necessary? This is only for time of transporting equipment. May there be a case that Contactor's Equipment of out of order is transported?
NK: (7) specifies for trailer/track to transport Contactor's Equipment but not the Equipment of out of order.
This (7) will be deleted because the (7) is provisions for Safety Measures during Loading and Transporting

(8) Ensure that ~~suitable load limit~~ authorized maximum loading capacity (JCA28) load limit, height, speed limit and any other required signage is applied to the trailer/track.

JCA28: suitable で良いか確認ください。「定められた」といった概念の言葉が入るべきではないでしょうか。
Please check if it is proper to use "suitable" here. It should mean the concept of such as "legally determined."
NK: トレーラの積載荷重の表示のため"authorized maximum loading capacity" に変更します。
Modified to "authorized maximum loading capacity".

(9) ~~Ensure that materials are loaded evenly.~~ (JCA28a)

Equipment does do not exceed actually required or legal limits.

(7) ~~Ensure that all lights, brakes, steering and safety devices are working properly.~~ - (JCB38)

JCB38: これ、必要でしょうか？単に運ばれている時の話ですし、故障したから運ばれる場合もあるのでは？
Is (7) necessary? This is only for time of transporting equipment. May there be a case that Contactor's Equipment of out of order is transported?
NK: (7) specifies for trailer/track to transport Contactor's Equipment but not the Equipment of out of order.
This (7) will be deleted because the (7) is provisions for Safety Measures during Loading and Transporting

Yes, I think it is necessary as trailers are very often old, not road-worthy, unsafe and commonly without operating electrics or lights or even brakes. I also suggest that it should stay here as it should be checked anyway when the Contractor's Equipment has been loaded.

Local law seems often to cover tractors but not detachable trailers

~~(8) Ensure that suitable load limit authorized maximum loading capacity (JCA28) load limit, height, speed limit and any other required signage is applied to the trailer/track.~~

JCA28: suitable で良いか確認ください。「定められた」といった概念の言葉が入るべきではないでしょうか。
Please check if it is proper to use "suitable" here. It should mean the concept of such as "legally determined."
NK: トレーラの積載荷重の表示のため"authorized maximum loading capacity" に変更します。
Modified to "authorized maximum loading capacity".

I suggest edit as follows:

(8) Ensure that suitable, clear and legally compliant signage is attached to the trailer visibly indicating the maximum safe loading capacity, height of load, width, speed limits and any other restrictions or required information.

NK: confirmed.

(9) ~~Ensure that materials are loaded evenly.~~ (JCA28a)

No problem to transfer above but suggest that the following modified clause is included here also:

(9) Ensure that trailers are loaded evenly.

NK: confirmed.

(10) Ensure that Contractor's Equipment is braked, wedged, securely locked in position and tied to the trailer with adequately sized chains, slings and other fixings and tensioned to prevent any

Equipment does do not exceed actually required or legal limits.

(7) Ensure that all lights, brakes, steering and safety devices are working properly.

(8) Ensure that suitable, clear and legally compliant signage is attached to the trailer visibly indicating the maximum safe loading capacity, height of load, width, speed limits and any other restrictions or required information.

(9) Ensure that trailers are loaded evenly.

(10) Ensure that Contractor's Equipment loaded onto trailers is braked, wedged, securely locked in position and tied to the trailer with adequately sized chains, slings and other fixings and tensioned to

(10) Ensure that Contractor's Equipment is braked, wedged, securely locked in position and tied to the trailer with adequately sized chains or other fixings and tensioned to prevent any movement during transit.

(11) Place any attachments on the trailer/track. and securely tie down.

(12) Inspect the tie-down tensioning, before and at intervals during transportation of Contractor's Equipment to ensure that there is no slackening.

(13) ~~Secure all loads with adequate and tensioned slings and cover with protective sheets, to avoid any fall or collapse of the conveyed articles and prevent any risk to workers and third parties;~~ (JCA28a)

(14) ~~Inspect slings for securing transported materials and if any abnormality is found, replace immediately.~~ (JCA28a)

JCA28a: Contractor's Equipment で輸送することを言っているならあり、Contractor's Equipment を輸送するなら無し
(9)も(14)もそうで、安易に組み替えた感じあり。
NK: (9), (13) and (14) are deleted here and moved to 4.3.7.

4.3.7 Safety Measures During Loading and Transporting of Materials

(1) When transporting heavy or long goods on public roads, select roads on which the transportation does not pose danger to ~~general~~ public traffic (JCB39), third parties, structures adjacent to the transportation route, obtain all necessary ~~prior~~ (JCB40), permission from the relevant authorities including police, road authority before commencement of transportation and comply with all requirements.

JCB39: general traffic?
To MD: Please review this change to public traffic.

JCB40: Prior は後に before があるから不要。
"Prior" is not necessary as there is "before".

movement during transit.

(11) Place any attachments on the trailer/~~track.~~ and securely tie down.

No need "track"

(12) Inspect the tie-down tensioning, before and at intervals during transportation of Contractor's Equipment to ensure that there is no slackening.

No comment (but no need)

(13) ~~Secure all loads with adequate and tensioned slings and cover with protective sheets, to avoid any fall or collapse of the conveyed articles and prevent any risk to workers and third parties;~~ (JCA28a)

(14) ~~Inspect slings for securing transported materials and if any abnormality is found, replace immediately.~~ (JCA28a)

No problem to transfer above but suggest that the following modified clause is included here also:

(13) Inspect chains, slings and other fixings for securing transported Contractor's Equipment and if any abnormality is found, replace immediately.

JCA28a: Contractor's Equipment で輸送することを言っているならあり、Contractor's Equipment を輸送するなら無し
(9)も(14)もそうで、安易に組み替えた感じあり。
NK: (9), (13) and (14) are deleted here and moved to 4.3.7.

No problem.

4.3.7 Safety Measures During Loading and Transporting of Materials

(1) When transporting heavy or long goods on public roads, select roads on which the transportation does not pose danger to ~~general~~ public traffic (JCB39), third parties, structures adjacent to the transportation route, obtain all necessary ~~prior~~ (JCB40), permission from the relevant authorities including police, road authority before commencement of transportation and comply with all requirements.

JCB39: general traffic?
To MD: Please review this change to public traffic.

Change is not necessary and has little or no meaning.

This is transportation on "public roads" anyway (which does have meaning) and any traffic thereon is covered by "general"

JCB40: Prior は後に before があるから不要。
"Prior" is not necessary as there is "before".
NK: Deleted as comented.

prevent any movement during transit.

(11) Place any attachments on trailers and securely tie down.

(12) Inspect the tie-down tensioning, before and at intervals during transportation of Contractor's Equipment to ensure that there is no slackening.

(13) Inspect chains, slings and other fixings for securing transported Contractor's Equipment and if any abnormality is found, replace immediately.

4.3.7 Safety Measures During Loading and Transporting of Goods

(1) When transporting heavy or long Goods on public roads, select roads on which the transportation does not pose danger to other traffic, third parties, structures adjacent to the transportation route, obtain all necessary permission from the relevant authorities including police and road authority before commencement of transportation and comply with all requirements.

NK: Deleted as comented.

(2) When transporting heavy or long goods within the Site, select suitable route where the transportation does not pose danger to existing permanent or temporary buildings or structures or other works and obtain the consent of the Engineer before commencement of the transportation and comply with all requirements.

(3) Ensure that materials are loaded evenly

(4) Secure all loads with adequate and tensioned slings and cover with protective sheets, to avoid any fall or collapse of the conveyed articles and prevent any risk to workers and third parties;

(5) Inspect slings for securing transported materials and if any abnormality is found, replace immediately.

Imported from Transportation (above also):

4.3.7 ~~Access Roads (JCA29) Roads in the Site~~ (JCB40) Temporary Transporting Roads in the Site

JCA29: 違和感あり、この上でも混乱しているので輸送車両等の Additional Requirements for か輸送時の安全措置でまとめた方が良いかと。4.3.2 も改めてみると中途半端な感じ。
There is confusion, so it is better to specify requirements in Additional Requirements for transporting equipment or Safety measures during transportation. 4.3.2 seems something imperfect.
“Access Roads”はサイトの外をイメージさせますが、記述の内容はサイト内のことであるように思います。タイトルを適切に変更したうえで(transportation in the Site など)、すなおに理解できるようにしてください。場合によっては 2 章に移動させることも検討してください(risk control in the site という見出しを新たに作ってそこに入れるなど)
“Access Roads” would give an impression that means roads outside of the site, whereas the contents are regarding the roads inside of the site.
Please, change the title properly such as “Transportation in the Site” to make the clause easier to understand. If necessary, consider to move this to Chapter 2 making new clause, for example [Risk Control in the Site].
NK: タイトルを Roads in the Site に変更しました。
The title is changed to [Roads in the Site].

JCB40: 仮設で作られる機械専用通路のことと理解していますが、英語の正しさについては MD 氏に確認願います。
We understood this Clause is for exclusive use roads temporary constrcuted.
Please ask MD to confirm the title and content.
NK: 和文では次のように作業環境と規定していました。
5.4.1 運搬車両の作業環境

Agreed.

(2) When transporting heavy or long goods within the Site, select suitable route where the transportation does not pose danger to existing permanent or temporary buildings or structures or other works and obtain the consent of the HSO ~~Engineer~~ before commencement of the transportation and comply with all requirements.

(3) Ensure that materials are loaded evenly

(4) Secure all loads with adequate and tensioned slings and cover with protective sheets, to avoid any fall or collapse of the conveyed articles and prevent any risk to workers and third parties;

(5) Inspect slings for securing transported materials and if any abnormality is found, replace immediately.

I think that the above should correctly be changed from Engineer to HSO.
Contractor is responsible for all such arrangements.

NK: agreed.

4.3.8 ~~Access Roads (JCA29) Roads in the Site~~ (JCB40) Temporary Transporting Roads in the Site

4.3.7 Site Access Roads

See notes below

JCA29: 違和感あり、この上でも混乱しているので輸送車両等の Additional Requirements for か輸送時の安全措置でまとめた方が良いかと。4.3.2 も改めてみると中途半端な感じ。
There is confusion, so it is better to specify requirements in Additional Requirements for transporting equipment or Safety measures during transportation. 4.3.2 seems something imperfect.
“Access Roads”はサイトの外をイメージさせますが、記述の内容はサイト内のことであるように思います。タイトルを適切に変更したうえで(transportation in the Site など)、すなおに理解できるようにしてください。場合によっては 2 章に移動させることも検討してください(risk control in the site という見出しを新たに作ってそこに入れるなど)
“Access Roads” would give an impression that means roads outside of the site, whereas the contents are regarding the roads inside of the site.
Please, change the title properly such as “Transportation in the Site” to make the clause easier to understand. If necessary, consider to move this to Chapter 2 making new clause, for example [Risk Control in the Site].
NK: タイトルを Roads in the Site に変更しました。
The title is changed to [Roads in the Site].

JCB40: 仮設で作られる機械専用通路のことと理解していますが、英語の正しさについては MD 氏に確認願います。
We understood this Clause is for exclusive use roads temporary constrcuted.
Please ask MD to confirm the title and content.
NK: 和文では次のように作業環境と規定していました。
5.4.1 運搬車両の作業環境
請負者は、運搬車両を用いた作業を行う場合には、運搬作業における現場内での安全な作業環境を確保するために、次の措置を講じなければならない。
(1) 運行経路について必要な幅員を保持すること、…。
(2) 運行経路の必要と認められる箇所には、制限速度を示す標識…。

(2) When transporting heavy or long mateerial Goods within the Site, select suitable routes where the transportation does not pose danger to existing permanent or temporary buildings or structures or other works and obtain the consent of the HSO before commencement of the transportation and comply with all requirements.

(3) Ensure that Goods are loaded evenly.

(4) Secure all loads with adequate and tensioned slings and cover with protective sheets, to avoid any fall or collapse of the conveyed articles and prevent any risk to workers and third parties.

(5) Inspect slings for securing transported materials and if any abnormality is found, replace immediately.

4.3.8 Site Access Roads

請負者は、運搬車両を用いた作業を行う場合には、運搬作業における現場内での安全な作業環境を確保するために、次の措置を講じなければならない。
(1) 運行経路について必要な幅員を保持すること、…。
(2) 運行経路の必要と認められる箇所には、制限速度を示す標識…。
(3) 運搬車両の走路と歩行者の安全通路を明示し、…。
(4) 規模の大きな工事現場においては運搬専用道路を設け、…。
(5) 夜間の運搬作業時には、…。
Site 外の公道の安全措置は道路管理者が行うべきことのため、和文（案）を参考に、現場内の運搬道路の安全措置とタイトルを変更することを提案します。
Japanese JSSS stipulate as follows:
5.4 Transport Works by Transportation Vehicles
5.4.1 Work Environment
The Contractor shall take the following measures for the safety working environment in the Site for operation of transportation vehicles.
(1) Take measures for the transportation road …;
(2) Put signboards indicating speed limit …;
(3) Separate roads for vehicles and walkways…;
(4) In large construction site, provide exclusive transport roads …; and
(5) Provide sufficient lighting facilities …;.
Safety measures in public roads out side of the Site shall be taken by the road authority.
NK: We propose to revise the title to Safety Measures for Temporary Transporting Roads in the Site referring to Japanese JSSS.
To MD, please review the title.

(1) Take measures for ensuring that ~~access roads in the Site~~ (JCB41)

(3) 運搬車両の走路と歩行者の安全通路を明示し、…。
(4) 規模の大きな工事現場においては運搬専用道路を設け、…。
(5) 夜間の運搬作業時には、…。
Site 外の公道の安全措置は道路管理者が行うべきことのため、和文（案）を参考に、現場内の運搬道路の安全措置とタイトルを変更することを提案します。
Japanese JSSS stipulate as follows:
5.4 Transport Works by Transportation Vehicles
5.4.1 Work Environment
The Contractor shall take the following measures for the safety working environment in the Site for operation of transportation vehicles.
(1) Take measures for the transportation road …;
(2) Put signboards indicating speed limit …;
(3) Separate roads for vehicles and walkways…;
(4) In large construction site, provide exclusive transport roads …; and
(5) Provide sufficient lighting facilities …;.
Safety measures in public roads out side of the Site shall be taken by the road authority.
NK: We propose to revise the title to Safety Measures for Temporary Transporting Roads in the Site referring to Japanese JSSS.
To MD, please review the title.

"Access Roads" is the correct title and is the correct expression to use.

An "access road" is not specific as you suggest it is any road which enables traffic to reach (access) a particular place or area. It is a common and correct expression for use in construction.

It is an expression that needs to be general also and may actually cover roads outside the Site also as these are still within the Contractor's responsibility. FIDIC refers to "access routes" outside the site (which are still the contractor's responsibility) generally meaning routes over existing roads. The use of "access roads" does not conflict with FIDIC or with any other part of JSSS.

Your statement that the road authority shall take "safety measures in public roads outside of the site" is not completely correct within the context of this clause and is not necessary.

Also, these are not just "temporary roads", they may also be:

Permanent existing roads within the Site (outside is covered by FIDIC)

New permanent roads within the Site to be constructed under the contract.

Semi-completed new permanent roads within the Site

Temporary roads, temporary routes or tracks.

Dirt roads or tracks

As there is obviously some lack of clarity or misunderstanding, and whilst there is no real need for any change to the original text of this clause I suggest changing it to "Site Access Roads".

There is no need to change any of the content of the clause.
NK: understood above.

~~(1) Take measures for ensuring that access roads in the Site (JCB41) Temporary Transporting Roads in the Site are of suitable construction, of sufficient width, free from potholes, uneven settlement and collapse.~~

JCB41: 同上。Ditto
NK: Ditto.

Temporary Transporting Roads in the Site are of suitable construction, ~~of~~ sufficient width, free from potholes, uneven settlement and collapse.

JCB41: 同上。Ditto
NK: Ditto.

(2) Provide signs indicating height and weight restrictions, bends, speed limits, intersections, dangerous places and the like (road shoulders, cliff edges.).

(3) Separate roads for vehicles and walkways for workers and provide passing area for vehicles at places where the road is narrow.

(4) In large construction site, provide exclusive transport roads which are one-way if possible, and passing areas at narrow roads.

(5) Provide sufficient lighting facilities at necessary places along the roads when work operating in night.

4.3.9 Additional Requirements for Static Equipment (JCA30)

JCA30: 骨材プラント、コンクリートプラント、アスファルトプラントなどを明示してもいい。
It is better to exemplify such as aggregate plant, concrete plant, etc.?
NK: 定置機械については 4.1.1 (6)で例示しているので、ここでの改めての例示は不要と考えます。
Static equipment is exemplified in 4.1.1 (6). Thus, it is not necessary to mention again here.

(1) The Contractor shall design and construct suitable foundations and support structures for static equipment with paved surfaces, screens(JCB42), fencing and associated facilities for storage of material and product and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended. Unless otherwise stated in the Contract, all such foundations, support structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works. All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

JC42: What is screen?
NK: It means fence screen such as shown in the photo below.

See above, notes:

(2) Take measures for ensuring that Site access roads are of suitable construction, of sufficient width, free from potholes, uneven settlement and collapse.

(3) Provide signs indicating height and weight restrictions, bends, speed limits, intersections, dangerous places and the like (road shoulders, cliff edges.).

(4) Separate roads for vehicles and walkways for workers and provide passing area for vehicles at places where the road is narrow.

(5) In large construction sites, provide exclusive transport roads which are one-way if possible and provide passing areas on narrow roads.

(6) Provide sufficient lighting facilities at necessary places along roads when work operating in night.

4.3.9 Additional Requirements for Static Equipment (JCA30)

JCA30: 骨材プラント、コンクリートプラント、アスファルトプラントなどを明示してもいい。
It is better to exemplify such as aggregate plant, concrete plant, etc.?
NK: 定置機械については 4.1.1 (6)で例示しているので、ここでの改めての例示は不要と考えます。
Static equipment is exemplified in 4.1.1 (6). Thus, it is not necessary to mention again here.

(1) The Contractor shall design and construct suitable foundations and support structures for static equipment with paved surfaces, screens(JCB42), fencing and associated facilities for storage of material and product and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended. Unless otherwise stated in the Contract, all such foundations, support structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works. All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

JC42: What is screen?
NK: It means fence screen such as shown in the photo below.

(1) Take measures for ensuring that Site access roads are of suitable construction, of sufficient width, free from potholes, uneven settlement and collapse.

(2) Provide signs indicating height and weight restrictions, bends, speed limits, intersections, dangerous places and the like (road shoulders, cliff edges.).

(3) Separate roads for vehicles and walkways for workers and provide passing area for vehicles at places where the road is narrow.

(4) In large construction sites, provide exclusive transport roads which are one-way if possible and provide passing areas on narrow roads.

(5) Provide sufficient lighting facilities at necessary places along roads when work operating in night.

4.3.9 Additional Requirements for Static Equipment

(1) The Contractor shall design and construct suitable foundations and support structures for static equipment with paved surfaces, screens, fencing and associated facilities for storage of material and product and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended. Unless otherwise stated in the Contract, all such foundations, support structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works. All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

(2) Unless otherwise stated in the Contract, all remaining aggregate, rock, cement, bitumen and the like used by or processed with the static equipment shall be removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

4.3.10 Additional Requirements for Personnel and Goods Elevators and Material Conveyors(JCA31) (JCB43)

JCA31: 定置機械にまとめた模様。
専門業者による組み立て、起動予告ブザー、連続装置設置(連続した非常停止スイッチ)、コンベア搭乗禁止とか削除されているので、復活させてください。エレベーターとコンベアを一緒にするか否かも要検討。
Please add the provisions of installation under the instruction of the experts, warning alarm system for start-up, emergency stop buttons for each necessary point and prohibition of riding on conveyor, etc. stipulated in Japanese version. Please consider whether requirements for elevators and conveyers shall be specified together or separately.
NK: 追記・別々に規定しました。(組立てに関しては 4.3.1(9)に規定済です。)
Added and separately specified. (Installation under instruction by expert is specified in 4.3.1(9).) Provisions for conveyors are stipulated referring to OSHA 1926.555 Conveyors.

JCB43: ポータブルコンベヤーと違うことをどこかで記載する必要があるのでは。このスペックはポータブルコンベヤーには適用しない。
It is necessary to describe that the material conveyors does not include portable conveyors in JSSS, and the provisions for the material conveyors does not apply to the portable conveyors.
NK: Portable conveyors is added in 4.1.1 Scope (7) (c) and specified in (1) below as commneted.

(1) ~~General Requirements~~

~~The Contractor shall post the maximum load capacity and any restrictions on the use~~

(2) ~~The Contractor shall undertake the following additional daily inspection items, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor's~~

(2) Unless otherwise stated in the Contract, all remaining aggregate, rock, cement, bitumen and the like used by or processed with the static equipment shall be removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

No comment, no change necessary.

4.3.10 Additional Requirements for Personnel and Goods Elevators and ~~Material~~ Conveyors

JCA31: 定置機械にまとめた模様。
専門業者による組み立て、起動予告ブザー、連続装置設置(連続した非常停止スイッチ)、コンベア搭乗禁止とか削除されているので、復活させてください。エレベーターとコンベアを一緒にするか否かも要検討。
Please add the provisions of installation under the instruction of the experts, warning alarm system for start-up, emergency stop buttons for each necessary point and prohibition of riding on conveyor, etc. stipulated in Japanese version. Please consider whether requirements for elevators and conveyers shall be specified together or separately.
NK: 追記・別々に規定しました。(組立てに関しては 4.3.1(9)に規定済です。)
Added and separately specified. (Installation under instruction by expert is specified in 4.3.1(9).) Provisions for static material conveyors are stipulated in (4) (a) referring to OSHA 1926.555 Conveyors.

JCB43: ポータブルコンベヤーと違うことをどこかで記載する必要があるのでは。このスペックはポータブルコンベヤーには適用しない。
It is necessary to describe that the material conveyors does not include portable conveyors in JSSS, and the provisions for the material conveyors does not apply to the portable conveyors.
NK: Portable conveyors is added in 4.1.1 Scope (7) (c) and specified in (1) below as commneted.

What exactly do you mean by "portable conveyors" for use in construction?

Why are they so different in a safety sense to any other type of temporary mobile conveyor?
NK6/19: 安衛則 151 条 77～83 はコンベヤーについて規定しているが、固定と移動式の区別はしていない。これらの安全要求事項に違いがないため、JCB43 のコメントへの対応は、Portable conveyor も含む規定を提案します。
NK6/19: Japanese regulation stipulate for conveyors without separating portable and static (fixed) conveyors. The safety requirements are almost same.
We will specify for both conveyors.

(1) ~~General Requirements~~

~~The Contractor shall post the maximum load capacity and any restrictions on the use~~

(2) ~~The Contractor shall undertake the following additional daily inspection items, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification~~

(2) Unless otherwise stated in the Contract, all remaining aggregate, rock, cement, bitumen and the like used by or processed with the static equipment shall be removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

4.3.10 Additional Requirements for Personnel and Goods Elevators and ~~Material~~ Conveyors

~~Equipment is permitted:~~

(a) ~~Defects or operational faults in elevator enclosures, doors, guide rails and runners;~~

(b) ~~Defects or operational faults in emergency stop and alarm systems;~~

(c) ~~Defects or operational faults in power, lighting and control systems;~~

(d) ~~Defects or operational faults with interphone systems;~~

(e) ~~Defects or operational faults in brakes, clutches; and~~

(f) ~~Defects or operational faults of sheaves and pulleys.~~

(3) ~~The Contractor shall undertake the following additional periodical inspection items, (at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:~~

(a) ~~Defects or operational faults in supporting cables and wire ropes; and~~

(b) ~~Defects or operational faults in supporting structures, guy ropes, fixings and anchors.~~

(1) General

(a) The requirements for material conveyors stipulated in 4.3.10 does not apply to portable conveyors.

(b) The Contractor shall undertake the ~~following additional~~ daily and periodical inspection ~~items~~ in addition to the items stipulated in JSSS 4.2 [INSPECTION, MAINTENANCE AND REPAIR], 4.2.1 [Requirements Generally], (4) and (5) as specified below, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain

~~of the HSO before any further operation of the Contractor's Equipment is permitted:~~

(g) ~~Defects or operational faults in elevator enclosures, doors, guide rails and runners;~~

(h) ~~Defects or operational faults in emergency stop and alarm systems;~~

(i) ~~Defects or operational faults in power, lighting and control systems;~~

(j) ~~Defects or operational faults with interphone systems;~~

(k) ~~Defects or operational faults in brakes, clutches; and~~

(l) ~~Defects or operational faults of sheaves and pulleys.~~

(3) ~~The Contractor shall undertake the following additional periodical inspection items, (at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:~~

(c) ~~Defects or operational faults in supporting cables and wire ropes; and~~

(d) ~~Defects or operational faults in supporting structures, guy ropes, fixings and anchors.~~

(1) General

(a) The requirements for material conveyors stipulated in t4.3.10 does not apply to portable conveyors.

Why not? What are the requirements for "portable conveyors" and where are they specified?

NK6/19: We will specify for both conveyors here.

(b) The Contractor shall undertake the ~~following additional~~ daily and periodical inspection ~~items~~ in addition to the items stipulated in JSSS 4.2 [INSPECTION, MAINTENANCE AND REPAIR], 4.2.1 [Requirements Generally], (4) and (5) as specified below, (or at intervals required by the manufacturer's official operation, maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(c) The Contractor shall undertake the following additional periodical inspection items, (at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and obtain re-certification of the HSO before any further operation of the

(1) General

(a) The requirements for ~~material~~ conveyors stipulated ~~in this clause does not~~ apply to portable and material conveyors.

(b) The Contractor shall undertake the daily and periodical inspection in addition to the items stipulated in JSSS 4.2 [*Inspection, Maintenance And Repair*], 4.2.1 [*Requirements Generally*], (4) and (5) as specified below, (or at intervals required by the manufacturer's official operation, maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(c) The Contractor shall undertake the following additional periodical inspection items, (at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(d) The Contractor shall post the maximum load capacity and any restrictions on the use.

(2) Personnel and Goods Elevators (JCB44)

JCB44: 以下のように、(b)、(c)も同様に直してください。(3)も同様。
Please modify (b) (c) and (3) as below.
NK: Modified.

(a) Additional daily inspection items shall include to check defects or operational faults with respect to:

(i) ~~Defects or operational faults in~~ elevator enclosures, doors, guide-rails and runners;

(ii) ~~Defects or operational faults in~~ emergency stop and alarm systems;

(iii) ~~Defects or operational faults in~~ power, lighting and control systems;

(iv) Defects or operational faults with interphone systems;

(v) Defects or operational faults in brakes, clutches; and

(vi) Defects or operational faults of sheaves and pulleys.

(b) Additional periodical inspection items shall include to check defects or operational faults with respect to:

(i) ~~Defects or operational faults in~~ daily inspection items;

(ii) Defects or operational faults in wire ropes;

(iii) Defects or operational faults in winch and its foundation; and

(iv) ~~Defects or operational faults in~~ supporting structures, guy ropes, fixings and anchors.

(3) ~~Belt~~ Material Conveyors

(a) Additonal safety measures

(i) Conveyor systems shall be equipped with an audible warning signal to be sounded immediately before starting up the conveyor.

(ii) Means for stopping the motor or engine shall be provided at the motor or engine location.

(iii) Emergency stop switches shall be provided and be arranged so that the conveyor cannot be started again until the actuating stop switch has been reset to running or “on”

Contractor's Equipment is permitted:

(d) The Contractor shall post the maximum load capacity and any restrictions on the use.

(2) Personnel and Goods Elevators

JCB44: 以下のように、(b)、(c)も同様に直してください。(3)も同様。
Please modify (b) (c) and (3) as below.
NK: Modified.

(a) Additional daily inspection items shall include checking for defects or operational faults with the following:

(i) ~~Defects or operational faults in~~ elevator enclosures, doors, guide-rails and runners;

(ii) ~~Defects or operational faults in~~ emergency stop and alarm systems;

(iii) ~~Defects or operational faults in~~ power, lighting and control systems;

(iv) Defects or operational faults with interphone systems;

(v) Defects or operational faults in brakes, clutches; and

(vi) Defects or operational faults of sheaves and pulleys.

(b) Additional periodical inspection items shall include checking for defects or operational faults with the following:

(i) Defects or operational faults in daily inspection items;

(ii) Defects or operational faults in wire ropes;

(iii) Defects or operational faults in winch and its foundation; and

(iv) ~~Defects or operational faults in~~ supporting structures, guy ropes, fixings and anchors.

(3) ~~Belt~~ Material Conveyors

(a) Additonal safety measures

(i) Conveyor systems shall be equipped with an audible warning signal to be sounded immediately before starting up the conveyor;

(ii) Means for stopping the motor or engine shall be provided at the motor or engine location;

(iii) Emergency stop switches shall be provided and be arranged so that the conveyor cannot be started again until the actuating stop switch has been reset to running or “on” position;

(iv) Where a conveyor passes over work areas, roads and walkways, suitable guards shall be provided ~~to protect workers required to work below the conveyors~~ to prevent

(c) The Contractor shall post the maximum load capacity and any restrictions on the use.

(2) Personnel and Goods Elevators

(a) Additional daily inspection items shall include checking for defects or operational faults with the following:

(i) Elevator enclosures, doors, guide-rails and runners;

(ii) Emergency stop and alarm systems;

(iii) Power, lighting and control systems;

(iv) Interphone systems;

(v) Brakes, clutches; and

(vi) Sheaves and pulleys.

(b) Additional periodical inspection items shall include checking for defects or operational faults with the following:

(i) Daily inspection items;

(ii) Wire ropes;

(iii) Winch and its foundation; and

(iv) Supporting structures, guy ropes, fixings and anchors.

(3) ~~Material~~ Conveyors

(a) Additonal safety measures:

(i) Conveyor systems shall be equipped with an audible warning signal to be sounded immediately before starting up the conveyor;

(ii) Means for stopping the motor or engine shall be provided at the motor or engine location;

(iii) Emergency stop switches shall be provided and be arranged so that the conveyor cannot be started again until the actuating stop switch has been reset to running or “on” position;

(iv) Where a conveyor passes over work areas, roads and walkways, suitable guards shall be provided to prevent fall of the materials being conveyed; and

position.

(iv) Where a conveyor passes over work areas, roads and walkways, suitable guards shall be provided ~~to protect workers required to work below the conveyors~~ to prevent fall of the materials being conveyed .

(v) Riding of workers on the moving belts ~~of the belt conveyors~~ shall be prohibited.

(b) Additional daily inspection items shall include to check defects or operational faults with respect to:

(i) ~~Defects or operational faults in~~ prevention devices against uncontrolled run and reverse run, and emergency stop switches; and

(ii) Defects or operational faults in guards.

(c) Additional periodical inspection items

Defects or operational faults in daily inspection items~~; and~~ (JCB45)

JCB45: There is no sentence after “and”.
NK: Deleted.

With regard to the following, please refer to Compliance standards above and can we discuss further:

To MD, The 4.1. General describes as follows:

The Contractor shall comply with “OHSA Part1926 Subpart N- Helicopters, Hoists, Elevators, and Conveyors, and Subpart I-Tools-and and Power” for the equipment, tools and stationary equipment which are not specified in (c), (d) and (e).

I do not think that this is necessary:

Do you think if we shall specify Subpart I, §1926.304 Woodworking tools again to specify more details for saws in 4.4.3 (2)?

4.3.11 Additional Requirements for ~~Tools, Tackle and~~ (JCB46)Small Equipment and Tools

JCB46: これらを総称して Tools でいいのでは. Tools and Tackle can be called as “Tools”.
NK: Defined “Tools2 in 4.1.1 (7) above.

(1) Accessories and attachments shall be the standard types obtained from or recommended by the manufacturer of the equipment to which they are connected.

(2) Any repairs shall be carried out by competent persons approved by the HSO. ~~the manufacturers recommended repair agents and using the~~ fall of the materials being conveyed; and

(v) Riding of workers on the moving belts ~~of the belt conveyors~~ shall be prohibited.

(b) Additional daily inspection items shall include checking for defects or operational faults with the following:

(i) ~~Defects or operational faults in~~ overrun and reverse run prevention devices; against uncontrolled run and reverse run,

(ii) emergency stop switches; and

(iii) Defects or operational faults in guards.

(c) Additional periodical inspection items, shall include for checking for defects or operational faults with daily inspection items. ~~and~~ (JCB45)

JCB45: There is no sentence after “and”.
NK: Deleted.

I have deleted the following notes from the last draft as they are no longer applicable:

~~*With regard to the following, please refer to Compliance standards above and can we discuss further:*~~

~~*To MD, The 4.1. General describes as follows:*~~

~~*The Contractor shall comply with “OHSA Part1926 Subpart N- Helicopters, Hoists, Elevators, and Conveyors, and Subpart I-Tools-and and Power” for the equipment, tools and stationary equipment which are not specified in (c), (d) and (e).*~~

~~*I do not think that this is necessary:*~~

~~*Do you think if we shall specify Subpart I, §1926.304 Woodworking tools again to specify more details for saws in 4.4.3 (2)?*~~

4.3.11 Additional Requirements for ~~Tools, Tackle and~~ Small Equipment and Tools

JCB46: これらを総称して Tools でいいのでは. Tools and Tackle can be called as “Tools”.
NK: Defined “Tools2 in 4.1.1 (7) above.
See 4.1.1 and 4.1.1 (7), this change is fine.
NK: confirmed.

(1) Accessories and attachments shall be the standard types obtained from or recommended by the manufacturer of the equipment to which they are connected.

(2) Any repairs shall be carried out by competent persons approved by the HSO. ~~the manufacturers recommended repair agents and using the manufacturers genuine or recommended spare parts.~~ (JCB47)

JCB47: Tools の修理に代理店を使うことはレアー。所謂 competent person が HSO に指名されたものであればいいとしたい。
あくまでも理想論。僻地では無理 “ as much as possible”を加えてみては

(v) Riding of workers on the moving belts shall be prohibited.

(b) Additional daily inspection items shall include checking for defects or operational faults with the following:

(i) Overrun and reverse run prevention devices;

(ii) Emergency stop switches; and

(iii) Guards.

(c) Additional periodical inspection items, shall include for checking for defects or operational faults with daily inspection items.

4.3.11 Additional Requirements for Small Equipment and Tools

(1) Accessories and attachments shall be the standard types obtained from or recommended by the manufacturer of the equipment to which they are connected.

(2) Any repairs shall be carried out by competent persons approved by the HSO and using the manufacturer’s genuine or recommended spare parts.

~~manufacturers genuine or recommended spare parts.~~ (JCB47)

JCB47: Tools の修理に代理店を使うことはレアー。所謂 competent person が HSO に指名されたものであればいいとしたい。
あくまでも理想論。僻地では無理“as much as possible”を加えてみては
It is few for agents to repair them, so it is replaced with competent persons approved by the HSO.
It is ideal for agent to repair them, so how about to add “as much as possible”.
NK: Modified as commented.

(3) All small equipment (JCB48) and Tools shall be tested and re-certified by the HSO as safe for use after any repair or replacement of parts, before such equipment is put back into use.

JCB48: マイナーなものなので、re-certified まではしないと思います。
It may not be re-certified because they are minor equipment.
NK: We would like to stipulate test before use to avoid injury of workers but not request to be certified. Therefore, it is left with modification as it is.

4.3.12 Additional Requirements for Electric Powered Equipment (JCB49)

JCB49: ここで規定する電動機械は何かを明確にしないと混乱してしまう。ポータブルのものや Tool の類は含まれないと理解しました。
It is confused because it is not clear what are Electric Powered Equipment. We undestood it does not include portable equipment and tools.
NK: The Electric Powered Equipment was defiend in 4.1.1 (8) in last draft R2 as follows:
(8) Electric powered equipment means portable electric powered mobile equipment or tools.
The (8) was deleted by JICA comment JC13 and 14.
NK: Definition is added in (1) below.

(1) Electric powered equipment specified in 4.3.12 is portable electric powered mobile equipment or tools among small equipment and Tools listed in 4.1.1 (7).

(2) The Contractor shall undertake the following additional daily inspection items, (or at intervals required by the manufacturer’s official maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor’s Equipment is permitted:

It is few for agents to repair them, so it is replaced with competent persons approved by the HSO.
It is ideal for agent to repair them, so how about to add “as much as possible”.
NK: Modified as commented.

Change to repair agents may be OK however it now ignores any mention of the use of genuine spare parts which I suggest is important even though it may not always be followed! I suggest the following be added in place of the above.

(2) Any repairs shall be carried out by competent persons approved by the HSO and using the manufacturer’s genuine or recommended spare parts.

NK: agreed.

(2) All small equipment (JCB48) and Tools shall be tested and re-certified by the HSO as safe for use after any repair or replacement of parts, before such equipment is put back into use.

JCB48: マイナーなものなので、re-certified まではしないと思います。
It may not be re-certified because they are minor equipment.
NK: We would like to stipulate test before use to avoid injury of workers but not request to be certified. Therefore, it is left with modification as it is.

This is OK.

4.3.12 Additional Requirements for Electric Powered Equipment (JCB49)

JCB49: ここで規定する電動機械は何かを明確にしないと混乱してしまう。ポータブルのものや Tool の類は含まれないと理解しました。
It is confused because it is not clear what are Electric Powered Equipment. We undestood it does not include portable equipment and tools.
NK: The Electric Powered Equipment was defiend in 4.1.1 (8) in last draft R2 as follows:
(8) Electric powered equipment means portable electric powered mobile equipment or tools.
The (8) was deleted by JICA comment JC13 and 14.
NK: Definition is added in (1) below.

(1) Electric powered equipment specified in 4.3.12 ~~shall include portable electric powered mobile equipment or tools and shall comprise a part of the small equipment and tools listed in 4.1.1 (7).

(2) The Contractor shall undertake the following additional daily inspection items, (or at intervals required by the manufacturer’s official operation, maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor’s Equipment is permitted:

(a) ~~All equipment is provided with Earth Leakage Circuit Breakers (ELCB) and that these are working properly with no defects or operational faults;~~ Defects or operational faults of Earth Leakage Circuit Breakers (ELCB), if any;

(3) All small equipment and tools shall be tested ~~and re-certified~~ by the HSO as safe for use after any repair or replacement of parts, before such equipment is put back into use.

4.3.12 Additional Requirements for Electric Powered Equipment

(1) Electric powered equipment specified in this clause shall include portable electric powered mobile equipment or tools and shall form a part of the small equipment and tools listed in JSSS 4.1.1 (7).

(2) The Contractor shall undertake the following additional daily inspection items, (or at intervals required by the manufacturer’s official operation, maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor’s Equipment is permitted:

(a) ~~All equipment is provided with Earth Leakage Circuit Breakers (ELCB) and that these are working properly with no defects or operational faults;~~ Defects or operational faults of Earth Leakage Circuit Breakers (ELCB), if any; (JCB50)

JCB50: 表現の横並びをとるとこのようになるのではないか？
(2)(d)では ELCB なるものは必須ではない記述になっている
The sentence will be as modified to make same listing style below.
(2) (d) stipulates ELCB is not compulsory.
NK: Modified as commented.

(b) Defects or operational faults with grounding such as disconnection of grounding wire and insecure fixing of grounding electrodes; and

(c) Damage to insulation and protective coverings of all wires and cables including flexible cables

(d) Damage to plugs, sockets, transformers and all wiring fittings and appliances

(3) The Contractor shall comply with the following additional safety requirements:

(a) Use ~~metal clad~~ weatherproof switches (JCB51) with covers, securely fixed in accessible and dry places; (JCA32)

JCA32: metalclad 形式に限定され他のタイプを排除することになりませんか。用語の意味を再度確認してください。これに限定するということでしょうか。途上国の現場で見たことがない気がします。
Doesn't it limit only to the metal clad type and eliminate other types? Please reconfirm the meaning of the term of metal clad. Does it mean to limit metal-clad? I feel I have not seen this in the developing countries.
https://www.google.co.jp/search?q=metalclad&source=lnms&tbm=isch&sa=X&ved=2ahUKEwi9jc-hm6rnAhVQw4sBHSlXCx8Q_AUoAXoECA4QAw&biw=1567&bih=748#spf=1580349127635
NK: 和文の規定を参考に変更します。

(JCB50)

JCB50: 表現の横並びをとるとこのようになるのではないか？
(2)(d)では ELCB なるものは必須ではない記述になっている
The sentence will be as modified to make same listing style below.
(2) (d) stipulates ELCB is not compulsory.
NK: Modified as commented.

Note to NK:

I strongly recommend that this entire subclause be reviewed from the electrical safety perspective by your professional electrical specialist.

I had also previously requested that this part be coordinated with JSSS 6.7 Temporary Electrical Installations but this does not appear to have happened and I again repeat this request as the two sections are not currently coordinated from the electrical safety aspect.

I suggest that the above reference to ELCB (unless changed to RCD) should not be changed, and preferably 3(d) and 3(e) below should be changed as for safety purposes as either ELCB, RCD or other safety measures are essential.

The fact that many JICA works are being executed in developing countries in my opinion should not in any way affect the specified level of safety in JSSS.

NK6/19: NK will request NK electrical expert after submission of DFR.

(b) Defects or operational faults with grounding such as disconnection of grounding wire and insecure fixing of grounding electrodes;

(c) Damage to insulation and protective coverings of all wires and cables including flexible cables; and

(d) Damage to plugs, sockets, transformers and all wiring fittings and appliances.

(3) The Contractor shall comply with the following additional safety requirements:

(a) Use ~~metal clad~~ waterproof ~~weatherproof~~ switches and socket outlets with covers, securely fixed and located in accessible and dry places;

JCA32: metalclad 形式に限定され他のタイプを排除することになりませんか。用語の意味を再度確認してください。これに限定するということでしょうか。途上国の現場で見たことがない気がします。
Doesn't it limit only to the metal clad type and eliminate other types? Please reconfirm the meaning of the term of metal clad. Does it mean to limit metal-clad? I feel I have not seen this in the developing countries.
https://www.google.co.jp/search?q=metalclad&source=lnms&tbm=isch&sa=X&ved=2ahUKEwi9jc-hm6rnAhVQw4sBHSlXCx8Q_AUoAXoECA4QAw&biw=1567&bih=748#spf=1580349127635
NK: 和文の規定を参考に変更します。
Modified referring to Japanese version "Use switches with covers for electrical power equipment, place them in a metal box, etc."

JCB51: 防爆タイプ(anti-explosion, if needed)が必要な場合も記載しては？
We propose to specify anti-explosion type, if needed.
NK: 防爆タイプの電動器具の配置が必要な場所は、可燃性のガスなどを取り扱っている工場などです。ODA 対象の工事現場では一般的な規定ではないた

(a) Defects or operational faults with grounding such as disconnection of grounding wire and insecure fixing of grounding electrodes;

(b) Damage to insulation and protective coverings of all wires and cables including flexible cables; and

(c) Damage to plugs, sockets, transformers and all wiring fittings and appliances.

(3) The Contractor shall comply with the following additional safety requirements:

(a) Use waterproof switches and socket outlets with covers, securely fixed and located in accessible and dry places;

Modified referring to Japanese version “Use switches with covers for electrical power equipment, place them in a metal box, etc.”

JCB51: 防爆タイプ(anti-explosion, if needed)が必要な場合も記載しては？
We propose to specify anti-explosion type, if needed.

NK: 防爆タイプの電動器具の配置が必要な場所は、可燃性のガスなどを取り扱っている工場などです。ODA 対象の工事現場では一般的な規定ではないため、追記しないことと致します。
参照：https://www.mars-tohken.co.jp/solution/model/detail/explosion-proof.html
Anti-exposition type equipment shall be provided at places such as factory to handle flammable gas. It is not general requirement in ODA construction sites, so not added it.

(b) Label and paint electrical power and switch boxes with warning signs and coloured hazard markings;

(c) Use rubber cabtyre cables for all electrical power equipment;

(d) Wherever possible provide an ELCB’s to each item of electrical equipment.

(e) If for any reason, an ELCB cannot be provided, ensure that the metal exterior of the electrical power supply, metal outer casing of electric motors and the electrical equipment are all grounded.–

To MD,

Please coordinate 7.7 Temporary Elect. Installations.

MD reply: is this part necessary? It seems that it is better covered by 7.7

Electric leakage prevention and disconnection device is important device.

*MD - Yes I am aware of that but please note that **ELCB** is the old name and refers to voltage operated devices that may no longer be available, it is advised these are replaced if found.*

***RCD** is specified in Chapter 7.7, please advise what you want to use??*

(f) Avoid hanging electric cables and wires directly on nails, reinforcing ~~or scaffolding tubes~~ and the like (JCA33) to prevent damage to the insulation and protective covering.

JCA33: 日本語の丸太足場を鋼管に替えているようですが、妥当性を再度確認願います（scaffolding tubes は削除でも良い）。
←被覆材保護のために摩擦係数の大きい丸太足場にひっかけないように、というのが原文の意味ではなかったのですか。(以下、日本語版)
移動して使用するケーブル、電線等は、被覆材の保護のため、直接、釘や鉄
め、追記しないことと致します。

参照：https://www.mars-tohken.co.jp/solution/model/detail/explosion-proof.html
Anti-exposition type equipment shall be provided at places such as factory to handle flammable gas. It is not general requirement in ODA construction sites, so not added it.

No comment, however “metal clad switches” are an understandable construction term for metal faced heavy duty fittings commonly used for external and temporary works.

Maybe also change “weatherproof” to “waterproof”

Please refer to my recommendation above regarding review by electrical specialist.

NK: confirmed.

(b) Label and paint electrical power and switch boxes with warning signs and coloured hazard markings;

(c) Use rubber cabtyre cables for all electrical power equipment;

(d) Wherever possible provide an ELCB’s to each item of electrical equipment;

(e) If for any reason, an ELCB cannot be provided, ensure that the metal exterior of the electrical power supply, metal outer casing of electric motors and the electrical equipment are all grounded;

Please refer to my recommendation above regarding review by electrical specialist and coordinate (d) and (e) above.

ELCB or RCD?

Previous issue MD notes:

Please coordinate 7.7 Temporary Elect. Installations.

MD reply: is this part necessary? It seems that it is better covered by 7.7 (6.7)

Electric leakage prevention and disconnection device is important device.

*MD - Yes I am aware of that but please note that **ELCB** is the old name and refers to voltage operated devices that may no longer be available, it is advised these are replaced if found.*

***RCD** is specified in Chapter 7.7, please advise what you want to use??*

NK6/19: NK will ask NK expert these provisions after submission of DFR.

(f) Avoid hanging electric cables and wires directly on nails, reinforcement ~~or scaffolding tubes~~ and the like to prevent damage to the insulation and protective covering;

JCA33: 日本語の丸太足場を鋼管に替えているようですが、妥当性を再度確認願います（scaffolding tubes は削除でも良い）。
←被覆材保護のために摩擦係数の大きい丸太足場にひっかけないように、というのが原文の意味ではなかったのですか。(以下、日本語版)
移動して使用するケーブル、電線等は、被覆材の保護のため、直接、釘や鉄

(b) Label and paint electrical power and switch boxes with warning signs and coloured hazard markings;

(c) Use rubber cabtyre cables for all electrical power equipment;

(d) Wherever possible provide an ELCB (Earth Leakage Circuit Breakers) or RCD (Current Sensing Devices) in the electrical supply to each item of electrical equipment; (Note to JICA: NK will consult these provisions regarding ELCB and RCD with NK electrical engineers again.)

(e) If for any reason, an ELCB or RCD cannot be provided, ensure that the metal exterior of the electrical power supply, metal outer casing of electric motors and the electrical equipment are all grounded;

(f) Avoid hanging electric cables and wires directly on nails, reinforcement or scaffolding and the like to prevent damage to the insulation and protective covering;

移動して使用するケーブル、電線等は、被覆材の保護のため、直接、釘や鉄筋・丸太足場等に掛けないこと。
It looks that log scaffolding has been changed to scaffolding tubes. Please, check its compatibility. Wasn't the original concept that the cables and wires shall not be hanged on log scaffoldings of large friction factor in order to prevent damage to the insulation?
NK: コメントに従い、"scaffolding tubes"を削除しました。
As commented, "scaffolding tubes" is deleted and "and the like" is added..

(g) Turn off the power before repairing, moving or maintaining electric power equipment;

(h) Replace fuses with correct type and rating, prohibit replacing fuses with a higher rating or with iron or copper wire;

(i) Ensure that fuses are replaced by an authorised person;

(j) Prevent any use of electric power equipment from use in the rain, or when the user is wet, standing in water or ~~is not~~ without wearing rubber soled insulated footwear or when the electric power equipment is wet;

(k) When any operational fault ~~or abnormality~~ is identified immediately turn off the power, unplug and stop using the equipment and advise (or hand to) the HSO;

(l) ~~Ensure that workers using electric power equipment wear appropriate PPE such as working clothes, protective helmets, safety shoes; and~~ (JCA34) Ensure that workers using electric power equipment wear appropriate PPE suitable for the electric power equipment in use such as working clothes, protective helmets, safety shoes, eye and face protection, ear protection; and

JCA34: electric power equipment の定義と照らし合わせて適切でしょうか。
Is this clause appropriate against the definition of electric power equipment?
NK: 4.1.1.(8)で持ち運びできる電動機械もしくは工具と定義しています。これらを使用する場合に当然適した保護具を使用することが求められます。器具により必要な保護具も変わりますので右のように修正します。
Electric power equipment is defined in 4.1.1 (8) that electric power equipment means portable electric powered mobile equipment or tools. When using these, it is necessary to use appropriate protective equipment which vary according to the type of equipment. The clause is modified.

移動して使用するケーブル、電線等は、被覆材の保護のため、直接、釘や鉄筋・丸太足場等に掛けないこと。
It looks that log scaffolding has been changed to scaffolding tubes. Please, check its compatibility. Wasn't the original concept that the cables and wires shall not be hanged on log scaffoldings of large friction factor in order to prevent damage to the insulation?
NK: コメントに従い、"scaffolding tubes"を削除しました。
As commented, "scaffolding tubes" is deleted and "and the like" is added..

"Log scaffolding" has no meaning, scaffolding has meaning.

NK: agreed.

(g) Turn off the power before repairing, moving or maintaining electric power equipment;

(h) Replace fuses with correct type and rating, prohibit replacing fuses with a higher rating or with iron or copper wire;

(i) Ensure that fuses are replaced by an authorised person;

(j) Prevent any use of electric power equipment from use in the rain, or when the user is wet, standing in water or ~~is not~~ without wearing rubber soled insulated footwear or when the electric power equipment is wet;

Your change is not grammatically correct, the original wording is correct.

(k) When any operational fault is identified immediately turn off the power, unplug and stop using the equipment and advise (or hand to) the HSO;

(l) ~~Ensure that workers using electric power equipment wear appropriate PPE such as working clothes, protective helmets, safety shoes; and~~ (JCA34) Ensure that workers using electric power equipment wear appropriate PPE suitable for the electric power equipment in use such as working clothes, protective helmets, safety shoes, eye and face protection, ear protection; and

JCA34: electric power equipment の定義と照らし合わせて適切でしょうか。
Is this clause appropriate against the definition of electric power equipment?
NK: 4.1.1.(8)で持ち運びできる電動機械もしくは工具と定義しています。これらを使用する場合に当然適した保護具を使用することが求められます。器具により必要な保護具も変わりますので右のように修正します。
Electric power equipment is defined in 4.1.1 (8) that electric power equipment means portable electric powered mobile equipment or tools. When using these, it is necessary to use appropriate protective equipment which vary according to the type of equipment. The clause is modified.

I think it is relevant.

NK: confirmed.

(m) When electric shock accident occurs, unplug and stop using the equipment and advise (or hand to) the HSO and take

(g) Turn off the power before repairing, moving or maintaining electric power equipment;

(h) Replace fuses with correct type and rating, prohibit replacing fuses with a higher rating or with iron or copper wire;

(i) Ensure that fuses are replaced by an authorised person;

(j) Prevent any use of electric power equipment from use in the rain, or when the user is wet, standing in water or is not wearing rubber soled insulated footwear or when the electric power equipment is wet;

(k) When any operational fault is identified immediately turn off the power, unplug and stop using the equipment and advise (or hand to) the HSO;

(l) Ensure that workers using electric power equipment wear appropriate PPE suitable for the electric power equipment in use such as working clothes, protective helmets, safety shoes, eye and face protection, ear protection; and

(m) When electric shock accident occurs, unplug and stop using the equipment and advise (or hand to) the HSO and take

(m) When electric shock accident occurs, unplug and stop using the equipment and advise (or hand to) the HSO and take measures in accordance with JSSS 1.21 [*Accident Response Plan*].

4.3.13 Additional Safety Measures during Adverse Weather

Further to the requirements of JSSS 2.7 [*Adverse Weather Requirements*], the Contractor shall ensure that Contractor's Equipment is parked in a stable and secure state by taking all necessary measures including:

(1) Dropping the jib, boom, arm and attachments to ground level and securing where necessary with adequate anchors and chains.

(2) If heavy rain and flooding can be anticipated, moving Contractor's Equipment to higher ground or to places where there is no risk of instability.

(3) Removing snow or ice.

4.4 ROPES, SLINGS AND CHAINS

4.4.1 Requirements Generally

(1) The Contractor shall ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

(2) Wire ropes, slings and chains shall have safety factor recommended by the manufactures ~~of at least 6~~, (JCA35), obtained by dividing the breaking strength by the maximum applied load for each type.

JCA35: マニュファクチャーズレコメンデーションに従う旨の記載に代えてください。(ワイヤーロープやスリングは現場では作らず専門業者から調達することを想定)
Please change this part as to comply with the recommendation by the manufacturer. (It is assumed that wire ropes and slings shall not be fabricated at the site but procured from the vendors.)

NK: コメントに従い、右のように修正しました。
As commented, the clause is changed as right.

measures in accordance with JSSS 1.24 [*Accident Response Plan*].

4.3.13 Additional Safety Measures during Adverse Weather

Further to the requirements of JSSS 2.7 [*Adverse Weather Requirements*], the Contractor shall ensure that Contractor's Equipment is parked in a stable and secure state by taking all necessary measures including:

(1) Dropping the jib, boom, arm and attachments to ground level and securing where necessary with adequate anchors and chains.

(2) If heavy rain and flooding can be anticipated, moving Contractor's Equipment to higher ground or to places where there is no risk of instability.

(3) Removing snow or ice.

4.4 ROPES, SLINGS AND CHAINS

4.4.1 Requirements Generally

(1) The Contractor shall ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

(2) Wire ropes, slings and chains shall have safety factor recommended by the manufactures ~~of at least 6~~, (JCA35), obtained by dividing the breaking strength by the maximum applied load for each type.

JCA35: マニュファクチャーズレコメンデーションに従う旨の記載に代えてください。(ワイヤーロープやスリングは現場では作らず専門業者から調達することを想定)
Please change this part as to comply with the recommendation by the manufacturer. (It is assumed that wire ropes and slings shall not be fabricated at the site but procured from the vendors.)

NK: コメントに従い、右のように修正しました。
As commented, the clause is changed as right.

I suggest that no extensive change is necessary here as all is specified in JSSS 5.4 as referenced below.

If you require this change, I suggest as follows:

(2) The safety factor for wire ropes, slings and chains shall be as recommended by the manufacturer of each type.

NK: agreed.

(2) Wire ropes and slings shall not be fabricated at the Site but shall be obtained only from sources approved by the HSO.

NK: (2) wire ropes cannot be fabricated at the site. Eye splices of rope can be made at the site. I think (2) is not necessary to additionally specified.

measures in accordance with JSSS 1.24 [*Accident Response Plan*].

4.3.13 Additional Safety Measures during Adverse Weather

Further to the requirements of JSSS 2.7 [*Adverse Weather Requirements*], the Contractor shall ensure that Contractor's Equipment is parked in a stable and secure state by taking all necessary measures including:

(1) Dropping the jib, boom, arm and attachments to ground level and securing where necessary with adequate anchors and chains.

(2) If heavy rain and flooding can be anticipated, moving Contractor's Equipment to higher ground or to places where there is no risk of instability.

(3) Removing snow or ice.

4.4 ROPES, SLINGS AND CHAINS

4.4.1 Requirements Generally

(1) The Contractor shall ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

(2) The safety factor for wire ropes, slings and chains shall be as recommended by the manufacturer of each type.

(3) ~~Wire ropes and slings shall not be fabricated at the Site but shall be obtained only from sources approved by the HSO.~~

To MD, (2) wire ropes cannot be fabricated at the site. Eye splices of rope can be made at the site. I think (2) is not necessary to be additionally specified.

(3) Requirements for Ropes, slings and chains shall be as required under JSSS 6.5 [*Rigging Equipment*].

4.5 ALTERNATIVE USE OF CONTRACTOR'S EQUIPMENT

4.5.1 Requirements Generally

The Contractor shall not use Contractor's Equipment for any other purpose than the purpose for which it is designed and other than the purpose recommended by the manufacturer.

~~If the manufacturer allows alternative use (for example bucket excavators used for lifting operations) then such alternative use shall be strictly in accordance with the manufacturer's written instructions (JCA36) and in any event within the designed operating capacity of the equipment.~~ (JCB52)

JCA36: 用途外使用の際の使用方法に関する書面でのマニュアルを本当にメーカーが出している事例があるのでしょうか。具体例を複数確認して提示願います。ないようであれば、この記述は修正が必要です。
Is there really any example that manufacturer of equipment issues written manual which contains usage for the purpose other than that of intended?
Please, present at least examples for such usage. If there is no such example, the description has to be changed.

NK: 下記サイトに用途外使用に関する情報がありましたが、あくまで安衛法の基づいた注意書に過ぎません。
There is one site in Japan that explains use of equipment for purpose other than one for which it is designed, however it is only points to care based on the Occupational Safety and Health Regulations of Japan.
the clause is change to comply with the Law.
https://www.taiyokenki.co.jp/rental/tidbits/post_13.html
In USA, there is the following information how to use lifting by excavator following the manufacturer's Excavator Lift Capacity Chart :
https://www.forconstructionpros.com/equipment/earthmoving/backhoe-loaders/article/11416879/interpret-the-surprises-in-your-backhoes-lift-chart-to-place-big-loads-safely
http://zoskin.praysafeconsulting.com/excavator-lift-capacity-chart/tips-for-using-earthmoving-equipment-for-lifting-equipment.html
Additional stipulation is added regarding the regulation and confirmation by the HSO.

JCB52: 製造者が目的外使用の書面でのインストラクションを出していることが想定できないので、いらないのではないでしょうか？
It cannot be considered that manufacturers issue instructions in writing for alternative use of equipment, therefore is this sentence not necessary?

NK: Agreed to delete.

(3) Requirements for Ropes, slings and chains shall be as specified in JSSS 5.4 [*Rigging Equipment*].

4.5 ALTERNATIVE USE OF CONTRACTOR'S EQUIPMENT

4.5.1 Requirements Generally

The Contractor shall not use Contractor's Equipment for any other purpose than the purpose for which it is designed and other than the purpose recommended by the manufacturer.

~~If the manufacturer allows alternative use (for example bucket excavators used for lifting operations) then such alternative use shall be strictly in accordance with the manufacturer's written instructions (JCA36) and in any event within the designed operating capacity of the equipment.~~ (JCB52)

JCA36: 用途外使用の際の使用方法に関する書面でのマニュアルを本当にメーカーが出している事例があるのでしょうか。具体例を複数確認して提示願います。ないようであれば、この記述は修正が必要です。
Is there really any example that manufacturer of equipment issues written manual which contains usage for the purpose other than that of intended?
Please, present at least examples for such usage. If there is no such example, the description has to be changed.

NK: 下記サイトに用途外使用に関する情報がありましたが、あくまで安衛法の基づいた注意書に過ぎません。
There is one site in Japan that explains use of equipment for purpose other than one for which it is designed, however it is only points to care based on the Occupational Safety and Health Regulations of Japan.
the clause is change to comply with the Law.
https://www.taiyokenki.co.jp/rental/tidbits/post_13.html
In USA, there is the following information how to use lifting by excavator following the manufacturer's Excavator Lift Capacity Chart :
https://www.forconstructionpros.com/equipment/earthmoving/backhoe-loaders/article/11416879/interpret-the-surprises-in-your-backhoes-lift-chart-to-place-big-loads-safely
http://zoskin.praysafeconsulting.com/excavator-lift-capacity-chart/tips-for-using-earthmoving-equipment-for-lifting-equipment.html
Additional stipulation is added regarding the regulation and confirmation by the HSO.

JCB52: 製造者が目的外使用の書面でのインストラクションを出していることが想定できないので、いらないのではないでしょうか？
It cannot be considered that manufacturers issue instructions in writing for alternative use of equipment, therefore is this sentence not necessary.

NK: Agreed to delete.

Using bucket excavators for example for hoisting lighter loads (e.g. steel pipes and drainage components) is a common and convenient practice. It is recognised as such by manufacturers and their equipment is designed for this.

NK: We cannot find any such official document from manufacture in websites, so I gave up to specify as original sentences

Use of Contractor's Equipment for any other purpose than the originally intended purpose are allowed only if it is not prohibited by either of the Law the Country and the manufacturer's official operation, maintenance and repair manual and subject to HSO's approval after reviewing all the safety aspects.

(4) Requirements for Ropes, slings and chains shall be as specified in JSSS 5.4 [*Rigging Equipment*].

4.5 ALTERNATIVE USE OF CONTRACTOR'S EQUIPMENT

4.5.1 Requirements Generally

The Contractor shall not use Contractor's Equipment for any other purpose than the purpose for which it is designed and other than the purpose recommended by the manufacturer.

Use of Contractor's Equipment for any other purpose than the originally intended purpose are allowed only if it is not prohibited by either of the Law the Country and the manufacturer's official operation, maintenance

Use of Contractor's Equipment for any other purpose than the originally intended purpose are allowed only if it is not prohibited by either of the Law the Country and the manufacturer's written instructions, and subject to HSO's approval after reviewing all the safety aspects.

In particular, when equipment for excavation is to be used for lifting, HSO shall confirm:

(1) Rigging Equipment such as hook is attached on an appropriate part of the excavation equipment (e.g. arm or bucket);

~~When the manufacturer's written instructions and the Laws of the Country regarding alternative use, the safety of alternative use shall be approved by the HSO by checking for example the following items for lifting:~~

(2) Rigging Equipment such as hook attached on construction equipment such as arm or bucket are used;

(3) Arms, bucket, Rigging Equipment have enough strength to lift the load;

(4) There is no risk that the lifting devices such as hook and shackles will be detached from arm or bucket of the ~~construction~~ equipment;

(5) The lifting capacity for alternative use is confirmed by loading tests at the Site; and

(6) Operators engaged in lifting work with construction equipment such as excavators shall be licensed when necessary and trained for lifting work. (JCB54)

JCB54: 揚貨作業をする時に揚貨の資格が必要であることは、揚貨の章に記述があるはず。不要。
The necessity of license is specified in the Chapter for lifting, so not necessary mention (5).
NK: Deleted.

~~Under these circumstances the Contractor shall take account of the following:~~ (JCB55)

JCB55: 用途外使用に対してこれほど詳細な注意書が必要ではないと思います。揚貨に必要なことは揚貨のところに書いてあるはずです。不要.
It is not necessary to specify in so details as bellow because requirement for hoisting works are specified in chapter 5Hoisting and Rigging.
NK: Deleted.

(1) ~~Ensure the Contractor's Equipment can safely handle the load~~

In particular, when equipment for excavation is to be used for lifting, HSO shall confirm:

(1) Rigging Equipment such as hook is attached on an appropriate part of the excavation equipment (e.g. arm or bucket).

~~When the manufacturer's written instructions and the Laws of the Country regarding alternative use, the safety of alternative use shall be approved by the HSO by checking for example the following items for lifting:~~

(2) Rigging Equipment such as hook attached on construction equipment such as arm or bucket are used;

(3) Arms, bucket, Rigging Equipment have enough strength to lift the load.

(4) There is no risk that the lifting devices such as hook and shackles will be detached from arm or bucket of the ~~construction~~ equipment.

(5) The lifting capacity for alternative use is confirmed by loading tests at the Site.

(6) Operators engaged in lifting work with construction equipment such as excavators shall be licensed when necessary and trained for lifting work. (JCB54)

JCB54: 揚貨作業をする時に揚貨の資格が必要であることは、揚貨の章に記述があるはず。不要。
The necessity of license is specified in the Chapter for lifting, so not necessary mention (5).
NK: Deleted.

~~Under these circumstances the Contractor shall take account of the following:~~ (JCB55)

JCB55: 用途外使用に対してこれほど詳細な注意書が必要ではないと思います。揚貨に必要なことは揚貨のところに書いてあるはずです。不要.
It is not necessary to specify in so details as bellow because requirement for hoisting works are specified in chapter 5Hoisting and Rigging.
NK: Deleted.

I think that this should remain, it is a secondary usage for example of an excavating machine for lifting light loads. It is not likely that the operator will be trained as a rigger and the following clauses are recommended to be included.

NK6/19: The operator needs licence or training certificate for hoisting work depending hoisting capacity with excavator as secondary usage in Japanese regulation. Therefore, JICA comments' is correct, however it is recommendable to specify here.

(1) ~~Ensure the Contractor's Equipment can safely handle the load without creating instability, tipping or loss of control and avoiding the resultant risk of injury or damage or stress to the equipment.~~

(2) ~~Ensure that operators understand the equipment capability, are properly trained in the alternative use, are fully aware of and follow the manufacturer's written instructions and load charts.~~

(3) ~~Ensure that operators have accurately determined the total weight~~

and repair manual and subject to HSO's approval after reviewing all the safety aspects.

In particular, when equipment for excavation is to be used for lifting, the HSO shall confirm:

(1) Rigging Equipment such as hook is attached on an appropriate part of the excavation equipment (e.g. arm or bucket).

(2) Arms, bucket, Rigging Equipment have enough strength to lift the load.

(3) There is no risk that the lifting devices such as hook and shackles will be detached from arm or bucket of the equipment.

(4) The lifting capacity for alternative use is confirmed by loading tests at the Site.

(5) Ensure that operators understand the equipment capability, are properly trained in the alternative use, are fully aware of and follow

without creating instability, tipping or loss of control and avoiding the resultant risk of injury or damage or stress to the equipment.

(2) Ensure that operators understand the equipment capability, are properly trained in the alternative use, are fully aware of and follow the manufacturer's written instructions and load charts.

(3) Ensure that operators have accurately determined the total weight of the load, taking account of the weight of any attachments, the reach and angle and configuration of the equipment and have informed the HSO of this and obtained his permission before commencing the operation.

(4) Check the working area and improve the ground surface as necessary to ensure the stability of the equipment.

(5) Ensure that manufacturer's genuine specialised accessories such as lifting hooks etc. are provided and used. .(JCA37)

JCA37: 本節は用途外使用を規定しています。用途外使用をするための genuine accessories というのが存在するのでしょうか。
Is there any "genuine accessory" for purpose other than one for which it is designed?

NK: バケットに取り付けるフックなどは、重機のメーカーではなく、部品メーカーが多種の製品を製造しています。純正となると、バケットに収納できる特殊フックしかないようです。本項目は削除します。
Accessories such as hooks for lifting are produced by suppliers not by the equipment manufacturer. A hook as a genuine accessory was found only in a special type bucket which can store the hook when it is not in use. This clause is deleted.

(6) Ensure that the equipment is stable, if provided lower stabilisers, if the equipment is equipped with a blade, lower the blade to the ground for added stability and ensure that necessary counterweights are in place.

(7) Check the rigging to ensure it is appropriate to the use and rated to handle the load. Inspect it before each use for any signs of damage or wear, and make sure it is properly secured to the machine and load.

(8) Ensure that the area is clear of any unnecessary personnel, Spotters should be the only individuals in the immediate area, and should be stationed clear of the lift area yet visible to the operator throughout the operation.

(9) Lift the load slowly, keep the lifting point directly over the centre of the load, keep the load as close to the machine and the ground as possible and position the equipment to hoist and lower end on not sideways.

(4) Check the working area and improve the ground surface as necessary to ensure the stability of the equipment.

(5) Ensure that manufacturer's genuine specialised accessories such as lifting hooks etc. are provided and used. .(JCA37)

JCA37: 本節は用途外使用を規定しています。用途外使用をするための genuine accessories というのが存在するのでしょうか。
Is there any "genuine accessory" for purpose other than one for which it is designed?

NK: バケットに取り付けるフックなどは、重機のメーカーではなく、部品メーカーが多種の製品を製造しています。純正となると、バケットに収納できる特殊フックしかないようです。本項目は削除します。
Accessories such as hooks for lifting are produced by suppliers not by the equipment manufacturer. A hook as a genuine accessory was found only in a special type bucket which can store the hook when it is not in use. This clause is deleted.

Lifting hook are common however excavators can hoist light loads e.g. drainage pipes, using the bucket and slings without hooks and are designed for this. I suggest that these clauses should remain as they are likely to apply.

NK6/19: Many accidents have occurred in the lifting works with excavators in Japan. To attention to the Contractor, the following is recommended to specify as proposed by MD.

(6) Ensure that the equipment is stable, if provided lower stabilisers, if the equipment is equipped with a blade, lower the blade to the ground for added stability and ensure that necessary counterweights are in place.

(7) Check the rigging to ensure it is appropriate to the use and rated to handle the load. Inspect it before each use for any signs of damage or wear, and make sure it is properly secured to the machine and load.

(8) Ensure that the area is clear of any unnecessary personnel, Spotters should be the only individuals in the immediate area, and should be stationed clear of the lift area yet visible to the operator throughout the operation.

(9) Lift the load slowly, keep the lifting point directly over the centre of the load, keep the load as close to the machine and the ground as possible and position the equipment to hoist and lower end on not sideways.

the manufacturer's written instructions and load charts.

(6) Ensure that operators have accurately determined the total weight of the load, taking account of the weight of any attachments, the reach and angle and configuration of the equipment and have informed the HSO of this and obtained his permission before commencing the operation.

(7) Check the working area and improve the ground surface as necessary to ensure the stability of the equipment.

(8) Ensure that the equipment is stable, if provided lower stabilisers, if the equipment is equipped with a blade, lower the blade to the ground for added stability and ensure that necessary counterweights are in place.

(9) Check the rigging to ensure it is appropriate to the use and rated to handle the load. Inspect it before each use for any signs of damage or wear, and make sure it is properly secured to the machine and load.

(10) Ensure that the area is clear of any unnecessary personnel, Spotters should be the only individuals in the immediate area, and should be stationed clear of the lift area yet visible to the operator throughout the operation.

(11) Lift the load slowly, keep the lifting point directly over the centre of the load, keep the load as close to the machine and the ground as

~~stationed clear of the lift area yet visible to the operator throughout the operation.~~

(9) ~~Lift the load slowly, keep the lifting point directly over the centre of the load, keep the load as close to the machine and the ground as possible and position the equipment to hoist and lower end on not sideways.~~

(10) ~~If there are any signs of instability or loss of control of the machine or load, discontinue the lift and lower the load to the ground.~~

4.6 HIRED/LEASED CONTRACTOR'S EQUIPMENT

4.6.1 Requirements Generally

(1) Contractor's Equipment from hire or lease companies shall comply with all of the requirements of the Contract and JSSS as if it were the Contractor's own property, in particular the Contractor shall ensure compliance with the requirements of JSSS 1.34 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*].

(2) The Contractor shall ensure that the hire/lease companies have performed all necessary inspection, maintenance and repair works before ~~the Contractor's Equipment~~ .(JCA38) the equipment is mobilised to the Site and that the following is provided with the equipment to the Contractor upon mobilisation and is available for the inspection of the Engineer:

JCA38: この表現でいい？ 例えば Rental or Lease equipment の方が素直に読めますがいかがでしょうか。そのうえで 4.6 内での表現を統一してください。
Is this a proper expression? It would be better to use, for example, "rental and lease equipment". And please unify the expression in 4.6.
NK: (2)及び(3)で使用されている" the Contractor's Equipment"は単に"equipment"で明確に意味が通じるので、"equipment"に変更します。
The term "the Contractor's Equipment" used in (2) & (3) can be replaced simply with "equipment", by which the meaning of this clause become clearer.

(a) Inspection and maintenance records;

(b) Operation, repair and maintenance manuals; and

(10) ~~If there are any signs of instability or loss of control of the machine or load, discontinue the lift and lower the load to the ground.~~

4.6 HIRED/LEASED CONTRACTOR'S EQUIPMENT

4.6.1 Requirements Generally

(1) Contractor's Equipment from hire or lease companies shall comply with all of the requirements of the Contract and JSSS as if it were the Contractor's own property, in particular the Contractor shall ensure compliance with the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*].

(2) The Contractor shall ensure that the hire/lease companies have performed all necessary inspection, maintenance and repair works before ~~the Contractor's Equipment~~ .(JCA38) the equipment is mobilised to the Site and that the following is provided with the equipment to the Contractor upon mobilisation and is available for the inspection of the Engineer:

JCA38: この表現でいい？ 例えば Rental or Lease equipment の方が素直に読めますがいかがでしょうか。そのうえで 4.6 内での表現を統一してください。
Is this a proper expression? It would be better to use, for example, "rental and lease equipment". And please unify the expression in 4.6.
NK: (2)及び(3)で使用されている" the Contractor's Equipment"は単に"equipment"で明確に意味が通じるので、"equipment"に変更します。
The term "the Contractor's Equipment" used in (2) & (3) can be replaced simply with "equipment", by which the meaning of this clause become clearer.

There is nothing wrong with the original wording, it is "Contractor's Equipment" as defined in the Contract whether rented, leased or owned.

"equipment" in this usage, should only follow in a sentence which already contains the term "Contractor's Equipment" and is therefore connected in meaning.

The changed wording introduces unnecessary duplication "equipment" and "equipment".

NK: agreed.

(a) Inspection and maintenance records;

(b) Operation, repair and maintenance manuals; and

(c) Spare and replacement parts, tools, maintenance equipment, lubricants, filters, hydraulic fluids and the like.

(3) The Contractor shall double-check to ensure that the inspection and maintenance has been carried out and if the Contractor has any doubt over the adequacy of such inspection or maintenance or if complete records are not made available, the Contractor shall not

possible and position the equipment to hoist and lower end on, not sideways.

(12) If there are any signs of instability or loss of control of the machine or load, discontinue the lift and lower the load to the ground.

4.6 HIRED/LEASED CONTRACTOR'S EQUIPMENT

4.6.1 Requirements Generally

(1) Contractor's Equipment from hire or lease companies shall comply with all of the requirements of the Contract and JSSS as if it were the Contractor's own property, in particular the Contractor shall ensure compliance with the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*].

(2) The Contractor shall ensure that the hire/lease companies have performed all necessary inspection, maintenance and repair works before the Contractor's Equipment is mobilised to the Site and that the following is provided with the equipment to the Contractor upon mobilisation and is available for the inspection of the Engineer:

(a) Inspection and maintenance records;

(b) Operation, repair and maintenance manuals; and

(c) Spare and replacement parts, tools, maintenance equipment, lubricants, filters, hydraulic fluids and the like.

(3) The Contractor shall double-check to ensure that the inspection and maintenance has been carried out and if the Contractor has any doubt over the adequacy of such inspection or maintenance or if

(c) Spare and replacement parts, tools, maintenance equipment, lubricants, filters, hydraulic fluids and the like.

(3) The Contractor shall double-check to ensure that the inspection and maintenance has been carried out and if the Contractor has any doubt over the adequacy of such inspection or maintenance or if complete records are not made available, the Contractor shall not allow this ~~Contractor's Equipment~~ equipment to be used upon the Works. The Contractor shall inspect and carry out full maintenance and repair on such equipment in compliance with the requirements of this Chapter before it is certified for use by the HSO and used upon the Works.

(4) Operators from hire/lease companies are by definition Contractor's Personnel and they shall be treated as if they ~~are~~ were employed by the Contractor, in terms of compliance with the Contract and JSSS.

Such operators shall be tested and certified by the HSO, shall receive safety training and shall perform all inspection, maintenance and other requirements fully in compliance with JSSS, in the same way as the Contractor's own employees.

4.7 TEMPORARY FUELLING FACILITIES

4.7.4 Requirements Generally

(1) ~~Unless otherwise specified in the Contract,~~ the Contractor ~~shall~~ may (JCB56) design and construct temporary fuel storage and dispensing facilities at the Site for the use of Contractor's Equipment after obtaining necessary permission required by the Law of the Country, if any. These facilities shall be substantial and secure and capable of storing and dispensing fuel in a safe and environmentally acceptable manner all to the approval of the Engineer.(JCB57)

JCB56: "shall"じゃなく"may"ぐらいでは？町中で station が近い場合には不要なはず。
It is not necessary to specify "shall" but "may" because fueling facilities are not necessary where there are fuel stations in town or near the Site.
NK: Modified.

JCB57: 法令上の許可が必要な場合は取得することを追記が必要と思量。
It is necessary to specify for the Contractor to get permission in accordance with

allow this ~~Contractor's Equipment~~ equipment to be used upon the Works. The Contractor shall inspect and carry out full maintenance and repair on such equipment in compliance with the requirements of this Chapter before it is certified for use by the HSO and used upon the Works.

The suggested change is correct nor necessary.

NK: as revised by MD.

(4) Operators from hire/lease companies are by definition Contractor's Personnel and they shall be treated as if they ~~are~~ were employed by the Contractor, in terms of compliance with the Contract and JSSS.

The suggested change is not correct nor necessary.

NK: (5) is correct expression..

Such operators shall be tested and certified by the HSO, shall receive safety training and shall perform all inspection, maintenance and other requirements fully in compliance with JSSS, in the same way as the Contractor's own employees.

4.7 TEMPORARY FUELLING FACILITIES

4.7.4 Requirements Generally

(1) ~~Unless otherwise specified in the Contract,~~ the Contractor ~~shall~~ may (JCB56) design and construct temporary fuel storage and dispensing facilities at the Site for the use of Contractor's Equipment after obtaining necessary permission required by the Law of the Country, if any. These facilities shall be substantial and secure and capable of storing and dispensing fuel in a safe and environmentally acceptable manner all to the approval of the Engineer.(JCB57)

JCB56: "shall"じゃなく"may"ぐらいでは？町中で station が近い場合には不要なはず。
It is not necessary to specify "shall" but "may" because fueling facilities are not necessary where there are fuel stations in town or near the Site.
NK: Modified.

The comment is understood but generally it will not apply on JICA projects and is not a recommended basis for a safety specification.

In the majority of cases, mobile Contractor's Equipment will not be registered or insured for use on public roads and fuel for such equipment (together with fuel for static equipment and all other site equipment) will usually need to be brought safely to the Site and safely stored and dispensed for Site use.

Also, with normal high consumption requirements (and even for tax and duty reasons), fuel is usually delivered to the Site and stored separately.

It is dangerous to obtain and transport and dispense manually in frequent and

complete records are not made available, the Contractor shall not allow this Contractor's Equipment to be used upon the Works. The Contractor shall inspect and carry out full maintenance and repair on such equipment in compliance with the requirements of this Chapter before it is certified for use by the HSO and used upon the Works.

(4) Operators from hire/lease companies are by definition Contractor's Personnel and they shall be treated as if they are employed by the Contractor, in terms of compliance with the Contract and JSSS.

(5) Operators shall be tested and certified by the HSO, shall receive safety training and shall perform all inspection, maintenance and other requirements fully in compliance with JSSS, in the same way as the Contractor's own employees.

4.7 TEMPORARY FUELLING FACILITIES

4.7.4 Requirements Generally

(1) Unless otherwise specified in the Particular Safety Specification, the Contractor shall design and construct temporary fuel storage and dispensing facilities at the Site for the use of Contractor's Equipment. These facilities shall be substantial and secure and capable of storing and dispensing fuel in a safe and environmentally acceptable manner all to the approval of the Engineer.

the Law of the Country when necessary. NK: Added. (2) The facility shall include storage tanks, suitable foundations, support or containment structures, protective bund walls as necessary, paved surfaces, screens, fencing and associated facilities for storage of separate fuels and lubricants and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended. (3) Unless otherwise specified in the Contract, all such tanks, foundations, support and containment structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works. All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer. (4) The Contractor must ensure that the temporary fuel storage and dispensing facility is operated and occupied at all time only by authorised personnel and that all unauthorised personnel are prohibited from entering such areas at all times. The Contractor shall be particularly careful and provide measures to prevent any unauthorised access, tampering, damage and theft at any time.	*small quantities.* *It is not necessary to state that the Contractor must obtain "necessary permission required by the Law of the Country"; the Contractor must in any event comply with the Law under GC 1.4 and such permission, etc., would be an automatic requirement.* *Fuel storage at Site will usually be required on most JICA projects and proper safety control is essential.* *I have already included a clause in the latest issue of the User Guide to cover this and suggest therefore that no change is necessary to the original text.* JCB57: 法令上の許可が必要な場合は取得することを追記が必要と思量。 It is necessary to specify for the Contractor to get permission in accordance with the Law of the Country when necessary. NK: Added. *Not necessary see note above.* NK6/19: considering small projects agreed to leave as original provision. (2) The facility shall include storage tanks, suitable foundations, support or containment structures, protective bund walls as necessary, paved surfaces, screens, fencing and associated facilities for storage of separate fuels and lubricants and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended. (3) Unless otherwise specified in the Contract, all such tanks, foundations, support and containment structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works. All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer. (4) The Contractor must ensure that the temporary fuel storage and dispensing facility is operated and occupied at all time only by authorised personnel and that all unauthorised personnel are prohibited from entering such areas at all times. The Contractor shall be particularly careful and provide measures to prevent any unauthorised access, tampering, damage and theft at any time. (5) <u>All storage tanks shall be bunded either as jacketed tanks or by providing bunded enclosures.</u>(JCA39), such that in the event of a catastrophic failure, the tank contents will be safely contained and shall not be allowed to run freely or enter the surface or ground water systems. JCA39: 単純に英語の意味がわからない	(2) The facility shall include storage tanks, suitable foundations, support or containment structures, protective bund walls as necessary, paved surfaces, screens, fencing and associated facilities for storage of separate fuels and lubricants and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended. (3) Unless otherwise specified in the Contract, all such tanks, foundations, support and containment structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works. All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer. (4) The Contractor must ensure that the temporary fuel storage and dispensing facility is operated and occupied at all time only by authorised personnel and that all unauthorised personnel are prohibited from entering such areas at all times. The Contractor shall be particularly careful and provide measures to prevent any unauthorised access, tampering, damage and theft at any time. (5) All storage tanks shall be bunded either as jacketed tanks or by providing bunded enclosures, such that in the event of a catastrophic failure, the tank contents will be safely contained and shall not be allowed to run freely or enter the surface or ground water systems.

(5) All storage tanks shall be bunded either as jacketed tanks or by providing bunded enclosures.(JCA39), such that in the event of a catastrophic failure, the tank contents will be safely contained and shall not be allowed to run freely or enter the surface or ground water systems. JCA39: 単純に英語の意味がわからない bund: A secondary enclosure, typically consisting of a wall or berm, which surrounds a tank or fluid-handling mechanism, intended to contain any spills or leaks. ex.) Plant room floors are generally bunded and/or waterproofed to contain any leaks or spillages of liquids and fluids from faulty tanks, plant or pipe work.  NK: 貯蔵タンクの燃料流出防止のために、2 重タンク又は流出防止壁の設置を規定していると解釈します。MD 氏に表現の再検討及び出典の提示を依頼します。 We will transfer the above comment and request to make it easy to understand and show the source of these requirements. (6) The Contractor is reminded of the requirements of JSSS 1.23 [*Fire Prevention*] and will be required to provide a comprehensive and a high standard of fire protection in fuel storage areas. *NK please can you provide a reference standard for storage tanks.* *Please also advise of regulations that should apply and any further technical requirements.* *We will edit and develop.*	bund: A secondary enclosure, typically consisting of a wall or berm, which surrounds a tank or fluid-handling mechanism, intended to contain any spills or leaks. ex.) Plant room floors are generally bunded and/or waterproofed to contain any leaks or spillages of liquids and fluids from faulty tanks, plant or pipe work. NK: 貯蔵タンクの燃料流出防止のために、2 重タンク又は流出防止壁の設置を規定していると解釈します。MD 氏に表現の再検討及び出典の提示を依頼します。 We will transfer the above comment and request to make it easy to understand and show the source of these requirements. *Note to NK, what does your comment mean? Are you adding a description?* *A "bunded" tank is either a jacketed tank or a tank in an enclosure with bunds or walls and meaning is clear. I think no change is necessary.* NK: JICA commented the underlined sentence cannot be understood. (6) The Contractor is reminded of the requirements of JSSS 2.8 [*Fire Prevention*] and will be required to provide a comprehensive and a high standard of fire protection in fuel storage areas. *NK in the previous draft I had requested your assistance to find a reference standard for fuel storage tanks, please advise if you have found one.* *Previous note:* *NK please can you provide a reference standard for storage tanks.* *Please also advise of regulations that should apply and any further technical requirements.* *We will edit and develop.* NK: sorry I cannot find it as requested.	(6) The Contractor is reminded of the requirements of JSSS 2.8 [*Fire Prevention*] and will be required to provide a comprehensive and a high standard of fire protection in fuel storage areas.

NK comment on 20200620
Changes to previous draft

JICA STANDARD SAFETY SPECIFICATION FOR PROJECT IMPLEMENTATION UNDER JAPANESE ODA

CHAPTER 4: CONTRACTOR'S EQUIPMENT

Japan International Cooperation Agency (JICA)

JICA STANDARD SAFETY SPECIFICATION (JSSS)
CHAPTER 4: CONTRACTOR'S EQUIPMENT

Table of Contents

4.1 GENERAL REQUIREMENTS

4.1.1 Scope

(1) This Chapter specifies the safety requirements for Contractor's Equipment which shall include mobile equipment, static equipment, small equipment, tools and electric power equipment as further described in the following paragraphs.

(2) The Contractor shall ensure the safety of all Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places where they may be affected by Contractor's Equipment in operation, standby or storage or when such equipment is being maintained or transported.

(3) For additional requirements for hoisting, rigging and cranes, refer to JSSS 5 [*Hoisting and Rigging*].

(4) Any reference to "operator" in this Chapter and elsewhere in JSSS shall be deemed to include "driver" also.

(5) Mobile equipment including wheeled or tracked, self-propelled construction machinery such as:

(a) Surface excavation and spoil movement equipment for bulk excavation, grading and levelling, such as bulldozers, graders and tractor excavators;

(b) Excavators such as backhoes, face shovels, power shovels;

(c) Loaders such as payloaders and face shovels;

(d) Dump trucks for removal or importation of spoil;

(e) Specialist foundation equipment such as pile driving and boring equipment;

(f) Compaction and surface treatment equipment such as smooth or sheepsfoot rollers, pneumatic and vibration rollers, asphalt finishers;

(g) Mobile cranes;

(h) Piling equipment

(i) Concreting equipment such as ready-mixed concrete trucks and pump trucks;

(j) Demolition equipment such as breakers, concrete crushers and demolition grippers;

(k) Transportation Equipment, such as cars and buses for Contractor's Personnel and trucks and trailers for transporting Goods to, around and from the Site;

(l) Workboat for diving works; and

(m) Tunnel Boring Machine (TBM). (To JICA, Note: TBM will be added in the Specification for Tunnel in future.)

(4) Static equipment includes powered stationary equipment such as:

(a) Stone crushing plants and screening equipment;

(b) Concrete and asphalt concrete batching plants;

(c) Tower cranes, derrick cranes;

(d) Elevators;

(e) Material conveyors;

(f) Air compressors;

(g) Engine Generators, submersible pumps and engine pumps; and

(h) Reinforcement, cutting and bending machines.

(5) Small equipment and tools such as:

(a) Hand steered vibrating rollers;

(b) Plate compactors and vibratory rammers;

(c) Portable conveyors;

(d) Pipe bending machines;

(e) Drills, hammers, breakers, compactors and compressors;

(f) Wood processing equipment;

(g) Independent concrete mixers;

(h) Air extract or blowing equipment for improving the working area environment;

(i) Jack hammers, drills;

(j) Chain saws;

(k) Hand operated equipment such as jacks, winches, lever hoists; and

(l) Hand tools such as wrenches, chisels, hand saw, picks, hammers.

4.1.2 Compliance Standards

(1) By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*], the Contractor shall comply with the requirements of this Chapter, read jointly with and including the further technical requirements of the Provision and Use of Work Equipment Regulations 1998 (PUWER), HSE Guidance in UK.

NK: Is "1998 (PUWER), HSE Guidance in UK" missing or intentionally deleted?

(2) In accordance with these regulations, together with JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*] the Contractor shall ensure that all Contractor's Equipment provided for use upon the Works is:

(a) Suitable and fit for the purpose for which it is intended;

(b) Safe for use, maintained in a safe condition and inspected to ensure it is correctly installed and used and does not subsequently deteriorate;

(c) Used only by people who have received adequate information, instruction and training;

(d) Accompanied by suitable health and safety measures, such as protective devices and controls. These shall include emergency stop devices, adequate means of isolation from sources of energy, clearly visible markings and warning devices; and

(e) Used for the designed and intended purpose.

4.1.3 Manufacturer's Documentation

The Contractor shall obtain a copy of the following official Manufacturer's documentation for all units of Contractor's Equipment:

(1) Safety instructions and recommendations.

(2) Operation, maintenance and repair manual

The Contractor shall inform all Contractor's Personnel of the content of same, provide further safety training as necessary and ensure full compliance by all Contractor's Personnel with such instructions and recommendations to assist in enforcing the safe use of Contractor's Equipment.

4.1.4 Instruction for Contractor's Personnel

Further to the requirements of JSSS 1.7 [*Contractor's Safety Plans*], JSSS 1.8 [*Contractor's Method Statements*] and JSSS 1.15.2 [*Contractor's Safety Management Activities*], the Contractor shall include details of the following in the Method Statement and Safety Plan for works involving the use of Contractor's Equipment and shall fully inform all Contractor's Personnel associated therewith of all requirements before the commencement of any such operations, including:

(1) Scope of work, locations and areas, work methods, dimensions, levels and quantities to be achieved.

(2) Types, capacities and numbers of units.

(3) Workplaces, area limits and operational routes, restricted areas, locations of caution signs and fences.

(4) Preservation of safe access, walkways and footpaths around the working areas and transportation areas.

(5) Identities and roles of and location(s) for Spotters and the communication and signalling requirements, including equipment to be used.

(6) Environmental impact including required measures for workers and any other persons against vibration, noise, dust and the like.

(7) Safety measures for the environmental conditions in the working area, any nearby areas for storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, operational areas or areas where Dangerous Work is taking place.

(8) Potential danger to any persons who may be affected by the use of Contractor's Equipment and the required measures to avoid any accident or injury.

(9) Any potential hazards in the use of Contractor's Equipment including those which may create a risk of falling or overturning.

(10) Restrictions to the movement and operation of Contractor's Equipment such as existing structures, foundations, surfaces, underground or overhead services and dangerous goods storage.

(11) Measures to be taken in case of breakdown, defect or fault in Contractor's Equipment including location of areas for inspection and maintenance.

(12) Name of the authorised operator for each unit of Contractor's Equipment when authorised operator is necessary to be assigned.

(13) The name and contact of the HSO to inform when there is any requirement for inspection, maintenance and repair of Contractor's Equipment.

4.1.5 Safety Training

(1) The Contractor shall provide the Contractor's Personnel with health and safety training in accordance with JSSS 1.19 [*Safety Training Generally*] taking account of the characteristics of the particular types of Contractor's Equipment and including:

(a) Functions, performance, operation methods, inspection items, inspection method of safety and emergency alarm devices;

(b) Work procedure, signal and communication method at starting time of the operation, and daily inspection;

(c) Lockout and tagout procedures for shutting down operation, turning off the power, locking the starter and necessary measures for the time of cleaning and inspection of the Contractor's Equipment;

(d) Stop of the operation of the Contractor's Equipment when an abnormality occurs and report to the person in charge;

(e) Prohibit removal or isolation of safety devices; and

(f) Risks during operation of the Contractor's Equipment.

(2) Particular safety training for transportation equipment operators shall be for the purpose of preventing of traffic accidents on and off the Site and shall include:

(a) Driving rules in general;

(b) Compliance with speed limits, signs, alcohol use, drugs and all other requirements the Laws of the Country;

(c) Driving methods to contact and collision with other persons, cycles, motorcycles and other vehicles;

(d) Driving methods to properly overtake other vehicles and to be undertaken by others;

(e) Driving methods when encountering holes, bumps or obstacles on the road;

(f) Required inspection and maintenance before starting operation; and

(g) Proper use of vehicles including behaviour and control of passengers, prevention of overcrowding, overloading and unauthorised passengers.

4.1.6 Requirements for Operators

Further to the requirements of JSSS 1.18 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that operators are appropriately qualified, skilled and experienced in operation of the Contractor's Equipment to which they are assigned and duly certified as such by the HSO.

(1) Operators shall safely and competently operate the Contractor's Equipment.

(2) Operators shall be fully aware of the following:

(a) Work procedures, hazards and operation methods;

(b) The need to stop the operation when any defect or abnormality is detected;

(c) The identity of and location(s) for Spotters and the communication and signalling requirements including equipment to be used; and

(d) The procedures in case of emergency.

(3) Operators shall:

(a) Keep all safety devices including emergency alarm and stop devices activated; and

(b) Inspect, clean, service and maintain the unit of Contractor's Equipment under their responsibility and control ~~or ensure that other qualified persons perform these operations.~~

(c) Ensure that other qualified persons safely operate Contractor's Equipment.

NK: NK6/19: the last paragraph "that other qualified persons perform these operations" is difficult to understand.
Does it mean Operators shall control the performing each other's operation?
NK propose as follows: (c)Ensure that other qualified persons safely operate Contractor's Equipment.

4.1.7 Signalling

(1) Signalling between operators and any associated workers shall only be carried out by designated personnel.

(2) Spotters shall be located in a safe place and where they can clearly see and be seen by the operator.

(3) When it is not possible for Spotters to give direct visible and audible signals to the operator, other systems including hand-held radios or videophone must be provided and

4.2 INSPECTION, MAINTENANCE AND REPAIR

4.2.1 Requirements Generally

(1) Further to the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*] the HSO shall ensure that all Contractor's Equipment is inspected, fully maintained and operational when it is mobilised to the Site. Thereafter all Contractor's Equipment shall be inspected, maintained and repaired before the commencement of the first and of all subsequent days of operation.

(2) Inspections shall include all items necessary to ensure the safe performance of the Contractor's Equipment including the following examples and any further requirements due to the characteristics, capability and condition of the Contractor's Equipment and in compliance with the manufacturer's official operation, maintenance and repair manual.

(3) When mobilising Contractor's Equipment to the Site and before commencement of operation, the Contractor shall:

(a) Inspect all units of Contractor's Equipment to ensure that

(i) all components are installed and functioning; and

(ii) adequate covers and safety guards (to prevent contact with moving parts) are provided and securely fixed.

(b) Ensure as a minimum that the daily and periodical check items have already been inspected and recorded;

(c) Ensure that all inspection and maintenance records are available for inspection by the Engineer if and when required in compliance with JSSS; and

(d) If any inspection and maintenance records are incomplete or not available, the Contractor shall carry out inspections and maintenance to ensure that a full and acceptable record is available for all units of Contractor's Equipment.

In relation with the above, it should be noted that Contractor's Equipment shall be in a working and safe condition and fully compliant with the Contract when it is mobilised to the Site. The Engineer may refuse to accept delivery to the Site any Contractor's Equipment which does not meet the requirements stipulated in the Contract.

(4) The Contractor shall undertake the following daily inspection items, (or at intervals required by the manufacturer's official operation, maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(a) Operating condition of engine, gearbox(s), drive shafts, pulleys and main components, emergency stop and safety devices, any defects or abnormalities in covers, doors and enclosures;

(b) Abnormal sounds, vibrations or smell;

(c) Leaks, levels and condition of lubricants, coolant, hydraulic fluid levels, and the like;

(d) Lights and indicators;

(e) Brakes, clutches, steering and operating devices and working devices;

(f) Cables, slings, ropes and chains;

(g) Protective covers are adequately provided over all rotating or moving parts;

(h) Attachments and tools such as buckets, grabs and the like;

(i) Cleanliness of each unit or item of Contractor's Equipment;

(j) Cleanliness of each working area and removal of obstructions;

(k) Availability of emergency kits such as warning flares and triangles, fire extinguisher, first aid kit and the like, as required by the Laws of the Country with the testing and expiration date clearly indicated; and

(l) Any additional inspection items stipulated in the manufacturer's official operation, maintenance and repair manual.

(5) The Contractor shall undertake the following periodic inspection items, (at intervals required by the manufacturer's official operation, maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(a) Engine compression pressure, valve clearance and other relevant parts of prime energy unit;

(b) Gearbox, clutch, transmission, propeller shaft, differential and other parts of power transmission devices;

(c) Drive wheels, idling wheels, vertical trunk rollers, belts, tires, wheel bearings and other parts of traveling devices;

(d) Springs, shock absorbers and other parts of suspension devices;

(e) Left and right rotation angle of steering wheel, knuckle, rod, arm and other parts of control devices;

(f) Brake capacity, brake drum, brake shoe and other parts of braking systems;

(g) Blades, booms, link mechanisms, buckets, wire ropes and other parts of work equipment;

(h) Hydraulic pump, hydraulic motor, cylinder, safety valve and other parts of hydraulic equipment;

(i) Voltage, amperage and relevant performance and components of electrical systems;

(j) Body, operating devices, head guards, back stoppers, access doors, protective covers, ladders and steps, locking devices, warning alarm devices, direction indicators, tyre air pressures and lightning devices; and

(k) Any additional inspection items stipulated in the manufacturer's official operation, maintenance and repair manual.

(6) Operation of any unit of Contractor's Equipment shall not be allowed to commence until the HSO has certified that it is safe to do so.

(7) The Contractor shall prepare standard checklists for all inspections and the HSO shall ensure that these are complied with, completed and signed and kept as a record in accordance with JSSS 1.33 [*Health and Safety Records*].

4.2.2 Defects and Repair During Operation

(1) If an operator notices any defect or abnormality in the Contractor's Equipment during operation (such as abnormal noise, temperature, smell, etc.) the operator shall stop the operation immediately.

(2) Necessary repair shall be provided by qualified mechanics, electricians or engineers.

(3) The HSO shall ensure that no further operation shall resume unless the above has been complied with and the Contractor's Equipment has been re-inspected by him and certified in accordance with JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety*

Equipment and PPP].

4.3 SAFETY REQUIREMENTS

4.3.1 General Safety Measures

In addition to other safety and health requirements of JSSS, the Contractor shall:

(1) Ensure that there is sufficient lighting to perform all work safely and provide artificial lighting where necessary.

(2) Ensure that Contractor's Equipment is equipped with suitable protective safety devices such as covers, screens, guards, contact prevention devices, auto-stop devices, enclosures, barriers and the like as necessary to prevent injury to personnel from equipment or parts of equipment, where:

(a) There may be any risk of persons being hit by, caught or injured or entangled in any ropes, cables, sheaves, moving or rotating parts; and

(b) There may be any risk of persons being hit by flying debris, offcuts, or the like produced by the equipment.

(3) Ensure that Contractor's Equipment is equipped with suitable ladders and steps for access to the operating cab and also to all other levels and components to permit inspection, assembly, maintenance and repair of the equipment. When any Contractor's Personnel need to work at a height of 2 m or more, the Contractor shall take suitable measures in accordance with JSSS 2.5 [*Fall Prevention*], including the provision and use by all Contractor's Personnel of guide ropes and PFAS.

(4) Prohibit personnel other than operators, workers and other authorised personnel from entering the place where Contractor's Equipment is in use for the Works.

(5) Ensure that each unit of Contractor's Equipment is provided with appropriate numbers and types of fire extinguishing equipment (where such equipment is necessary) and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and in fire safety procedures.

(6) Ensure that each working area where Contractor's Equipment is in use, is provided with appropriate numbers and types of first-aid equipment and such other facilities that are necessary to ensure safety and treat accidents and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and first-aid procedures.

(7) Post a label clearly showing the name of the operator on each unit of Contractor's Equipment together with the name and contact number of the HSO or a person in charge who shall be contacted in the event of breakdown or fault.

(8) Ensure that only the authorised operating, inspection and maintenance personnel access the mechanical, electrical and other components and systems of the Contractor's Equipment and prohibit all other persons from such access.

(9) Ensure that any inspection and maintenance covers, safety guards to prevent contact with moving parts and the like are not disabled, tampered with or removed except for repair, maintenance or any other justifiable reason.

(10) Ensure that installation, assembly, testing commissioning, operation and dismantling of all Contractor's Equipment is carried out under the direction of an Operation Leader, appropriately qualified, skilled and experienced in such activities for the particular type and capacity of equipment and in accordance with the manufacturer's operation, maintenance and repair manual.

4.3.2 Safety Measures During Cleaning, Inspection and Maintenance

The Contractor shall take the following measures for safety of Contractor's Personnel during cleaning, inspection and maintenance. Until such measures are taken, the Contractor shall

prohibit any inspection or maintenance personnel or other workers from entering the areas.

(1) Perform inspection and maintenance work wherever possible on a level surface. Where unavoidable ensure that wheels are securely chocked to prevent any movement of equipment.

(2) Provide safety blocks or supports under cargo bed of vehicles to prevent them descending unexpectedly during inspection and maintenance.

(3) Lower attachments (buckets and blades etc.) to the ground during any inspection and maintenance. Where unavoidable ensure that attachments are securely supported to prevent any fall or downward movement.

(4) Stop and isolate the functions completely, establish and implement lockout and tagout procedures to prevent accidents during inspection and maintenance. The lockout and tagout system shall fully isolate the starting system.

(5) Post warning signs to prohibit start-up or use of any Contractor's Equipment during inspection and maintenance.

(6) Assign a Spotter.

(7) Ensure that only authorised personnel have access to the inspection and maintenance area.

4.3.3 Safety Measures During Operation

(1) Unless otherwise specifically permitted by the HSO, all work involving the use of Contractor's Equipment shall be designated as Dangerous Work and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) The Contractor shall also ensure that:

(a) All operators are able to clearly see and communicate effectively with Spotters and other relevant persons;

(b) No Contractor's Equipment is operating beyond the capacity or operational limits officially prescribed by the equipment manufacturer;

(c) The surfaces upon which the Contractor's Equipment is working, and any adjacent surfaces and areas over which access is required, are sound, safe and suitable to support the equipment and the Contractor shall provide any temporary foundations, hardstanding or other surfaces, sleepers or steel plates as are necessary to ensure safety and stability of the equipment at all times;

(d) Spotters are always be provided to enable precise movement and positioning of Contractor's Equipment, particularly when reversing, loading and unloading, in dangerous areas or when the operator's view is not clear and at intersections with public roads;

(e) Where there is any risk of turnover, slippage, collapse or fall, Contractor's Equipment is equipped with seatbelts or safety harnesses and that such seatbelts and harnesses are used;

(f) Where there is any risk of turnover, slippage, collapse or fall, Contractor's Equipment is equipped with a "Roll-Over Protective Structure" (ROPS);

(g) Where there is any risk of injury to operators due to falling objects Contractor's Equipment is equipped with a "Falling Object Protective Structure" (FOPS);

(h) Operators are aware that they shall pay careful and constant attention to the position of any workers near to the operating area and particularly when mobile equipment is reversing;

(i) Operators of excavating equipment are aware that excavator buckets shall never pass over the operator's seat of Contractor's Equipment;

(j) Workers shall not enter under a bucket which is loading material and shall keep away from dump trucks when loading or unloading materials; and

(k) No person shall ride on trucks, trailers or cargo bed other than cabin of vehicles unless permitted by the Law of the Country.

4.3.4 Safety Measures When Mobile Equipment Is Not in Use

(1) When mobile equipment is not in use, the Contractor shall ensure that operators:

(a) Park on surfaces which are level, sound, safe and suitable to support the equipment;

(b) Securely chock all wheels to prevent any movement;

(c) Lower attachments (buckets and blades etc.) to the ground;

(d) Stop and isolate the functions completely, fully engage brakes and lock the brake pedal; and

(e) Lock the equipment and store the starter key in the designated place.

(2) The Contractor shall prohibit all persons other than authorised personnel from entering the area where Contractor's Equipment is parked.

4.3.5 Safety Measures During Connecting and Removing of Attachments

The Contractor shall take the following measures when connecting and removing attachments (buckets, blades etc.) to Contractor's Equipment:

(1) Prevent any accident due to movement or fall of attachments by taking safety measures for example, connecting and removing attachments after locating them on stable and sound frames or on the ground.

(2) Prevent accidental movement or operation causing persons to be trapped attachments by taking safety measures for example, parking of the Contractor's Equipment such that it cannot move (as mentioned in JSSS 4.3.4 (1) (a), (b) and (d)) and stop the engine.

4.3.6 Safety Measures During Loading and Transporting of Contractor's Equipment

(1) Select and use trailers with associated ramps, other loading equipment and restraints which are suitable for the particular type, size and weight of the Contractor's Equipment and fit for the purpose for which they are intended.

(2) Select location and areas for loading and unloading which have sufficient space and surfaces which are level, sound, safe and suitable to support all of the equipment.

(3) Securely chock all wheels of trailers to prevent any movement.

(4) Stop and isolate the functions of trailers and load and fully engage brakes.

(5) Ensure trailers are equipped with tie down devices to allow secure fixing of load.

(6) Ensure that the weight and height of the loaded Contractor's Equipment does do not exceed actually required or legal limits.

(7) Ensure that all lights, brakes, steering and safety devices are working properly.

(8) Ensure that suitable, clear and legally compliant signage is attached to the trailer visibly indicating the maximum safe loading capacity, height of load, width, speed limits and any other restrictions or required information.

(9) Ensure that trailers are loaded evenly.

(10) Ensure that Contractor's Equipment loaded onto trailers is braked, wedged, securely

locked in position and tied to the trailer with adequately sized chains, slings and other fixings and tensioned to prevent any movement during transit.

(11) Place any attachments on trailers and securely tie down.

(12) Inspect the tie-down tensioning, before and at intervals during transportation of Contractor's Equipment to ensure that there is no slackening.

(13) Inspect chains, slings and other fixings for securing transported Contractor's Equipment and if any abnormality is found, replace immediately.

4.3.7 Safety Measures During Loading and Transporting of Goods

(1) When transporting heavy or long Goods on public roads, select roads on which the transportation does not pose danger to other traffic, third parties, structures adjacent to the transportation route, obtain all necessary permission from the relevant authorities including police and road authority before commencement of transportation and comply with all requirements.

(2) When transporting heavy or long mateerial Goods within the Site, select suitable routes where the transportation does not pose danger to existing permanent or temporary buildings or structures or other works and obtain the consent of the HSO before commencement of the transportation and comply with all requirements.

(3) Ensure that Goods are loaded evenly.

(4) Secure all loads with adequate and tensioned slings and cover with protective sheets, to avoid any fall or collapse of the conveyed articles and prevent any risk to workers and third parties.

(5) Inspect slings for securing transported materials and if any abnormality is found, replace immediately.

4.3.8 Site Access Roads

(1) Take measures for ensuring that Site access roads are of suitable construction, of sufficient width, free from potholes, uneven settlement and collapse.

(2) Provide signs indicating height and weight restrictions, bends, speed limits, intersections, dangerous places and the like (road shoulders, cliff edges.).

(3) Separate roads for vehicles and walkways for workers and provide passing area for vehicles at places where the road is narrow.

(4) In large construction sites, provide exclusive transport roads which are one-way if possible and provide passing areas on narrow roads.

(5) Provide sufficient lighting facilities at necessary places along roads when work operating in night.

4.3.9 Additional Requirements for Static Equipment

(1) The Contractor shall design and construct suitable foundations and support structures for static equipment with paved surfaces, screens, fencing and associated facilities for storage of material and product and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended. Unless otherwise stated in the Contract, all such foundations, support structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works. All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

(2) Unless otherwise stated in the Contract, all remaining aggregate, rock, cement, bitumen and the like used by or processed with the static equipment shall be removed and disposed

of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

4.3.10 Additional Requirements for Personnel and Goods Elevators and ~~Material~~ Conveyors

NK6/19: Japanese regulation stipulate for conveyors without separating portable and static (fixed) conveyors. The safety requirements are almost same. We will specify for both conveyors. Therefore, the "Material" is deleted.

(1) General

(a) The requirements for ~~material~~ conveyors stipulated ~~in this clause does not~~ apply to portable and material conveyors.

(b) The Contractor shall undertake the daily and periodical inspection in addition to the items stipulated in JSSS 4.2 [*Inspection, Maintenance And Repair*], 4.2.1 [*Requirements Generally*], (4) and (5) as specified below, (or at intervals required by the manufacturer's official operation, maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(c) The Contractor shall post the maximum load capacity and any restrictions on the use.

(2) Personnel and Goods Elevators

(a) Additional daily inspection items shall include checking for defects or operational faults with the following:

(i) Elevator enclosures, doors, guide-rails and runners;

(ii) Emergency stop and alarm systems;

(iii) Power, lighting and control systems;

(iv) Interphone systems;

(v) Brakes, clutches; and

(vi) Sheaves and pulleys.

(b) Additional periodical inspection items shall include checking for defects or operational faults with the following:

(i) Daily inspection items;

(ii) Wire ropes;

(iii) Winch and its foundation; and

(iv) Supporting structures, guy ropes, fixings and anchors.

(3) ~~Material~~ Conveyors

(a) Additonal safety measures:

(i) Conveyor systems shall be equipped with an audible warning signal to be sounded immediately before starting up the conveyor;

(ii) Means for stopping the motor or engine shall be provided at the motor or engine location;

(iii) Emergency stop switches shall be provided and be arranged so that the conveyor cannot be started again until the actuating stop switch has been reset to running or "on" position;

(iv) Where a conveyor passes over work areas, roads and walkways, suitable guards shall be provided to prevent fall of the materials being conveyed; and

(v) Riding of workers on the moving belts shall be prohibited.

(b) Additional daily inspection items shall include checking for defects or operational faults with the following:

(i) Overrun and reverse run prevention devices;

(ii) Emergency stop switches; and

(iii) Guards.

(c) Additional periodical inspection items, shall include for checking for defects or operational faults with daily inspection items.

4.3.11 Additional Requirements for Small Equipment and Tools

(1) Accessories and attachments shall be the standard types obtained from or recommended by the manufacturer of the equipment to which they are connected.

(2) Any repairs shall be carried out by competent persons approved by the HSO and using the manufacturer's genuine or recommended spare parts.

(3) All small equipment and tools shall be tested ~~and re-certified~~ by the HSO as safe for use after any repair or replacement of parts, before such equipment is put back into use.

NK: We would like to stipulate test before use to avoid injury of workers but not request to be certified. Therefore, it is left with modification as it is.

4.3.12 Additional Requirements for Electric Powered Equipment

(1) Electric powered equipment specified in this clause shall include portable electric powered mobile equipment or tools and shall form a part of the small equipment and tools listed in JSSS 4.1.1 (7).

(2) The Contractor shall undertake the following additional daily inspection items, (or at intervals required by the manufacturer's official operation, maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(a) Defects or operational faults with grounding such as disconnection of grounding wire and insecure fixing of grounding electrodes;

(b) Damage to insulation and protective coverings of all wires and cables including flexible cables; and

(c) Damage to plugs, sockets, transformers and all wiring fittings and appliances.

(3) The Contractor shall comply with the following additional safety requirements:

(a) Use waterproof switches and socket outlets with covers, securely fixed and located in accessible and dry places;

(b) Label and paint electrical power and switch boxes with warning signs and coloured hazard markings;

(c) Use rubber cabtyre cables for all electrical power equipment;

(d) Wherever possible provide an ELCB (Earth Leakage Circuit Breakers) or RCD (Current Sensing Devices) in the electrical supply to each item of electrical equipment; Note to JICA: NK will consult these provisions regarding ELCB and RCD with NK electrical engineers again.)

NK: added.

(e) If for any reason, an ELCB or RCD cannot be provided, ensure that the metal exterior of the electrical power supply, metal outer casing of electric motors and the electrical equipment are all grounded;

(f) Avoid hanging electric cables and wires directly on nails, reinforcement or scaffolding and the like to prevent damage to the insulation and protective covering;

(g) Turn off the power before repairing, moving or maintaining electric power equipment;

(h) Replace fuses with correct type and rating, prohibit replacing fuses with a higher rating or with iron or copper wire;

(i) Ensure that fuses are replaced by an authorised person;

(j) Prevent any use of electric power equipment from use in the rain, or when the user is wet, standing in water or is not wearing rubber soled insulated footwear or when the electric power equipment is wet;

(k) When any operational fault is identified immediately turn off the power, unplug and stop using the equipment and advise (or hand to) the HSO;

(l) Ensure that workers using electric power equipment wear appropriate PPE suitable for the electric power equipment in use such as working clothes, protective helmets, safety shoes, eye and face protection, ear protection; and

(m) When electric shock accident occurs, unplug and stop using the equipment and advise (or hand to) the HSO and take measures in accordance with JSSS 1.24 [*Accident Response Plan*].

4.3.13 Additional Safety Measures during Adverse Weather

Further to the requirements of JSSS 2.7 [*Adverse Weather Requirements*], the Contractor shall ensure that Contractor's Equipment is parked in a stable and secure state by taking all necessary measures including:

(1) Dropping the jib, boom, arm and attachments to ground level and securing where necessary with adequate anchors and chains.

(2) If heavy rain and flooding can be anticipated, moving Contractor's Equipment to higher ground or to places where there is no risk of instability.

(3) Removing snow or ice.

4.4 ROPES, SLINGS AND CHAINS

4.4.1 Requirements Generally

(1) The Contractor shall ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

(2) The safety factor for wire ropes, slings and chains shall be as recommended by the manufacturer of each type.

(3) ~~Wire ropes and slings shall not be fabricated at the Site but shall be obtained only from sources approved by the HSO.~~

NK: (2) wire ropes cannot be fabricated at the site. Eye splices of rope can be made at the site. I think (2) is not necessary to be additionally specified.

(4) Requirements for Ropes, slings and chains shall be as specified in JSSS 5.4 [*Rigging Equipment*].

4.5 ALTERNATIVE USE OF CONTRACTOR'S EQUIPMENT

4.5.1 Requirements Generally

The Contractor shall not use Contractor's Equipment for any other purpose than the purpose for which it is designed and other than the purpose recommended by the manufacturer.

Use of Contractor's Equipment for any other purpose than the originally intended purpose are allowed only if it is not prohibited by either of the Law the Country and the manufacturer's official operation, maintenance and repair manual and subject to HSO's approval after reviewing all the safety aspects.

In particular, when equipment for excavation is to be used for lifting, the HSO shall confirm:

(1) Rigging Equipment such as hook is attached on an appropriate part of the excavation equipment (e.g. arm or bucket).

(2) Arms, bucket, Rigging Equipment have enough strength to lift the load.

(3) There is no risk that the lifting devices such as hook and shackles will be detached from arm or bucket of the equipment.

(4) The lifting capacity for alternative use is confirmed by loading tests at the Site.

(5) Ensure that operators understand the equipment capability, are properly trained in the alternative use, are fully aware of and follow the manufacturer's written instructions and load charts.

(6) Ensure that operators have accurately determined the total weight of the load, taking account of the weight of any attachments, the reach and angle and configuration of the equipment and have informed the HSO of this and obtained his permission before commencing the operation.

(7) Check the working area and improve the ground surface as necessary to ensure the stability of the equipment.

(8) Ensure that the equipment is stable, if provided lower stabilisers, if the equipment is equipped with a blade, lower the blade to the ground for added stability and ensure that necessary counterweights are in place.

(9) Check the rigging to ensure it is appropriate to the use and rated to handle the load. Inspect it before each use for any signs of damage or wear, and make sure it is properly secured to the machine and load.

(10) Ensure that the area is clear of any unnecessary personnel, Spotters should be the only individuals in the immediate area, and should be stationed clear of the lift area yet visible to the operator throughout the operation.

(11) Lift the load slowly, keep the lifting point directly over the centre of the load, keep the load as close to the machine and the ground as possible and position the equipment to hoist and lower end on, not sideways.

(12) If there are any signs of instability or loss of control of the machine or load, discontinue the lift and lower the load to the ground.

4.6 HIRED/LEASED CONTRACTOR'S EQUIPMENT

4.6.1 Requirements Generally

(1) Contractor's Equipment from hire or lease companies shall comply with all of the requirements of the Contract and JSSS as if it were the Contractor's own property, in particular the Contractor shall ensure compliance with the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*].

(2) The Contractor shall ensure that the hire/lease companies have performed all necessary

inspection, maintenance and repair works before the Contractor's Equipment is mobilised to the Site and that the following is provided with the equipment to the Contractor upon mobilisation and is available for the inspection of the Engineer:

(a) Inspection and maintenance records;

(b) Operation, repair and maintenance manuals; and

(c) Spare and replacement parts, tools, maintenance equipment, lubricants, filters, hydraulic fluids and the like.

(3) The Contractor shall double-check to ensure that the inspection and maintenance has been carried out and if the Contractor has any doubt over the adequacy of such inspection or maintenance or if complete records are not made available, the Contractor shall not allow this Contractor's Equipment to be used upon the Works. The Contractor shall inspect and carry out full maintenance and repair on such equipment in compliance with the requirements of this Chapter before it is certified for use by the HSO and used upon the Works.

(4) Operators from hire/lease companies are by definition Contractor's Personnel and they shall be treated as if they are employed by the Contractor, in terms of compliance with the Contract and JSSS.

(5) Operators shall be tested and certified by the HSO, shall receive safety training and shall perform all inspection, maintenance and other requirements fully in compliance with JSSS, in the same way as the Contractor's own employees.

4.7 TEMPORARY FUELLING FACILITIES

4.7.1 Requirements Generally

(1) Unless otherwise specified in the Particular Safety Specification, the Contractor shall design and construct temporary fuel storage and dispensing facilities at the Site for the use of Contractor's Equipment. These facilities shall be substantial and secure and capable of storing and dispensing fuel in a safe and environmentally acceptable manner all to the approval of the Engineer.

(2) The facility shall include storage tanks, suitable foundations, support or containment structures, protective bund walls as necessary, paved surfaces, screens, fencing and associated facilities for storage of separate fuels and lubricants and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended.

(3) Unless otherwise specified in the Contract, all such tanks, foundations, support and containment structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works. All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

(4) The Contractor must ensure that the temporary fuel storage and dispensing facility is operated and occupied at all time only by authorised personnel and that all unauthorised personnel are prohibited from entering such areas at all times. The Contractor shall be particularly careful and provide measures to prevent any unauthorised access, tampering, damage and theft at any time.

(5) All storage tanks shall be bunded either as jacketed tanks or by providing bunded enclosures, such that in the event of a catastrophic failure, the tank contents will be safely contained and shall not be allowed to run freely or enter the surface or ground water systems.

(6) The Contractor is reminded of the requirements of JSSS 2.8 [*Fire Prevention*] and will

be required to provide a comprehensive and a high standard of fire protection in fuel storage areas.

NK in the previous draft I had requested your assistance to find a reference standard for fuel storage tanks, please advise if you have found one.

Previous note:

NK please can you provide a reference standard for storage tanks.

Please also advise of regulations that should apply and any further technical requirements.

We will edit and develop.

NK: sorry I cannot find it as requested.

JICA Standard Safety Specification Preparation Study
英文検討経緯表: 4. CONTRACTOR'S EQUIPMENT (Issue 4 DFR)

2020.7.7 DFR

NK R2 for Issue 3 submitted by NK to JICA on 2020/5/11	JICA Comments given on Issue 3 on 2020/5/24 and NK Actions (NK R3 for Issue 3) *JC is JICA Comment: of 2020/5/24*, NK: Actions	Issue 3 by MD on 2020/6/2 JCA and JCB (=JC) are JICA Comments of 2020/1/30 and 2020/5/24, respectively. Revision, *MD Comments*, NK: Comment	Issue 4 (DFR) on 2020/6/25 NK confirmed and agreed on 6/25
4 CONTRACTOR'S EQUIPMENT	**4 CONTRACTOR'S EQUIPMENT**	**4. CONTRACTOR'S EQUIPMENT**	**4. CONTRACTOR'S EQUIPMENT**
4.1 GENERAL REQUIREMENT	**4.1 GENERAL REQUIREMENT**	**4.1 GENERAL REQUIREMENTS**	**4.1 GENERAL REQUIREMENTS**
4.1.1 Scope	4.1.1 Scope	4.1.1 Scope	4.1.1 Scope
4.1.2 Compliance Standards	4.1.2 Compliance Standards	4.1.2 Compliance Standards	4.1.2 Compliance Standards
4.1.3 Instruction for Contractor's Personnel	4.1.3 Instruction for Contractor's Personnel	4.1.3 Manufacturer's Documentation	4.1.3 Manufacturer's Documentation
4.1.4 Safety Training	4.1.4 Safety Training	4.1.4 Instruction for Contractor's Personnel	4.1.4 Instruction for Contractor's Personnel
4.1.5 Requirements to Operators	4.1.5 Requirements to Operators	4.1.5 Safety Training	4.1.5 Safety Training
4.1.6 Signaling	4.1.6 Signaling	4.1.6 Qualification of Operators Requirements for Operators	4.1.6 Requirements for Operators
		4.1.7 Signalling	4.1.7 Signalling
4.2 INSPECTION, MAINTENANCE AND REPAIR	**4.2 INSPECTION, MAINTENANCE AND REPAIR**	**4.2 INSPECTION, MAINTENANCE AND REPAIR**	**4.2 INSPECTION, MAINTENANCE AND REPAIR**
4.2.1 Requirements Generally	4.2.1 Requirements Generally	4.2.1 Requirements Generally	4.2.1 Requirements Generally
4.2.2 Defects and Repair during Operation	4.2.2 Defects and Repair during Operation	4.2.2 Defects and Repair During Operation	4.2.2 Defects and Repair During Operation
4.3 SAFETY REQUIREMENT	**4.3 SAFETY REQUIREMENTS**	**4.3 SAFETY REQUIREMENTS**	**4.3 SAFETY REQUIREMENTS**
4.3.1 General Safety Measures	4.3.1 General Safety Measures	4.3.1 General Safety Measures	4.3.1 General Safety Measures
4.3.2 Safety Measures during Cleaning, Inspection and Maintenance	4.3.2 Safety Measures during Cleaning, Inspection and Maintenance	4.3.2 Transportation to and Removal from Site	4.3.2 Safety Measures During Cleaning, Inspection and Maintenance
4.3.3 Safety Measures during Operation	4.3.3 Safety Measures during Operation	4.3.2 Safety Measures During Cleaning, Inspection and Maintenance	4.3.3 Safety Measures During Operation
4.3.4 Safety Measures When Mobile Equipment Is Not in Use	4.3.4 Safety Measures When Mobile Equipment Is Not in Use	4.3.3 Safety Measures During Operation	4.3.4 Safety Measures When Mobile Equipment Is Not in Use
4.3.5 Safety Measures during Connection of Attachment	4.3.5 Safety Measures during Connection of Attachment	4.3.4 Safety Measures When Equipment Is Not In Use Safety Measures When Equipment Mobile Equipment Is Not in Use	4.3.5 Safety Measures During Connecting and Removing of Attachments
4.3.6 Safety Measures during Loading and Transporting of Contactor's Equipment	4.3.6 Safety Measures during Loading and Transporting of Contactor's Equipment	4.3.5 Safety Measures During Connection Connecting and Removing of Attachments	4.3.6 Safety Measures During Loading and Transporting of Contractor's Equipment
4.3.7 Safety Measures During Loading and Transporting of Materials	4.3.7 Safety Measures During Loading and Transporting of Materials	4.3.6 Safety Measures During Loading and Transporting of Contractor's Equipment	4.3.7 Safety Measures During Loading and Transporting of Goods
4.3.8 Roads in the Site	4.3.8 Roads in the Site	4.3.7 Safety Measures During Loading and Transporting of Materials	4.3.8 Site Access Roads
4.3.9 Additional Requirements for Static Equipment	4.3.9 Additional Requirements for Static Equipment	4.3.7 Site Access Roads	4.3.9 Additional Requirements for Static Equipment
4.3.10 Additional Requirements for Personnel and Goods Elevators and Material Conveyors	4.3.10 Additional Requirements for Personnel and Goods Elevators and Material Conveyors	4.3.8 Additional Requirements for Static Equipment	4.3.10 Additional Requirements for Personnel and Goods Elevators and Conveyors
4.3.11 Additional Requirements for Tools, Tackles and Small	4.3.11 Additional Requirements for Tools, Tackles and Small	4.3.9 Additional Requirements for Personnel and Goods Elevators and Material Conveyors	4.3.11 Additional Requirements for Small Equipment and Tools
4.3.12 Additional Requirements for Electric Powered Equipment	4.3.12 Additional Requirements for Electric Powered Equipment	4.3.10 Additional Requirements for Tools, Tackle and Small Equipment and Tools	4.3.12 Additional Requirements for Electric Powered Equipment
4.3.13 Additional Safety Measures during Adverse Weather	4.3.13 Additional Safety Measures during Adverse Weather	4.3.11 Additional Requirements for Electric Powered Equipment	4.3.13 Additional Safety Measures during Adverse Weather
4.4 ROPES, SLINGS AND CHAINS	**4.4 ROPES, SLINGS AND CHAINS**	4.3.12 Additional Safety Measures during Adverse Weather	**4.4 ROPES, SLINGS AND CHAINS**
4.4.1 Requirement Generally	4.4.1 Requirement Generally	**4.4 ROPES, SLINGS AND CHAINS**	4.4.1 Requirements Generally
4.5 ALTERNATIVE USE OF CONTRACTORS'S EQUIPMENT	**4.5 ALTERNATIVE USE OF CONTRACTORS'S EQUIPMENT**	4.4.1 Requirements Generally	**4.5 ALTERNATIVE USE OF CONTRACTOR'S EQUIPMENT**
4.5.1 Requirement Generally	4.5.1 Requirement Generally	**4.5 ALTERNATIVE USE OF CONTRACTOR'S EQUIPMENT**	4.5.1 Requirements Generally
4.6 HIRED/LEASED CONTRACTORS'S EQUIPMENT	**4.6 HIRED/LEASED CONTRACTORS'S EQUIPMENT**	4.5.1 Requirements Generally	**4.6 HIRED/LEASED CONTRACTOR'S EQUIPMENT**
4.6.1 Requirement Generally	4.6.1 Requirement Generally	**4.6 HIRED/LEASED CONTRACTOR'S EQUIPMENT**	4.6.1 Requirements Generally
4.7 TEMPORARY FUELLING FACILLITIES	**4.7 TEMPORARY FUELLING FACILLITIES**	4.6.1 Requirements Generally	**4.7 TEMPORARY FUELLING FACILITIES**
4.7.1 Requirement Generally	4.7.1 Requirement Generally	**4.7 TEMPORARY FUELLING FACILITIES**	4.7.1 Requirements Generally
		4.7.1 Requirements Generally	

4. CONTRACTOR'S EQUIPMENT

4.1 GENERAL REQUIREMENTS

4.1.1 Scope

(1) This Chapter specifies the safety requirements for Contractor's Equipment which shall include mobile equipment, static equipment, tools, tackle and small equipment and electric power equipment as further described in the following paragraphs.

(2) The requirements of this Chapter shall apply to Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where works are being executed and who may be affected by such work.

4. CONTRACTOR'S EQUIPMENT

4.1 GENERAL REQUIREMENTS

4.1 GENERAL REQUIREMENTS (JC1)

JC1: 全体を通して、特に Tools についてはすべての要求事項が適用されるわけではないと思います。したがって、適用除外される可能性を上手に書き分ける表現になるよう工夫していただけますでしょうか。
(Tools(器具工具)について 適用されない箇所が多くあるため。(例:Operator の指名や責任者の掲示など))
Whole Provisions in this Chapter may not apply all to Tools, so please devise to stipulate possibility of exemption of some provisions.
(There are many provisions which will not apply to Tools for example, appointment of Operator, post of a label showing the name.)

NK: We will review and modify provisions as commented.

4.1.1 Scope

(1) This Chapter specifies the safety requirements for Contractor's Equipment which shall include mobile equipment, static equipment, tools, tackle and small equipment and electric power equipment as further described in the following paragraphs.

(2) The requirements of this Chapter shall apply to Contractor's Personnel, Employer's Personnel and any other persons (JC 2) that are on the Site, adjacent to the Site (JC3) and other places (if any) where works are being executed ~~and who may be affected by such work~~.(JC4)

JC2: この Chapter で三箇所出てくるようなのでまとめましょう。
(in this Chapter called as "Concerned Personnel")
There are same phrase in 3 locations in this Chapter, therefore it is better to define as (in this Chapter called as "Concerned Personnel").

NK: Modified as commented.

JC3: "who are on or adjacent to the Site and any other places where…でいいのでは
can this be "who are on or adjacent to the Site and any other places where…"?

NK: Modified as commented.

JC4: 英語のつながりが悪いし、影響を受ける人に対する requirement ではないので削除します。
The sentences connection is not good and this is not requirement for persons to be affected.

NK: Modified as commented.

4. CONTRACTOR'S EQUIPMENT

4.1 GENERAL REQUIREMENTS

NK: We will review and modify provisions as commented.

The specification is for general application and designed to apply to all types of project, and all types of equipment including various tools such as hand tools and hand operated tools including pneumatic drills etc., so the coverage needs to be as broad as possible to capture all types and give general rules. There is no need to be specific when something does not apply to any particular type, I suggest that the important aim is to make sure that all types and requirements are covered.

Contractor's Equipment is an all-embracing term, defined as such in the Contract.

NK: Understood.

4.1.1 Scope

(1) This Chapter specifies the safety requirements for Contractor's Equipment which shall include mobile equipment, static equipment, ~~tools, tackle and~~ small equipment, tools and electric power equipment as further described in the following paragraphs.

I suggest for clarity it is better to delete "tackle" as it is not such a common international term, it may have different meaning and there is little difference to tools. Also so that it is consistent with 4.3.10

(2) The requirements of this Chapter shall apply to Contractor's Personnel, Employer's Personnel and any other persons (JCB2) that are on the Site, adjacent to the Site (JCB3) and other places (if any) where works are being executed and who may be affected by such work. (JCB4):

(2) The requirements of this Chapter shall apply to Contractor's Personnel, Employer's Personnel and any other persons (in this Chapter called as "Concerned Personnel") who are on or adjacent to the Site and any other places where and other places (if any) where works are being executed.

NK: Modified as commented.

The suggested new definition has been used in only one other location (4.1.4 (8)) and I suggest that such a definition applicable to one item in this chapter only, is therefore not really necessary.

The reference to "other persons" in this sense is however used in one other instance in 4.3.4 in a slightly different way.

I understand the point but suggest it is better to slightly modify the text of your above suggested clause as follows, and modify or delete the two later references, which I have now done

(2) The Contractor shall ensure the safety of all

4. CONTRACTOR'S EQUIPMENT

4.1 GENERAL REQUIREMENTS

4.1.1 Scope

(1) This Chapter specifies the safety requirements for Contractor's Equipment which shall include mobile equipment, static equipment, small equipment, tools and electric power equipment as further described in the following paragraphs.

(2) The Contractor shall ensure the safety of all

		Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places where they may be affected by Contractor's Equipment in operation, standby or storage or when such equipment is being maintained or transported.	Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places where they may be affected by Contractor's Equipment in operation, standby or storage or when such equipment is being maintained or transported.
		See also change in 4.1.4 (8) and deletion of 4.3.4	
(3) For additional requirements for hoisting, rigging and cranes, refer to JSSS 6.0 [*Hoisting and Rigging*].	(3) For additional requirements for hoisting, rigging and cranes, refer to JSSS 6.0 [*Hoisting and Rigging*].	(3) For additional requirements for hoisting, rigging and cranes, refer to JSSS 5 [*Hoisting and Rigging*].	(3) For additional requirements for hoisting, rigging and cranes, refer to JSSS 5 [*Hoisting and Rigging*].
(4) Any reference to "operator" in this Chapter and elsewhere in JSSS shall be deemed to include "driver" also.	(4) Any reference to "operator" in this Chapter and elsewhere in JSSS shall be deemed to include "driver" also. (JC5)	(4) Any reference to "operator" in this Chapter and elsewhere in JSSS shall be deemed to include "driver" also. (JCB5)	(4) Any reference to "operator" in this Chapter and elsewhere in JSSS shall be deemed to include "driver" also.
	JC5: 少しシンプルに。 is synonymous with "driver"の方がMDB 版の表現でもありますし、それが通常だと思います。全体のバージョンで出していただく際に、synonymous の表現に合わせて全体を調整してください。 Please make phrases simple a little. The phrase of "is synonymous with "driver"" is one used in FIDIC MDB version and normal. When all JSSS Chapters are submitted, please adjust all document to use this phrase. NK: FIDIC MDB uses this as follows: *1.2 Interpretation (e)the word "tender" is synonymous with "bid", and "tenderer" with "bidder" and the words "tender documents" with "bidding documents* 日本語では、Operator は操作者、操縦者、Driver は運転手、運転士、運転者、機関士が類義語辞典に記載があります。 (4)では、Operator の用語にはに Driver も含まれると規定し、これは、Operator と Driver が synonymous（同義語）との規定ではなく、他の呼び名の機械を操作・運転する者がいることと示しています。 別の Spotter でも次のように同様に規定しています。 *(b) Any reference to "Spotter" in this Chapter shall be deemed to include "flagman" and "signaller" also.* 上記の理由で(4)はこのままとします。同様の文章があればそれを見直し、必要があれば変更します。 The operators include pilots, etc. The drivers include engine driver, motorman, etc. The (3) states "operator" includes "driver" but not that "operator" is synonymous with "driver". The same expression is made for the Spotter as below. *(b) Any reference to "Spotter" in this Chapter shall be deemed to include "flagman" and "signaller" also.* With the above reason, the (4) is not modified. Other sentences as above will be reviewed and modified when necessary.	JCB5: To MD: Please review NK reply above. *I think that there is no need to change this wording; it is now consistently used throughout the various chapters of JSSS. It is simple and more understandable than "synonymous" and will not require dictionary reference by many readers as may not be the case with FIDIC.* *The need for definition is a partial consequence of your original draft which uses diverse expressions.* NK: agreed.	
(5) Mobile equipment including wheeled or tracked, self-propelled construction machinery such as:	To MD: Please review NK reply above. (5) Mobile equipment includes wheeled or tracked, self-propelled construction machinery such as:	(5) Mobile equipment including wheeled or tracked, self-propelled construction machinery such as:	(5) Mobile equipment including wheeled or tracked, self-propelled construction machinery such as:
(a) Surface excavation and spoil movement equipment for bulk excavation, grading	(a) Surface excavation and spoil movement equipment for bulk excavation, grading	(a) Surface excavation and spoil movement equipment for bulk excavation, grading	(a) Surface excavation and spoil movement equipment for bulk excavation, grading

and levelling, such as bulldozers, graders and tractor excavators;	and levelling, such as bulldozers, graders and tractor excavators;	and levelling, such as bulldozers, graders and tractor excavators;	and levelling, such as bulldozers, graders and tractor excavators;
(b) Excavators such as backhoes, face shovels, power shovels;	(b) Excavators such as backhoes, face shovels, power shovels;	(b) Excavators such as backhoes, face shovels, power shovels;	(b) Excavators such as backhoes, face shovels, power shovels;
(c) Loaders such as payloaders and face shovels;	(c) Loaders such as payloaders and face shovels;	(c) Loaders such as payloaders and face shovels;	(c) Loaders such as payloaders and face shovels;
(d) Dump trucks for removal or importation of spoil;	(d) Dump trucks for removal or importation of spoil;	(d) Dump trucks for removal or importation of spoil;	(d) Dump trucks for removal or importation of spoil;
(e) Specialist foundation equipment such as pile driving and boring machines;	(e) Specialist foundation equipment such as pile driving and boring machines;(JC6) JC6: equipment に修正. Revise to equipment. NK: JICA has commented same in Chap. 6 TW that "replace machine with equipment?" BS 8081 Code of practice for grouted anchors use the terms as follows: *Machine: drilling machine, Equipment: mixers, pumps.* Following the BS, Boring machine is left as it is.	(e) Specialist foundation equipment such as pile driving and boring machines; (JCB6) J To MD, please review my answer above. *It doesn't really matter as both meanings are clear and understandable, however I understood that the rule was generally to use BS 8081.* NK: agreed to use equipment as JICA requested.	(e) Specialist foundation equipment such as pile driving and boring equipment;
(f) Compaction and surface treatment equipment such as smooth or sheepsfoot rollers, pneumatic and vibration rollers;	(f) Compaction and surface treatment equipment such as smooth or sheepsfoot rollers, pneumatic and vibration rollers; (JC7) JC7: Asphalt finisher も入れてほしい。Please add Asphalt finisher. NK: Added.	(f) Compaction and surface treatment equipment such as smooth or sheepsfoot rollers, pneumatic and vibration rollers; (JCB7) asphalt finisher; NK: Added. *No comment*	(f) Compaction and surface treatment equipment such as smooth or sheepsfoot rollers, pneumatic and vibration rollers, asphalt finishers;
(g) Mobile cranes and other hoisting equipment;	(g) Mobile cranes and other hoisting equipment (JC8); JC8: Mobile ではない。This is not mobile equipment. NK: Mobile means able to be moved from one place to another. It seems there are other hoisting equipment than mobile cranes, however NK cannot show examples so far. Deleted it..	(g) Mobile cranes ~~and other hoisting equipment~~ (JCB8); *Mobile gantries, mobile "A" frame cranes, piling equipment; otherwise no comment*	(g) Mobile cranes;
(h) Concreting equipment such as concrete mixer trucks, agitator trucks, pump trucks;	(h) Concreting equipment such as concrete mixer trucks, agitator trucks, pump trucks;	(h) Concreting equipment such as ~~concrete mixer trucks~~ ready-mixed concrete trucks, ~~agitator trucks,~~ pump trucks; *In Chapter 8, the comment required concrete mixer trucks and agitator trucks to be replaced by "ready-mixed concrete truck". This therefore requires change here.* NK: Agreed.	(h) Piling equipment;
(i) Demolition equipment such as breakers, concrete crushers and demolition grippers; and (j) Transportation Equipment, such as cars and buses for Contractor's Personnel and trucks and trailers for transporting Contractor's Equipment and materials to, around and from the Site.	(i) Demolition equipment such as breakers, concrete crushers and demolition grippers; and (j) Transportation Equipment, such as cars and buses for Contractor's Personnel and trucks and trailers for transporting Contractor's Equipment and materials to, around and from the Site.	(i) Demolition equipment such as breakers, concrete crushers and demolition grippers; and (j) Transportation Equipment, such as cars and buses for Contractor's Personnel and trucks and trailers for transporting Goods to, around and from the Site. *I suggest that this is changed to "Goods" which is defined in FIDIC and is more inclusive.* NK: Agreed.	(i) Concreting equipment such as ready-mixed concrete trucks and pump trucks; (j) Demolition equipment such as breakers, concrete crushers and demolition grippers; (k) Transportation Equipment, such as cars and buses for Contractor's Personnel and trucks and trailers for transporting Goods to, around and from the Site; and
(k) Workboat for diving works	(k) Workboat for diving works	(k) Workboat for diving works NK: By the comments on Chap 10 Diving Works, (k) Workboat is	(l) Workboat for diving works.

	(l) TBM (Slurry and EPB) (JC9) JC9: JICA added. EPB: Earth pressure balance type TBM NK: TBM is added but Slurry and EPB are not because they are too detail to be referred to.	added. *No need because no requirements are stated here but otherwise no comment* (l) Tunnel Boring Machine (TBM) . (JCB9) *I understood that Tunnelling was not part of the scope of JSSS and this is confirmed in the Index in Chapter one.* *Please note that there are although it may be listed here, there are no particular requirements included in this chapter and it is possible that some requirements here may be incompatible with this equipment. I suggest adding this later in future issues as stated in the Overall Document Index of Chapter 1, against future Chapter 17?.* NK: understood. We added with note 'to be added when Spec for tunnel is prepared."	
(6) Static equipment includes powered stationary equipment such as: (a) Stone crushing plants and screening equipment; (b) Concrete and asphalt concrete batching plants. (c) Tower cranes, derrick cranes; (d) Personnel and Goods Elevators; and	(6) Static equipment includes powered stationary equipment such as: (a) Stone crushing plants and screening equipment; (b) Concrete and asphalt concrete batching plants. (c) Tower cranes, derrick cranes; (d) Personnel and Goods Elevators; (JC10) and JC10: 今更かも知れませんが。 Personnel and Goods Elevator は単純に Elevator ではダメなんでしたっけ？特段問題なければこれでよいと思います。 Is there any reasons to stipulate Personnel and Goods Elevator in stead of Elevator? If no special reason, Elevator can be use. NK: 日本の安衛則に準じて分けていました。まとめて良いと考えます。 We specified it following Japanese regulation. They can be Elevator.	(6) Static equipment includes powered stationary equipment such as: (JCA7) (a) Stone crushing plants and screening equipment; (b) Concrete and asphalt concrete batching plants; (c) Tower cranes, derrick cranes; (d) ~~Personnel and Goods~~ Elevators; (JC10) *I had specified because they are two different types usually with slightly different separate descriptions (material hoists or lifts) but I have no comment.* NK: confirmed.	(6) Static equipment includes powered stationary equipment such as: (a) Stone crushing plants and screening equipment; (b) Concrete and asphalt concrete batching plants; (c) Tower cranes, derrick cranes; (d) Elevators;
(e) Material conveyors. (f) Air compressors.	(e) Material conveyors. (f) Air compressors.(JC11) JC11: Engine Generator も追加しましょう。Submersible pump, engine pump も加えたい。 Please add Engine Generator, Submersible pump, engine pump NK: Added.	(e) Material conveyors; (f) Air compressors;(JCB11) NK: Added. *Where? Suggest simply as follows:* NK: confirmed. (g) Engine Generators, submersible pumps and engine pumps; and (h) Reinforcement, cutting and bending machines. Above is moved here from below as instructed NK: confirmed.	(e) Material conveyors; (f) Air compressors; (g) Engine Generators, submersible pumps and engine pumps; and (h) Reinforcement, cutting and bending machines.
(7) Tools, tackle and small equipment such as:	(7) Small equipment, tools and tackle (JC46) such as:	~~(7) Tools, tackle(JCB46) and small equipment such as:~~ Small equipment, tools and tackle (tools and	

	JC46: (JICA comment to 4.3.11) これらを総称して Tools でいいのでは. Tools and Tackle can be called as “Tools”. NK: Defied “Tools” in (7) here.	tackle are collectively referred to “Tools” in this Chapter”) such as: NK: Defied “Tools” in (7) here. *I suggest there is no need for a separate definition, if in doubt just delete “tackle”.* *See notes above in 4.1.1 (1)* *“Tools” perhaps are generally hand-held, please see examples of hand tools already given in (7) (m) below.* *Suggest as follows:*	(7) Small equipment and tools such as:
(a) Hand steered vibrating rollers; (b) Plate compactors and vibratory rammers;	(a) Hand steered vibrating rollers; (b) Plate compactors and vibratory rammers;	(7) Small equipment and tools such as: (a) Hand steered vibrating rollers; (b) Plate compactors and vibratory rammers; (c) Portable conveyors; *What exactly do you mean by “portable conveyors”? Hand portable? All conveyors are to some extent “portable” meaning “mobile”; this is not really clear.* NK: Both portable and movable conveyors are used as shown website: https://www.google.co.jp/search?q=portable+movable+beltconveyor&tbm=isch&hl=ja&chips=q:portable+movable+beltconveyor&hl=ja&ved=2ahUKEwj3s6-D44zqAhVK6JQKHVX3BPIQ3VZ6BAgBEBU&biw=1228&bih=693 This (6) is for small equipment, so portable can be used.	(7) Small equipment and tools such as: (a) Hand steered vibrating rollers; (b) Plate compactors and vibratory rammers; (c) Conveyors;
(c) Reinforcement, cutting and bending machines;	(c) ~~Reinforcement, cutting and bending machines;~~ (JC12) JC12: これらは tool, tackle and small equipment としては大きすぎるのでは →(6)に移動してください。 Please move these to (6) as they are too large as tool, tackle and small equipment. NK: Moved to (6)(g)	~~(c) Reinforcement, cutting and bending machines;~~ (JCB12) NK: Moved to (6)(g) *See above (6) (h).* NK: confirmed.	
(d) Pipe bending machines; (e) Pneumatic drills, hammers, breakers, compactors and compressors; (f) Wood processing equipment; (g) Independent concrete mixers; (h) Air extract or blowing equipment for improving the working area environment; (i) Pneumatic power tools such as jack hammers, drills, (j) Engine driven chain saws;	(d) Pipe bending machines; (e) ~~Pneumatic~~ drills, hammers, breakers, compactors and compressors; (f) Wood processing equipment; (g) Independent concrete mixers; (h) Air extract or blowing equipment for improving the working area environment; (i) ~~Pneumatic power tools such as~~, Jack hammers and drills, (JC13) (j) ~~Engine driven~~ Chain saws; (JC13) JC13: 電動も含まれるようにして下記の(8)は削除しています。 Modified to include electric power equipment and deleted (8) below. NK: Modified.	(d) Pipe bending machines; (e) ~~Pneumatic~~ drills, hammers, breakers, compactors and compressors; (f) Wood processing equipment; (g) Independent concrete mixers; (h) Air extract or blowing equipment for improving the working area environment; (i) ~~Pneumatic power tools such as~~ jack hammers, drills, (JCB13) (j) ~~Engine driven~~ chain saws; (JCB13) *No comment.* NK: confirmed.	(d) Pipe bending machines; (e) Drills, hammers, breakers, compactors and compressors; (f) Wood processing equipment; (g) Independent concrete mixers; (h) Air extract or blowing equipment for improving the working area environment; (i) Jack hammers, drills; (j) Chain saws;
(k) Hand operated equipment such as jacks, winches, lever hoists; and (l) Hand tools such as wrenches, chisels, and saw, picks, hammers.	(k) Hand operated equipment such as jacks, winches, lever hoists; and (l) Hand tools such as wrenches, chisels, and saw, picks, hammers.	(k) Hand operated equipment such as jacks, winches, lever hoists; and (l) Hand tools such as wrenches, chisels, hand saw, picks, hammers.	(k) Hand operated equipment such as jacks, winches, lever hoists; and (l) Hand tools such as wrenches, chisels, hand saw, picks, hammers.
(8) Electric powered equipment means portable	(8) ~~Electric powered equipment means portable~~	(4) ~~Electric powered equipment means portable~~	

electric powered mobile equipment or tools.

4.1.2 Compliance Standards

(1) By reference to JSSS 1.4 [JSSS - Laws and Reference Standards], the Contractor shall comply with the requirements of this Chapter, read jointly with and including the further technical requirements of the HSE Provision and Use of Work Equipment Regulations 1998 (PUWER).

(2) In accordance with these regulations, together with JSSS 1.34 [Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment] the Contractor shall ensure that all Contractor's Equipment provided for use upon the Works is:

(a) Suitable and fit for the purpose for which it is intended;

(b) Safe for use, maintained in a safe condition and inspected to ensure it is correctly installed and used and does not subsequently deteriorate;

(c) Used only by people who have received adequate information, instruction and training;

(d) Accompanied by suitable health and safety measures, such as protective devices and controls. These shall include emergency stop devices, adequate means of isolation from sources of energy, clearly visible markings and warning devices; and

(e) Used for the designed and intended purpose.

~~electric powered mobile equipment or tools.~~ (JC14)

JC14: JICA deleted related with JC12.
NK: Deleted.

4.1.2 Compliance Standards

(1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], the Contractor shall comply with the requirements of this Chapter, read jointly with and including the further technical requirements of the *HSE Provision and Use of Work Equipment Regulations 1998 (PUWER)*.(JC15)

JC15: 正式に言えば、"The Provision and Use of Work Equipment Regulations 1998 (PUWER) under the HSE regulations in UK "では？法令の内容は一般的なので harmful ではないと思える。
Is the official title "The Provision and Use of Work Equipment Regulations 1998 (PUWER) under the HSE regulations in UK? It is considered that the regulations is general ones, so not harmful.
NK: Modified as commented.

(2) In accordance with these regulations, together with JSSS 1.34 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the Contractor shall ensure that all Contractor's Equipment provided for use upon the Works is:

(a) Suitable and fit for the purpose for which it is intended;

(b) Safe for use, maintained in a safe condition and inspected to ensure it is correctly installed and used and does not subsequently deteriorate;

(c) Used only by people who have received adequate information, instruction and training;

(d) Accompanied by suitable health and safety measures, such as protective devices and controls. These shall include emergency stop devices, adequate means of isolation from sources of energy, clearly visible markings and warning devices; and

(e) Used for the designed and intended purpose.

~~electric powered mobile equipment or tools such as:~~ ~~(JCA7a) (JCB14)~~

4.1.2 Compliance Standards

(1) By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*], the Contractor shall comply with the requirements of this Chapter, read jointly with and including the further technical requirements of the Provision and Use of Work Equipment Regulations 1998 (PUWER), HSE Guidance in UK.

NK: Modified as commented.

Please refer to potential copyright requirements.

See above.

NK: Clean copy is different from the above. Is it necessary to add "1998 (PUWER), HSE Guidance in UK"?

(2) In accordance with these regulations, together with JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*] the Contractor shall ensure that all Contractor's Equipment provided for use upon the Works is:

(a) Suitable and fit for the purpose for which it is intended;

(b) Safe for use, maintained in a safe condition and inspected to ensure it is correctly installed and used and does not subsequently deteriorate;

(c) Used only by people who have received adequate information, instruction and training;

(d) Accompanied by suitable health and safety measures, such as protective devices and controls. These shall include emergency stop devices, adequate means of isolation from sources of energy, clearly visible markings and warning devices; and

(e) Used for the designed and intended purpose.

4.1.3 Manufacturer's Documentation

The Contractor shall obtain a copy of the following official Manufacturer's documentation for all units of Contractor's Equipment:

(1) Safety instructions and recommendations.

(2) Operation, maintenance and repair manual

4.1.2 Compliance Standards

(1) By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*], the Contractor shall comply with the requirements of this Chapter, read jointly with and including the further technical requirements of the Provision and Use of Work Equipment Regulations 1998 (PUWER), HSE Guidance in UK.

(2) In accordance with these regulations, together with JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*] the Contractor shall ensure that all Contractor's Equipment provided for use upon the Works is:

(a) Suitable and fit for the purpose for which it is intended;

(b) Safe for use, maintained in a safe condition and inspected to ensure it is correctly installed and used and does not subsequently deteriorate;

(c) Used only by people who have received adequate information, instruction and training;

(d) Accompanied by suitable health and safety measures, such as protective devices and controls. These shall include emergency stop devices, adequate means of isolation from sources of energy, clearly visible markings and warning devices; and

(e) Used for the designed and intended purpose.

4.1.3 Manufacturer's Documentation

The Contractor shall obtain a copy of the following official Manufacturer's documentation for all units of Contractor's Equipment:

(1) Safety instructions and recommendations.

(2) Operation, maintenance and repair manual.

		The Contractor shall inform all Contractor's Personnel of the content of same, provide further safety training as necessary and ensure full compliance by all Contractor's Personnel with such instructions and recommendations to assist in enforcing the safe use of Contractor's Equipment. *I suggest the addition of the above clause to your draft.* NK: Agreed as the instructions and manuals are specified at some provisions in the JSSS.	The Contractor shall inform all Contractor's Personnel of the content of same, provide further safety training as necessary and ensure full compliance by all Contractor's Personnel with such instructions and recommendations to assist in enforcing the safe use of Contractor's Equipment.
4.1.3 Instruction for Contractor's Personnel Further to the requirements of JSSS 1.6 [*Contractor's Safety Plan*], JSSS 1.7 [*Contractor's Method Statements*] and JSSS 1.13.2 [*Contractor's Safety Management Activities*], the Contractor shall include details of the following in the Method Statement and Safety Plan for works involving the use of Contractor's Equipment and shall fully inform all Contractor's Personnel associated therewith of all requirements before the commencement of any such operations, including: (1) The scope of work, locations and areas, work methods, dimensions, levels and quantities to be achieved. (2) Types, capacities and numbers of units. (3) Work places, area limits and operational routes, restricted areas, locations of caution signs and fences.	**4.1.3 Instruction for Contractor's Personnel** Further to the requirements of JSSS 1.6 [*Contractor's Safety Plan*], JSSS 1.7 [*Contractor's Method Statements*] and JSSS 1.13.2 [*Contractor's Safety Management Activities*], the Contractor shall include details of the following in the Method Statement and Safety Plan for works involving the use of Contractor's Equipment and shall fully inform all Contractor's Personnel associated therewith of all requirements before the commencement of any such operations, including: (1) Scope of work, locations and areas, work methods, dimensions, levels and quantities to be achieved. (2) Types, capacities and numbers of units. (3) Workplaces, ~~area limits and~~ (JC16) operational routes, restricted areas, locations of caution signs and fences. JC16: Workplace の boundary という意味でつかわれているのであれば、workplace に含まれているので不要と考えます。 If the above workplace is used as meaning of boundary, it is not necessary because workplace include its boundary. NK: The term of workplaces is used to mean workplaces where the Contractor's Equipment is used. Because of it is same as locations and areas stipulated in (1) above, deleted To MD, please review this comment.	**4.1.4 Instruction for Contractor's Personnel** Further to the requirements of JSSS 1.7 [*Contractor's Safety Plans*], JSSS 1.8 [*Contractor's Method Statements*] and JSSS 1.15.2 [*Contractor's Safety Management Activities*], the Contractor shall include details of the following in the Method Statement and Safety Plan for works involving the use of Contractor's Equipment and shall fully inform all Contractor's Personnel associated therewith of all requirements before the commencement of any such operations, including: (1) ~~The~~ Scope of work, locations and areas, work methods, dimensions, levels and quantities to be achieved. (2) Types, capacities and numbers of units. (3) ~~Workplaces, area limits and~~ (JCB16) operational routes, restricted areas, locations of caution signs and fences. To MD, please review this comment. *Draft states "work places"* *I recommend to maintain the original wording, it is clear and unambiguous.* NK: Agreed.	**4.1.4 Instruction for Contractor's Personnel** Further to the requirements of JSSS 1.7 [*Contractor's Safety Plans*], JSSS 1.9 [*Contractor's Method Statements*] and JSSS 1.15 [*Contractor's Safety Management Activities*], the Contractor shall include details of the following in the Method Statement and Safety Plan for works involving the use of Contractor's Equipment and shall fully inform all Contractor's Personnel associated therewith of all requirements before the commencement of any such operations, including: (1) Scope of work, locations and areas, work methods, dimensions, levels and quantities to be achieved. (2) Types, capacities and numbers of units. (3) Workplaces, area limits and operational routes, restricted areas, locations of caution signs and fences.
(4) The preservation of safe access, walkways and footpaths around the working areas and transportation areas. (5) Identities, location and scope of Spotters.	(4) ~~The~~ Preservation of safe access, walkways and footpaths around the working areas and transportation areas. (5) Identities, location (JC17) and ~~scope~~ role of Spotters. JC17: 4.1.5 の(1)の(d)では The identity of and location(s)となっているので 4.1.5 の表現に統一してください。 The 4.1.5 (1) (d) stipulate "The identity of and location(s). Please make (5) consistent expression same as 4.1.5. *4.1.5 (1)Operators shall be fully aware of the following:* *(d) The identity of and location(s) for Spotters and the communication and signalling requirements including equipment to be used; and* NK: Modified as commented and added referring 4.1.5.	(4) ~~The~~ Preservation of safe access, walkways and footpaths around the working areas and transportation areas. (5) ~~Identities, location (JCB17) and scope of Spotters.~~ Identities and roles of and location(s) for Spotters and the communication and signalling requirements, including equipment to be used. ~~(6) Environmental impact mitigation (JCB18)~~	(4) Preservation of safe access, walkways and footpaths around the working areas and transportation areas. (5) Identities and roles of and location(s) for Spotters and the communication and signalling requirements, including equipment to be used.

(6) Environmental impact mitigation including required measures against vibration, noise, dust and the like.	(6) Environmental impact mitigation (JC18) including required measures against vibration, noise, dust and the like. JC18: これは環境のことを言っているのか、作業環境のことを示しているのか分からない。(多分作業環境のこと) であれば"Hazardous working conditions (if any) including required mitigation measures …"ですよね？ "Environmental impact effects including required mitigation measures against …"では？ It is not clear for which environment or working environment this (5) stipulates. If this is for working environment, is this to be stipulated "Hazardous working conditions (if any) including required mitigation measures …" Is this "Environmental impact effects including required mitigation measures against …"？ NK: This can be read for both environment impact to third parties and working environment in the Site. Modified to make clear. To MD, please review the comment and modify (6).	~~Environmental impact to third parties and workers including required measures against vibration, noise, dust and the like.~~ To MD, please review the comment and modify (6). *Modify as follows:* (6) Environmental impact including required measures for workers and third parties against vibration, noise, dust and the like. NK: confirmed.	(6) Environmental impact including required measures for workers and any other persons against vibration, noise, dust and the like.
(7) Environmental conditions in the working area, nearby areas for storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, Operational Areas or areas where Dangerous Work is taking place.	(7) Environmental conditions in the working area, nearby areas for storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, Operational Areas or areas where Dangerous Work is taking place. (JC19) JC19: ここの部分は本当によく分からない。英語として羅列されている事項のつながりが・・・"Safety requirements of working near the storage of Dangerous Goods or Hazardous Substances or the areas where Dangerous Work is taking place."??? This sentence cannot be really understood. The connection of matters listed in English are not understandable. Is this "Safety requirements of working near the storage of Dangerous Goods or Hazardous Substances or the areas where Dangerous Work is taking place."? NK: Modified referring to the comment. To MD, please review the comment and modify (7).	(7) ~~Environmental conditions in the working area, nearby areas for storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, Operational Areas or areas where Dangerous Work is taking place.~~ (JCB19) Safety measures for the environmental conditions in the working area and nearby areas for storage of Dangerous Goods or Hazardous Substances, in Hazardous Areas, and in operational areas or areas where Dangerous Work is taking place. NK: Modified referring to the comment. To MD, please review the comment and modify (7). *Please read conjointly; with the heading paragraph of this clause. The Contractor shall include details of the above in the Method Statement and Safety Plan for works involving the use of Contractor's Equipment and shall fully inform all Contractor's Personnel associated therewith of all requirements before the commencement of any such work. This clause lists information to be provided for environmental conditions and I suggest that no change to the original wording is necessary.* NK: understood.	(7) Safety measures for the environmental conditions in the working area, any nearby areas for storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, operational areas or areas where Dangerous Work is taking place.
(8) The potential danger to other Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where Contractor's Equipment is to be used and who may be affected by the use of Contractor's Equipment and the required measures to avoid any risk accident or injury.	(8) The potential danger to ~~other~~ Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where Contractor's Equipment is to be used and (JC20) who may be affected by the use of Contractor's Equipment and the required measures to avoid any ~~risk~~ accident or injury. JC20 (= JC2): この Chapter で三箇所出てくるようなのでまとめましょう。(in this Chapter called as "Concerned Personnel")	~~(8) The potential danger to other Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where Contractor's Equipment is to be used and (JCB20) who may be affected by the use of Contractor's Equipment and the required measures to avoid any risk accident or injury.~~ NK: Modified as commented. *Please refer to notes and suggested new clause in 4.1.1.* *A new definition is not necessary but I do agree that rewording the above could be beneficial and suggest the simplest solution is as follows:*	

	There are same phrase in 3 locations in this Chapter, therefore it is better to define as (in this Chapter called as "Concerned Personnel"). NK: Modified as commented.	(8) Potential danger to any persons who may be affected by the use of Contractor's Equipment and the required measures to avoid any accident or injury. NK: Confirmed.	(8) Potential danger to any persons who may be affected by the use of Contractor's Equipment and the required measures to avoid any accident or injury.
(9) Any potential hazards in the use of Contractor's Equipment including those which may create a risk of falling or overturning.	(9) Any potential hazards in the use of Contractor's Equipment including those which may create a risk of falling or overturning.	(9) Any potential hazards in the use of Contractor's Equipment including those which may create a risk of falling or overturning.	(9) Any potential hazards in the use of Contractor's Equipment including those which may create a risk of falling or overturning.
(10) Restrictions to the movement and operation of Contractor's Equipment such as existing structures, foundations, surfaces, underground or overhead services and dangerous goods storage.	(10) Restrictions to the movement and operation of Contractor's Equipment such as existing structures, foundations, surfaces, underground or overhead services and dangerous goods storage.	(10) Restrictions to the movement and operation of Contractor's Equipment such as existing structures, foundations, surfaces, underground or overhead services and dangerous goods storage.	(10) Restrictions to the movement and operation of Contractor's Equipment such as existing structures, foundations, surfaces, underground or overhead services and dangerous goods storage.
(11) Measures for breakdown, defect or fault in Contractor's Equipment including location of areas for inspection and maintenance.	(11) Measures to be taken in case of ~~for~~ breakdown, defect or fault in Contractor's Equipment including location of areas for inspection and maintenance.	(11) Measures to be taken in case of ~~for~~ breakdown, defect or fault in Contractor's Equipment including location of areas for inspection and maintenance. *No comment.*	(11) Measures to be taken in case of breakdown, defect or fault in Contractor's Equipment including location of areas for inspection and maintenance.
(12) The name of the authorised operator for each unit of Contractor's Equipment.	(12) The name of the authorised operator for each unit of Contractor's Equipment. (JC21) JC21 (=JC1): 全体を通して、特に Tools についてはすべての要求事項が適用されるわけではないと思います。したがって、適用除外される可能性を上手に書き分ける表現になるよう工夫していただけますでしょうか。 (Tools(器具工具)について 適用されない箇所が多くあるため。(例:Operator の指名や責任者の掲示など)) Whole Provisions in this Chapter may not apply all to Tools, so please devise to stipulate possibility of exemption of some provisions. (There are many provisions which will not apply to Tools for example, appointment of Operator, post of a label showing the name.) NK: Modified as commented.	(12) ~~The~~ Name of the authorised operator for each unit of Contractor's Equipment. (JCB21) when authorised operator is necessary to be assigned. NK: Modified as commented. *No comment.*	(12) Name of the authorised operator for each unit of Contractor's Equipment when authorised operator is necessary to be assigned.
(13) The name and contact of the HSO to inform when there is any requirement for inspection, maintenance and repair of Contractor's Equipment.	(13) The name and contact of the HSO to inform when there is any requirement for inspection, maintenance and repair of Contractor's Equipment.	(13) The name and contact of the HSO to inform when there is any requirement for inspection, maintenance and repair of Contractor's Equipment.	(13) The name and contact of the HSO to inform when there are any requirements for inspection, maintenance and repair of Contractor's Equipment.
4.1.4 Safety Training	**4.1.4 Safety Training**	**4.1.5 Safety Training**	**4.1.5 Safety Training**
The Contractor shall provide health and safety training in accordance with JSSS 1.19 [*Safety Training Generally*] taking account of the characteristics of the particular types of Contractor's Equipment.	The Contractor shall provide the Contractor's personnel with health and safety training in accordance with JSSS 1.19 [*Safety Training Generally*] taking account of the characteristics of the particular types of Contractor's Equipment.	(1) The Contractor shall provide the Contractor's Personnel with health and safety training in accordance with JSSS 1.19 [*Safety Training Generally*] taking account of the characteristics of the particular types of Contractor's Equipment and including: *Because of your insertion and changes below, the above clause needs to be renumbered as (1) and the added clauses numbered as (a) etc. and the wording" and included is added* NK: Confirmed.	(1) The Contractor shall provide the Contractor's Personnel with health and safety training in accordance with JSSS 1.19 [*Safety Training Generally*] taking account of the characteristics of the particular types of Contractor's Equipment and including:

The health and safety training shall be done to the personnel including the following items depending on the characteristics of the Contractor's Equipment with which the personnel will be engaged in works.

(1) Functions, performance, operation methods, inspection items, inspection method of safety device and emergency alarm device;

(2) Work procedure, signal and communication method at starting time of the operation, and daily inspection;

(3) Lockout and tagout procedures for shutting down operation, turning off the power, locking the starter and necessary measures for the time of cleaning and inspection of the Contractor's equipment;

(4) Stop of the operation and work with the Contractor's equipment when an abnormality occurs and report to the person in charge; and

(5) Prohibition from removing safety devices; and

(6) Risks during operation of the Contractor's Equipment..

Particular safety training for transportation operators shall also include prevention of traffic accidents on and off the Site for example including:

The health and safety training shall be ~~done~~ provided to the personnel including the following items depending on the characteristics of the Contractor's Equipment ~~with which the personnel will be engaged in works.~~(JC22)

JC22: この部分は蛇足なので削除。This phrase is superfluity.
NK: Deleted.

(1) Functions, performance, operation methods, inspection items, inspection method of safety device and emergency alarm device;

(2) Work procedure, signal and communication method at starting time of the operation, and daily inspection;

(3) Lockout and tagout procedures for shutting down operation, turning off the power, locking the starter and necessary measures for the time of cleaning and inspection of the Contractor's equipment;

(4) Stop of the operation ~~and work with~~ of the Contractor's Equipment when an abnormality occurs and report to the person in charge;~~ and~~

(5) Prohibition ~~from~~ of removing safety devices; and

(6) Risks during operation of the Contractor's Equipment..

Particular safety training for transportation equipment operators shall for the purpose of prevention of traffic accidents on and off the Site, (JC23) ~~also~~ include ~~prevention of traffic accidents on and off the Site for example including~~: (JC24)

JC23: 冒頭に交通事故の防止という言葉が入り、具体例においていちいち言わないように修正しています.
Phrase of prevention of traffic accidents is added to avoid necessity to stipulate repeatedly stipulate in each example.
NK: Modified.

JC 24: この下のナンバリングが変ではないでしょうか。
Is numbering below strange?
NK: Modified to that the above sentence is numbered as (7) and the clauses below are numbered (a) to (g).

(7) Particular safety training for transportation equipment operators for the purpose of prevention of traffic accidents on and off the Site including:

~~The health and safety training shall be provided to the personnel including the following items depending on the characteristics of the Contractor's Equipment. (JCB22)~~

NK: Deleted.

I do not understand the above comment but assume that the above added clause is not necessary because of duplication, I have therefore deleted.

Where is the following transferred from?

(a) Functions, performance, operation methods, inspection items, inspection method of safety and emergency alarm devices;

(b) Work procedure, signal and communication method at starting time of the operation, and daily inspection;

(c) Lockout and tagout procedures for shutting down operation, turning off the power, locking the starter and necessary measures for the time of cleaning and inspection of the Contractor's Equipment;

(d) Stop of the operation of the Contractor's Equipment when an abnormality occurs and report to the person in charge;

(e) Prohibit removal or isolation of safety devices; and

(f) Risks during operation of the Contractor's Equipment.

~~Particular safety training for transportation operators shall also include prevention of traffic accidents on and off the Site for example including:~~ (JCB23)

(2) Particular safety training for transportation equipment operators shall for the purpose of prevention of traffic accidents on and off the Site, including:

NK: Modified.

Modification is OK

JCB24: この下のナンバリングが変ではないでしょうか。
Is numbering below strange?

(a) Functions, performance, operation methods, inspection items, inspection method of safety and emergency alarm devices;

(b) Work procedure, signal and communication method at starting time of the operation, and daily inspection;

(c) Lockout and tagout procedures for shutting down operation, turning off the power, locking the starter and necessary measures for the time of cleaning and inspection of the Contractor's Equipment;

(d) Stop of the operation of the Contractor's Equipment when an abnormality occurs and report to the person in charge;

(e) Prohibit removal or isolation of safety devices; and

(f) Risks during operation of the Contractor's Equipment.

(2) Particular safety training for transportation equipment operators shall be for the purpose of preventing of traffic accidents on and off the Site and shall include:

(1) Driving rules for prevention of traffic accidents;

(2) Compliance with speed limits, signs, alcohol use, drugs and all other requirements the Laws of the Country;

(3) Driving methods to prevent accidents including contact and collision with other persons, cycles, motorcycles and other vehicles;

(4) Driving methods to prevent accidents in overtaking other vehicles and undertaken by others;

(5) Driving methods to prevent accidents due to holes, bumps or obstacles on the road;

(6) Required inspection and maintenance before starting operation;

(7) Proper use of vehicles including behaviour and control of passengers, prevention of overcrowding, overloading and unauthorised passengers.

4.1.5 Requirements to Operators

Further to the requirements of JSSS 1.16 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that operators are appropriately qualified, skilled and experienced in operation of the Contractor's Equipment to which they are assigned and duly certified as such by the HSO. The Contractor shall also ensure that

(1) Operators shall be fully aware of the following:

(a) Work procedures, possible risks and operation methods;

(b) The need to stop all work when any defect or abnormality is detected;

(c) Prohibition of removing, interfering with or overriding any safety devices;

(a) Driving rules ~~for prevention of traffic accidents~~ in general;

(b) Compliance with speed limits, signs, alcohol use, drugs and all other requirements the Laws of the Country;

(c) Driving methods to ~~prevent accidents including~~ contact and collision with other persons, cycles, motorcycles and other vehicles;

(d) Driving methods to properly ~~prevent accidents in~~ overtake ~~ing~~ other vehicles and to be undertaken by others

(e) Driving methods ~~to prevent accidents due to~~ when encountering holes, bumps or obstacles on the road;

(f) Required inspection and maintenance before starting operation;

(g) Proper use of vehicles including behaviour and control of passengers, prevention of overcrowding, overloading and unauthorised passengers.

4.1.5 Requirements to Operators

Further to the requirements of JSSS 1.16 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that operators are appropriately qualified, skilled and experienced in operation of the Contractor's Equipment to which they are assigned and duly certified as such by the HSO. The Contractor shall also ensure that

(1) Operators shall safely and competently operate the Contractor's Equipment.

(2) Operators shall be fully aware of the following:

(a) Work procedures ~~possible risks~~ hazards and operation methods;

(b) The need to stop ~~all work~~ the operation when any defect or abnormality is detected;

(c) ~~Prohibition of removing, interfering with or overriding any safety devices;~~ (JC25)

JC25: 4.1.4 (5)に同じことが記載されているので削除します。
Deleted as same is stipulated in 4.1.4 (5).
NK: Deleted.

NK: Modified to that the above sentence is numbered as (7) and the clauses below are numbered (a) to (g).

Numbering requires correcting above and below because of your additional text.

(a) Driving rules in general;

(b) Compliance with speed limits, signs, alcohol use, drugs and all other requirements the Laws of the Country;

(c) Driving methods to contact and collision with other persons, cycles, motorcycles and other vehicles;

(d) Driving methods to properly overtake other vehicles and to be undertaken by others;

(e) Driving methods when encountering holes, bumps or obstacles on the road;

(f) Required inspection and maintenance before starting operation; and

(g) Proper use of vehicles including behaviour and control of passengers, prevention of overcrowding, overloading and unauthorised passengers.

4.1.6 ~~Qualification of Operators~~ Requirements for Operators

Further to the requirements of JSSS 1.18 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that operators are appropriately qualified, skilled and experienced in operation of the Contractor's Equipment to which they are assigned and duly certified as such by the HSO.

(1) Operators shall safely and competently operate the Contractor's Equipment.

(2) Operators shall be fully aware of the following:

(a) Work procedures, hazards and operation methods;

(b) The need to stop the operation when any defect or abnormality is detected;

~~(c) Not to remove, interfere with or override any safety devices;~~ (JCA11) ~~Prohibition of removing, interfering with or overriding any safety devices;~~ (JCB25)

(a) Driving rules in general;

(b) Compliance with speed limits, signs, alcohol use, drugs and all other requirements the Laws of the Country;

(c) Driving methods to contact and collision with other persons, cycles, motorcycles and other vehicles;

(d) Driving methods to properly overtake other vehicles and to be undertaken by others;

(e) Driving methods when encountering holes, bumps or obstacles on the road;

(f) Required inspection and maintenance before starting operation; and

(g) Proper use of vehicles including behaviour and control of passengers, prevention of overcrowding, overloading and unauthorised passengers.

4.1.6 Requirements for Operators

Further to the requirements of JSSS 1.18 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that operators are appropriately qualified, skilled and experienced in operation of the Contractor's Equipment to which they are assigned and duly certified as such by the HSO.

(1) Operators shall safely and competently operate the Contractor's Equipment.

(2) Operators shall be fully aware of the following:

(a) Work procedures, hazards and operation methods;

(b) The need to stop the operation when any defect or abnormality is detected;

(d) The identity of and location(s) for Spotters and the communication and signalling requirements including equipment to be used and signals; and (e) The procedures in case of emergency. (2) In addition, operators shall: (a) Safely and competently operate the Contractor's Equipment; (b) Operate all safety devices including emergency alarm and stop devices; and (c) Inspect, clean, service and maintain the unit of Contractor's Equipment under their responsibility.	(d) The identity of and location(s) for Spotters and the communication and signalling requirements including equipment to be used ~~and signals~~; and (e) The procedures in case of emergency. (3) ~~In addition,~~ Operators shall: (a) ~~Safely and competently operate the Contractor's Equipment;~~ (b) ~~Operate~~ Keep all safety devices including emergency alarm and stop devices activated; and (c) Inspect, clean, service and maintain the unit of Contractor's Equipment under their responsibility.~~-~~	(c) The identity of and location(s) for Spotters and the communication and signalling requirements including equipment to be used ~~and signals~~; and (d) The procedures in case of emergency. (3) ~~In addition,~~ Operators shall: ~~(a) Safely and competently operate the Contractor's Equipment;~~ (a) ~~Operate~~ Keep all safety devices including emergency alarm and stop devices activated; and (b) Inspect, clean, service and maintain the unit of Contractor's Equipment under their responsibility ~~and control or ensure that other qualified persons perform these operations~~. (JCA12) *Do not agree. The supervisor (whoever he is) may be responsible for managing servicing and maintenance but the operator is the primary person, he should not start or continue to use any equipment that he knows requires repair, service or maintenance.* NK6/19: the last paragraph "that other qualified persons perform these operations" is difficult to understand. Does it mean Operators shall control performing each other's operation? NK propose as follows: (c)Ensure that other qualified persons safely operate Contractor's Equipment.	(c) The identity of and location(s) for Spotters and the communication and signalling requirements including equipment to be used; and (d) The procedures in case of emergency. (3) Operators shall: (a) Keep all safety devices including emergency alarm and stop devices activated; (b) Keep their assigned unit clean and carry out regular inspections prescribed by the Contractor before start of operation; and (c) Ensure that the Contractor's maintenance personnel are made aware of any apparent defect or maintenance requirements and that such personnel have performed any required repair or maintenance before the start of operation.
4.1.6 Signalling (1) Signalling between operators and any associated workers shall only be carried out by the Spotters. (2) Spotters shall be located in a safe place and where they can clearly see and be seen by the operator. (3) When it is not possible for Spotters to give direct visible and audible signals to the operator, other systems including hand-held radios or videophone must be provided and used.	**4.1.6 Signalling** (1) Signalling between operators and any associated workers shall only be carried out by the Spotters. (2) Spotters shall be located in a safe place and where they can clearly see and be seen by the operator. (3) When it is not possible for Spotters to give direct visible and audible signals to the operator, other systems including hand-held radios or videophone must be provided and used.	**4.1.7 Signalling** (1) Signalling between operators and any associated workers shall only be carried out by designated personnel (hereinafter referred to as signallers). (2) Spotters shall be located in a safe place and where they can clearly see and be seen by the operator. (3) When it is not possible for Spotters to give direct visible and audible signals to the operator, other systems including hand-held radios or videophone must be provided and used. *It can also mean video reversing camera however no comment.* NK: confirmed.	**4.1.7 Signalling** (1) Signalling between operators and any associated workers shall only be carried out by designated personnel. (2) Spotters shall be located in a safe place and where they can clearly see and be seen by the operator. (3) When it is not possible for Spotters to give direct visible and audible signals to the operator, other systems including hand-held radios or videophone must be provided and used.
4.2 INSPECTION, MAINTENANCE AND REPAIR **4.2.1 Requirements Generally** (1) Further to the requirements of JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective*	**4.2 INSPECTION, MAINTENANCE AND REPAIR** **4.2.4 Requirements Generally** (1) Further to the requirements of JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective* Equipment] the HSO shall ensure that all	**4.2 INSPECTION, MAINTENANCE AND REPAIR** **4.2.1 Requirements Generally** (1) Further to the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*] the HSO shall ensure that all Contractor's Equipment is	**4.2 INSPECTION, MAINTENANCE AND REPAIR** **4.2.1 Requirements Generally** (1) Further to the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*] the HSO shall ensure that all Contractor's Equipment is inspected, fully maintained and operational

Equipment] the HSO shall ensure that all Contractor's Equipment is inspected, fully maintained and operational when it is mobilised to the Site. Thereafter all Contractor's Equipment shall be inspected, maintained and repaired before the commencement of the first and of all subsequent days of operation.

(2) Inspections shall include all items necessary to ensure the safe performance of the Contractor's Equipment including the following examples and any further requirements due to the characteristics, capability and condition of the Contractor's Equipment and in compliance with the manufacturer's official maintenance and repair manual.

(3) Inspection at the time when Contractor's Equipment is mobilised to the Site and before commencement of operation, for which the Contractor shall:

(a) Inspect all units of Contractor's Equipment to ensure that

- all components are installed and functioning,
- safety guards to prevent contact with moving parts and the like are in place, adequate and fit for purpose, securely fixed, and
- that all such units of equipment are in the condition required by the Contract;

(b) Ensure as a minimum that the daily and periodical check items listed below in this Sub Clause, have already been inspected and recorded;

(c) Ensure that all inspection and maintenance records are available for inspection by the Engineer if and when may be required in compliance with JSSS; and

Contractor's Equipment is inspected, fully maintained and operational when it is mobilised to the Site. Thereafter all Contractor's Equipment shall be inspected, maintained and repaired before the commencement of the first and of all subsequent days of operation.

(2) Inspections shall include all items necessary to ensure the safe performance of the Contractor's Equipment, taking account of the characteristics, capability and condition of the Contractor's Equipment, and in compliance with the manufacturer's official maintenance and repair manual.

(3) ~~Inspection at the time when Contractor's Equipment is mobilised~~ When mobilizing Contractor's Equipment to the Site and before commencement of operation, ~~for which~~ (JC26) the Contractor shall:

JC26: 文として完結していないので修正しました。The sentence is not completed, so modified.
NK: Modified as commented.

(a) Inspect all units of Contractor's Equipment to ensure that

(i) all components are installed and functioning,

~~• all inspection and maintenance covers,~~

(ii) safety guards to prevent contact with moving parts and the like are in place, adequate and fit for purpose, securely fixed, and

(iii) ~~that~~ all such units of equipment are in ~~the condition required by the Contract~~ proper condition ; (JC27)

JC27: "契約"が機械の状況について要求するのか？in proper condition で良いのでは.
Dose the Contract request the conditions of equipment?
Can it be "proper condition"?
NK: Modified as commented.

(b) Ensure as a minimum that the daily and periodical check items ~~listed below in this Sub Clause~~ (JC28), have already been inspected and recorded;

JC28: 何を指すのか？不要ではないか。What do they mean? Is it necessary?
NK: Deleted as commented.

(c) Ensure that all inspection and maintenance records are available for inspection by the Engineer if and when ~~may be~~ (JC29) required in compliance with JSSS; and

inspected, fully maintained and operational when it is mobilised to the Site. Thereafter all Contractor's Equipment shall be inspected, maintained and repaired before the commencement of the first and of all subsequent days of operation.

(2) Inspections shall include all items necessary to ensure the safe performance of the Contractor's Equipment including the following examples and any further requirements due to the characteristics, capability and condition of the Contractor's Equipment and in compliance with the manufacturer's official operation, maintenance and repair manual.

(3) ~~Inspection at the time when Contractor's Equipment is mobilised~~ When mobilizing Contractor's Equipment to the Site and before commencement of operation, ~~for which~~ (JCB26) the Contractor shall:
NK: Modified as commented.

No comment

(a) Inspect all units of Contractor's Equipment to ensure that

- all components are installed and functioning; and
- adequate covers and safety guards (to prevent contact with moving parts) are provided and securely fixed.

To MD: Please review the JICA comment and NK proposal above and make the items above to one sentence.

"Covers" is from your draft and it is a usual and common term for inspection and maintenance covers that are usually screwed in position to allow access for inspection and maintenance. Equipment is not safe if these are missing which is frequently the case.

Otherwise no comment, edited as instructed.

NK: confirmed.

(b) Ensure as a minimum that the daily and periodical check items ~~listed below in this Sub Clause~~ (JCB28) have already been inspected and recorded;
NK: Deleted as commented.

No comment

(c) Ensure that all inspection and maintenance records are available for inspection by the Engineer if and when ~~may be~~ (JCB29)required in compliance with JSSS; and

when it is mobilised to the Site. Thereafter all Contractor's Equipment shall be inspected, maintained and repaired before the commencement of the first and of all subsequent days of operation.

(2) Inspections shall include all items necessary to ensure the safe performance of the Contractor's Equipment including the following examples and any further requirements due to the characteristics, capability and condition of the Contractor's Equipment and in compliance with the manufacturer's official operation, maintenance and repair manual.

(3) When mobilising Contractor's Equipment to the Site and before commencement of operation, the Contractor shall:

(a) Inspect all units of Contractor's Equipment to ensure that:

(i) all components are installed and functioning; and

(ii) adequate covers and safety guards (to prevent contact with moving parts) are provided and securely fixed.

(b) Ensure as a minimum that the daily and periodical check items have already been inspected and recorded;

(c) Ensure that all inspection and maintenance records are available for inspection by the Engineer if and when required in compliance with JSSS; and

(d) If any inspection and maintenance records are incomplete or not available, the Contractor shall carry out inspections and maintenance to ensure that a full and acceptable record is available for all units of Contractor's Equipment.

In relation with the above, it should be noted that Contractor's Equipment shall be in a working and safe condition and fully compliant with the Contract when it is mobilised to the Site. The Engineer may refuse to accept delivery to the Site any Contractor's Equipment which does not meet the requirements stipulated in the Contract.

(4) The Contractor shall undertake the following daily inspection items, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(a) Operating condition of engine, gearbox(s), drive shafts, pulleys and main components, emergency stop and safety devices, any defects or abnormalities in covers, doors and enclosures;

(b) Abnormal sounds, vibrations or smell;

(c) Leaks, levels and condition of lubricants, coolant, hydraulic fluid levels, and the like;

(d) Lights and indicators;

(e) Brakes, clutches, steering and operating devices and working devices;

(f) Cables, slings, ropes and chains;

(g) Protective covers are adequately provided over all rotating or moving parts;

(h) Attachments and tools such as buckets, grabs, etc.

(i) Cleanliness of each unit or item of Contractor's Equipment; and

(j) Cleanliness of each working area and removal of obstructions.

(k) Emergency kits such as warning flares and triangles, fire extinguisher, first aid kit and the like, as required by the Laws of the

JC29: 不要。Unnecessary.
NK: Deleted.

(d) If any inspection and maintenance records are incomplete or not available, the Contractor shall carry out inspections and maintenance to ensure that a full and acceptable record is available for all units of Contractor's Equipment.

In relation with the above, it should be noted that Contractor's Equipment shall be in a working and safe condition and fully compliant with the Contract when it is mobilised to the Site. The Engineer may refuse to accept delivery to the Site any Contractor's Equipment which does not meet the requirements stipulated in the Contract.

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(a) Operating condition of engine, gearbox(s), drive shafts, pulleys and main components, emergency stop and safety devices, any defects or abnormalities in covers, doors and enclosures;

(b) Abnormal sounds, vibrations or smell;

(c) Leaks, levels and condition of lubricants, coolant, hydraulic fluid levels, and the like;

(d) Lights and indicators;

(e) Brakes, clutches, steering and operating devices and working devices;

(f) Cables, slings, ropes and chains;

(g) Protective covers are adequately provided over all rotating or moving parts;

(h) Attachments and tools such as buckets, grabs, etc.

(i) Cleanliness of each unit or item of Contractor's Equipment; and

(j) Cleanliness of each working area and removal of obstructions.

(k) Emergency kits such as warning flares and triangles, fire extinguisher, first aid kit and the like, as required by the Laws of the

NK: Deleted.

No comment.

(d) If any inspection and maintenance records are incomplete or not available, the Contractor shall carry out inspections and maintenance to ensure that a full and acceptable record is available for all units of Contractor's Equipment.

In relation with the above, it should be noted that Contractor's Equipment shall be in a working and safe condition and fully compliant with the Contract when it is mobilised to the Site. The Engineer may refuse to accept delivery to the Site any Contractor's Equipment which does not meet the requirements stipulated in the Contract.

(4) The Contractor shall undertake the following daily inspection items, (or at intervals required by the manufacturer's official operation, maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(a) Operating condition of engine, gearbox(s), drive shafts, pulleys and main components, emergency stop and safety devices, any defects or abnormalities in covers, doors and enclosures;

(b) Abnormal sounds, vibrations or smell;

(c) Leaks, levels and condition of lubricants, coolant, hydraulic fluid levels, and the like;

(d) Lights and indicators;

(e) Brakes, clutches, steering and operating devices and working devices;

(f) Cables, slings, ropes and chains;

(g) Protective covers are adequately provided over all rotating or moving parts;

(h) Attachments and tools such as buckets, grabs and the like;

(i) Cleanliness of each unit or item of Contractor's Equipment;

(j) Cleanliness of each working area and removal of obstructions;

(k) Availability of emergency kits such as warning flares and triangles, fire extinguisher, first aid kit and the like, as

(d) If any inspection and maintenance records are incomplete or not available, the Contractor shall carry out inspections and maintenance to ensure that a full and acceptable record is available for all units of Contractor's Equipment.

In relation with the above, it should be noted that Contractor's Equipment shall be in a working and safe condition and fully compliant with the Contract when it is mobilised to the Site. The Engineer may refuse to accept delivery to the Site any Contractor's Equipment which does not meet the requirements stipulated in the Contract.

(4) The Contractor shall undertake the following daily inspection items, (or at intervals required by the manufacturer's official operation, maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:

(a) Operating condition of engine, gearbox(s), drive shafts, pulleys and main components, emergency stop and safety devices, any defects or abnormalities in covers, doors and enclosures;

(b) Abnormal sounds, vibrations or smell;

(c) Leaks, levels and condition of lubricants, coolant, hydraulic fluid levels, and the like;

(d) Lights and indicators;

(e) Brakes, clutches, steering and operating devices and working devices;

(f) Cables, slings, ropes and chains;

(g) Protective covers are adequately provided over all rotating or moving parts;

(h) Attachments and tools such as buckets, grabs and the like;

(i) Cleanliness of each unit or item of Contractor's Equipment;

(j) Cleanliness of each working area and removal of obstructions;

(k) Availability of emergency kits such as warning flares and triangles, fire extinguisher, first aid kit and the like, as required by the Laws of the Country with

Country with the testing and expiration date clearly indicated. (l) For other items not covered here, the inspection items stipulated in the manufacturer's official maintenance and repair manual shall be applied.	Country with the testing and expiration date clearly indicated. (l) For other items not covered here, the inspection items stipulated in the manufacturer's official maintenance and repair manual shall be applied.	required by the Laws of the Country with the testing and expiration date clearly indicated; and (l) Any additional inspection items stipulated in the manufacturer's official operation, maintenance and repair manual. *Edited.* NK: confirmed.	the testing and expiration date clearly indicated; and (l) Any additional inspection items stipulated in the manufacturer's official operation, maintenance and repair manual.
(5) The Contractor shall undertake the following periodic inspection items, (at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted: (a) Engine compression pressure, valve clearance and other relevant parts of prime energy unit; (b) Gearbox, clutch, transmission, propeller shaft, differential and other parts of power transmission devices; (c) Drive wheels, idling wheels, vertical trunk rollers, belts, tires, wheel bearings and other parts of traveling devices; (d) Springs, shock absorbers and other parts of suspension devices; (e) Left and right rotation angle of steering wheel, knuckle, rod, arm and other parts of control devices; (f) Brake capacity, brake drum, brake shoe and other parts of braking systems; (g) Blades, booms, link mechanisms, buckets, wire ropes and other parts of work equipment; (h) Hydraulic pump, hydraulic motor, cylinder, safety valve and other parts of hydraulic equipment; (i) Voltage, amperage and relevant performance and components of electrical systems; and (j) Body, operating devices, head guards, back stoppers, access doors, protective covers, ladders and steps, locking devices, warning alarm devices, direction indicators and lightning devices. (k) For other items not covered here, the inspection items stipulated in the manufacturer's official maintenance and	(5) The Contractor shall undertake the following periodic inspection items, (at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted: (a) Engine compression pressure, valve clearance and other relevant parts of prime energy unit; (b) Gearbox, clutch, transmission, propeller shaft, differential and other parts of power transmission devices; (c) Drive wheels, idling wheels, vertical trunk rollers, belts, tires, wheel bearings and other parts of traveling devices; (d) Springs, shock absorbers and other parts of suspension devices; (e) Left and right rotation angle of steering wheel, knuckle, rod, arm and other parts of control devices; (f) Brake capacity, brake drum, brake shoe and other parts of braking systems; (g) Blades, booms, link mechanisms, buckets, wire ropes and other parts of work equipment; (h) Hydraulic pump, hydraulic motor, cylinder, safety valve and other parts of hydraulic equipment; (i) Voltage, amperage and relevant performance and components of electrical systems; and (j) Body, operating devices, head guards, back stoppers, access doors, protective covers, ladders and steps, locking devices, warning alarm devices, direction indicators, tires' air pressure and lightning devices. (k) For other items not covered here, the inspection items stipulated in the manufacturer's official maintenance and	(5) The Contractor shall undertake the following periodic inspection items, (at intervals required by the manufacturer's official operation, maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted: (a) Engine compression pressure, valve clearance and other relevant parts of prime energy unit; (b) Gearbox, clutch, transmission, propeller shaft, differential and other parts of power transmission devices; (c) Drive wheels, idling wheels, vertical trunk rollers, belts, tires, wheel bearings and other parts of traveling devices; (d) Springs, shock absorbers and other parts of suspension devices; (e) Left and right rotation angle of steering wheel, knuckle, rod, arm and other parts of control devices; (f) Brake capacity, brake drum, brake shoe and other parts of braking systems; (g) Blades, booms, link mechanisms, buckets, wire ropes and other parts of work equipment; (h) Hydraulic pump, hydraulic motor, cylinder, safety valve and other parts of hydraulic equipment; (i) Voltage, amperage and relevant performance and components of electrical systems; (j) Body, operating devices, head guards, back stoppers, access doors, protective covers, ladders and steps, locking devices, warning alarm devices, direction indicators, tyre air pressures and lightning devices; and (k) Any additional inspection items stipulated in the manufacturer's official operation, maintenance and repair manual.	(5) The Contractor shall undertake the following periodic inspection items, (at intervals required by the manufacturer's official operation, maintenance and repair manual), carry out any necessary maintenance and repair, and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted: (a) Engine compression pressure, valve clearance and other relevant parts of prime energy unit; (b) Gearbox, clutch, transmission, propeller shaft, differential and other parts of power transmission devices; (c) Drive wheels, idling wheels, vertical trunk rollers, belts, tires, wheel bearings and other parts of traveling devices; (d) Springs, shock absorbers and other parts of suspension devices; (e) Left and right rotation angle of steering wheel, knuckle, rod, arm and other parts of control devices; (f) Brake capacity, brake drum, brake shoe and other parts of braking systems; (g) Blades, booms, link mechanisms, buckets, wire ropes and other parts of work equipment; (h) Hydraulic pump, hydraulic motor, cylinder, safety valve and other parts of hydraulic equipment; (i) Voltage, amperage and relevant performance and components of electrical systems; (j) Body, operating devices, head guards, back stoppers, access doors, protective covers, ladders and steps, locking devices, warning alarm devices, direction indicators, tyre air pressures and lightning devices; and (k) Any additional inspection items stipulated in the manufacturer's official operation, maintenance and repair manual.

repair manual shall be applied.

(6) Operation of any unit of Contractor's Equipment shall not be allowed to commence until the HSO has certified that it is safe to do so.

(7) The Contractor shall prepare standard checklists for all inspections and the HSO shall ensure that these are complied with, completed and signed and kept as a record in accordance with JSSS 1.31 [*Health and Safety Records*].

4.2.2 Defects and Repair During Operation

(1) If an operator notices any defect or abnormality in the Contractor's Equipment during operation (such as abnormal noise, temperature, smell, etc.) the operator shall stop the operation immediately;

(2) The operator shall then identify the cause of the defect or abnormality and make necessary repairs by using authorised and qualified specialist mechanics, electricians or representative technical engineers authorised by the Contractor's Equipment manufacturer; and

(3) The HSO shall ensure that no further operation shall resume unless the above has been complied with and the Contractor's Equipment has been re-inspected by him and certified in accordance with JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*].

4.3 SAFETY REQUIREMENTS

4.3.1 General Safety Measures

In addition to other safety and health requirements of JSSS, the Contractor shall:

(1) Ensure that there is sufficient lighting to

repair manual shall be applied.

(6) Operation of any unit of Contractor's Equipment shall not be allowed to commence until the HSO has certified that it is safe to do so.

(7) The Contractor shall prepare standard checklists for all inspections and the HSO shall ensure that these are complied with, completed and signed and kept as a record in accordance with JSSS 1.31 [*Health and Safety Records*].

4.2.5 Defects and Repair During Operation

(1) If an operator notices any defect or abnormality in the Contractor's Equipment during operation (such as abnormal noise, temperature, smell, etc.) the operator shall stop the operation immediately and report to the person in charge;

(2) ~~The operator shall then identify the cause of the defect or abnormality and make necessary repairs by using authorised and qualified specialist mechanics, electricians or representative technical engineers authorised by the Contractor's Equipment manufacturer; and~~ Necessary repair shall be provided by qualified mechanics, electricians or engineers (JC30) ; and

JC30: オペレーターが不調の原因まで identify できるのでしょうか。また修理の主語がオペレーターになっていますがこれでよいのか？4.1.4(4)では不調の場合はストップして person in charge に報告することが想定されている。
Can operator identify causes? Is it correct that the main actor of repair is operator? The 4.1.4(4) stipulate *that Stop of the operation and work with of the Contractor's Equipment when an abnormality occurs and report to the person in charge;*

NK: Modified as commented.

(3) The HSO shall ensure that no further operation shall resume unless the above has been complied with and the Contractor's Equipment has been re-inspected by him and certified in accordance with JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*].

4.3 SAFETY REQUIREMENTS

4.3.1 General Safety Measures

In addition to other safety and health requirements of JSSS, the Contractor shall:

(1) Ensure that there is sufficient lighting to

(6) Operation of any unit of Contractor's Equipment shall not be allowed to commence until the HSO has certified that it is safe to do so.

(7) The Contractor shall prepare standard checklists for all inspections and the HSO shall ensure that these are complied with, completed and signed and kept as a record in accordance with JSSS 1.33 [*Health and Safety Records*].

4.2.2 Defects and Repair During Operation

(1) If an operator notices any defect or abnormality in the Contractor's Equipment during operation (such as abnormal noise, temperature, smell, etc.) the operator shall stop the operation immediately.

(2) Necessary repair shall be provided by qualified mechanics, electricians or engineers.(JC30)

(3) The HSO shall ensure that no further operation shall resume unless the above has been complied with and the Contractor's Equipment has been re-inspected by him and certified in accordance with JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPP*].

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4.3 SAFETY REQUIREMENTS

4.3.1 General Safety Measures

In addition to other safety and health requirements of JSSS, the Contractor shall:

(1) Ensure that there is sufficient lighting to

perform all work safely and provide artificial lighting where necessary.

(2) Ensure that Contractor's Equipment is equipped with suitable protective safety devices such as covers, screens, guards, contact prevention devices, auto-stop devices, enclosures, barriers and the like all as necessary to prevent any risk of injury to personnel from equipment or parts of equipment, where:

(a) There may be any risk of persons being hit by, caught or injured or entangled in any ropes, cables, sheaves, moving or rotating parts; and

(b) There may be any risk of persons being hit by flying debris, offcuts, or the like produced by the equipment.

(3) Ensure that Contractor's Equipment is equipped with suitable ladders and steps for access to the operating cabin and also to all other levels and components to permit inspection, assembly, maintenance and repair of the equipment. When any Contractor's Personnel need to work at a height of 2 m or more, the Contractor shall take suitable measures in accordance with JSSS 2.5 [*Fall Prevention*], including the provision and use by all Contractor's Personnel of guide ropes and PFAS.

(4) Prohibit personnel other than operators, workers and other authorised personnel from entering the place where Contractor's Equipment is in use for the Works.

(5) Ensure that each unit of Contractor's Equipment is provided with appropriate numbers and types of fire extinguishing equipment and such other facilities where such equipment is necessary and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and fire safety procedures.

(6) Ensure that each working area where Contractor's Equipment is in use, is provided with appropriate numbers and types of first-aid equipment and such other facilities that are necessary to ensure safety and treat accidents and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and first-aid procedures.

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(2) Ensure that Contractor's Equipment is equipped with suitable protective safety devices such as covers, screens, guards, contact prevention devices, auto-stop devices, enclosures, barriers and the like, ~~all~~ as necessary to prevent ~~any risk of~~ injury to personnel from equipment or parts of equipment, where:

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(6) ~~Ensure that each working area where Contractor's Equipment is in use, is provided with appropriate numbers and types of first-aid equipment and such other facilities that are necessary to ensure safety and treat accidents and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and first-aid procedures.~~ (JC31)

JC31: 機械の safety requirement ではない。It is not the safety requirements for the Equipment.
NK: 機械を使っての作業場所に救急用具を設置すること

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perform all work safely and provide artificial lighting where necessary.

(2) Ensure that Contractor's Equipment is equipped with suitable protective safety devices such as covers, screens, guards, contact prevention devices, auto-stop devices, enclosures, barriers and the like as necessary to prevent injury to personnel from equipment or parts of equipment, where:

(a) There may be any risk of persons being hit by, caught or injured or entangled in any ropes, cables, sheaves, moving or rotating parts; and

(b) There may be any risk of persons being hit by flying debris, offcuts, or the like produced by the equipment.

(3) Ensure that Contractor's Equipment is equipped with suitable ladders and steps for access to the operating cab and also to all other levels and components to permit inspection, assembly, maintenance and repair of the equipment. When any Contractor's Personnel need to work at a height of 2 m or more, the Contractor shall take suitable measures in accordance with JSSS 2.5 [*Fall Prevention*], including the provision and use by all Contractor's Personnel of guide ropes and PFAS.

(4) Prohibit personnel other than operators, workers and other authorised personnel from entering the place where Contractor's Equipment is in use for the Works.

The original text was fine.
Your added text is edited as follows:

(5) Ensure that each unit of Contractor's Equipment is provided with appropriate numbers and types of fire extinguishing equipment ~~and such other facilities~~ where such equipment is necessary and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and in fire safety procedures.

(6) Ensure that each working area where Contractor's Equipment is in use, is provided with appropriate numbers and types of first-aid equipment and such other facilities that are necessary to ensure safety and treat accidents and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and first-aid procedures. (JCB31)

JCB31: 機械の safety requirement ではない。It is not the safety requirements for the Equipment.
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perform all work safely and provide artificial lighting where necessary.

(2) Ensure that Contractor's Equipment is equipped with suitable protective safety devices such as covers, screens, guards, contact prevention devices, auto-stop devices, enclosures, barriers and the like as necessary to prevent injury to personnel from equipment or parts of equipment, where:

(a) There may be any risk of persons being hit by, caught or injured or entangled in any ropes, cables, sheaves, moving or rotating parts; and

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(4) Prohibit personnel other than operators, workers and other authorised personnel from entering the place where Contractor's Equipment is in use for the Works.

(5) Ensure that each unit of Contractor's Equipment is provided with appropriate numbers and types of fire extinguishing equipment (where such equipment is necessary) and ensure that all operators and other Contractor's Personnel are trained in the use of such equipment and in fire safety procedures.

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	は、機械の安全措置ではないですが、作業員の安全措置ですので、このまま残します。 This clause is not safety requirement for Equipment but for workers in the working area with Equipment. Therefore this as left as it is.	は、機械の安全措置ではないですが、作業員の安全措置ですので、このまま残します。 This clause is not safety requirement for Equipment but for workers in the working area with Equipment. Therefore, this is left as it is.	
(7) Post a label clearly showing the name of the operator on each unit of Contractor's Equipment together with the name and contact of the HSO who shall be contacted in the event of breakdown or fault.	(7) Post a label clearly showing the name of the operator on each unit of Contractor's Equipment together with the name and contact of the HSO (JC32) or a person in charge who shall be contacted in the event of breakdown or fault. JC32: 4.1.4(4)では不調の場合はストップして person in charge に報告することが想定されているので、併記しておきます。 4.1.4(4) stipulate operator shall stop operation and inform person in charge of event of breakdown or fault, so added the person in charge. NK: Modified.	(7) Post a label clearly showing the name of the operator on each unit of Contractor's Equipment together with the name and contact number of the HSO (JCB32) or a person in charge who shall be contacted in the event of breakdown or fault.	(7) Post a label clearly showing the name of the operator on each unit of Contractor's Equipment together with the name and contact number of the HSO or a person in charge who shall be contacted in the event of breakdown or fault.
(8) Ensure that only the authorised operating, inspection and maintenance personnel access the mechanical, electrical and other components and systems of the Contractor's Equipment and prohibit all other persons from such access and prevent them from disabling any features and tampering with or removing any inspection and maintenance covers, safety guards to prevent contact with moving parts and the like.	(8) Ensure that only the authorised operating, inspection and maintenance personnel access the mechanical, electrical and other components and systems of the Contractor's Equipment and prohibit all other persons from such access~~. and prevent them from disabling any features and tampering with or removing any inspection and maintenance covers, safety guards to prevent contact with moving parts and the like.~~ (JC33) (9) Ensure that any inspection and maintenance covers, safety guards to prevent contact with moving parts and the like are not disabled, tampered with or removed except for repair, maintenance or any other justifiable reason. JC33: 無関係な人間にアクセスを禁じるのは防護装置に悪さをさせないためだけではないし、関係者が防護装置に悪さをするかもしれない。従って、無関係者のアクセス禁止と防護装置の維持の話に分ける。 The prohibition of other persons from accessing to equipment is for avoiding them doing bad to protective device. On the other hand, there is possibility that workers related with the work do bad to the protective device. Therefore, the (8) is divided to two for(8) prohibition of other persons to access to equipment and (9) keeping the protective device function. NK: Modified as commented.	(8) Ensure that only the authorised operating, inspection and maintenance personnel access the mechanical, electrical and other components and systems of the Contractor's Equipment and prohibit all other persons from such access . (9) Ensure that any inspection and maintenance covers, safety guards to prevent contact with moving parts and the like are not disabled, tampered with or removed except for repair, maintenance or any other justifiable reason.	(8) Ensure that only the authorised operating, inspection and maintenance personnel access the mechanical, electrical and other components and systems of the Contractor's Equipment and prohibit all other persons from such access. (9) Ensure that any inspection and maintenance covers, safety guards to prevent contact with moving parts and the like are not disabled, tampered with or removed except for repair, maintenance or any other justifiable reason.
(9) Ensure that installation, assembly, testing commissioning, operation and dismantling of all major equipment including static equipment, personnel and goods elevators and the like, is carried out under the direction of an Operation Leader appropriately qualified, skilled and experienced in such activities for the particular type and capacity of equipment and strictly in	(10) Ensure that installation, assembly, testing commissioning, operation and dismantling of all major equipment including static equipment, ~~personnel and goods~~ (JC34) elevators and (JC35)the like, is carried out under the direction of an Operation Leader appropriately qualified, skilled and experienced in such activities for the particular type and capacity of equipment and strictly in accordance with the manufacturer's written	~~(10) Ensure that installation, assembly, testing commissioning, operation and dismantling of all major equipment including static equipment, personnel and goods (JCB34) elevators and or (JCB35) the like, is carried out under the direction of an Operation Leader appropriately qualified, skilled and experienced in such activities for the particular type and capacity of equipment and strictly in accordance with the~~	

accordance with the manufacturer's written instructions.	instructions. JC34: 削除。単に elevators でいいのでは。 Deleted. It can be "elevators". NK: Modified. JC35: Is it "or". NK: We think "and" can be left. To MD, please advise to use "or" or "and".	~~manufacturer's printed instructions.~~ To MD, please advise to use "or" or "and". *I suggest editing in total as follows:* (10) Ensure that installation, assembly, testing commissioning, operation and dismantling of all Contractor's Equipment is carried out under the direction of an Operation Leader, appropriately qualified, skilled and experienced in such activities for the particular type and capacity of equipment and in accordance with the manufacturer's operation, maintenance and repair manual.	(10) Ensure that installation, assembly, testing commissioning, operation and dismantling of all Contractor's Equipment is carried out under the direction of an Operation Leader, appropriately qualified, skilled and experienced in such activities for the particular type and capacity of equipment and in accordance with the manufacturer's operation, maintenance and repair manual.
4.3.2 Safety Measures During Cleaning, Inspection and Maintenance The Contractor shall take the following measures for safety of Contractor's Personnel during cleaning, inspection and maintenance. Until such measures are taken, the Contractor shall prohibit any inspection or maintenance personnel or other workers from entering the areas at risk. (1) Perform inspection and maintenance work wherever possible on a level surface. Where unavoidable ensure that wheels are securely chocked to prevent any movement of equipment. (2) Provide safety blocks or supports under cargo bed of vehicles to prevent them descending unexpectedly during inspection and maintenance. (3) Lower attachments (buckets and blades etc.) to the ground during any inspection and maintenance. Where unavoidable ensure that attachments are securely supported to prevent any fall or downward movement. (4) Stop and isolate the functions completely, establish and implement lockout and tagout procedures to prevent accidents during inspection and maintenance. The lockout and tagout system shall fully isolate the starting system. (5) Post warning signs to prohibit start-up or use of any Contractor's Equipment during inspection and maintenance. (6) Assign a Spotter. (7) Ensure that only authorised personnel have access to the inspection and maintenance area.	**4.3.2 Safety Measures During Cleaning, Inspection and Maintenance** The Contractor shall take the following measures for safety of Contractor's Personnel during cleaning, inspection and maintenance. Until such measures are taken, the Contractor shall prohibit any inspection or maintenance personnel or other workers from entering the areas ~~at risk~~. (1) Perform inspection and maintenance work wherever possible on a level surface. Where unavoidable ensure that wheels are securely chocked to prevent any movement of equipment. 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4.3.3 Safety Measures During Operation (1) The Contractor shall ensure the safety of all Contractor's Personnel, Employer's Personnel	**4.3.3 Safety Measures During Operation** (1) The Contractor shall ensure the safety of all Contractor's Personnel, Employer's Personnel	**4.3.3 Safety Measures During Operation** ~~(1) The Contractor shall ensure the safety of all Contractor's Personnel, Employer's Personnel and~~	**4.3.3 Safety Measures During Operation**

and any other persons that are on the Site, adjacent to the Site and other places (if any) where works are being executed and who may be affected by such work.	and any other persons that are on the Site, adjacent to the Site and other places (if any) where works are being executed and who may be affected by such work.	~~any other persons that are on the Site, adjacent to the Site and other places (if any) where works are being executed and who may be affected by such work.~~ *The above is similar to and partial duplication of 4.1.1 and can be deleted if 4.1.1 is reworded slightly, which I have done.*	
(2) Unless otherwise specifically permitted by the HSO, all work involving the use of Contractor's Equipment shall be designated as Dangerous Work and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [Prohibition of Entry - Dangerous Work].	(2) Unless otherwise specifically permitted by the HSO, all work involving the use of Contractor's Equipment shall be designated as Dangerous Work and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [Prohibition of Entry - Dangerous Work].	(1) Unless otherwise specifically permitted by the HSO, (JCA23) all work involving the use of Contractor's Equipment shall be designated as Dangerous Work (JCA24) and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].	(1) Unless otherwise specifically permitted by the HSO, all work involving the use of Contractor's Equipment shall be designated as Dangerous Work and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].
(3) The Contractor shall also ensure that:	(3) The Contractor shall also ensure that:	(2) JThe Contractor shall also ensure that:	(2) The Contractor shall also ensure that:
(a) All operators are able to clearly see and communicate effectively with Spotters and other relevant persons;	(a) All operators are able to clearly see and communicate effectively with Spotters and other relevant persons;	(a) All operators are able to clearly see and communicate effectively with Spotters and other relevant persons;	(a) All operators are able to clearly see and communicate effectively with Spotters and other relevant persons;
(b) No Contractor's Equipment shall be allowed to operate beyond the capacity or operational limits officially prescribed by the equipment manufacturer;	(b) No Contractor's Equipment shall be allowed to operate beyond the capacity or operational limits officially prescribed by the equipment manufacturer;	(b) No Contractor's Equipment shall be allowed to operate beyond the capacity or operational limits officially prescribed by the equipment manufacturer;	(b) No Contractor's Equipment is operating beyond the capacity or operational limits officially prescribed by the equipment manufacturer;
(c) The surfaces upon which the Contractor's Equipment is working, and any adjacent surfaces and areas over which access is required, are sound, safe and suitable to support the equipment and the Contractor shall provide any temporary foundations, hardstanding or other surfaces, sleepers or steel plates as are necessary to ensure safety and stability of the equipment at all times;	(c) The surfaces upon which the Contractor's Equipment is working, and any adjacent surfaces and areas over which access is required, are sound, safe and suitable to support the equipment and the Contractor shall provide any temporary foundations, hardstanding or other surfaces, sleepers or steel plates as are necessary to ensure safety and stability of the equipment at all times;	(c) The surfaces upon which the Contractor's Equipment is working, and any adjacent surfaces and areas over which access is required, are sound, safe and suitable to support the equipment and the Contractor shall provide any temporary foundations, hardstanding or other surfaces, sleepers or steel plates as are necessary to ensure safety and stability of the equipment at all times;	(c) The surfaces upon which the Contractor's Equipment is working, and any adjacent surfaces and areas over which access is required, are sound, safe and suitable to support the equipment and the Contractor shall provide any temporary foundations, hardstanding or other surfaces, sleepers or steel plates as are necessary to ensure safety and stability of the equipment at all times;
(d) Spotters shall always be provided to enable precise movement and positioning of Contractor's Equipment, particularly when reversing, loading and unloading, dangerous areas, areas where the operator's view is not clear and intersections with public roads.	(d) Spotters shall always be provided to enable precise movement and positioning of Contractor's Equipment, particularly when reversing, loading and unloading, being at dangerous areas, ~~areas~~ where the operator's view is not clear and intersections with public roads. To MD, please review the above deletion of areas is correct.	~~(d) Spotters shall always be provided to enable precise movement and positioning of Contractor's Equipment, particularly when reversing, loading and unloading, being at dangerous areas, areas where the operator's view is not clear and at intersections with public roads.~~ To MD, please review the above deletion of areas is correct. *I suggest editing as follows:* (d) Spotters shall always be provided to enable precise movement and positioning of Contractor's Equipment, particularly when reversing, loading and unloading, in dangerous areas or when the operator's view is not clear and at intersections with public roads;	(d) Spotters are always be provided to enable precise movement and positioning of Contractor's Equipment, particularly when reversing, loading and unloading, in dangerous areas or when the operator's view is not clear and at intersections with public roads;
(e) Where there is any risk of turnover,	(e) Where there is any risk of turnover,	(e) Where there is any risk of turnover, slippage, collapse or fall, Contractor's Equipment ~~is~~ shall be equipped with	(e) Where there is any risk of turnover, slippage, collapse or fall, Contractor's

slippage, collapse or fall, Contractor's Equipment shall be equipped with seatbelts or safety harnesses and that such seatbelts and harnesses are used;

(f) Where there is any risk of turnover, slippage, collapse or fall, Contractor's Equipment shall be equipped with a "Roll-Over Protective Structure" (ROPS);

(g) Where there is any risk of injury to operators due to falling objects Contractor's Equipment shall be equipped with a "Falling Object Protective Structure" (FOPS);

(h) Operators shall pay careful and constant attention to the position of any workers near to the operating area and particularly when mobile equipment is reversing;

(i) Operators of excavating equipment shall ensure that excavator buckets never pass over the operator's seat of the other Contractor's Equipment; and

(j) Workers shall not enter under a bucket which is loading material and shall keep away from dump trucks when loading or unloading materials.

(k) No person shall ride on trucks, trailers or cargo bed other than cabin of vehicles unless permitted by the Law of the Country.

4.3.4 Safety Measures When Mobile Equipment Is Not in Use

(1) When mobile equipment is not in use, the Contractor shall ensure that operators:

(a) Park on surfaces which are level, sound, safe and suitable to support the equipment;

(b) Securely chock all wheels to prevent any movement;

(c) Lower attachments (buckets and blades etc.) to the ground;

(d) Stop and isolate the functions completely, fully engage brakes and lock the brake pedal; and

(e) Lock the equipment and store the starter key in the designated place.

(2) The Contractor shall prohibit all persons other than authorised personnel from entering the area where Contractor's Equipment is parked.

slippage, collapse or fall, Contractor's Equipment shall be equipped with seatbelts or safety harnesses and that such seatbelts and harnesses are used;

(f) Where there is any risk of turnover, slippage, collapse or fall, Contractor's Equipment shall be equipped with a "Roll-Over Protective Structure" (ROPS);

(g) Where there is any risk of injury to operators due to falling objects Contractor's Equipment shall be equipped with a "Falling Object Protective Structure" (FOPS);

(h) Operators shall pay careful and constant attention to the position of any workers near to the operating area and particularly when mobile equipment is reversing;

(i) Operators of excavating equipment shall ensure that excavator buckets never pass over the operator's seat of ~~the other~~ another Contractor's Equipment nearby; and

(j) Workers shall not enter under a bucket which is loading material and shall keep away from dump trucks when loading or unloading materials.

(k) No person shall ride on trucks, trailers or cargo bed other than cabin of vehicles unless permitted by the Law of the Country.

4.3.4 Safety Measures When Mobile Equipment Is Not in Use

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(b) Securely chock all wheels to prevent any movement;

(c) Lower attachments (buckets and blades etc.) to the ground;

(d) Stop and isolate the functions completely, fully engage brakes and lock the brake pedal; and

(e) Lock the equipment and store the starter key in the designated place.

(2) The Contractor shall prohibit all persons other than authorised personnel from entering the area where Contractor's Equipment is parked.

seatbelts or safety harnesses and that such seatbelts and harnesses are used;

(f) Where there is any risk of turnover, slippage, collapse or fall, Contractor's Equipment shall be equipped with a "Roll-Over Protective Structure" (ROPS);

(g) Where there is any risk of injury to operators due to falling objects Contractor's Equipment shall be equipped with a "Falling Object Protective Structure" (FOPS);

(h) Operators shall pay careful and constant attention to the position of any workers near to the operating area and particularly when mobile equipment is reversing;

(i) Operators of excavating equipment shall ensure that excavator buckets never pass over the operator's seat of Contractor's Equipment;

(j) Workers shall not enter under a bucket which is loading material and shall keep away from dump trucks when loading or unloading materials; and

(k) No person shall ride on trucks, trailers or cargo bed other than cabin of vehicles unless permitted by the Law of the Country.

4.3.4 Safety Measures When Mobile Equipment Is Not in Use

(1) When mobile equipment is not in use, the Contractor shall ensure that operators:

(a) Park on surfaces which are level, sound, safe and suitable to support the equipment;

(b) Securely chock all wheels to prevent any movement;

(c) Lower attachments (buckets and blades etc.) to the ground;

(d) Stop and isolate the functions completely, fully engage brakes and lock the brake pedal; and

(e) Lock the equipment and store the starter key in the designated place.

(2) The Contractor shall prohibit all persons other than authorised personnel from entering the area where Contractor's Equipment is parked.

Equipment is equipped with seatbelts or safety harnesses and that such seatbelts and harnesses are used;

(f) Where there is any risk of turnover, slippage, collapse or fall, Contractor's Equipment is equipped with a "Roll-Over Protective Structure" (ROPS);

(g) Where there is any risk of injury to operators due to falling objects Contractor's Equipment is equipped with a "Falling Object Protective Structure" (FOPS);

(h) Operators are aware that they shall pay careful and constant attention to the position of any workers near to the operating area and particularly when mobile equipment is reversing;

(i) Operators of excavating equipment are aware that excavator buckets shall never pass over the operator's seat of Contractor's Equipment;

(j) Workers shall not enter under a bucket which is loading material and shall keep away from dump trucks when loading or unloading materials; and

(k) No person shall ride on trucks, trailers or cargo bed other than cabin of vehicles unless permitted by the Law of the Country.

4.3.4 Safety Measures When Mobile Equipment Is Not in Use

(1) When mobile equipment is not in use, the Contractor shall ensure that operators:

(a) Park on surfaces which are level, sound, safe and suitable to support the equipment;

(b) Securely chock all wheels to prevent any movement;

(c) Lower attachments (buckets and blades etc.) to the ground;

(d) Stop and isolate the functions completely, fully engage brakes and lock the brake pedal; and

(e) Lock the equipment and store the starter key in the designated place.

(2) The Contractor shall prohibit all persons other than authorised personnel from entering the area where Contractor's Equipment is parked.

4.3.5 Safety Measures During Connection of Attachments The Contractor shall take the following measures when connecting and removing attachments (buckets, blades etc.) to Contractor's Equipment: (1) Prevent any risk due to movement or fall of attachments. (2) Prevent accidental movement or operation causing persons to be trapped.	**4.3.5 Safety Measures During Connection of Attachments** The Contractor shall take the following measures when connecting and removing attachments (buckets, blades etc.) to Contractor's Equipment:(JC36) JC36: こうした事態が発生するのを防ぐために具体的な記述を記載してください。 ・安定したフレームにアタッチメントをおいて着脱する。 ・エンジンを切る その他、4.3.4 の(1)で参考になるようなことを具体的に記述してください。 Please stipulate concrete measures to avoid occurrence of accident mentioned in 81) and (2) for example, - connecting and removing attachments which are located on stable frames, - Put off engine - Other concrete measures referring to 4.3.4 (1). NK: added in (1) and (2). (1) Prevent any ~~risk~~ accident due to movement or fall of attachments. (2) Prevent accidental movement or operation causing persons to be trapped.	**4.3.5 Safety Measures During Connecting and Removing of Attachments** The Contractor shall take the following measures when connecting and removing attachments (buckets, blades etc.) to Contractor's Equipment: (JCB36) (1) Prevent any accident due to movement or fall of attachments by taking safety measures for example, connecting and removing attachments after locating them on stable and sound frames or on the ground. (2) Prevent accidental movement or operation causing persons to be trapped attachments by taking safety measures for example, parking of the Contractor's Equipment such that it cannot move (as mentioned in JSSS 4.3.4 (1) (a), (b) and (d)) and stop the engine.	**4.3.5 Safety Measures During Connecting and Removing of Attachments** The Contractor shall take the following measures when connecting and removing attachments (buckets, blades etc.) to Contractor's Equipment: (1) Prevent any accident due to movement or fall of attachments by taking safety measures for example, connecting and removing attachments after locating them on stable and sound frames or on the ground. (2) Prevent accidental movement or operation causing persons to be trapped attachments by taking safety measures for example, parking of the Contractor's Equipment such that it cannot move (as mentioned in JSSS 4.3.4 (1) (a), (b) and (d)) and stop the engine.
4.3.6 Safety Measures during Loading and Transporting of Contactor's Equipment (1) Select and use trailers, ramps, tracks and climbing equipment or other equipment which is suitable for the particular type, size and weight of the Contractor's Equipment and fit for the purpose for which they are intended.	**4.3.6 Safety Measures during Loading and Transporting of Contactor's Equipment (JC37)** JC37: 4.3.6 では積み上げ・積み下ろし作業を論じている。輸送時のこととしてみると、おかしなことがある((3)とか)。 (1) Select and use trailers, ~~ramps~~, tracks, their accessary and/or ~~climbing equipment or~~ other equipment which is suitable for the particular type, size and weight of the Contractor's Equipment and fit for the purpose for which they are intended.	**4.3.6 Safety Measures During Loading and Transporting of Contractor's Equipment** ~~(1)~~ Select and use trailers, ~~ramps~~, tracks, their accessary and/or ~~climbing equipment or~~ other equipment which is suitable for the particular type, size and weight of the Contractor's Equipment and fit for the purpose for which they are intended. To MD, may we know this track is truck. It seems JICA misunderstood and revised to trailer/track. If misunderstood the original shall be used. *This is from your original transportation draft which stated – "Use vehicles with climbing equipment or special equipment when construction heavy equipment is transported by trailers or tracks".* *It is correct as it was i.e. not "trucks" it is "tracks" and so is "ramps". This clause refers to selecting trailers and for getting equipment onto the trailers although "ramps" is more understandable than tracks.*	**4.3.6 Safety Measures During Loading and Transporting of Contractor's Equipment**

		I suggest minor editing as follows:	(1) Select and use trailers with associated ramps, other loading equipment and restraints which are suitable for the particular type, size and weight of the Contractor's Equipment and fit for the purpose for which they are intended.
(2) Select location and loading and unloading areas which have sufficient space and surfaces which are level, sound, safe and suitable to support all of the equipment.	(2) Select location and ~~loading and unloading~~ areas for loading and unloading which have sufficient space and surfaces which are level, sound, safe and suitable to support all of the equipment.	(2) Select location and ~~loading and unloading~~ areas for loading and unloading which have sufficient space and surfaces which are level, sound, safe and suitable to support all of the equipment.	(2) Select location and areas for loading and unloading which have sufficient space and surfaces which are level, sound, safe and suitable to support all of the equipment.
(3) Securely chock all trailer wheels to prevent any movement.	(3) Securely chock all wheels of trailer/track ~~wheels~~ to prevent any movement. NK: Added "during loading of Contactor's Equipment.	(3) Securely chock all wheels of trailer/~~track wheels~~ to prevent any movement ~~during loading of Contractor's Equipment.~~ NK: Added "during loading of Contactor's Equipment".	(3) Securely chock all wheels of trailers to prevent any movement.
(4) Stop and isolate the functions of trailer and load and fully engage brakes.	(4) Stop and isolate the functions of trailer/track and load and fully engage brakes.	*OK but no need to add as the clause heading describes this already No need "track"* (4) Stop and isolate the functions of trailer/track and load and fully engage brakes.	(4) Stop and isolate the functions of trailers and load and fully engage brakes.
(5) Ensure trailers are equipped with tie down devices to allow secure fixing of load.	(5) Ensure trailers/tracks are equipped with tie down devices to allow secure fixing of load.	*No need "track"* (5) Ensure trailers/track are equipped with tie down devices to allow secure fixing of load.	(5) Ensure trailers are equipped with tie down devices to allow secure fixing of load.
(6) Ensure that the weight and height of the loaded Contractor's Equipment does not exceed actually required or legal limits. (7) Ensure that all lights, brakes, steering and safety devices are working properly.	(6) Ensure that the weight and height of the loaded Contractor's Equipment does not exceed actually required or legal limits. (7) ~~Ensure that all lights, brakes, steering and safety devices of the trailer/track working properly.~~ (JC38) JC38: これ、必要でしょうか？単に運ばれている時の話ですし、故障したから運ばれる場合もあるのでは？ Is (7) necessary? This is only for time of transporting equipment. May there be a case that Contactor's Equipment of out of order is transported? NK: (7) specifies for trailer/track to transport Contactor's Equipment but not the Equipment of out of order. This (7) will be deleted because the (7) is provisions for Safety Measures during Loading and Transporting.	*No need "track"* (6) Ensure that the weight and height of the loaded Contractor's Equipment does do not exceed actually required or legal limits. (7) Ensure that all lights, brakes, steering and safety devices are working properly. . (JCB38) NK: (7) specifies for trailer/track to transport Contactor's Equipment but not the Equipment of out of order. This (7) will be deleted because the (7) is provisions for Safety Measures during Loading and Transporting *Yes, I think it is necessary as trailers are very often old, not road-worthy, unsafe and commonly without operating electrics or lights or even brakes. I also suggest that it should stay here as it should be checked anyway when the Contractor's Equipment has been loaded.*	(6) Ensure that the weight and height of the loaded Contractor's Equipment does do not exceed actually required or legal limits. (7) Ensure that all lights, brakes, steering and safety devices are working properly.
(8) Ensure that authorized maximum loading capacity, height, speed limit and any other required signage is applied to the trailer.	(8) Ensure that ~~suitable load limit~~ authorized maximum loading capacity, height, speed limit and any other required signage is applied to the trailer/track.	*Local law seems often to cover tractors but not detachable trailers* ~~(8) Ensure that suitable load limit authorized maximum loading capacity (JCA28) load limit, height, speed limit and any other required signage is applied to the trailer/track.~~ *I suggest edit as follows:* (8) Ensure that suitable, clear and legally compliant signage is attached to the trailer visibly indicating the maximum safe loading capacity, height of load, width, speed limits and any other restrictions or required information.	(8) Ensure that suitable, clear and legally compliant signage is attached to the trailer visibly indicating the maximum safe loading capacity, height of load, width, speed limits and any other restrictions or required information.

		~~(9) Ensure that materials are loaded evenly.~~ (JCA28a) *No problem to transfer above but suggest that the following modified clause is included here also:* (9) Ensure that trailers are loaded evenly.	(9) Ensure that trailers are loaded evenly.
(9) Ensure that Contractor's Equipment is braked, wedged, securely locked in position and tied to the trailer with adequately sized chains or other fixings and tensioned to prevent any movement during transit.	(9) Ensure that Contractor's Equipment is braked, wedged, securely locked in position and tied to the trailer with adequately sized chains or other fixings and tensioned to prevent any movement during transit.	(10) Ensure that Contractor's Equipment is braked, wedged, securely locked in position and tied to the trailer with adequately sized chains, slings and other fixings and tensioned to prevent any movement during transit.	(10) Ensure that Contractor's Equipment loaded onto trailers is braked, wedged, securely locked in position and tied to the trailer with adequately sized chains, slings and other fixings and tensioned to prevent any movement during transit.
(10) Place any attachments on the trailer and securely tie down.	(10) Place any attachments on the trailer/track and securely tie down.	(11) Place any attachments on the trailer/~~track.~~ and securely tie down. *No need "track"*	(11) Place any attachments on trailers and securely tie down.
(11) Inspect the tie-down tensioning, before and at intervals during transportation of Contractor's Equipment to ensure that there is no slackening.	(11) Inspect the tie-down tensioning, before and at intervals during transportation of Contractor's Equipment to ensure that there is no slackening.	(12) Inspect the tie-down tensioning, before and at intervals during transportation of Contractor's Equipment to ensure that there is no slackening. *No comment (but no need)*	(12) Inspect the tie-down tensioning, before and at intervals during transportation of Contractor's Equipment to ensure that there is no slackening.
		~~(10) Inspect slings for securing transported materials and if any abnormality is found, replace immediately.~~ (JCA28a) *No problem to transfer above but suggest that the following modified clause is included here also:* (13) Inspect chains, slings and other fixings for securing transported Contractor's Equipment and if any abnormality is found, replace immediately.	(13) Inspect chains, slings and other fixings for securing transported Contractor's Equipment and if any abnormality is found, replace immediately.
4.3.7 Safety Measures During Loading and Transporting of Materials (1) When transporting heavy or long goods on public roads, select roads on which the transportation does not pose danger to general traffic, third parties, structures adjacent to the transportation route, obtain all necessary prior permission from the relevant authorities including police, road authority before commencement of transportation and comply with all requirements.	**4.3.7 Safety Measures During Loading and Transporting of Materials** (1) When transporting heavy or long goods on public roads, select roads on which the transportation does not pose danger to general traffic (JC39), third parties, structures adjacent to the transportation route, obtain all necessary ~~prior~~ (JC40) permission from the relevant authorities including police, road authority before commencement of transportation and comply with all requirements. JC39: general traffic? To MD: Please review this change to public traffic. JC40: Prior は後に before があるから不要。 "Prior" is not necessary as there is "before". NK: Deleted as comented.	**4.3.7 Safety Measures During Loading and Transporting of Materials** (1) When transporting heavy or long goods on public roads, select roads on which the transportation does not pose danger to ~~general~~ public traffic (JCB39), third parties, structures adjacent to the transportation route, obtain all necessary ~~prior~~ (JCB40), ~~–~~permission from the relevant authorities including police, road authority before commencement of transportation and comply with all requirements. To MD: Please review this change to public traffic. *Change is not necessary and has little or no meaning.* *This is transportation on "public roads" anyway (which does have meaning) and any traffic thereon is covered by "general"* NK: Deleted as comented.	**4.3.7 Safety Measures During Loading and Transporting of Goods** (1) When transporting heavy or long Goods on public roads, select roads on which the transportation does not pose danger to other traffic, third parties, structures adjacent to the transportation route, obtain all necessary permission from the relevant authorities including police and road authority before commencement of transportation and comply with all requirements.

(2) When transporting heavy or long goods within the Site, select suitable route where the transportation does not pose danger to existing permanent or temporary buildings or structures or other works and obtain the consent of the Engineer before commencement of the transportation and comply with all requirements. (3) Ensure that materials are loaded evenly (4) Secure all loads with adequate and tensioned slings and cover with protective sheets, to avoid any fall or collapse of the conveyed articles and prevent any risk to workers and third parties; (5) Inspect slings for securing transported materials and if any abnormality is found, replace immediately.]	(2) When transporting heavy or long goods within the Site, select suitable route where the transportation does not pose danger to existing permanent or temporary buildings or structures or other works and obtain the consent of the Engineer before commencement of the transportation and comply with all requirements. (3) Ensure that materials are loaded evenly (4) Secure all loads with adequate and tensioned slings and cover with protective sheets, to avoid any fall or collapse of the conveyed articles and prevent any risk to workers and third parties; (5) Inspect slings for securing transported materials and if any abnormality is found, replace immediately.	*Agreed.* (2) When transporting heavy or long goods within the Site, select suitable route where the transportation does not pose danger to existing permanent or temporary buildings or structures or other works and obtain the consent of the HSO ~~Engineer~~ before commencement of the transportation and comply with all requirements. (3) Ensure that materials are loaded evenly (4) Secure all loads with adequate and tensioned slings and cover with protective sheets, to avoid any fall or collapse of the conveyed articles and prevent any risk to workers and third parties; (5) Inspect slings for securing transported materials and if any abnormality is found, replace immediately. *I think that the above should correctly be changed from Engineer to HSO. Contractor is responsible for all such arrangements.* NK: agreed.	(2) When transporting heavy or long mateerial Goods within the Site, select suitable routes where the transportation does not pose danger to existing permanent or temporary buildings or structures or other works and obtain the consent of the HSO before commencement of the transportation and comply with all requirements. (3) Ensure that Goods are loaded evenly. (4) Secure all loads with adequate and tensioned slings and cover with protective sheets, to avoid any fall or collapse of the conveyed articles and prevent any risk to workers and third parties. (5) Inspect slings for securing transported materials and if any abnormality is found, replace immediately.
4.3.8 Roads in the Site	**4.3.8 ~~Roads~~ Temporary Motor Way in the Site (JC40)** JC40: 仮設で作られる機械専用通路のことと理解していますが、英語の正しさについては MD 氏に確認願います。 We understood this Clause is for exclusive use roads temporary constrcuted. Please ask MD to confirm the title and content. NK: 和文では次のように作業環境と規定していました。 *5.4.1 運搬車両の作業環境* *請負者は、運搬車両を用いた作業を行う場合には、運搬作業における現場内での安全な作業環境を確保するために、次の措置を講じなければならない。* *(1) 運行経路について必要な幅員を保持すること、…。* *(2) 運行経路の必要と認められる箇所には、制限速度を示す標識…。* *(3) 運搬車両の走路と歩行者の安全通路を明示し、…。* *(4) 規模の大きな工事現場においては運搬専用道路を設け、…。* *(5) 夜間の運搬作業時には、…。* Site 外の公道の安全措置は道路管理者が行うべきことのため、和文（案）を参考に、現場内の運搬道路の安全措置とタイトルを変更することを提案します。 Japanese JSSS stipulate as follows: *5.4 Transport Works by Transportation Vehicles* *5.4.1 Work Environment* *The Contractor shall take the following measures for the safety working environment in the Site for operation of transportation vehicles.* *(1) Take measures for the transportation road …;*	**4.3.8 ~~Access Roads (JCA29)~~ ~~Roads in the Site~~ ~~(JCB40)~~ Temporary Transporting Roads in the Site** To MD, please review the title. *"Access Roads" is the correct title and is the correct expression to use.* *An "access road" is not specific as you suggest it is any road which enables traffic to reach (access) a particular place or area. It is a common and correct expression for use in construction.* *It is an expression that needs to be general also and may actually cover roads outside the Site also as these are still within the Contractor's responsibility. FIDIC refers to "access routes" outside the site (which are still the contractor's responsibility) generally meaning routes over existing roads. The use of "access roads" does not conflict with FIDIC or with any other part of JSSS.* *Your statement that the road authority shall take "safety measures in public roads outside of the site" is not completely correct within the context of this clause and is not necessary.* *Also, these are not just "temporary roads", they may also be:* *Permanent existing roads within the Site (outside is covered by FIDIC)* *New permanent roads within the Site to be constructed under the contract.* *Semi-completed new permanent roads within the Site*	**4.3.8 Site Access Roads**

(1) Take measures for ensuring that ~~access~~ roads in the Site are of suitable construction, ~~of~~ sufficient width, free from potholes, uneven settlement and collapse.

(2) Provide signs indicating height and weight restrictions, bends, speed limits, intersections, dangerous places and the like (road shoulders, cliff edges.).

(3) Separate roads for vehicles and walkways for workers and provide passing area for vehicles at places where the road is narrow.

(4) In large construction site, provide exclusive transport roads which are one-way if possible, and passing areas at narrow roads.

(5) Provide sufficient lighting facilities at necessary places along the roads when work operating in night.

4.3.9 Additional Requirements for Static Equipment

(1) The Contractor shall design and construct suitable foundations and support structures for static equipment with paved surfaces, screens, fencing and associated facilities for storage of material and product and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended.

Unless otherwise stated in the Contract, all such foundations, support structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works.

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(2) Put signboards indicating speed limit …;
(3) Separate roads for vehicles and walkways…;
(4) In large construction site, provide exclusive transport roads …; and
(5) Provide sufficient lighting facilities …;.
Safety measures in public roads out side of the Site shall be taken by the road authority.

NK: We propose to revise the title to Safety Measures for Temporary Transporting Roads in the Site referring to Japanese JSSS.

To MD, please review the title.

(1) Take measures for ensuring that access roads in the Site (JC41)are of suitable construction, of sufficient width, free from potholes, uneven settlement and collapse.

JC41: 同上。Ditto

NK: Ditto.

(2) rovide signs indicating height and weight restrictions, bends, speed limits, intersections, dangerous places and the like (road shoulders, cliff edges.).

(3) Separate roads for vehicles and walkways for workers and provide passing area for vehicles at places where the road is narrow.

(4) In large construction site, provide exclusive transport roads which are one-way if possible, and passing areas at narrow roads.

(5) Provide sufficient lighting facilities at necessary places along the roads when work operating in night.

4.3.9 Additional Requirements for Static Equipment

(1) The Contractor shall design and construct suitable foundations and support structures for static equipment with solid surface (paved, graded or compacted as appropriate) , screens(JC42), fencing and associated facilities for storage of material and product and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended.

JC42: What is screen?

NK: It means fence screen such as shown in the photo below.

Temporary roads, temporary routes or tracks.

Dirt roads or tracks

As there is obviously some lack of clarity or misunderstanding, and whilst there is no real need for any change to the original text of this clause I suggest changing it to "Site Access Roads".

There is no need to change any of the content of the clause.

NK: understood above.

~~(1) Take measures for ensuring that access roads in the Site (JCB41) Temporary Transporting Roads in the Site are of suitable construction, of sufficient width, free from potholes, uneven settlement and collapse.~~

(1) Take measures for ensuring that Site access roads are of suitable construction, of sufficient width, free from potholes, uneven settlement and collapse.

(2) Provide signs indicating height and weight restrictions, bends, speed limits, intersections, dangerous places and the like (road shoulders, cliff edges.).

(3) Separate roads for vehicles and walkways for workers and provide passing area for vehicles at places where the road is narrow.

(4) In large construction sites, provide exclusive transport roads which are one-way if possible and provide passing areas on narrow roads.

(5) Provide sufficient lighting facilities at necessary places along roads when work operating in night.

4.3.9 Additional Requirements for Static Equipment

(1) The Contractor shall design and construct suitable foundations and support structures for static equipment with paved surfaces, screens(JCB42), fencing and associated facilities for storage of material and product and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended.

Unless otherwise stated in the Contract, all such foundations, support structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works.

All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

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(1) Take measures for ensuring that Site access roads are of suitable construction, of sufficient width, free from potholes, uneven settlement and collapse.

(2) Provide signs indicating height and weight restrictions, bends, speed limits, intersections, dangerous places and the like (road shoulders, cliff edges.).

(3) Separate roads for vehicles and walkways for workers and provide passing area for vehicles at places where the road is narrow.

(4) In large construction sites, provide exclusive transport roads which are one-way if possible and provide passing areas on narrow roads.

(5) Provide sufficient lighting facilities at necessary places along roads when work operating in night.

4.3.9 Additional Requirements for Static Equipment

(1) The Contractor shall design and construct suitable foundations and support structures for static equipment with paved surfaces, screens, fencing and associated facilities for storage of material and product and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended. Unless otherwise stated in the Contract, all such foundations, support structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works. All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

(2) Unless otherwise stated in the Contract, all remaining aggregate, rock, cement, bitumen and the like used by or processed with the static equipment shall be removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works.

All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

4.3.10 Additional Requirements for Personnel and Goods Elevators and Material Conveyors

(1) General

(a) The Contractor shall undertake the daily and periodical inspection ~~items~~ in addition to the items stipulated in JSSS 4.2 [INSPECTION, MAINTENANCE AND REPAIR], 4.2.1 [Requirements Generally], (4) and (5) as specified below, (or at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further

Unless otherwise stated in the Contract, all such foundations, support structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works.

All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

(2) Unless otherwise stated in the Contract, all remaining aggregate, rock, cement, bitumen and the like used by or processed with the static equipment shall be removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works.

All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

4.3.10 Additional Requirements for Personnel and Goods Elevators and Material Conveyors (JC43)

JC43: ポータブルコンベヤーと違うことをどこかで記載する必要があるのでは。このスペックはポータブルコンベヤーには適用しない。
It is necessary to describe that the material conveyors does not include portable conveyors in JSSS, and the provisions for the material conveyors does not apply to the portable conveyors.

NK: Portable conveyors is added in 4.1.1 Scope (7) (c) and specified in (1) below as commneted.

(1) General

(a) The requirements for material conveyors stipulated in t4.3.10 does not apply to portable conveyors.

(b) The Contractor shall undertake the daily and periodical inspection in addition to the items stipulated in JSSS 4.2 [INSPECTION, MAINTENANCE AND REPAIR], 4.2.1 [Requirements Generally], (4) and (5) as specified below, (or at intervals required by the manufacturer's official maintenance and repair manual).

(2) Unless otherwise stated in the Contract, all remaining aggregate, rock, cement, bitumen and the like used by or processed with the static equipment shall be removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

No comment, no change necessary.

4.3.10 Additional Requirements for Personnel and Goods Elevators and ~~Material~~ Conveyors

NK: Portable conveyors is added in 4.1.1 Scope (7) (c) and specified in (1) below as commneted.

What exactly do you mean by "portable conveyors" for use in construction?

Why are they so different in a safety sense to any other type of temporary mobile conveyor?

NK6/19: 安衛則 151 条 77～83 はコンベヤーについて規定しているが、固定と移動式の区別はしていない。これらの安全要求事項に違いがないため、JCB43 のコメントへの対応は、Portable conveyor も含む規定を提案します。

NK6/19: Japanese regulation stipulate for conveyors without separating portable and static (fixed) conveyors. The safety requirements are almost same.
We will specify for both conveyors.

(1) General

(a) The requirements for material conveyors stipulated in t4.3.10 does not apply to portable conveyors.

Why not? What are the requirements for "portable conveyors" and where are they specified?

NK6/19: We will specify for both conveyors here.

(b) The Contractor shall undertake the ~~following additional~~ daily and periodical inspection ~~items~~ in addition to the items stipulated in JSSS 4.2 [INSPECTION,

(2) Unless otherwise stated in the Contract, all remaining aggregate, rock, cement, bitumen and the like used by or processed with the static equipment shall be removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer.

4.3.10 Additional Requirements for Personnel and Goods Elevators and Conveyors

(1) General

(a) The requirements for conveyors stipulated in this clause apply to portable and material conveyors;

(b) The Contractor shall undertake the daily and periodical inspection in addition to the items stipulated in JSSS 4.2 [Inspection, Maintenance And Repair], JSSS 4.2.1 [Requirements Generally], (4) and (5) (or

operation of the Contractor's Equipment is permitted: (b) The Contractor shall post the maximum load capacity and any restrictions on the use. (2) Personnel and Goods Elevators (a) Additional daily inspection items (i) Defects or operational faults in elevator enclosures, doors, guide-rails and runners; (ii) Defects or operational faults in emergency stop and alarm systems; (iii) Defects or operational faults in power, lighting and control systems; (iv) Defects or operational faults with interphone systems; (v) Defects or operational faults in brakes, clutches; and (vi) Defects or operational faults of sheaves and pulleys. (b) Additional periodical inspection items (i) Defects or operational faults in daily inspection items; (ii) Defects or operational faults in wire ropes; (iii) Defects or operational faults in winch and its foundation; and (iv) Defects or operational faults in supporting structures, guy ropes, fixings and anchors. (3) Belt Conveyors (a) Additonal safety measures	The Contractor shall also carry out any maintenance and repair, and obtain re-certification of the HSO for further operation; (c) The Contractor shall undertake the following additional periodical inspection items, (at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted: (d) The Contractor shall post the maximum load capacity and any restrictions on the use. (2) Personnel and Goods Elevators (JC44) JC44: 以下のように、(b)、(c)も同様に直してください。(3)も同様。 Please modify (b) (c) and (3) as below. NK: Modified. (a) Additional daily inspection items shall include to check defects or operational faults with respect to: (i) ~~Defects or operational faults in~~ elevator enclosures, doors, guide-rails and runners; (ii) ~~Defects or operational faults in~~ emergency stop and alarm systems; (iii) ~~Defects or operational faults in~~ power, lighting and control systems; (iv) ~~Defects or operational faults with~~ interphone systems; (v) ~~Defects or operational faults in~~ brakes, clutches; and (vi) ~~Defects or operational faults of~~ sheaves and pulleys. (b) Additional periodical inspection items shall include to check defects or operational faults with respect to: (i) ~~Defects or operational faults in~~ daily inspection items; (ii) ~~Defects or operational faults in~~ wire ropes; (iii) ~~Defects or operational faults in~~ winch	MAINTENANCE AND REPAIR], 4.2.1 [Requirements Generally], (4) and (5) as specified below, (or at intervals required by the manufacturer's official operation, maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted: (c) The Contractor shall undertake the following additional periodical inspection items, (at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted: (d) The Contractor shall post the maximum load capacity and any restrictions on the use. (2) Personnel and Goods Elevators(JC44) (a) Additional daily inspection items shall include checking for defects or operational faults with the following: ~~(i) Defects or operational fa~~ (i) ~~ults in~~ elevator enclosures, doors, guide-rails and runners; (ii) ~~Defects or operational faults in~~ emergency stop and alarm systems; (iii) ~~Defects or operational faults in~~ power, lighting and control systems; (iv) Defects or operational faults with interphone systems; (v) Defects or operational faults in brakes, clutches; and (vi) Defects or operational faults of sheaves and pulleys. (b) Additional periodical inspection items shall include checking for defects or operational faults with the following: (i) Defects or operational faults in daily inspection items; (ii) Defects or operational faults in wire ropes; (iii) Defects or operational faults in winch and its foundation; and (iv) ~~Defects or operational faults in~~	at intervals required by the manufacturer's official operation, maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted; and (c) The Contractor shall post the maximum load capacity and any restrictions on the use. (2) Personnel and Goods Elevators (a) Additional daily inspection items shall include checking for defects or operational faults with the following: (i) Elevator enclosures, doors, guide-rails and runners; (ii) Emergency stop and alarm systems; (iii) Power, lighting and control systems; (iv) Interphone systems; (v) Brakes, clutches; and (vi) Sheaves and pulleys. (b) Additional periodical inspection items shall include checking for defects or operational faults with the following: (i) Daily inspection items; (ii) Wire ropes; (iii) Winch and its foundation; and (iv) Supporting structures, guy ropes, fixings and anchors.

(i) Conveyor systems shall be equipped with an audible warning signal to be sounded immediately before starting up the conveyor.

(ii) Means for stopping the motor or engine shall be provided at the motor or engine location.

(iii) Emergency stop switches shall be provided and be arranged so that the conveyor cannot be started again until the actuating stop switch has been reset to running or "on" position.

(iv) Where a conveyor passes over work areas, roads and walkways, suitable guards shall be provided to protect workers required to work below the conveyors.

(v) Riding of workers on the moving belts of the belt conveyors shall be prohibited.

(b) Additional daily inspection items

(i) Defects or operational faults in prevention devices against uncontrolled run and reverse run, and emergency stop switches; and

(ii) Defects or operational faults in guards.

(c) Additional periodical inspection items

Defects or operational faults in daily inspection items; and

and its foundation; and

(iv) ~~Defects or operational faults in~~ supporting structures, guy ropes, fixings and anchors.

(3) ~~Belt~~ Material Conveyors

(a) Additonal safety measures

(i) Conveyor systems shall be equipped with an audible warning signal to be sounded immediately before starting up the conveyor.

(ii) Means for stopping the motor or engine shall be provided at the motor or engine location.

(iii) Emergency stop switches shall be provided and be arranged so that the conveyor cannot be started again until the actuating stop switch has been reset to running or "on" position.

(iv) Where a conveyor passes over work areas, roads and walkways, suitable guards shall be provided ~~to protect workers required to work below the conveyors~~ to prevent fall of the materials being conveyed .

(v) Riding of workers on the moving belts ~~of the belt conveyors~~ shall be prohibited.

(b) Additional daily inspection items shall include to check defects or operational faults with respect to:

(i) ~~Defects or operational faults in~~ prevention devices against uncontrolled run and reverse run, and emergency stop switches; and

(ii) ~~Defects or operational faults in~~ guards.

(c) Additional periodical inspection items

Defects or operational faults in daily inspection items; ~~and~~(JC45)

JC45: There is no sentence after "and".
NK: Deleted.

~~(1) General Requirements~~

~~The Contractor shall post the maximum load capacity and any restrictions on the use.~~

~~(2) The Contractor shall undertake the following additional daily inspection items, (or at intervals required by the manufacturer's official maintenance and repair manual),~~

supporting structures, guy ropes, fixings and anchors.

(3) ~~Belt~~ Material Conveyors

(a) Additonal safety measures

(i) Conveyor systems shall be equipped with an audible warning signal to be sounded immediately before starting up the conveyor;

(ii) Means for stopping the motor or engine shall be provided at the motor or engine location;

(iii) Emergency stop switches shall be provided and be arranged so that the conveyor cannot be started again until the actuating stop switch has been reset to running or "on" position;

(iv) Where a conveyor passes over work areas, roads and walkways, suitable guards shall be provided ~~to protect workers required to work below the conveyors~~ to prevent fall of the materials being conveyed; and

(v) Riding of workers on the moving belts ~~of the belt conveyors~~ shall be prohibited.

(b) Additional daily inspection items shall include checking for defects or operational faults with the following:

(i) ~~Defects or operational faults in~~ overrun and reverse run prevention devices; against uncontrolled run and reverse run,

(ii) emergency stop switches; and

(iii) Defects or operational faults in guards.

(c) Additional periodical inspection items, shall include for checking for defects or operational faults with daily inspection items. ~~and~~ (JCB45)

(3) Conveyors

(a) Additonal safety measures:

(i) Conveyor systems shall be equipped with an audible warning signal to be sounded immediately before starting up the conveyor;

(ii) Means for stopping the motor or engine shall be provided at the motor or engine location;

(iii) Emergency stop switches shall be provided and be arranged so that the conveyor cannot be started again until the actuating stop switch has been reset to running or "on" position;

(iv) Where a conveyor passes over work areas, roads and walkways, suitable guards shall be provided to prevent fall of the materials being conveyed; and

(v) Riding of workers on the moving belts shall be prohibited.

(b) Additional daily inspection items shall include checking for defects or operational faults with the following:

(i) Overrun and reverse run prevention devices;

(ii) Emergency stop switches; and

(iii) Guards.

(c) Additional periodical inspection items, shall include for checking for defects or operational faults with daily inspection items.

	~~carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:~~ ~~(a) Defects or operational faults in elevator enclosures, doors, guide rails and runners;~~ ~~(b) Defects or operational faults in emergency stop and alarm systems;~~ ~~(c) Defects or operational faults in power, lighting and control systems;~~ ~~(d) Defects or operational faults with interphone systems;~~ ~~(e) Defects or operational faults in brakes, clutches; and~~ ~~(f) Defects or operational faults of sheaves and pulleys.~~ ~~(3) The Contractor shall undertake the following additional periodical inspection items, (at intervals required by the manufacturer's official maintenance and repair manual), carry out any necessary maintenance and repair, and obtain re-certification of the HSO before any further operation of the Contractor's Equipment is permitted:~~ ~~(a) Defects or operational faults in supporting cables and wire ropes; and~~ ~~(b) Defects or operational faults in supporting structures, guy ropes, fixings and anchors.~~		
4.3.11 Additional Requirements for Tools, Tackle and Small Equipment (1) Accessories and attachments shall be the standard types obtained from or recommended by the manufacturer of the equipment to which they are connected. (2) Any repairs shall be carried out by the manufacturers recommended repair agents and using the manufacturers genuine or recommended spare parts.	**4.3.11 Additional Requirements for Small Equipment, Tools and Tackle** (JC46) JC46: これらを総称して Tools でいいのでは. Tools and Tackle can be called as "Tools". NK: Defined "Tools2 in 4.1.1 (7) above. (1) Accessories and attachments shall be the standard types obtained from or recommended by the manufacturer of the equipment to which they are connected. (2) Any repairs shall be carried out by competent persons approved by the HSO ~~the manufacturers recommended repair agents and using the manufacturers genuine or recommended spare parts.~~ (JC47) JC47: Tools の修理に代理店を使うことはレアー。所謂 competent person が HSO に指名されたものであればいいとしたい。 あくまでも理想論。僻地では無理 " as much as possible" を加えてみては	**4.3.11 Additional Requirements for ~~Tools, Tackle and~~ Small Equipment and Tools** NK: Defined "Tools2 in 4.1.1 (7) above. *See 4.1.1 and 4.1.1 (7), this change is fine.* (1) Accessories and attachments shall be the standard types obtained from or recommended by the manufacturer of the equipment to which they are connected. ~~(2) Any repairs shall be carried out by competent persons approved by the HSO.~~	**4.3.11 Additional Requirements for Small Equipment and Tools** (1) Accessories and attachments shall be the standard types obtained from or recommended by the manufacturer of the equipment to which they are connected.

(3) All equipment shall be tested and re-certified by the HSO as safe for use after any repair or replacement of parts, before such equipment is put back into use.	It is few for agents to repair them, so it is replaced with competent persons approved by the HSO. It is ideal for agent to repair them, so how about to add “as much as possible”. NK: Modified as commented. (3) All equipment (JC48), tools and tackle shall be tested by competent persons after any repair or replacement of parts, before such equipment is put back into use. JC48: マイナーなものなので、re-certified まではしないと思います。 It may not be re-certified because they are minor equipment. NK: We would like to stipulate test before use to avoid injury of workers but not request to be certified. Therefore, it is left with modification as it is.	NK: Modified as commented. *Change to repair agents may be OK however it now ignores any mention of the use of genuine spare parts which I suggest is important even though it may not always be followed! I suggest the following be added in place of the above.* (2) Any repairs shall be carried out by competent persons approved by the HSO and using the manufacturer’s genuine or recommended spare parts. NK: agreed. (3) All small equipment (JCB48) and Tools shall be tested and re-certified by the HSO as safe for use after any repair or replacement of parts, before such equipment is put back into use. *This is OK.*	(2) Any repairs shall be carried out by competent persons approved by the HSO and using the manufacturer’s genuine or recommended spare parts. (3) All small equipment and tools shall be tested by the HSO as safe for use after any repair or replacement of parts, before such equipment is put back into use.
4.3.12 Additional Requirements for Electric Powered Equipment	**4.3.12 Additional Requirements for Electric Powered Equipment (JC49) other than small equipment and tools** JC49: ここで規定する電動機械は何かを明確にしないと混乱してしまう。ポータブルのものや Tool の類は含まれないと理解しました。 It is confused because it is not clear what are Electric Powered Equipment. We undestood it does not include portable equipment and tools. NK: The Electric Powered Equipment was defiend in 4.1.1 (8) in last draft R2 as follows: *(8) Electric powered equipment means portable electric powered mobile equipment or tools.* The (8) was deleted by JICA comment JC13 and 14. NK: Definition is added in (1) below.	**4.3.12 Additional Requirements for Electric Powered Equipment (JCB49)**	**4.3.12 Additional Requirements for Electric Powered Equipment**
(1) The Contractor shall undertake the following additional daily inspection items, (or at intervals required by the manufacturer’s official maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor’s Equipment is permitted: (a) All equipment is provided with Earth Leakage Circuit Breakers (ELCB) and that these are working properly with no defects	(1) Electric powered equipment specified in 4.3.12 is portable electric powered mobile equipment or tools among small equipment and Tools listed in 4.1.1 (7). (2) The Contractor shall undertake the following additional daily inspection items, (or at intervals required by the manufacturer’s official maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor’s Equipment is permitted: (a) ~~All equipment is provided with Earth Leakage Circuit Breakers (ELCB) and that these are working properly with no defects or operational faults;~~ Defects or	(1) Electric powered equipment specified in 4.3.12 shall include portable electric powered mobile equipment or tools and shall comprise a part of the small equipment and tools listed in 4.1.1 (7). (2) The Contractor shall undertake the following additional daily inspection items, (or at intervals required by the manufacturer’s official operation, maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor’s Equipment is permitted: ~~(a) Defects or operational faults of Earth Leakage Circuit Breakers (ELCB), if any; (JCB50)~~ NK: Modified as commented. (NK deleted this (a) and specified	(1) Electric powered equipment specified in this clause shall include portable electric powered mobile equipment or tools and shall form a part of the small equipment and tools listed in JSSS 0 (7). (2) The Contractor shall undertake the following additional daily inspection items, (or at intervals required by the manufacturer’s official operation, maintenance and repair manual), carry out any necessary maintenance and repair and when necessary obtain re-certification of the HSO before any further operation of the Contractor’s Equipment is permitted:

or operational faults;	operational faults of Earth Leakage Circuit Breakers (ELCB), if any; (JC50) JC50: 表現の横並びをとるとこのようになるのではないか？ (2)(d)では ELCB なるものは必須ではない記述になっている The sentence will be as modified to make same listing style below. (2) (d) stipulates ELCB is not compulsory. NK: Modified as commented.	in (3) (d)). *Note to NK:* *I strongly recommend that this entire subclause be reviewed from the electrical safety perspective by your professional electrical specialist.* *I had also previously requested that this part be coordinated with JSSS 6.7 Temporary Electrical Installations but this does not appear to have happened and I again repeat this request as the two sections are not currently coordinated from the electrical safety aspect.* *I suggest that the above reference to ELCB (unless changed to RCD) should not be changed, and preferably 3(d) and 3(e) below should be changed as for safety purposes as either ELCB, RCD or other safety measures are essential.* *The fact that many JICA works are being executed in developing countries in my opinion should not in any way affect the specified level of safety in JSSS.* NK6/19: NK will request NK electrical expert after submission of DFR.	
(b) Defects or operational faults with grounding such as disconnection of grounding wire and insecure fixing of grounding electrodes; and (c) Damage to insulation and protective coverings of all wires and cables including flexible cables (d) Damage to plugs, sockets, transformers and all wiring fittings and appliances (2) The Contractor shall comply with the following additional safety requirements: (a) Use weatherproof switches with covers, securely fixed in accessible and dry places;	(b) Defects or operational faults with grounding such as disconnection of grounding wire and insecure fixing of grounding electrodes; and (c) Damage to insulation and protective coverings of all wires and cables including flexible cables (d) Damage to plugs, sockets, transformers and all wiring fittings and appliances (3) The Contractor shall comply with the following additional safety requirements: (a) Use weatherproof switches (JC51) with covers, securely fixed in accessible and dry places; JC51: 防爆タイプ(anti-explosion, if needed)が必要な場合も記載しては？ We propose to specify anti-explosion type, if needed. NK: 防爆タイプの電動器具の配置が必要な場所は、可燃性のガスなどを取り扱っている工場などです。ODA 対象の工事現場では一般的な規定ではないため、追記しないことと致します。 参照：https://www.mars-tohken.co.jp/solution/model/detail/explosion-proof.html Anti-exposition type equipment shall be provided at places such as factory to handle flammable gas. It is not general requirement in ODA construction sites, so not added it.	(a) Defects or operational faults with grounding such as disconnection of grounding wire and insecure fixing of grounding electrodes; (b) Damage to insulation and protective coverings of all wires and cables including flexible cables; and (c) Damage to plugs, sockets, transformers and all wiring fittings and appliances. (3) The Contractor shall comply with the following additional safety requirements: (a) Use ~~metal clad~~ waterproof ~~weatherproof~~ switches and socket outlets with covers, securely fixed and located in accessible and dry places; *No comment, however "metal clad switches" are an understandable construction term for metal faced heavy duty fittings commonly used for external and temporary works.* *Maybe also change "weatherproof" to "waterproof"* *Please refer to my recommendation above regarding review by electrical specialist.*	(a) Defects or operational faults with grounding such as disconnection of grounding wire and insecure fixing of grounding electrodes; (b) Damage to insulation and protective coverings of all wires and cables including flexible cables; and (c) Damage to plugs, sockets, transformers and all wiring fittings and appliances. (3) The Contractor shall comply with the following additional safety requirements: (a) Use waterproof switches and socket outlets with covers, securely fixed and located in accessible and dry places;
(b) Label and paint electrical power and switch boxes with warning signs and coloured hazard markings; (c) Use rubber cabtyre cables for all electrical power equipment;	(b) Label and paint electrical power and switch boxes with warning signs and coloured hazard markings; (c) Use rubber cabtyre cables for all electrical power equipment;	(b) Label and paint electrical power and switch boxes with warning signs and coloured hazard markings; (c) Use rubber cabtyre cables for all electrical power equipment;	(b) Label and paint electrical power and switch boxes with warning signs and coloured hazard markings;

(d) Wherever possible provide an ELCB's to each item of electrical equipment.	(d) Wherever possible provide an ELCB's to each item of electrical equipment.	(d) Wherever possible provide an ELCB's to each item of electrical equipment;	(c) Use rubber cabtyre cables for all electrical power equipment; (d) Wherever possible provide an ELCB (Earth Leakage Circuit Breaker) or RCD (Current Sensing Device) in the electrical supply to each item of electrical equipment;
(e) If for any reason, an ELCB cannot be provided, ensure that the metal exterior of the electrical power supply, metal outer casing of electric motors and the electrical equipment are all grounded.	(e) If for any reason, an ELCB cannot be provided, ensure that the metal exterior of the electrical power supply, metal outer casing of electric motors and the electrical equipment are all grounded.	(e) If for any reason, an ELCB cannot be provided, ensure that the metal exterior of the electrical power supply, metal outer casing of electric motors and the electrical equipment are all grounded; *Please refer to my recommendation above regarding review by electrical specialist and coordinate (d) and (e) above.* *ELCB or RCD?* *Previous issue MD notes:* *Please coordinate 7.7 Temporary Elect. Installations.* *MD reply: is this part necessary? It seems that it is better covered by 7.7 (6.7)* *Electric leakage prevention and disconnection device is important device.* *MD - Yes I am aware of that but please note that **ELCB** is the old name and refers to voltage operated devices that may no longer be available, it is advised these are replaced if found.* ***RCD** is specified in Chapter 7.7, please advise what you want to use??* NK6/19: NK will ask NK expert these provisions after submission of DFR.	(e) If for any reason, an ELCB or RCD cannot be provided, ensure that the metal exterior of the electrical power supply, metal outer casing of electric motors and the electrical equipment are all grounded;
(f) Avoid hanging electric cables and wires directly on nails, reinforcing bars and the like to prevent damage to the insulation and protective covering. (g) Turn off the power before repairing, moving or maintaining electric power equipment; (h) Replace fuses with correct type and rating, prohibit replacing fuses with a higher rating or with iron or copper wire; (i) Ensure that fuses are replaced by an authorised person; (j) Prevent any use of electric power equipment from use in the rain, or when the user is wet, standing in water and not wearing rubber soled insulated footwear or when the electric power equipment is wet;	(f) Avoid hanging electric cables and wires directly on nails, reinforcing bars and the like to prevent damage to the insulation and protective covering. (g) Turn off the power before repairing, moving or maintaining electric power equipment; (h) Replace fuses with correct type and rating, prohibit replacing fuses with a higher rating or with iron or copper wire; (i) Ensure that fuses are replaced by an authorised person; (j) Prevent any use of electric power equipment from use in the rain, or when the user is wet, standing in water ~~and not~~ without wearing rubber soled insulated footwear or when the electric power equipment is wet;	(f) Avoid hanging electric cables and wires directly on nails, reinforcement ~~or scaffolding tubes~~ and the like to prevent damage to the insulation and protective covering; *"Log scaffolding" has no meaning, scaffolding has meaning.* (g) Turn off the power before repairing, moving or maintaining electric power equipment; (h) Replace fuses with correct type and rating, prohibit replacing fuses with a higher rating or with iron or copper wire; (i) Ensure that fuses are replaced by an authorised person; (j) Prevent any use of electric power equipment from use in the rain, or when the user is wet, standing in water or ~~is not~~ without wearing rubber soled insulated footwear or when the electric power equipment is wet; *Your change is not grammatically correct, the original*	(f) Avoid hanging electric cables and wires directly on nails, reinforcement or scaffolding and the like to prevent damage to the insulation and protective covering; (g) Turn off the power before repairing, moving or maintaining electric power equipment; (h) Replace fuses with correct type and rating, prohibit replacing fuses with a higher rating or with iron or copper wire; (i) Ensure that fuses are replaced by an authorised person; (j) Prevent any use of electric power equipment from use in the rain, or when the user is wet, standing in water or is not wearing rubber soled insulated footwear or when the electric power equipment is wet;

(k) When any operational fault is identified immediately turn off the power, unplug and stop using the equipment and advise (or hand to) the HSO;

(l) Ensure that workers using electric power equipment wear appropriate PPE suitable for the electric power equipment in use such as working clothes, protective helmets, safety shoes, eye and face protection, ear protection; and

(m) When electric shock accident occurs, unplug and stop using the equipment and advise (or hand to) the HSO and take measures in accordance with JSSS 1.21 [*Accident Response Plan*].

4.3.13 Additional Safety Measures during Adverse Weather

Further to the requirements of JSSS 2.7 [*Adverse Weather Requirements*], the Contractor shall ensure that Contractor's Equipment is parked in a stable and secure state by taking all necessary measures including:

(1) Dropping the jib, boom, arm and attachments to ground level and securing where necessary with adequate anchors and chains.

(2) If heavy rain and flooding can be anticipated, moving Contractor's Equipment to higher ground or to places where there is no risk of instability.

(3) Removing snow or ice.

4.4 ROPES, SLINGS AND CHAINS

4.4.4 Requirements Generally

(1) The Contractor shall ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

(2) Wire ropes, slings and chains shall have a safety factor recommended by the manufactures, obtained by dividing the breaking strength by the maximum applied load for each type.

(k) When any operational fault is identified immediately turn off the power, unplug and stop using the equipment and advise (or hand to) the HSO;

(l) Ensure that workers using electric power equipment wear appropriate PPE suitable for the electric power equipment in use such as working clothes, protective helmets, safety shoes, eye and face protection, ear protection; and

(m) When electric shock accident occurs, unplug and stop using the equipment and advise (or hand to) the HSO and take measures in accordance with JSSS 1.21 [*Accident Response Plan*].

4.3.13 Additional Safety Measures during Adverse Weather

Further to the requirements of JSSS 2.7 [*Adverse Weather Requirements*], the Contractor shall ensure that Contractor's Equipment is parked in a stable and secure state by taking all necessary measures including:

(1) Dropping the jib, boom, arm and attachments to ground level and securing where necessary with adequate anchors and chains.

(2) If heavy rain and flooding can be anticipated, moving Contractor's Equipment to higher ground or to places where there is no risk of instability.

(3) Removing snow or ice.

4.4 ROPES, SLINGS AND CHAINS

4.4.4 Requirements Generally

(1) The Contractor shall ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

(2) Wire ropes, slings and chains shall have a safety factor recommended by the manufactures , obtained by dividing the breaking strength by the maximum applied

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wording is correct.

(k) When any operational fault is identified immediately turn off the power, unplug and stop using the equipment and advise (or hand to) the HSO;

(l) ~~Ensure that workers using electric power equipment wear appropriate PPE such as working clothes, protective helmets, safety shoes; and~~ (JCA34) Ensure that workers using electric power equipment wear appropriate PPE suitable for the electric power equipment in use such as working clothes, protective helmets, safety shoes, eye and face protection, ear protection; and

I think it is relevant.

NK: confirmed.

(m) When electric shock accident occurs, unplug and stop using the equipment and advise (or hand to) the HSO and take measures in accordance with JSSS 1.24 [*Accident Response Plan*].

4.3.13 Additional Safety Measures during Adverse Weather

Further to the requirements of JSSS 2.7 [*Adverse Weather Requirements*], the Contractor shall ensure that Contractor's Equipment is parked in a stable and secure state by taking all necessary measures including:

(1) Dropping the jib, boom, arm and attachments to ground level and securing where necessary with adequate anchors and chains.

(2) If heavy rain and flooding can be anticipated, moving Contractor's Equipment to higher ground or to places where there is no risk of instability.

(3) Removing snow or ice.

4.4 ROPES, SLINGS AND CHAINS

4.4.1 Requirements Generally

(1) The Contractor shall ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

~~(2)~~ Wire ropes, slings and chains shall have safety factor recommended by the manufactures ~~of at least 6~~, (JCA35), obtained by dividing the breaking strength by the maximum applied load for each type.

(k) When any operational fault is identified immediately turn off the power, unplug and stop using the equipment and advise (or hand to) the HSO;

(l) Ensure that workers using electric power equipment wear appropriate PPE suitable for the electric power equipment in use such as working clothes, protective helmets, safety shoes, eye and face protection, ear protection; and

(m) When electric shock accident occurs, unplug and stop using the equipment and advise (or hand to) the HSO and take measures in accordance with JSSS 1.24 [*Accident Response Plan*].

4.3.13 Additional Safety Measures during Adverse Weather

Further to the requirements of JSSS 2.7 [*Adverse Weather Requirements*], the Contractor shall ensure that Contractor's Equipment is parked in a stable and secure state by taking all necessary measures including:

(1) Dropping the jib, boom, arm and attachments to ground level and securing where necessary with adequate anchors and chains.

(2) If heavy rain and flooding can be anticipated, moving Contractor's Equipment to higher ground or to places where there is no risk of instability.

(3) Removing snow or ice.

4.4 ROPES, SLINGS AND CHAINS

4.4.4 Requirements Generally

(1) The Contractor shall ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

	load for each type.	As commented, the clause is changed as right. *I suggest that no extensive change is necessary here as all is specified in JSSS 5.4 as referenced below.* *If you require this change, I suggest as follows:* (2) The safety factor for wire ropes, slings and chains shall be as recommended by the manufacturer of each type. NK: agreed. (3) Wire ropes and slings shall not be fabricated at the Site but shall be obtained only from sources approved by the HSO. NK: (2) wire ropes cannot be fabricated at the site. Eye splices of rope can be made at the site. I think (2) is not necessary to additionally specified.	(2) The safety factor for wire ropes, slings and chains shall be as recommended by the manufacturer of each type.
(3) Requirements for Ropes, slings and chains shall be as required under JSSS 6.5 [*Rigging Equipment*].	(3) Requirements for Ropes, slings and chains shall be as required under JSSS 6.5 [*Rigging Equipment*].	(4) Requirements for Ropes, slings and chains shall be as specified in JSSS 5.4 [*Rigging Equipment*].	(3) Requirements for Ropes, slings and chains shall be as specified in JSSS 5.4 [*Rigging Equipment*].
4.5 ALTERNATIVE USE OF CONTRACTOR'S EQUIPMENT	**4.5 ALTERNATIVE USE OF CONTRACTOR'S EQUIPMENT**	**4.5 ALTERNATIVE USE OF CONTRACTOR'S EQUIPMENT**	**4.5 ALTERNATIVE USE OF CONTRACTOR'S EQUIPMENT**
4.5.1 Requirements Generally	**4.5.4 Requirements Generally**	**4.5.1 Requirements Generally**	**4.5.1 Requirements Generally**
The Contractor shall not use Contractor's Equipment for any other purpose than the purpose for which it is designed and other than the purpose recommended by the manufacturer.	The Contractor shall not use Contractor's Equipment for any other purpose than the purpose for which it is designed and other than the purpose recommended by the manufacturer.	The Contractor shall not use Contractor's Equipment for any other purpose than the purpose for which it is designed and other than the purpose recommended by the manufacturer.	The Contractor shall not use Contractor's Equipment for any other purpose than the purpose for which it is designed and other than the purpose recommended by the manufacturer.
If the manufacturer allows alternative use (for example bucket excavators used for lifting operations) then such alternative use shall be strictly in accordance with the manufacturer's written instructions and in any event within the designed operating capacity of the equipment.	~~If the manufacturer allows alternative use (for example bucket excavators used for lifting operations) then such alternative use shall be strictly in accordance with the manufacturer's written instructions and in any event within the designed operating capacity of the equipment.~~ (JC52) JC52: 製造者が目的外使用の書面でのインストラクションを出していることが想定できないので、いらないのではないでしょうか？ It cannot be considered that manufacturers issue instructions in writing for alternative use of equipment, therefore is this sentence not necessary? NK: Agreed to delete.	NK: Agreed to delete. *Using bucket excavators for example for hoisting lighter loads (e.g. steel pipes and drainage components) is a common and convenient practice. It is recognised as such by manufacturers and their equipment is designed for this.*	
When the manufacturer's written instructions and the Laws of the Country regarding alternative use, the safety of alternative use shall be approved by the HSO by checking for example the following items for lifting:	Use of Contractor's Equipment for any other purpose than the originally intended purpose are allowed only if it is not prohibited by either of the Law the Country and the manufacturer's written instructions, and subject to HSO's approval after reviewing all the safety aspects. In particular, when equipment for excavation is to be used for lifting, HSO shall confirm:	Use of Contractor's Equipment for any other purpose than the originally intended purpose are allowed only if it is not prohibited by either of the Law the Country and the manufacturer's official operation, maintenance and repair manual and subject to HSO's approval after reviewing all the safety aspects. In particular, when equipment for excavation is to be used for lifting, HSO shall confirm:	Use of Contractor's Equipment for any other purpose than the originally intended purpose are allowed only if it is not prohibited by either of the Law the Country and the manufacturer's official operation, maintenance and repair manual and subject to HSO's approval after reviewing all the safety aspects. In particular, when equipment for excavation is to be used for lifting, the HSO shall confirm:
(1) Rigging Equipment such as hook attached on construction equipment such as arm or bucket are used;	(1) ~~Rigging Equipment such as hook attached on construction equipment such as arm or bucket are used;~~ Rigging Equipment such as hook is	(1) Rigging Equipment such as hook is attached on an appropriate part of the excavation equipment (e.g. arm or bucket).	(1) Rigging Equipment such as hook is attached on an appropriate part of the excavation equipment (e.g. arm or bucket).

	attached on an appropriate part of the excavation equipment (e.g. arm or bucket); JC53: 下記の例示は全て掘削機械を揚貨のために用いる時の事項とみました。それであれば、修文案ような記述に修正した方がよいと思います. The following examples are all lifting use of excavators, so the (1) above is better to revised as revised above. NK: Modified as commented.		
(2) Arms, bucket, Rigging Equipment have enough strength to lift the load;	(2) Arms, bucket, Rigging Equipment have enough strength to lift the load;	(2) Arms, bucket, Rigging Equipment have enough strength to lift the load.	(2) Arms, bucket, Rigging Equipment have enough strength to lift the load.
(3) There is no risk that the lifting devices such as hook and shackles will be detached from arm or bucket of the construction equipment;	(3) There is no risk that the lifting devices such as hook and shackles will be detached from arm or bucket of the ~~construction~~ equipment;	(3) There is no risk that the lifting devices such as hook and shackles will be detached from arm or bucket of the ~~construction e~~quipment.	(3) There is no risk that the lifting devices such as hook and shackles will be detached from arm or bucket of the equipment.
(4) The lifting capacity for alternative use is confirmed by loading tests at the Site; and	(4) The lifting capacity for alternative use is confirmed by loading tests at the Site; and	(4) The lifting capacity for alternative use is confirmed by loading tests at the Site.	(4) The lifting capacity for alternative use is confirmed by loading tests at the Site.
(5) Operators engaged in lifting work with construction equipment such as excavators shall be licensed when necessary and trained for lifting work.	(5) ~~Operators engaged in lifting work with construction equipment such as excavators shall be licensed when necessary and trained for lifting work.~~ (JC54) JC54: 揚貨作業をする時に揚貨の資格が必要であることは、揚貨の章に記述があるはず。不要。 The necessity of license is specified in the Chapter for lifting, so not necessary mention (5). NK: Deleted.	(5) Operators engaged in lifting work with construction equipment such as excavators shall be licensed when necessary and trained for lifting work. (JCB54)	
Under these circumstances the Contractor shall take account of the following:	~~Under these circumstances the Contractor shall take account of the following:~~ (JC55) JC55: 用途外使用に対してこれほど詳細な注意書が必要ではないと思います。揚貨に必要なことは揚貨のところに書いてあるはずです。不要. It is not necessary to specify in so details as bellow because requirement for hoisting works are specified in chapter 5Hoisting and Rigging. NK: Deleted.	~~Under these circumstances the Contractor shall take account of the following:~~ (JCB55) NK: Deleted. *I think that this should remain, it is a secondary usage for example of an excavating machine for lifting light loads. It is not likely that the operator will be trained as a rigger and the following clauses are recommended to be included.* NK6/19: The operator needs licence or training certificate for hoisting work depending hoisting capacity with excavator as secondary usage in Japanese regulation. Therefore, JICA comments' is correct, however it is recommendable to specify here.	
(1) Ensure the Contractor's Equipment can safely handle the load without creating instability, tipping or loss of control and avoiding the resultant risk of injury or damage or stress to the equipment.	(1) ~~Ensure the Contractor's Equipment can safely handle the load without creating instability, tipping or loss of control and avoiding the resultant risk of injury or damage or stress to the equipment.~~	(1) ~~Ensure the Contractor's Equipment can safely handle the load without creating instability, tipping or loss of control and avoiding the resultant risk of injury or damage or stress to the equipment.~~	
(2) Ensure that operators understand the equipment capability, are properly trained in the alternative use, are fully aware of and follow the manufacturer's written instructions and load charts.	(2) ~~Ensure that operators understand the equipment capability, are properly trained in the alternative use, are fully aware of and follow the manufacturer's written instructions and load charts.~~	(2) ~~Ensure that operators understand the equipment capability, are properly trained in the alternative use, are fully aware of and follow the manufacturer's written instructions and load charts.~~	(5) Ensure that operators understand the equipment capability, are properly trained in the alternative use, are fully aware of and follow the manufacturer's written instructions and load charts.
(3) Ensure that operators have accurately determined the total weight of the load, taking account of the weight of any attachments, the reach and angle and configuration of the equipment and have informed the HSO of this and obtained his permission before commencing the operation.	(3) ~~Ensure that operators have accurately determined the total weight of the load, taking account of the weight of any attachments, the reach and angle and configuration of the equipment and have informed the HSO of this and obtained his permission before commencing the operation.~~	(3) ~~Ensure that operators have accurately determined the total weight of the load, taking account of the weight of any attachments, the reach and angle and configuration of the equipment and have informed the HSO of this and obtained his permission before commencing the operation.~~	(6) Ensure that operators have accurately determined the total weight of the load, taking account of the weight of any attachments, the reach and angle and configuration of the equipment and have informed the HSO of this and obtained his permission before commencing the operation.
(4) Check the working area and improve the ground surface as necessary to ensure the stability of the equipment.	(4) ~~Check the working area and improve the ground surface as necessary to ensure the~~	(4) ~~Check the working area and improve the ground surface as necessary to ensure the~~	(7) Check the working area and improve the ground
(5) Ensure that the equipment is stable, if provided			

lower stabilisers, if the equipment is equipped with a blade, lower the blade to the ground for added stability and ensure that necessary counterweights are in place.

(6) Check the rigging to ensure it is appropriate to the use and rated to handle the load. Inspect it before each use for any signs of damage or wear, and make sure it is properly secured to the machine and load.

(7) Ensure that the area is clear of any unnecessary personnel, Spotters should be the only individuals in the immediate area, and should be stationed clear of the lift area yet visible to the operator throughout the operation.

(8) Lift the load slowly, keep the lifting point directly over the centre of the load, keep the load as close to the machine and the ground as possible and position the equipment to hoist and lower end on not sideways.

(9) If there are any signs of instability or loss of control of the machine or load, discontinue the lift and lower the load to the ground.

4.6 HIRED/LEASED CONTRACTOR'S EQUIPMENT

4.6.1 Requirements Generally

(1) Contractor's Equipment from hire or lease companies shall comply with all of the requirements of the Contract and JSSS as if it were the Contractor's own property, in particular the Contractor shall ensure compliance with the requirements of JSSS 1.34 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*].

(2) The Contractor shall ensure that the hire/lease companies have performed all necessary

~~stability of the equipment.~~

(5) ~~Ensure that the equipment is stable, if provided lower stabilisers, if the equipment is equipped with a blade, lower the blade to the ground for added stability and ensure that necessary counterweights are in place.~~

(6) ~~Check the rigging to ensure it is appropriate to the use and rated to handle the load. Inspect it before each use for any signs of damage or wear, and make sure it is properly secured to the machine and load.~~

(7) ~~Ensure that the area is clear of any unnecessary personnel, Spotters should be the only individuals in the immediate area, and should be stationed clear of the lift area yet visible to the operator throughout the operation.~~

(8) ~~Lift the load slowly, keep the lifting point directly over the centre of the load, keep the load as close to the machine and the ground as possible and position the equipment to hoist and lower end on not sideways.~~

(9) ~~If there are any signs of instability or loss of control of the machine or load, discontinue the lift and lower the load to the ground.~~

4.6 HIRED/LEASED CONTRACTOR'S EQUIPMENT

4.6.4 Requirements Generally

(1) Contractor's Equipment from hire or lease companies shall comply with all of the requirements of the Contract and JSSS as if it were the Contractor's own property, in particular the Contractor shall ensure compliance with the requirements of JSSS 1.34 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*].

(2) The Contractor shall ensure that the hire/lease

~~stability of the equipment.~~

(5) ~~Ensure that manufacturer's genuine specialised accessories such as lifting hooks etc. are provided and used.~~ .(JCA37)

Lifting hook are common however excavators can hoist light loads e.g. drainage pipes, using the bucket and slings without hooks and are designed for this. I suggest that these clauses should remain as they are likely to apply.

NK6/19: Many accidents have occurred in the lifting works with excavators in Japan. To attention to the Contractor, the following is recommended to specify as proposed by MD.

(6) ~~Ensure that the equipment is stable, if provided lower stabilisers, if the equipment is equipped with a blade, lower the blade to the ground for added stability and ensure that necessary counterweights are in place.~~

(7) ~~Check the rigging to ensure it is appropriate to the use and rated to handle the load. Inspect it before each use for any signs of damage or wear, and make sure it is properly secured to the machine and load.~~

(8) ~~Ensure that the area is clear of any unnecessary personnel, Spotters should be the only individuals in the immediate area, and should be stationed clear of the lift area yet visible to the operator throughout the operation.~~

(9) ~~Lift the load slowly, keep the lifting point directly over the centre of the load, keep the load as close to the machine and the ground as possible and position the equipment to hoist and lower end on not sideways.~~

(10) ~~If there are any signs of instability or loss of control of the machine or load, discontinue the lift and lower the load to the ground.~~

4.6 HIRED/LEASED CONTRACTOR'S EQUIPMENT

4.6.1 Requirements Generally

(1) Contractor's Equipment from hire or lease companies shall comply with all of the requirements of the Contract and JSSS as if it were the Contractor's own property, in particular the Contractor shall ensure compliance with the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*].

(2) The Contractor shall ensure that the hire/lease companies have performed all necessary

surface as necessary to ensure the stability of the equipment.

(8) Ensure that the equipment is stable, if provided lower stabilisers, if the equipment is equipped with a blade, lower the blade to the ground for added stability and ensure that necessary counterweights are in place.

(9) Check the rigging to ensure it is appropriate to the use and rated to handle the load. Inspect it before each use for any signs of damage or wear, and make sure it is properly secured to the machine and load.

(10) Ensure that the area is clear of any unnecessary personnel, Spotters should be the only individuals in the immediate area, and should be stationed clear of the lift area yet visible to the operator throughout the operation.

(11) Lift the load slowly, keep the lifting point directly over the centre of the load, keep the load as close to the machine and the ground as possible and position the equipment to hoist and lower end on, not sideways.

(12) If there are any signs of instability or loss of control of the machine or load, discontinue the lift and lower the load to the ground.

4.6 HIRED/LEASED CONTRACTOR'S EQUIPMENT

4.6.4 Requirements Generally

(1) Contractor's Equipment from hire or lease companies shall comply with all of the requirements of the Contract and JSSS as if it were the Contractor's own property, in particular the Contractor shall ensure compliance with the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*].

(2) The Contractor shall ensure that the hire/lease companies have performed all necessary inspection, maintenance and repair works

inspection, maintenance and repair works before the equipment is mobilised to the Site and that the following is provided with the equipment to the Contractor upon mobilisation and is available for the inspection of the Engineer:	companies have performed all necessary inspection, maintenance and repair works before the equipment is mobilised to the Site and that the following is provided with the equipment to the Contractor upon mobilisation and is available for the inspection of the Engineer:	inspection, maintenance and repair works before ~~the Contractor's Equipment~~.(JCA38) the equipment is mobilised to the Site and that the following is provided with the equipment to the Contractor upon mobilisation and is available for the inspection of the Engineer: *There is nothing wrong with the original wording, it is "Contractor's Equipment" as defined in the Contract whether rented, leased or owned.* *"equipment" in this usage, should only follow in a sentence which already contains the term "Contractor's Equipment" and is therefore connected in meaning.* *The changed wording introduces unnecessary duplication "equipment" and "equipment".* NK: agreed.	before the Contractor's Equipment is mobilised to the Site and that the following is provided with the equipment to the Contractor upon mobilisation and is available for the inspection of the Engineer:
(a) Inspection and maintenance records; (b) Operation, repair and maintenance manuals; and (c) Spare and replacement parts, tools, maintenance equipment, lubricants, filters, hydraulic fluids and the like.	(a) Inspection and maintenance records; (b) Operation, repair and maintenance manuals; and (c) Spare and replacement parts, tools, maintenance equipment, lubricants, filters, hydraulic fluids and the like.	(a) Inspection and maintenance records; (b) Operation, repair and maintenance manuals; and (c) Spare and replacement parts, tools, maintenance equipment, lubricants, filters, hydraulic fluids and the like.	(a) Inspection and maintenance records; (b) Operation, repair and maintenance manuals; and (c) Spare and replacement parts, tools, maintenance equipment, lubricants, filters, hydraulic fluids and the like.
(3) The Contractor shall double-check to ensure that the inspection and maintenance has been carried out and if the Contractor has any doubt over the adequacy of such inspection or maintenance or if complete records are not made available, the Contractor shall not allow this equipment to be used upon the Works. The Contractor shall inspect and carry out full maintenance and repair on such equipment in compliance with the requirements of this Chapter before it is certified for use by the HSO and used upon the Works.	(3) The Contractor shall double-check to ensure that the inspection and maintenance has been carried out and if the Contractor has any doubt over the adequacy of such inspection or maintenance or if complete records are not made available, the Contractor shall not allow this equipment to be used upon the Works. The Contractor shall inspect and carry out full maintenance and repair on such equipment in compliance with the requirements of this Chapter before it is certified for use by the HSO and used upon the Works.	(3) The Contractor shall double-check to ensure that the inspection and maintenance has been carried out and if the Contractor has any doubt over the adequacy of such inspection or maintenance or if complete records are not made available, the Contractor shall not allow this ~~Contractor's Equipment~~ equipment to be used upon the Works. The Contractor shall inspect and carry out full maintenance and repair on such equipment in compliance with the requirements of this Chapter before it is certified for use by the HSO and used upon the Works. *The suggested change is correct nor necessary.* NK: as revised by MD.	(3) The Contractor shall double-check to ensure that the inspection and maintenance has been carried out and if the Contractor has any doubt over the adequacy of such inspection or maintenance or if complete records are not made available, the Contractor shall not allow this Contractor's Equipment to be used upon the Works. The Contractor shall inspect and carry out full maintenance and repair on such equipment in compliance with the requirements of this Chapter before it is certified for use by the HSO and used upon the Works.
(4) Operators from hire/lease companies are by definition Contractor's Personnel and they shall be treated as if they are employed by the Contractor, in terms of compliance with the Contract and JSSS. Such operators shall be tested and certified by the HSO, shall receive safety training and shall perform all inspection, maintenance and other requirements fully in compliance with JSSS, in the same way as the Contractor's own employees.	(4) Operators from hire/lease companies are by definition Contractor's Personnel and they shall be treated as if they ~~are~~ were employed by the Contractor, in terms of compliance with the Contract and JSSS. Such operators shall be tested and certified by the HSO, shall receive safety training and shall perform all inspection, maintenance and other requirements fully in compliance with JSSS, in the same way as the Contractor's own employees.	(4) Operators from hire/lease companies are by definition Contractor's Personnel and they shall be treated as if they ~~are~~ were employed by the Contractor, in terms of compliance with the Contract and JSSS. *The suggested change is not correct nor necessary.* Such operators shall be tested and certified by the HSO, shall receive safety training and shall perform all inspection, maintenance and other requirements fully in compliance with JSSS, in the same way as the Contractor's own employees.	(4) Operators from hire/lease companies are by definition Contractor's Personnel and they shall be treated as if they are employed by the Contractor, in terms of compliance with the Contract and JSSS. (5) Operators shall be tested and certified by the HSO, shall receive safety training and shall perform all inspection, maintenance and other requirements fully in compliance with JSSS, in the same way as the Contractor's own employees.

4.7 TEMPORARY FUELLING FACILITIES

4.7.1 Requirements Generally

(1) Unless otherwise specified in the Contract, the Contractor shall design and construct temporary fuel storage and dispensing facilities at the Site for the use of Contractor's Equipment. These facilities shall be substantial and secure and capable of storing and dispensing fuel in a safe and environmentally acceptable manner all to the approval of the Engineer.

(2) The facility shall include storage tanks, suitable foundations, support or containment structures, protective bund walls as necessary, paved surfaces, screens, fencing and associated facilities for storage of separate fuels and lubricants and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended.

(3) Unless otherwise specified in the Contract, all such tanks, foundations, support and containment structures, paved surfaces, fencing,

4.7 TEMPORARY FUELLING FACILITIES

4.7.4 Requirements Generally

(1) ~~Unless otherwise specified in the Contract,~~ the Contractor ~~shall~~ may (JC56) design and construct temporary fuel storage and dispensing facilities at the Site for the use of Contractor's Equipment after obtaining necessary permission required by the Law of the Country, if any. These facilities shall be substantial and secure and capable of storing and dispensing fuel in a safe and environmentally acceptable manner all to the approval of the Engineer.(JC57)

JC56: "shall"じゃなく"may"ぐらいでは？町中で station が近い場合には不要なはず。
It is not necessary to specify "shall" but "may" because fuelling facilities are not necessary where there are fuel stations in town or near the Site.
NK: Modified.

JC57: 法令上の許可が必要な場合は取得することを追記が必要と思量。
It is necessary to specify for the Contractor to get permission in accordance with the Law of the Country when necessary.
NK: Added.

(2) The facility shall include storage tanks, suitable foundations, support or containment structures, protective bund walls as necessary, paved surfaces, screens, fencing and associated facilities for storage of separate fuels and lubricants and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended.

(3) Unless otherwise specified in the Contract, all such tanks, foundations, support and

4.7 TEMPORARY FUELLING FACILITIES

4.7.4 Requirements Generally

(1) ~~Unless otherwise specified in the Contract,~~ the Contractor ~~shall~~ may (JCB56) design and construct temporary fuel storage and dispensing facilities at the Site for the use of Contractor's Equipment after obtaining necessary permission required by the Law of the Country, if any. These facilities shall be substantial and secure and capable of storing and dispensing fuel in a safe and environmentally acceptable manner all to the approval of the Engineer.(JCB57)

NK: Modified.

The comment is understood but generally it will not apply on JICA projects and is not a recommended basis for a safety specification.

In the majority of cases, mobile Contractor's Equipment will not be registered or insured for use on public roads and fuel for such equipment (together with fuel for static equipment and all other site equipment) will usually need to be brought safely to the Site and safely stored and dispensed for Site use.

Also, with normal high consumption requirements (and even for tax and duty reasons), fuel is usually delivered to the Site and stored separately.

It is dangerous to obtain and transport and dispense manually in frequent and small quantities.

It is not necessary to state that the Contractor must obtain "necessary permission required by the Law of the Country"; the Contractor must in any event comply with the Law under GC 1.4 and such permission, etc., would be an automatic requirement.

Fuel storage at Site will usually be required on most JICA projects and proper safety control is essential.

I have already included a clause in the latest issue of the User Guide to cover this and suggest therefore that no change is necessary to the original text.

NK: Added.

Not necessary see note above.

NK6/19: considering small projects agreed to leave as original provision.

(2) The facility shall include storage tanks, suitable foundations, support or containment structures, protective bund walls as necessary, paved surfaces, screens, fencing and associated facilities for storage of separate fuels and lubricants and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended.

(3) Unless otherwise specified in the Contract, all such tanks, foundations, support and

4.7 TEMPORARY FUELLING FACILITIES

4.7.4 Requirements Generally

(1) Unless otherwise specified in the Particular Safety Specification, the Contractor shall design and construct temporary fuel storage and dispensing facilities at the Site for the use of Contractor's Equipment. These facilities shall be substantial and secure and capable of storing and dispensing fuel in a safe and environmentally acceptable manner all to the approval of the Engineer.

(2) The facility shall include storage tanks, suitable foundations, support or containment structures, protective bund walls as necessary, paved surfaces, screens, fencing and associated facilities for storage of separate fuels and lubricants and for offices, access and the like all of which shall be suitable and fit for the purpose for which they are intended.

(3) Unless otherwise specified in the Contract, all such tanks, foundations, support and

screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works. All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer. (4) The Contractor must ensure that the temporary fuel storage and dispensing facility is operated and occupied at all time only by authorised personnel and that all unauthorised personnel are prohibited from entering such areas at all times. The Contractor shall be particularly careful and provide measures to prevent any unauthorised access, tampering, damage and theft at any time. (5) All storage tanks shall be bunded either as jacketed tanks or by providing bunded enclosures, such that in the event of a catastrophic failure, the tank contents will be safely contained and shall not be allowed to run freely or enter the surface or ground water systems. (6) The Contractor is reminded of the requirements of JSSS 1.23 [*Fire Prevention*] and will be required to provide a comprehensive and a high standard of fire protection in fuel storage areas.	containment structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works. All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer. (4) The Contractor must ensure that the temporary fuel storage and dispensing facility is operated and occupied at all time only by authorised personnel and that all unauthorised personnel are prohibited from entering such areas at all times. The Contractor shall be particularly careful and provide measures to prevent any unauthorised access, tampering, damage and theft at any time. (5) All storage tanks shall be bunded either as jacketed tanks or by providing bunded enclosures, such that in the event of a catastrophic failure, the tank contents will be safely contained and shall not be allowed to run freely or enter the surface or ground water systems. (6) The Contractor is reminded of the requirements of JSSS 1.23 [*Fire Prevention*] and will be required to provide a comprehensive and a high standard of fire protection in fuel storage areas.	containment structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works. All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer. (4) The Contractor must ensure that the temporary fuel storage and dispensing facility is operated and occupied at all time only by authorised personnel and that all unauthorised personnel are prohibited from entering such areas at all times. The Contractor shall be particularly careful and provide measures to prevent any unauthorised access, tampering, damage and theft at any time. (5) All storage tanks shall be bunded either as jacketed tanks or by providing bunded enclosures.(JCA39), such that in the event of a catastrophic failure, the tank contents will be safely contained and shall not be allowed to run freely or enter the surface or ground water systems. (6) The Contractor is reminded of the requirements of JSSS 2.8 [*Fire Prevention*] and will be required to provide a comprehensive and a high standard of fire protection in fuel storage areas. *NK in the previous draft I had requested your assistance to find a reference standard for fuel storage tanks, please advise if you have found one.* *Previous note:* *NK please can you provide a reference standard for storage tanks.* *Please also advise of regulations that should apply and any further technical requirements.* *We will edit and develop.* NK: sorry I cannot find it as requested.	containment structures, paved surfaces, fencing, screens and associated facilities shall be demolished and removed and disposed of safely and in an environmentally acceptable manner by the Contractor on completion and taking over of the Works. All areas shall be backfilled, restored to a safe and suitable condition, cleaned and landscaped, all to the approval of the Engineer. (4) The Contractor must ensure that the temporary fuel storage and dispensing facility is operated and occupied at all time only by authorised personnel and that all unauthorised personnel are prohibited from entering such areas at all times. The Contractor shall be particularly careful and provide measures to prevent any unauthorised access, tampering, damage and theft at any time. (5) All storage tanks shall be bunded either as jacketed tanks or by providing bunded enclosures, such that in the event of a catastrophic failure, the tank contents will be safely contained and shall not be allowed to run freely or enter the surface or ground water systems. (6) The Contractor is reminded of the requirements of JSSS 2.8 [*Fire Prevention*] and will be required to provide a comprehensive and a high standard of fire protection in fuel storage areas.

検討経緯書

5 Hoisting and Rigging

2019.11.5 Japanese Prov. Final
2019.11.13 NK Draft R0
2019.11.19 NK Draft R1(6.1&6.2)
2019.12.2 NK Draft R1

2019.12.02 JSSS in Japanese （Provisional Final Draft 11/5）&	SSS in English R0（11/13）	JSSS in English R1（12/02） 6.1-6.5
目次 6 揚貨・玉掛け作業 6.1一般事項 6.2 揚貨作業 6.2.1 作業員への周知 6.2.2 揚貨機械の運転者及び操作者 6.2.3 安全教育と指導 6.2.4 揚貨機械の搬入時の点検 6.2.5 揚貨機械の点検・整備 6.2.6 揚貨機械の運用時の安全措置 6.3クレーン 6.3.1 設置・組立・解体 6.3.2 運転と操作 6.4移動式クレーン 6.4.1 移動式クレーンの配置と据付 6.4.2 運転と操作 6.4.3 作業終了後の措置 6.5玉掛け作業 6.5.1 玉掛け作業員 6.5.2 玉掛け用具 6.5.3 玉掛け作業時の安全措置 (Memo of Sakoda, Reference Clause shall be revised in JSSS in Japanese.)	Contents 6 Hoisting and Rigging Works 6.1 General 6.2 Lifting Works 6.2.1 General Instruction for Authorized Contractor's Personnel 6.2.2 Operators and Drivers of Lifting Equipment 6.2.3 Safety Instructions 6.2.4 Inspections in Installation and Assembly 6.2.5 Maintenance 6.2.6 Safety Measures in Operation 6.3 Crane Works 6.3.1 Installation, Assembly and Dismantling 6.3.2 Operations 6.4 Mobile Crane Works 6.4.1 Placements and Installations of Mobile Crane 6.4.2 Operations 6.4.3 After the Operations 6.5 Hoisting and Rigging Works 6.5.1 Rigger 6.5.2 Hoisting and Rigging Tool 6.5.3 Safety Measures in Hoisting and Rigging Works	Contents 6 Hoisting and Rigging Works 6.1 General 6.2 Hoisting Works 6.2.1 Instruction for Contractor's Personnel 6.2.2 Operators and Drivers of Lifting Equipment 6.2.3 Safety Education and Training 6.2.4 Inspections at Installation or Assignment of Lifting Equipment 6.2.5 Inspections and Maintenance 6.2.6 Safety Measures in Operation 6.3 Crane Works 6.3.1 Installation, Assembly and Dismantling 6.3.2 Operations 6.4 Mobile Crane Works 6.4.1 Placements and Installations of Mobile Crane 6.4.2 Operations 6.4.3 After the Operations 6.5 Hoisting and Rigging Works 6.5.1 Rigger 6.5.2 Hoisting and Rigging Equipment 6.5.3 Safety Measures in Hoisting and Rigging Works
6 揚貨・玉掛け作業 **6. 1 一般事項** (1) 本節では、揚貨作業及び玉掛け作業にかかる揚貨機械の転倒、崩壊、吊り荷の落下等による作業員の危険を防止するための措置について規定する。 (2) 本仕様書で使用する用語の定義は次である。 (a) 揚貨機械とは、動力によって荷をつり上げ、移動することを目的とするものをいう。 (b) 定格荷重（Rated capacity）とは、揚貨機械の製造者が規定した揚貨作業の条件（機械の構造、半径、ブームの長さ及び他の使用上の要素等）に応じて、この製造者が許可した最大の揚貨荷重をいう。 (c) 玉掛け作業(hoisting and rigging)とは、揚貨機械により、つり荷をつり具でつるために玉掛け用具を使用して行う準備、荷のつり上げ、つり荷の移動及びつり荷を所定の位置に置くまでの作業をいう。 (d) 玉掛け作業員(rigger)とは、玉掛け作業に関する十分な知識及び作業能力を有し、作業チームの作業員を適切に指揮・統率する能力があると請負者が認めるもの(competent person)とし、本仕様書 1.9.2 (2)[特に危険又は有害な作業へ配置予定の者への教育]で定めた教育を終了した作業員をいう。	**6 Hoisting and Rigging Works** **6.1 General** (1) This chapter specified the safety measure for the falling, collapse of lifting equipment and fail of suspended object in hoisting work and rigging work. (2) Definitions of words and expressions in JSSS are as follows. (a) "Lifting Equipment" means machines in order to hoist and transport object by motive power. (b) "Rated Capacity" means the maximum suspended load approved by the manufacture depending on the use condition of Lifting equipment (structures of machines, the length of boom, and the other factor for use) specified by the manufacture. (c) "Hoisting and Rigging" means the work procedure including preparation of suspended loads, hoisting and transport loads, and, placing the load by Lifting equipment using the rigging tool. (d) "Rigger" means the competent person who is certified by the Contractor to have sufficient knowledge, work ability regarding hoisting and rigging works, and the ability to properly direct and lead the workers of the work team, and has completed the education specified by JSSS 1.18[Skill Training]. (e) "Hoisting Tool" means the tool for suspended object such as hooks, etc. which is equipped with Lifting equipment and cannot be removed as normal operation.	**6 Hoisting and Rigging Works** **6.1 General** (1) This Chapter specify the safety measures to avoid risk to the workers by falling or collapse of Lifting Equipment and drop of suspended loads in Hoisting and Rigging works. (2) Definitions of terms are as follows. (a) "Lifting Equipment" means machines such as cranes and mobile cranes by which suspended loads can be raised, lowered, and moved horizontally. (b) "Rated Capacity" means the maximum hoisting load approved by the manufacture of Lifting Equipment depending on the structures of equipment, use conditions such as angle and length of boom and other factors in use of Lifting Equipment specified by the manufacture. (c) "Hoisting and Rigging" means the work procedure including preparation of rigging loads, hoisting and transport loads, and, placing the loads by Lifting Equipment using the Rigging Equipment. (d) "Rigger" means the competent person who is certified by the Contractor to have sufficient knowledge, work ability regarding Hoisting and Rigging works, and the ability to properly direct

2019.12.02 JSSS in Japanese （Provisional Final Draft 11/5）&	SSS in English R0（11/13）	JSSS in English R1（12/02） 6.1-6.5
(e) つり具(Hoisting Tool ~~Lifting equipment~~)とは、揚貨機械に付属して装備され、取外しできないフック等のつり上げ用具をいう。 (f) 玉掛け用具(rigging tool)とは、つり荷をつり具でつるためのロープ、チェーン、ベルト、シャックル、リング、クランプ、ハッカー等をいう。	(f) “Rigging Tool” means the equipment which are ropes, chains, belts, shackles, rings, clamps and, hackers, etc, for suspended object by the lifting tool.	and lead the workers of the work team, and has completed the education specified in JSSS 1.18[Skill Training]. *(To MD, it needs to revise (d) for the rigger referring to the Chapter 1.)* (e) “Hoisting Equipment” means the equipment to suspended loads such as hooks, etc. which is equipped with Lifting Equipment and cannot be removed in normal operation. (f) “Rigging Equipment” means the equipment which are ropes, chains, belts, shackles, rings, clamps, hackers, etc. to suspend loads by the Hoisting Equipment.
6.2 揚貨作業 **6.2.1 作業員への周知** 請負者は、揚貨機械を用いて揚貨作業を行うときは、作業に必要な下記の安全上の措置について、必要に応じ作業員に説明しなければならない。 (1) 揚貨機械による作業内容、作業方法、作業範囲 (2) 揚貨機械の種類、定格荷重等の能力 (3) 玉掛け用具の種類、許容荷重 (4) 揚貨作業の場所 (5) 高圧線、危険物貯蔵庫などの危険箇所とつり荷の移動・稼働制限範囲 (6) 立入禁止箇所の特定と注意標識、柵の設置場所 (7) 揚貨作業周辺の安全な通路 (8) 誘導者、監視員の配置場所 (9) 揚貨機械の運転者又は操作者、玉掛け作業員 (10) 揚貨機械に異常が発生したときの対処方法 (11) 現場の隣地や公道における近隣住民・第三者への~~揚貨機械~~　揚貨作業による危険性	**6.2 Hoisting Works** **6.2.1 General Instruction for Authorized Contractor’s Personnel** The Contractor shall instruct the following safety measures for Authorized Contractor’s Personnel as necessary when the lifting work with Lifting Equipment shall be executed. (1) Work contents, method, range by Lifting Equipment. (2) Type and capacity such as rated capacity of Lifting Equipment. (3) Allowable loads and type of Rigging Tool. (4) Work places of hoisting work. (5) Hazardous locations and the area of movement and operation restriction such as high-voltage lines and dangerous goods storage. (6) Identification of restricted areas, caution signs, and fence. (7) Safety passage surrounded the place of hoisting work. (8) The position of flagmen and watchman. (9) Operator, driver of Lifting equipment and rigger. (10) Procedure of emergency in Lifting equipment. (11) Danger of hoisting work to neighboring residents and third parties on adjacent sites and public roads.	**6.2 Hoisting Works** **6.2.1 Instruction for Contractor’s Personnel** The Contractor shall make the following safety measures to the workers as needed when the lifting work with Lifting Equipment is executed: (1) Work contents, method, area by Lifting Equipment, (2) Type and capacity such as Rated Capacity of Lifting Equipment, (3) Allowable loads and type of Rigging Equipment, (4) Work places of hoisting work, (5) Hazardous locations and the area of movement and operation restriction such as high-voltage lines and dangerous goods storage, (6) Identification of restricted areas, caution signs, and fence, (7) Safety passage around the place of hoisting work, (8) Location of Spotter and Flagmen, (9) Operator, driver of Lifting Equipment and rigger, (10) Procedure in case of emergency of Lifting Equipment, and (11) Danger of hoisting work to neighboring residents and third parties on adjacent sites and public roads.
6.2.2 揚貨機械の運転者及び操作者 請負者は、本仕様書4.1.4[建設機械の運転者及び操作者]に準じ、揚貨機械の運転者又は操作者の適正配置、運転者又は操作者の氏名の揚貨機械への明示、作業前の健康状態の確認等を行わなければならない。 **6.2.3 安全教育と指導** 請負者は、本仕様書~~4.1.5~~4.1.4[安全教育と指導]に準じ、また揚貨機械の特性に応じて揚貨機械の運転者又は操作者、揚貨作業に従事する作業員への教育を行わなければならない。 **6.2.4 揚貨機械の搬入時の点検**	**6.2.2 Operators and Drivers of Lifting Equipment** The Contractor shall ensure the proper placement of operators and drivers of Lifting equipment, the installation of signs that show the name of operators and drivers on Lifting equipment, and the implement the health check before the work complying with JSSS4.1.3[Operators and Drivers]. **6.2.3 Safety Instructions** The Contractor shall conduct the trainings for Authorized Contractor’s Personnel engaging hoisting works, operators, and drivers of Lifting equipment complying with JSSS4.1.5[Safety Instruction] and the characteristic of Lifting equipment.	**6.2.2 Operators and Drivers of Lifting Equipment** The Contractor shall properly assign operators and drivers of Lifting Equipment and post name of operator or driver on Lifting Equipment, and implement the health check before the work in accordance with JSSS 4.1.3[Operators and Drivers]. *(To MD, this reference Clause shall be changed later.)* **6.2.3 Safety Education and Training** The Contractor shall conduct education and training to the operators and drivers of Lifting Equipment, and workers engaging in hoisting works, complying with JSSS 4.1.4[Safety education and training] according to the characteristics of the Lifting Equipment.

2019.12.02 JSSS in Japanese （Provisional Final Draft 11/5）&	SSS in English R0（11/13）	JSSS in English R1（12/02） 6.1-6.5
請負者は、揚貨機械の搬入時の点検は、本仕様書~~4.1.6~~4.2.1(1)に準じ、行わなければならない。この点検には、本仕様書6.2.2（1）及び(2)に規定の項目を含まなければならない。	**6.2.4 Inspections in Installation and Assembly** The Contractor shall inspect Lifting equipment in installation complying with JSSS4.1.6 [Inspections in Installations]. This inspection shall be included the items specified in JSSS6.2.2(1) and (2).	**6.2.4 Inspections at Installation or Assignment of Lifting Equipment** The Contractor shall inspect Lifting Equipment at its installation or assignment time complying with JSSS 4.2.1 (1) [Inspections at Installation or Assignment of Equipment]. This inspection shall be included the items specified in JSSS 6.2.5 (1) and (2).
6. 2. 5 揚貨機械の点検・整備 請負者は、本仕様書4.1.7[建設機械の点検・整備]に準じ、揚貨機械の日常点検表、定期点検表の作成、次の日常及び定期点検と整備、エンジニアへの点検状況の報告を行わなければならない。揚貨機械の組立時完了時は日常点検及び定期点検の項目をすべて点検しなければならない。 (1) 日常点検 請負者は、本仕様書4.1.8[日常点検]に準じて揚貨機械の日常点検、整備を、運転者又は操作者に揚貨機械の始業前に、請負者が準備した点検表に基づき行わせなければならない。この点検表には、揚貨機械の種類に応じて次の点検項目を含まなくてはならない。 (a) 巻過防止装置の機能 (b) ブレーキ、クラツチ及びコントローラーの機能 (c) ランウエイの上又はトロリが横行するレールの状態 (d) ワイヤロープが通っている箇所の状態 (e) ワイヤーロープの状態 (2) 定期点検 請負者は、本仕様書4.1.9[定期点検]に準じて、揚貨機械の定期点検、整備を行わなければならない。この点検には、揚貨機械の種類に応じて次の点検を含まなくてはならない。 (a) 巻過防止装置、過負荷防止装置その他の安全装置、警報装置、ブレーキ及びクラツチの異常の有無 (b) ワイヤロープ及びつりチエーンの損傷の有無 (c) フック等のつり具の損傷の有無 (d) ウインチの据付けの状態の異常の有無 (e) 配線、配電盤及びコントローラーの異常の有無	**6.2.5 Maintenance** The Contractor shall carry out making the daily and periodic checklist of Lifting equipment, the just before operation of Lifting equipment, the Contractor shall carry out the daily and periodic checklist and maintenance and, the report of results of inspections to the Engineer complying with JSSS4.1.7 [Maintenances]. (1) Daily Inspections The Contractor shall let operators and drivers carry out the daily inspection and maintenance of Lifting equipment complying with JSSS4.1.8 [Daily Inspections] before starting the work based on the checklist prepared by The Contractor. This checklist shall be included the following items depending on the type of Lifting equipment. (a) Functions of overwind prevention devices (b) Functions of brakes, clutches and controllers (c) Conditions of rail for trolley and run-way (d) Conditions of parts through the wire ropes (e) Conditions of wire ropes (2) Periodic Inspections The Contractor shall carry out the periodic inspections and maintenances of Lifting equipment complying with JSSS4.1.9 [Periodic Inspections]. This inspection shall be included the following items depending on the type of Lifting equipment. (a) Condition of overwind prevention devices, overload prevention devices, the other safety devices, brakes, and clutches (b) Condition of wire ropes and hanging chain (c) Condition of lifting equipment such as hooks (d) Condition of conditions of placement of winches (e) Condition of electric wire, switchboard and, controller	**6.2.5 Inspections and Maintenance** The Contractor shall prepare checklists for daily and periodic check of Lifting Equipment, carry out check Lifting Equipment just before operation of Lifting Equipment and periodic check and maintenance, and report results of inspections complying with JSSS 4.1.6[Inspections and Maintenance]. (1) Daily Inspections The Contractor shall make operators or drivers carry out the daily inspection and maintenance of Lifting Equipment complying with JSSS 4.2.1(2)[Daily Inspections] before starting the work based on the checklist prepared by The Contractor. This checklist shall be included the following items according to the characteristics of Lifting Equipment. (a) Functions of over-winding prevention devices (b) Functions of brakes, clutches and controllers (c) Conditions of rails for trolley and run-way (d) Conditions of parts such as pulley where wire ropes pass (e) Conditions of wire ropes (2) Periodic Inspections The Contractor shall carry out periodic inspections and maintenance of Lifting Equipment complying with JSSS 4.2.1(3)[Periodic Inspections]. The inspection shall include the following items according to the characteristics of Lifting Equipment. (a) Condition of over-winding prevention devices, overload prevention devices, other safety devices, brakes, and clutches (b) Condition of wire ropes and hanging chain (c) Condition of Lifting Equipment such as hooks (d) Condition of conditions of placement of winches (e) Condition of electric wire, switchboard and controller
6. 2. 6 揚貨機械の運用時の安全措置 請負者は、本仕様書4.1.10[運用時の安全措置]に準じ、揚貨機械と作業員の接触の防止、揚貨機械の安全対策を行うとともに、次の措置を講じなければならない。 (1) つり荷及び玉掛け用具の重量、作業範囲、作業半径・角度等の条件に見合った揚貨能力を持つ機械を選定すること。 (2) 運転者及び玉掛け作業員が、揚貨機械の種類や作業状態に応じた定格荷重を常時知ることができよう定格荷重を、揚貨機械の適切な位置に表示すること。 (3) 運転者及び玉掛け作業員に、つり荷及び玉掛け用具の合計重量が、定	**6.2.6 Safety Measures in Operation** The Contractor shall take the following measures complying with JSSS 4.1.10 [Safety Measures in Operation] as well as the prevention the accidents between Lifting equipment and Authorized Contractor's Personnel. (1) Selections of the machines with enough Rated capacity satisfied with the work conditions such as the weight of suspended loads and hoisting and rigging tool, work area, the radius and angle of the booms, etc. (2) Display the rated capacity depending on the type of Lifting equipment and work conditions at the appropriate place of Lifting equipment as drivers and riggers could know rated capacity any time. (3) Let drivers and riggers confirm whether the weight of loads and hoisting	**6.2.6 Safety Measures in Operation** The Contractor shall take safety measures to avoid collision to workers by Lifting Equipment and those for Lifting Equipment complying with JSSS 4.2.3 [Safety Measures in Operation] and take the following measures. (1) Select Lifting Equipment which has lifting capacity and functions to meet work conditions/requirements such as weight of suspended loads, hoisting and Rigging Equipment, work area, radius and angle of booms, etc. (2) Display Rated Capacity of the Lifting Equipment depending on the type of Lifting Equipment and work conditions at the appropriate place of Lifting equipment so that drivers/operators and riggers can know Rated Capacity any time.

2019.12.02 JSSS in Japanese （Provisional Final Draft 11/5）&	SSS in English R0（11/13）	JSSS in English R1（12/02） 6.1-6.5
格荷重以下であることを確認させること。 (4) 揚貨作業中は、揚貨機械の安全装置を常時作動させること。 (5) 立入りの禁止 本仕様書2.3[立入禁止の措置]に従い、次の立入禁止の措置を講じること。 (a) 揚貨作業中は、つり荷の直下のほか、つり荷の移動範囲内で、つり荷の落下による危険のある場所への作業員の立入りを禁止すること。 (b) ワイヤロープが通っているシーブ又はその取付け部の破損により、当該ワイヤロープがはね、又は当該シーブ若しくはその取付具が飛来することによる作業員の危険を防止するため、当該ワイヤロープの内角側への作業員の立入りを禁止すること。 (c) 立入りを禁止した場所には、看板、標識等を設置し、作業員に立入禁止を周知すること。 (6) 合図 (a) 本仕様書 2.4.2[合図、信号等の統一]に従い、合図者を任命し運転者又は操作者と合図者に決められた合図で作業させること。 (b) 合図者に、つり荷がよく見え、運転者又は操作者からもよく見える安全な位置で、かつ作業範囲外に位置して合図を行なわせること。 (c) やむを得ず運転者又は操作者から見えない位置で合図する場合には、無線等で確実に合図が伝わる方法をとらせること。 (7) 玉掛け作業 (a) 本仕様書 6.4[玉掛け作業]にもとづき、玉掛け作業をおこなうこと。 (b) 揚貨機体の安定、吊り荷の重心、玉掛けの状態を確認すること。 (8) 荷の吊り上げ作業 (a) 荷を吊り上げるとき、つり具がつり荷の重心の真上にあることを確認すること。 (b) 荷の吊り上げを開始するとき、吊り上げ面から 30 ㎝吊り上げた状態でつり荷を一旦停止し、つり荷の安定を確認すること。 (c) 旋回を行うとき、旋回範囲内に人や障害物がないことを確認すること。 (d) つり荷を安全な高さまで吊り上げた後、静かに旋回すること。 (e) 常にブームの先端の動きやつり荷の状態に注意すること。 (f) 荷下しは一気に着床させず、着床直前に一旦停止し、着床場所の状態や荷の位置を確認した後、静かに下すこと。 (9) 運転者又は操作者は、荷を吊り上げたままで運転席を離れないこと。 (10) 作業中の揚貨機械の異常に関する措置 (a) 運転者又は操作者は、作業中に機械に異常音、発熱、臭気、異常	and rigging tool is less than the rated capacity. (4) Activate the safety devices of Lifting equipment every time in lifting works. (5) Prohibition of entry The Contractor shall prohibit Authorized Contractor's Personnel from entering the place under the listing loads complying with JSSS 2.3[Restricted Area]. (a) In Hoisting work, prohibit Authorized Contractor's Personnel from entering the place under the suspended loads, moving ranges of them and, the place where there are risks by falling the suspended loads. (b) In order to prevent the accident for Authorized Contractor's Personnel because the damaged sheaves or its attachments hit Authorized Contractor's Personnel due to bouncing wire ropes, prohibit Authorized Contractor's Personnel from entering in inner corner side of the wire ropes. (c) Instruct Authorized Contractor's Personnel of the restricted area by installing the fences and signboards, etc. (6) Signals (a) Appoint signalmen and ensure that all Contractor's Personnel understand and comply with the signals complying with JSSS 2.4.2[Unifying Signals]. (b) Ensure that signalmen stand at the place where signalmen can look suspended loads and, operators and drivers also can look signalmen and out of the work area. (c) When signalmen stand the place where operators and drivers cannot look them for unavoidable reason, ensure the signal can be transmitted securely by radio talk devices etc. (7) Hoisting and Rigging works (a) Carry out hoisting and rigging works based on JSSS 6.4[Hoisting and Rigging Works]. (b) Confirm the condition of the stability of Lifting equipment, center of gravity if suspended loads and, hoisting and rigging. (8) Hoisting Works (a) Ensure that lifting tools are above the center of gravity of listing loads. (b) In starting the lifting the loads, suspend them 30 cm from ground and, ensure the stability. (c) Ensure that there are no person and objects within the turning area when the Lifting equipment turns. (d) After suspended loads up to the safety height, turn the boom gently. (e) Always pay attention to the edge of boom, the condition of suspended loads. (f) In unloading the loads, stop once before landing and check the condition of the landing place and loads, and then lower it gently. (9) Operators and drives shall not leave the driving seats during operation	(3) make drivers/operators and riggers confirm whether the total weight of loads and Hoisting and Rigging Equipment is less than the Rated Capacity. (4) Activate the safety devices of Lifting Equipment at any operation time of lifting works. (5) Prohibition of entry The Contractor shall take the following prohibition measures of Contractor's Personnel from entering hoisting work site complying with JSSS 2.3[Prohibition of Entry-Dangerous Work]. (a) Prohibit workers from entering the place under the suspended loads and place where there are risks by falling of the suspended loads during time of hoisting work. (b) Prohibit workers from entering the place of inside corner of ropes to avoid workers being hit by bounced wire ropes, broken sheaves or its attachments. (*To MD, please see reference and sketch at the end of pages.)* (c) Instruct workers not to enter the restricted area by installing the notice signboards, etc. (6) Signals (a) Appoint Flagman and make drivers or operators work with the signals between them in accordance with JSSS 2.4.5[Signals]. (b) Make Flagman stand at and give signals from the safe place out of the hoisting work area where Flagman can see suspended loads well and operator or driver also can easily see Flagman well, too. (c) When Flagman stand the place where operator or driver cannot see him with unavoidable reason, take measures to transmit signals certainly by radio devices, etc. (7) Rigging works (a) Carry out rigging works in accordance with JSSS 6.5[Hoisting and Rigging Works]. (b) Check the stability of Lifting Equipment, center of gravity of suspended loads and, conditions of rigging. (8) Hoisting Works (a) Check if the lifting tools are above the center of gravity of suspended loads. (b) At starting to lift the loads, stop them at 30 cm from ground for trial lifting and, check tits stability. (c) Check if no person and objects within the turning area when the Lifting Equipment turns. (d) After lifting loads up to the safe height, turn the boom gently. (e) Always pay attention to the edge of boom and the condition of

2019.12.02 JSSS in Japanese（Provisional Final Draft 11/5）&	SSS in English R0（11/13）	JSSS in English R1（12/02） 6.1-6.5
動作等が認められたときは、直ちに作業を中止すること。 (b) 機械の異常作動の原因を調べ、必要な修理を行うこと。 (c) 機械の正常動作を確認した後でなければ、作業を再開しないこと。 (11) 揚貨機械で使用するワイヤロープが、本仕様書 4.1.10(6)[建設機械のワイヤロープ]の(a)から(d)に規定のいずれかの状態のときは、交換したうえで切り捨て等の措置を講ずること。 (12) 本仕様書 2.7[悪天候及び地震時の対策]及び 4.1.10(8)[悪天候時の対策]の措置に加えて、悪天候時には揚貨機械が不安定な状態になることを回避するために、次のような措置を講じること。 (a) 悪天候時には、ジブを倒す又はマスト等をアンカー等で固定すること。 (b) 悪天候及び地震の後に作業を行なうときは、作業前に本仕様書 6.2.2[揚貨機械の点検・整備]に規定の日常点検表及び定期点検表にもとづき、揚貨機械の各部分の点検を行なうこと。 (13) 揚貨機械の目的外使用の禁止 (a) 作業員の運搬や作業員をつり上げて作業をしないこと。 (b) 作業の性質上やむを得ない場合又は安全な作業の遂行上必要な場合は、揚貨機械のつり具に専用のとう乗設備を設けて、次の全ての措置を講じて、作業員の運搬又はつり上げての作業をおこなうこと。 (i) 揚貨機械に使用するワイヤロープは、荷重に対して安全係数が 10 以上であること。 (ii) とう乗設備の転位及び脱落を防止する措置をとること。 (iii) 作業員に墜落制止用器具等を使用させること。 (iv) とう乗設備ととう乗者との総重量の 1.3 倍に相当する重量に 500 kgを加えた値が、当該揚貨機械の定格荷重をこえないこと。 (v) とう乗設備を下降させるときは、動力下降の方法をとること。	(10) Measures regarding abnormalities in Lifting equipment during operation (a) When operators and driver find an abnormality in Lifting equipment such as abnormal sound, fever, odor and, abnormal operation during the operation, stop working immediately (b) Identify the reason of abnormalities and, make necessary repairs. (c) Unless confirming the lifting equipment is functioning properly, no resume the lifting works. (11) Take the measures such as cut the wire and discharging after the replacement when wire ropes used for Lifting equipment are in any of the condition specified in (a) to (d) of JSSS 4.1.10(6) [Wire ropes of construction machineries] (12) Take the following measures additional to the measures described in [Adverse Weather Requirements] and 4.1.10(8) [Measures in bad weather] in order to avoid that lifting equipment become unstable in bad weather. (a) During the bad weather, lean the jib or fix the mast with an anchor. (b) In starting the work after the bad weather and earthquake, carry out the inspections for each part of lifting equipment before the operation based on the daily and periodic checklist specified in JSSS 6.1.6[Maintenance]. (13) Restrict of operate of lifting equipment for other use (a) No use the lifting equipment to transport Authorized Contractor's Personnel and hang Authorized Contractor's Personnel. (b) For unavoidable reasons or as necessary for safety work procedures, take the following measures, and then use the lifting equipment attached with dedicated gondola to transport Authorized Contractor's Personnel and hang Authorized Contractor's Personnel. (i) Safety factor of wire rope used for Lifting equipment against loads is more than 10. (ii) Take the measures for the prevention from the turning and falling of gondolas. (iii) Let Authorized Contractor's Personnel use the falling prevention devices. (iv) The weight of 1.3 times the total weight of gondolas and passengers plus 500 kg is less than the rated capacity of the Lifting equipment. (i) In landing gondolas, make the gondolas landing by power.	suspended loads. (f) At unloading the loads, stop once before landing and check the condition of the landing place and loads, and then lower it gently. (9) Operator or driver shall not leave the driving/operation seat during operation. (10) Measures against abnormalities in Lifting Equipment during operation (a) When operators or drivers notices abnormality in Lifting Equipment such as abnormal noise, temperature, smell, etc. during the lifting operation, stop work immediately. (b) Identify the cause of abnormalities and make necessary repairs. (c) Unless confirming the Lifting Equipment is functioning properly, not resume the lifting work. (11) Take measures such as cutting wire and so on not to use it again after the replacement of wire rope when wire rope used for Lifting Equipment is in any of the condition specified in JSSS 4.2.3[safety Measures in Operation of Construction Equipment], (6) [Wire ropes of Construction Equipment]. (12) Take the following measures additionally to the measures specified in JSSS 2.7 [Adverse Weather Requirements] and 4.2.3 (8)[Measures in Adverse Weather] to avoid Lifting Equipment become unstable in adverse weather. (a) During the adverse weather, lean the jib or fix mast and others with anchor. (b) At starting the hoisting work after the adverse weather, inspect each part of Lifting Equipment using the daily and periodic checklist specified in JSSS 6.2.5[Inspections and Maintenance]. (13) Prohibition of operation of Lifting Equipment for other use (a) Neither use the Lifting Equipment to transport Contractor's Personnel nor hang Contractor's Personnel for work. (b) For unavoidable reason or necessary for safety work procedures, take the following measures, and then use the Lifting Equipment attached with dedicated gondola to transport Contractor's Personnel or hang Contractor's Personnel for work. (i) Safety factor of wire rope to be used for Lifting Equipment against loads is 10 or more, (ii) Take the measures for the prevention from the turning and falling of gondola, (iii) Make Contractor's Personnel use the PFAS, (iv) 1.3 times of total weight of gondola and workers plus 500 kg shall not exceed the Rated Capacity of the Lifting Equipment, and

2019.12.02 JSSS in Japanese （Provisional Final Draft 11/5）&	SSS in English R0（11/13）	JSSS in English R1（12/02） 6.1-6.5
		(v) The lowering the gondola shall be made by power. *(not free drop).*
6.3 クレーン **6.3.1 設置・組立・解体** 請負者は、クレーンの設置・組立・解体を行うときは、次の措置を講じなければならない。 (1) クレーンの設置、組立、解体は、クレーンの専門家の指揮のもとに行うこと。 (2) クレーンの設置場所を調査し、障害物がある場合は、適切な設置方法を検討すること。 (3) 走行レーンがあるクレーンの場合は、走行する範囲の状況を調査し、安全を確保すること。 (4) クレーンの設計に従い、基礎の建設、据え付けを行うこと。 (5) クレーンの据付後又は組立後、当該国の規則に基づき、又は規則がない場合はクレーンの製造者のマニュアルに従い、組立時検査、荷重試験及び安定度試験を実施すること。 (6) ~~クレーンの組立後の点検は、本仕様書 6.2.2[揚貨機械の点検・整備]の規定に従い行うこと。~~ *(NK：(5)と(6)は重複していることから、上の(5)に又は組立後を追記し、組立後の点検を削除した。)*	**6.3 Crane Works** **6.3.1 Installation, Assembly and Dismantling** The Contractor shall take the following measures in installation, assembly and dismantling cranes or derricks. (1) Conduct the installation, assembly and dismantling cranes under the instruction of cranes specialist. (2) Investigate the installation location of cranes and consider the appropriate installation method when there are some obstacles. (3) In using the cranes with driving lane, investigate the driving range and ensure the safety. (4) Construct and install the foundation complying with the design of cranes. (5) Based on the regulation of the country or manual by the manufacture of cranes, conduct completion inspection, load test and stability test after the installation. (6) Carry out the inspections after assembly of cranes complying with JSSS6.2.2[Operators and Drivers of Lifting Equipment].	**6.3 Crane Works** **6.3.1 Installation, Assembly and Dismantling** The Contractor shall take the following measures in installation, assembly and dismantling works of cranes: (1) Conduct the installation, assembly and dismantling works of cranes under the instruction of cranes specialist, (2) Investigate the location to install crane and plan the appropriate installation method of the crane when there are some obstacles, (3) Investigate the operation area and ensure the safety of the crane which run on crane rails, (4) Construct crane foundation and install the crane complying with the design of crane, and (5) Conduct completion inspection, load test and stability test of the crane after the installation or assembly in accordance with the Laws of the Country or manual of the manufacture of crane in case of no Laws of the Country.
6.3.2 運転と操作 請負者は、クレーンによる揚貨作業を行うときは、本仕様書~~6.1.7~~6.2.6[揚貨機械の運用時の安全措置]の措置を講じるとともに、本仕様書~~6.1.3~~6.2.2[揚貨機械の運転者及び操作者]に従い、クレーンの運転者又は操作者の氏名を、クレーンの運転席又は操作盤に掲示すること。	**6.3.2 Operations** The Contractor shall display the name of operators or drivers of cranes on drivers' seats or the operation board complying with JSSS 6.1.3[Operators and Drivers of Lifting Equipment] and take the measures described in JSSS 6.1.7 [Safety Measures in Operation] when the Contractor shall carry out the hoisting works by cranes or derricks.	**6.3.2 Operations** The Contractor shall post the name of operators or drivers of cranes on drivers' seats or the operation board complying with JSSS 6.2.2[Operators and Drivers of Lifting Equipment] and take the measures described in JSSS 6.2.6[Safety Measures in Operation] when the Contractor carry out the hoisting works by cranes.
6.4 移動式クレーン作業 本仕様書6.16.2[揚貨作業]の規定に加え、移動式クレーンを用いる場合には次の措置を講じなければならない。 **6.4.1 移動式クレーンの配置と据付** 請負者は、移動式クレーンの配置及び据付を行うときは、次の措置を講じなければならない。	**6.4 Mobile Crane Works** The Contractor shall take the following measures when the mobile crane shall be operated additional to the regulations specified in JSSS 6.1［Lifting Work］. **6.4.1 Placements and Installations of Mobile Crane** The Contractor shall take the following measures when the mobile crane shall be placed and installed.	**6.4 Mobile Crane Works** The Contractor shall take the following measures in addition to the measures specified in JSSS 6.2[Lifting Work] for mobile cranes works. **6.4.1 Placements and Installations of Mobile Crane** The Contractor shall take the following measures for the placement or installation of the mobile crane:
(1) 移動式クレーンの作業範囲内に障害物がない位置に据え付けること。障害物がある場合は、障害物を回避する適切な作業方法を計画し、操作者、合図者に実施させること。	(1) Place at the place where there are no obstacles within the operation range of mobile cranes. When there are obstacles, plan the appropriate operation to avoid the obstacles and let operators, and signalmen comply this plan.	(1) Locate mobile crane at the place where there are no obstacles within the operation range of mobile crane. When there are obstacles, plan the appropriate operation to avoid the obstacles and make operators, Spotter and Flagman comply with this plan,

2019.12.02 JSSS in Japanese （Provisional Final Draft 11/5）&	SSS in English R0（11/13）	JSSS in English R1（12/02） 6.1-6.5
(2) 移動式クレーンは、十分な支持力のある場所に設置すること。 (3) 移動式クレーンが転倒するおそれがある場所を特定し、地盤が軟弱な場所、埋設物その他地下に存する工作物が損壊するおそれがある場所においては、移動式クレーンの転倒を防止するために必要な広さ及び強度を有する鉄板等が敷設したうえで作業を行うこと。 (4) 移動式クレーンのアウトリガーと地盤との間には、鉄板等の敷板を敷設し、アウトリガーの沈下を防止すること。	(2) Place at sufficient stiff ground (3) Investigate the risk of falling of mobile cranes. When there is such a risk because the ground is soft or underground installations and manufactured one shall be damaged, place the steel plate with necessary width and strength to operate mobile cranes (4) Place the floor board in order to prevent from the subsidence of outriggers between the ground and outriggers of mobile cranes.	(2) Place mobile crane on the ground which has sufficient bearing capacity for the mobile crane, (3) Investigate the risk of fall or overturn of mobile cranes. When there is a risk of fall or overturn of the mobile crane as the ground is weak or collapse occurs in the ground due to that underground utilities is broken by the mobile crane, place steel plates with necessary width and strength to avoid fall or overturn of the mobile crane for operation of the mobile crane, (4) Place outrigger pads of steel and the like in order to prevent from the subsidence of outriggers between the ground and outriggers of mobile crane,
(5) アウトリガーを有する移動式クレーン又は拡幅式のクローラを有する移動式クレーンを用いて作業を行うときは、当該アウトリガー又はクローラを最大限に張り出すこと。ただし、アウトリガー又はクローラを最大限に張り出すことができない場合には、当該移動式クレーンに掛ける荷重が当該移動式クレーンのアウトリガー又はクローラの張り出し幅に応じた定格荷重を下回ることが確実に見込まれる事を確認して作業をすること。	(6) In operation by using mobile cranes with outriggers or crawlers of extension type, overhang the outriggers or crawlers as long as possible. When the outriggers or crawlers cannot be overhung maximum, ensure that the loads on the mobile cranes is less than the rated capacity accordance with the overhang length of outriggers and crawlers.	(5) When mobile crane with outriggers or extension type crawlers is operated, extend the outriggers or crawlers to maximum position, (6) When the outriggers or crawlers cannot be extended to the maximum position, ensure that the loads on the mobile cranes is less than the Rated Capacity of the crane depending on the extension length of outriggers or crawlers, and
(7) 移動式クレーンを用いて作業を行うときは、クレーンの運転者及び hoisting and rigging をする者が当該クレーンの定格荷重を常時知ることができるよう、表示その他の措置を講じること。運転者及び hoisting and rigging をする者に作業の開始前に定格荷重、旋回範囲の制限を確認させ、作業中はこれらを厳守させること。	(7) Display the rated capacity or take the other measures as drivers and riggers could know rated capacity of the mobile crane any time. Ensure that drivers and riggers confirm the rated capacity and turning limit before the operation and comply with them.	(7) Post or take other measures to show the Rated Capacity of the mobile crane so that drivers and riggers can always know the Rated Capacity of the mobile crane. Ensure to make drivers and riggers confirm the Rated Capacity and operation limit (area, angle, distance and height) of the mobile crane before the start of operation and make them comply with them.
6. 4. 2 運転と操作 請負者は、移動式クレーンの運転と操作をする場合は、本仕様書6.1.7[揚貨機械の運用時の安全措置]の該当する措置を講じるとともに、次の措置を講じなければならない。	**6.4.2 Operations** The Contractor shall take the following measures additional to the measures described in JSSS 6.1.7 [Safety Measures in Operation] in operating mobile cranes.	**6.4.2 Operations** The Contractor shall take the following measures for operating mobile cranes in addition to the measures specified in JSSS 6.2.6[Safety Measures in Operation].
(1) 本仕様書 ~~6.1.3~~6.2.2[揚貨機械の運転者及び操作者]に従い、移動式クレーンの運転者の氏名を、クレーンの運転席の外側に掲示すること。 (2) 運転者に移動式クレーンに装備されている過負荷防止装置に、ブームの作業状態とアウトリガーの設置状態を正確にセットさせ、過負荷防止装置を作動させること。 (3) 運転者に、作業開始後一定時間を経過したところで、一旦作業を停止し、アウトリガー又はクローラの状態を点検し、異常があれば作業を中断させること。	(1) Display the name of operators or drivers of mobile cranes on outside of drivers' seats complying with JSSS 6.1.3[Operators and Drivers of Lifting Equipment]. (2) Activate the over load prevention devices of mobile cranes and let drivers carry out the setting the operation condition of booms and the installation condition of outrigger accurately. (3) Ensure that drivers stop the operation once and inspect the outrigger and crawler when a certain time has passed since the start of works, and prohibit the operation if there is an abnormality.	(1) Post names of operators or drivers of mobile cranes on outside of drivers' seats complying with JSSS 6.2.2[Operators and Drivers of Lifting Equipment]. (2) Activate the over-load prevention device of mobile cranes and make drivers input accurately operation condition of booms and outriggers. (3) Make drivers stop the operation once after at a certain time has passed since the start of works and inspect the condition of outriggers or crawlers, and prohibit to continue the operation when there is abnormality in them.

2019.12.02 JSSS in Japanese （Provisional Final Draft 11/5）&	SSS in English R0（11/13）	JSSS in English R1（12/02） 6.1-6.5
6.4.3 作業終了後の措置 請負者は、移動式クレーンの作業終了時には、運転手に次の措置を講じさせなければならない。	**6.4.3 After the Operation** The Contractor shall let drivers take the following measures mobile crane after the operation.	**6.4.3 After the Operation** The Contractor shall make drivers take the following measures for mobile cranes after the hoisting operation:
(1) つり具を安全な位置に固定させること。 (2) 走行する場合は、事前に次の事項を行うこと。 (a) 各部の固定ピン等を取り付けること。 (b) 旋回ブレーキ、ウインチドラムをロックすること。 (c) クレーン操作関係のスイッチは全て切り(off)にすること。	(1) Hoist the lifting tools at safety position and fix it. (2) Take the following measures before in driving (a) Attach the fixed pin on each part. (b) Lock the Swivel brake, winch drum (c) Turn off all switch related to the operation of cranes	(1) Fix the Hoisting Equipment at safety position, (2) Take the following measures before driving of mobile cranes: (a) Attach fixing pin on each part, (b) Lock brake of turning device and winch drum, and (c) Turn off all switches related with operation of cranes.
6.5 玉掛け作業 **6.5.1 玉掛け作業員** 請負者は、玉掛け作業員以外のものに、玉掛け作業を行わせてはならない。 **6.5.2 玉掛け用具** 請負者は、玉掛け用具の破断等による揚貨作業での作業員の危険を防止するため、次の玉掛け用具に関する規定を遵守しなければならない。	**6.5 Hoisting and Rigging Works** **6.5.3 Rigger** The Contractor shall prohibit other worker than rigger from engaging hoisting and rigging works. **6.5.4 Hoisting and Rigging Tool** The Contractor shall comply the following regulations related to hoisting and rigging tool in order to prevent the danger for Authorized Contractor's Personnel due to the fracture of equipment, etc.	**6.5 Hoisting and Rigging Works** **6.5.1 Rigger** The Contractor shall prohibit other worker than Rigger from engaging in Hoisting and Rigging works. **6.5.2 Hoisting and Rigging Equipment** The Contractor shall take the following measures to prevent the danger for workers by the failure of Rigging Equipment, etc. in the hoisting works:
(1) 玉掛け用具は、製造者と最大使用荷重（Working Limit Load）が確認できるものであることとし、現場で請負者が作成したものは用いてはならない (2) 製造者が定めた用途及び最大使用荷重に従い適切に使用すること。 (3) 次のいずれかの状態の玉掛け用具は使用してはならない。使用できない状態の玉掛け用具は、切断廃棄等の処分を行うこと。 (a) ワイヤロープの場合 (i) 一よりの間で素線数の 10%以上の素線の断線があるもの (ii) 直径の減少が公称径の 7%を越えるもの (iii) キンクがあるもの (iv) 著しい形くずれ又は腐食があるもの (b) つりチェーンの場合 (i) 伸びが、当該つりチエーンが製造されたときの長さの 5%をこえるもの (v) リンクの断面の直径の減少が、当該つりチエーンが製造されたときの当該リンクの断面の直径の 10%をこえるもの (vi) き裂があるもの (c) フック、シャックルの場合 (i) 変形しているもの (vii) き裂があるもの	(1) Ensure that the manufactures and working limit load of hoisting and rigging tool can be confirmed and prohibit using the equipment which the Contractor made at construction site. (2) Use the hoisting and rigging tool complying with the working limit load and usage specified with the manufactures. (3) No use hoisting and rigging tool which is the following conditions, and discharge hoisting and rigging tool which cannot be used. (a) Wire rope (i) Regarding to a twine of wire rope, more than 10% of the number of strands are cut (ii) Diameter reduction exceeds 7% of nominal diameter (iii) Any kink in wire rope (iv) Significant deformation or corrosion (b) Hanging chain (i) The Stretch is more than 5 % the length at the time of manufacture. (ii) The diameter of cross section of link decreases 10 % of the diameter at the time of manufacture. (iii) Cracked (c) Hook, shackle	(1) Rigging Equipment shall be those that the manufacture and working limit load of Rigging Equipment can be confirmed on them. Use of Rigging Equipment made at the Site by the Contractor shall be prohibited, (2) Rigging Equipment shall be used complying with the working limit load and as specified by its manufacture, (3) Rigging Equipment under the following conditions shall not be used, and such Rigging Equipment shall be made unusable or disposed: (a) Wire ropes (i) Those with one-tenth or more of the element wires are cut in one strand. (ii) Those with the reduction ratio of a diameter due to wear-out, of which are exceeding 7% of the nominal diameter. (iii) Those with kink. (iv) Those with marked deformation or corrosion. *Alternative: OSHA§1926.250 General requirements for storage. Wire rope shall not be used if, in any length of eight diameters, the total number of visible broken wires exceeds 10 percent of the total number of wires, or if the rope shows other signs of excessive wear, corrosion, or defect.* (b) Hanging chain (i) The stretch is longer than 5 % of the length at the time of manufactured.

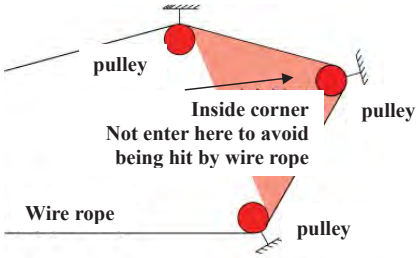
2019.12.02 JSSS in Japanese（Provisional Final Draft 11/5）&	SSS in English R0（11/13）	JSSS in English R1（12/02） 6.1-6.5
(d) 繊維ロープの場合 (i) ストランドが切断しているもの (viii)著しい損傷又は腐食があるもの	(i) Deformation (ii) Cracked (d) Synthetic fiver rope (i) Broken or cut strand (ix) Significant deformation or corrosion	(ii) The diameter of cross section of link decreases 10 % of the diameter at the time of manufactured. (iii) Cracked. *Alternative: OSHA§1926.250 General requirements for storage. Whenever wear at any point of any chain link exceeds that shown in Table H-1 —MAXIMUM ALLOWABLE WEAR AT ANY POINT OF LINK, the assembly shall be removed from service.* (c) Hook, shackle (i) Deformation (ii) Cracked (d) Synthetic fiver rope (i) Broken or cut strand (ii) Significant damage or corrosion
6. 5. 3 玉掛け作業時の安全措置 請負者は、玉掛け作業を行うときは、つり荷の落下、衝突による作業員の危険を防止するため次の措置を講じなければならない。 (1) 玉掛け用ワイヤロープの月例点検を明確にするため、月毎に異なる色のビニールテープ等で、玉掛け用ワイヤロープの見やすい位置に、ワイヤロープ点検済の色分け表示をすること。 (2) 作業を開始する前に使用する玉掛け用具の異常の有無について点検を行なうこと。 (3) 異常のある玉掛け用具は、切断廃棄等の処分をすること。 (4) 揚貨物の重量・形状に応じて適格な玉掛け具を選定して使用すること。 (5) 荷のつり上げ時に、玉掛けワイヤロープがつり具又は吊り荷の表面で滑らないように、適切な吊り角度、あて物の位置、玉掛け等の方法を選定すること。 (6) つり荷の重心位置を定めて、その真上で吊り上げること。 (7) クランプ等の小物やパイプ類などの滑りやすいものを吊り上げる場合は、適切な玉掛け方法によりつり荷の落下防止をすること。 (8) 荷を吊る際は、介錯ロープを吊り荷の端部に取り付け、吊り荷の移動の作業を行うこと。 (9) 玉掛け用具は、雨や粉じん等が防げる保管場所へ整理して保管すること。	**6.5.3 Safety Measures in Hoisting and Rigging Works** The Contractor shall take the following measures in order to prevent the danger for Authorized Contractor's Personnel due to the falling and contact of suspended loads, etc. in hoisting and rigging works. (1) In order to ensure that the monthly inspection for wire ropes was completed, attach the vinyl tapes whose colors vary by month to an easy-to-see positions of wire ropes. (2) Carry out the inspection of hoisting and rigging tool before the work. (3) If the hoisting and rigging tool is defective, cut down and discharge them. (4) Select and use hoisting and rigging tool depending on the weight and shape of suspended loads. (5) Apply the appropriate methods such as hanging angles and the position of the frame, in lifting works in order not to slip off the wire rope from lifting tools and the surface of suspended loads. (6) Carry out the suspended loads after deciding the center of gravity (7) In lifting the slippery objects such as pipes and the small object such as clamps, prevent from dropping off by selecting appropriate hoisting and rigging methods. (8) In transport the suspended loads, attach the assistance rope at the edge of suspended loads. (9) Store the hoisting and rigging tool at the storage location specified in the Contractor preventing from the rain and dust.	**6.5.3 Safety Measures in Hoisting and Rigging Works** The Contractor shall take the following measures to prevent the danger for workers due to the falling and contact of suspended loads, etc. in Hoisting and Rigging works. (1) Attach vinyl tapes, etc. which colors vary by month at easy-to-see positions of wire rope to make clear that the monthly inspection for wire ropes is completed, (2) Inspect Rigging Equipment before start of works, (3) Make unusable and destroy defective Rigging Equipment, (4) Select and use suitable Rigging Equipment depending on the weight and shape of loads, (5) Apply appropriate method of hanging angles, position of rigging pad, etc., in lifting works to avoid slipping off the wire rope from lifting tools and the surface of loads, *(To MD, Rigging pads: I cannot find proper name of these shown in the photos in the last page.)* (6) Hoist loads at the center of gravity of loads, (7) For lifting slippery goods such as pipes, small goods such as clamps, prevent from dropping them by selecting appropriate rigging methods. (8) In transporting loads, attach a guide rope at the edge of loads. (9) Store the Rigging Equipment in order in the storage which can prevent them from wet by rain and dust.

Terms
BS 6100-12:2008
12 36007 jib crane crane (01) that has a luffing jib (12 36018) pivoted at a low level (01)
12 36008 derrick crane mast crane crane (01) that consists of a mast (03 51007) capable of rotation, with a luffing jib (12 36018) pivoted from its foot
12 36009 scotch derrick crane derrick crane (12 36008) with bracing (01) to hold the top of the mast (03 51007) in position
12 36010 guy-derrick crane derrick crane (12 36008) with guys (03 52011) holding the top of the mast (03 51007) in position
12 36011 tower crane crane (01) that consists of a lattice tower (03 51006) of steel with a jib (12 36017) mounted on the top
12 36012 climbing crane tower crane (12 36011) supported by the building (01) or structure (01) within which it stands, and raised as the height (01) of the building (01) or structure (01) increases
12 36013 self-erecting tower crane tower crane (12 36011) that can be erected without using another crane (01)
12 36014 overhead travelling crane crane (01) that consists of one or two girders (01) mounted on travelling end carriages; the hoist (12 36026) or chain block (12 36037) traverses the girder (01)
12 36015 portal gantry crane crane (01) that consists of a girder (01) supported on legs running on rails (04 22051); a trolley and hoist (12 36026) or chain block (12 36037) traverses the girder (01)
12 36016 scaffold hoist small jib crane (12 36007) for mounting on a vertical scaffold tube (12 36047)
12 36017 jib component (01) of a crane (01) giving it reach and/or height (01) and from which the load (01) is suspended

BS ISO 6707-1:2017
3.5.3.17 crane
machine that incorporates an elevated structural member (3.3.1.3) beneath which suspended loads can be raised, lowered, and moved horizontally

(Reference) Dangerous place in rope works; Not enter inside corner of ropes to avoid being hit by wire rope

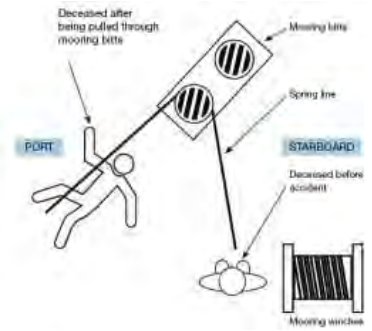
https://safety4sea.com/fatal-accident-mooring-operation-deck/



Fatal accident during mooring operation on deck

During mooring operation on board a Hong Kong registered bulk carrier, a crew member was killed after **being hit by a mooring rope,** the HK Marine Department informs. The chief officer was the person in charge of the mooring operation at the forward station of the vessel, assisted by other crew members including one ordinary seaman (OS)

滑車内角側周辺　立ち入り禁止
ワイヤーロープの引っ掛かりなど予想しない荷重が作用する場合があります。
一般的には巻き上げ機に過負荷制御機能があるケースは残念ながら少数です。
従って、滑車が壊れワイヤーロープが跳ねることを前提にし、滑車の内角側周辺には立ち入らない作業計画をお立てください。

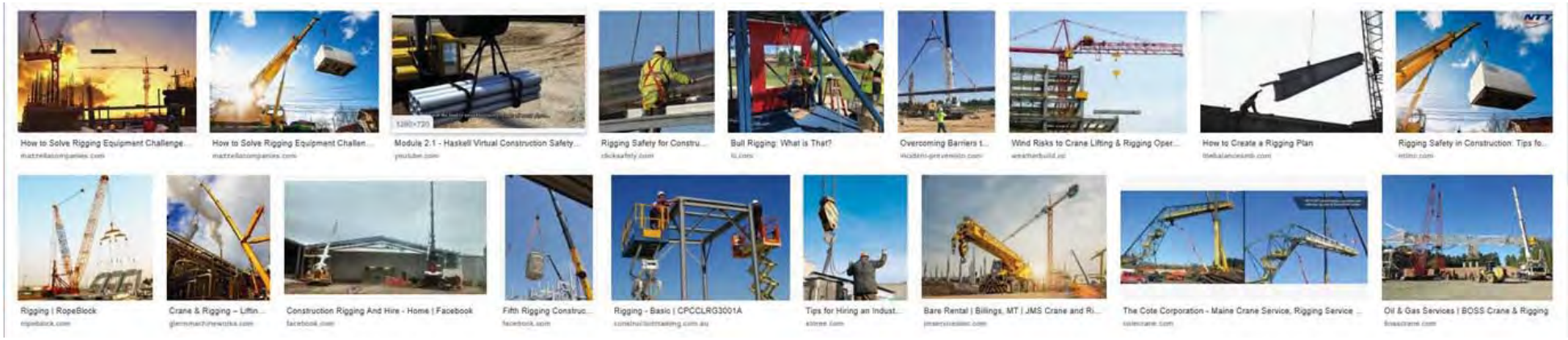


https://www.marineinsight.com/marine-safety/avoiding-death-traps-on-ships-understanding-dangers-of-mooring-operation/
2) Rope Bight
Mooring ropes are long and heavy ropes stored on board ships in coil form. When these ropes are under operation, they tend to form a coil or ring shape naturally known as rope bight.
Rope Bight
If a person involved in mooring operation comes under this rope bight, the pull of the rope can drag him over the ship or smash him in the hard deck over machines. Several injuries and deaths have been reported due to crew unaware of standing over bight and dragged by the rope.
The best ways to avoid accidents due to rope bight are:
•The crew must be aware of where he is standing while handling the ropes or when near them. It must be repeatedly made known to them that they should NEVER stand in the bight of a rope as the smallest error can cause them their life

•The supervisor must concentrate on others action and should not involve himself/herself in the operation as working hand. Being the officer in charge of the whole operation, the person must ensure that he oversees the safe mooring operation and carry out the Master's orders. There is absolutely no need, unless in a critical situation, for the officer to get involved with the handling of ropes as rather than helping the situation, it only further increases the risk

Hoisting and Rigging Works

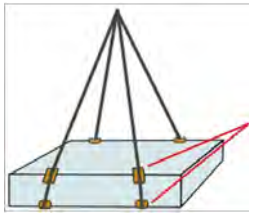
https://www.google.co.jp/search?biw=2068&bih=1015&tbm=isch&sa=1&ei=Xa_TXbnsPPuUr7wP0Pmm2AY&q=rigging+construction&oq=rigging+construction&gs_l=img.3..0i19j0i8i30i19l3.38040.41033..42115...0.0..0.153.1095.12j1.....0....1..gws-wiz-img.....0j0i30j0i8i30j0i5i30.FRN06GbbBCo&ved=0ahUKEwj5jpD19PXlAhV7yosBHdC8CWsQ4dUDCAY&uact=5#spf=1574154120851



Rigging pads (To MD I cannot find proper name of these.)

https://www.taiyoseiki.co.jp/blog/1942/

https://www.tekken-k.com/app-def/S-102/wp/?p=2860



2019.11.05 Japanese Final
2019.12.02 NK Draft Eng. R1
2019.12.12 NK Issue 1
2019.12.26 JICA Comment
2020.3.23 NK Eng. R2

JSSS in Japanese (2019/11/05)	JSSS in English Issue 1（2019/12/12）	JICA Comments (2019/12/26) JC: JICA Comments in blue letters on sentence and in yellow NK: NK actions	JSSS in English R2 for Issue 2（2020/3/23） Words in red color are added or modified ones from the last version.
		全体についてのコメント 1. 揚貨・玉掛け作業のリスクを想定して記載することが必要だが、総花的な記載になっている。下記などを念頭した記載である必要がある。 ・重量物を扱う ・揚貨機械の不整備・Rigging の損傷および消耗 ・不適切な玉掛 ・資格のないものの玉掛け、信号 ・バックホーなどによる揚貨 2. 機械一般では機械の整備が一つのテーマだったはず。それが適用されるのか。或いは別途記載するか必用。 3. スリング・アクセサリーなどの絵、クレーンのシグナルの絵、揚貨作業の作業場の囲いなどの絵があってもいいのでは。 4. 玉掛の掛け方も通常ははいっているのでは。例 BS EN13414" Steel wire rope slings – Safety" JC: Comment as a whole of the section. 1. It is necessary to describe in the section about the risk of hoisting and sling works, however, the draft seems to be mentioning general requirements only. It should be described concretely considering following matters. ・ Handling heavy objects ・ Insufficient maintenance of hoisting equipment, damage and wear of rigging ・ Improper slinging ・ Sling and signal by unqualified personnel ・ Hoisting using unsuitable equipment such as a backhoe 2. Maintenance of equipment should have been one of the themes for "Equipment in General (Chapter 4?)". Will it be mentioned here or in another part? 3. Figures of sling accessories, signal for crane work and enclosure of the lifting work area might be inserted in the section. 4. Sling methods are generally described. For example, BS EN 13414 "Steel wire rope slings – Safety" NK: 1. JSSS covers the comments except hoisting by backhoe because it is specified in 4.5.1 (1) & (5) as general. The comment will be refelected in 4.5.1. NK: 2. Maintenance is specifird in 5.2.5 Inspection of Hoisting Equipment and Rigging Equipment. Some addition is made as commented. NK: 3. Figures requested to be included are not attached because NK considers JSSS is specification to specify safety measures to be taken by the Contractor and the Conrtractor shall take various measures and study methods by	**5 HOISTING AND RIGGING** **5.1 GENERAL REQUIREMENTS** 5.1.1 Scope 5.1.2 Definitions 5.1.3 Compliance Standards **5.2 HOISTING OPERATIONS** 5.2.1 Instruction for Contractor's Personnel 5.2.2 Operators 5.2.3 Riggers 5.2.4 Safety Education and Training 5.2.5 Inspection of Hoisting Equipment and Rigging Equipment 5.2.6 General Safety Measures for Hoisting Operations **5.3 HOISTING EQUIPMENT - CRANES** 5.3.1 Planning, Installation and Removal 5.3.2 Additional Requirements for Mobile Cranes **5.4 RIGGING EQUIPMENT** 5.4.1 Hoisting and Rigging Equipment 5.4.2 Further Safety Requirements for Rigging

		themselves. NK: 4. Sling methods shall be selected to meet JSSS requirements to safely hoist loads. BS EN 13414 “Steel wire rope slings – Safety is added in 5.4.2 Further Safety Requirements for Rigging (4).	
5 揚貨・玉掛け作業 **5.1 一般事項** (1) 本節では、揚貨作業及び玉掛け作業にかかる揚貨機械の転倒、崩壊、吊り荷の落下等による作業員の危険を防止するための措置について規定する。 (2) 本仕様書で使用する用語の定義は次である。 (a) 揚貨機械とは、動力によって荷をつり上げ、移動することを目的とするものをいう。**→E6.1.2 (1)で規定済み** (b) 定格荷重（Rated capacity）とは、揚貨機械の製造者が規定した揚貨作業の条件（機械の構造、半径、ブームの長さ及び他の使用上の要素等）に応じて、この製造者が許可した最大の揚貨荷重をいう。**→E6.1.2 (3)で規定済み** (c) 玉掛け作業(hoisting and rigging)とは、揚貨機械により、つり荷をつり具でつるために玉掛け用具を使用して行う準備、荷のつり上げ、つり荷の移動及びつり荷を所定の位置に置くまでの作業をいう。**→規定なし** (d) 玉掛け作業員(rigger)とは、玉掛け作業に関する十分な知識及び作業能力を有し、作業チームの作業員を適切に指揮・統率する能力があると請負者が認めるもの(competent person)とし、本仕様書 1.9.2 (2)[特に危険又は有害な作業へ配置予定の者への教育]で定めた教育を終了した作業員をいう。**→E6.1.2 (6)で規定済み** (e) つり具(lifting equipment)とは、揚貨機械に付属して装備され、取外しできないフック等のつり上げ用具をいう。**→規定なし** (f) 玉掛け用具(rigging equipment)とは、つり荷をつり具でつるためのロープ、チェーン、ベルト、シャックル、リング、クランプ、ハッカー等をいう。**→E6.1.2 (2)で規定済み**	**5.1 GENERAL REQUIREMENTS** **5.1.1 Scope** This Chapter contains examples of required safety measures for Hoisting Operations as defined in JSSS Annex 1.1 [*Definitions and Abbreviations*] and associated rigging requirements all as necessary to avoid risk of injury, death or damage to Contractor’s Personnel, Employer’s Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where the Works are being executed and who may be affected by such operations including neighbouring residents and other persons and property on adjacent areas, public roads and footpaths or buildings. **5.1.2 Definitions** Definitions of terms for the purpose of this Chapter are as follows. (1) “**Hoisting Equipment**” means Contractor’s Equipment such as cranes, hoists, chain-blocks, pulleys and the like which constitute the prime mover which, when used with Rigging Equipment, permits loads to be hoisted or lowered and positioned. (2) “**Rigging Equipment**” means the ropes, webbing, chains and slings together with all associated accessories such as hooks, hoisting points, shackles, etc. which, when used with Hoisting Equipment permits loads to be hoisted or lowered and positioned. (3) “**Rated Capacity**” means the maximum hoisting load for each type of Hoisting Equipment as officially recommended by the manufacturer. This will vary according to configuration of Hoisting Equipment and conditions of use such as length and angle of boom and other factors as officially recommended by the manufacturer. (4) “**Recommended Safe Working Load**” means the maximum safe working load for each type, size and capacity of Rigging Equipment as officially recommended by the manufacturer.	**5.1 GENERAL REQUIREMENTS** **5.1.1 Scope** This Chapter contains examples of required safety measures for Hoisting Operations as defined in JSSS Annex 1.1 [*Definitions and Abbreviations*] and associated rigging requirements all as necessary to avoid risk of injury, death or damage to Contractor’s Personnel, Employer’s Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where the Works are being executed and who may be affected by such operations including neighbouring residents and other persons and property on adjacent areas, public roads and footpaths or buildings. **5.1.2 Definitions** Definitions of terms for the purpose of this Chapter are as follows. 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(4) “**Recommended Safe Working Load**” means the maximum safe working load for each type, size and capacity of Rigging Equipment as officially recommended by the manufacturer. JC: Rated Capacity は揚重機、Recommended Safe Working Load は吊具に対してというのは理解できるが、定義なしに文脈で記載されるとわかりにくい。Rated Hoisting Capacity と Maximum Rigging Working Load とか名称変更したほう	**5.1 GENERAL REQUIREMENTS** **5.1.1 Scope** This Chapter contains examples of required safety measures for Hoisting Operations as defined in JSSS Annex 1.1 [*Definitions and Abbreviations*] and associated rigging requirements all as necessary to avoid risk of injury, death or damage to Contractor’s Personnel, Employer’s Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where the Works are being executed and who may be affected by such operations including neighbouring residents and other persons and property on adjacent areas, public roads and footpaths or buildings. **5.1.2 Definitions** Definitions of terms for the purpose of this Chapter are as follows. (1) “**Hoisting Equipment**” means Contractor’s Equipment such as cranes, hoists, chain-blocks, pulleys and the like which constitute the prime mover which, when used with Rigging Equipment, permits loads to be hoisted or lowered and positioned. (2) “**Rigging Equipment**” means the ropes, webbing, chains and slings together with all associated accessories such as hooks, hoisting points, shackles, etc. which, when used with Hoisting Equipment permits loads to be hoisted or lowered and positioned. (3) “**Rated Capacity**” means the maximum hoisting load for each type of Hoisting Equipment as officially recommended by the manufacturer. This will vary according to configuration of Hoisting Equipment and conditions of use such as length and angle of boom and other factors as officially recommended by the manufacturer. (4) “**Recommended Safe Working Load**” means the maximum safe working load for each type, size and capacity of Rigging Equipment as officially recommended by the manufacturer.

		が良い。 It is understandable that the word of “Rated Capacity” is used for lifting equipment and “Recommended Safe Working Load” for sling. However, it is a little difficult to understand if they are used without defining them. It is recommended to change the wording such that “Rated Hoisting Capacity” and “Maximum Rigging Working Load” respectively. NK:“Rated Capacity” is defined in OSHA as follows: Subpart CC-Cranes and Derricks in Construction, 1926.1401 Definitions. Rated capacity means the maximum working load permitted by the manufacturer under specified working conditions. Such working conditions typically include a specific combination of factors such as equipment configuration, radii, boom length, and other parameters of use. NK propse to use the same term in JSSS as defined in OSHA so that readers of JSSS can easily understand “Rated Capacity”. NK:“Recommended Safe Working Load” is useed in OSHA as follows: Subpart H-Materials Handling, Storage, Use, and Disposal, 1926.251 Rigging equipment for material handling. (a) General. (2) Employers must ensure that rigging equipment: (i) Has permanently affixed and legible identification markings as prescribed by the manufacturer that indicate the recommended safe working load;(ii) Not be loaded in excess of its recommended safe working load as prescribed on the identification markings by the manufacturer; and NK propse to use the same term in JSSS as used in OSHA so that readers of JSSS can easily understand “Recommended Safe Working Load”.	
	(5) “**Total Load**” means either the Rated Capacity or the “Recommended Safe Working Load”, neither of which shall be exceeded. (6) “**Rigger**” means a competent person who is certified by the HSO as suitable for assignment on Hoisting Operations under this Section in accordance with JSSS 1.16 [*Proper Placement of Contractor’s Personnel*].	(5) “**Total Load**” means either the Rated Capacity or the “Recommended Safe Working Load”, neither of which shall be exceeded. (6) “**Rigger**” means a competent person who is certified by the HSO as suitable for assignment on ~~Hoisting Operations~~ Rigging under this Section in accordance with JSSS 1.16 [*Proper Placement of Contractor’s Personnel*]. NK:OSHA used “rigger” as follows: Subpart CC—Cranes and Derricks in Construction 1926.1404 Assembly/Disassembly—general requirements (applies to all assembly and disassembly operations). (r) Rigging. (1) The rigging work is done by a qualified rigger. OSHA Fact Sheet mentions as follows: https://www.osha.gov/Publications/cranes-qualified-rigger-factsheet.html Employers must use qualified riggers during hoisting activities for assembly and disassembly work (1926.1404(r)(1)). Rigging work is a part of hoisting activities. NK ask if MD which is suitable term.	(5) “**Total Load**” means either the Rated Capacity or the “Recommended Safe Working Load”, neither of which shall be exceeded. (6) “**Rigger**” means a competent person who is certified by the HSO as suitable for assignment on Hoisting Operations/Rigging under this Section in accordance with JSSS 1.16 [*Proper Placement of Contractor’s Personnel*].

5.2 揚貨作業

5.2.1 作業員への周知

請負者は、揚貨機械を用いて揚貨作業を行うときは、作業に必要な下記の安全上の措置について、必要に応じ作業員に説明しなければならない。→E6.2.1 (1)(a)/(b)

5.1.3 Compliance Standards

(1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], for any items in this Chapter or relevant to the subject of this Chapter and which are not fully covered by JSSS, the Contractor shall comply with the technical requirements of the following standards:

(a) OSHA PART 1926-Safety and Health Regulations for Construction, Subpart CC- Cranes and Derricks in Construction; Section 1413 – Wire Rope Inspection and Section 1414 – Wire Rope Selection and installation criteria;

(b) OSHA PART 1926.753-Safety and Health Regulations for Construction, Subpart R- Steel Erection; Hoisting and rigging;

(Whilst this standard is related to Steel Erection, JSSS requires these technical requirements to apply to Hoisting Operations and associated rigging requirements in construction works generally)

(c) OSHA Information Booklet on Sling safety, ref OSHA 3072, 1996 (revised) concerning the Use of Slings (composed of chains, wire rope fiber rope and synthetic web), Safe Lifting Practices and Maintenance of Slings.

5.2 HOISTING OPERATIONS

5.2.1 Instruction for Contractor's Personnel

Further to the requirements of JSSS 1.6 [*Contractor's Safety Plan*], JSSS 1.7 [*Contractor's Method Statements*] and JSSS 1.13.2 [*Contractor's Safety Management Activities*], the Contractor shall

5.1.3 Compliance Standards

(1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], for any items in this Chapter or relevant to the subject of this Chapter and which are not fully covered by JSSS, the Contractor shall comply with the technical requirements of the following standards:

(a) OSHA PART 1926-Safety and Health Regulations for Construction, Subpart CC- Cranes and Derricks in Construction; Section 1413 – Wire Rope Inspection and Section 1414 – Wire Rope Selection and installation criteria;

(b) OSHA PART 1926.753-Safety and Health Regulations for Construction, Subpart R- Steel Erection; Hoisting and rigging;

(Whilst this standard is related to Steel Erection, JSSS requires these technical requirements to apply to Hoisting Operations and associated rigging requirements in construction works generally)

(c) OSHA Information Booklet on Sling safety, ref OSHA 3072, 1996 (revised) concerning the Use of Slings (composed of chains, wire rope fiber rope and synthetic web), Safe Lifting Practices and Maintenance of Slings.

JC: 妥当性は要検討

Validity of clauses should be re-examined. (5.1.3 (1))

NK: (c) is available in internet but information booklet, not regulation, so it is deleted.
https://www.scribd.com/document/28664578/OSHA-3072-Sling-Safety

For reference: There is Guidance on safe safe sling use issued by OSHA below.

https://www.osha.gov/dsg/guidance/slings/index.html

NK: Addition of 1926.251Rigging equipment for material handling., Subpart H - Materials Handling, Storage, Use, is made as (a) and order of present (a) and (b) is changed to (b) and (c)

5.2 HOISTING OPERATIONS

5.2.1 Instruction for Contractor's Personnel

Further to the requirements of JSSS 1.6 [*Contractor's Safety Plan*], JSSS 1.7 [*Contractor's Method Statements*] and JSSS 1.13.2 [*Contractor's Safety Management Activities*], the Contractor shall

5.1.3 Compliance Standards

(1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], for any items in this Chapter or relevant to the subject of this Chapter and which are not fully covered by JSSS, the Contractor shall comply with the technical requirements of the following standards in OSHA PART 1926 - Safety and Health Regulations for Construction:

(a) Subpart H - Materials Handling, Storage, Use, and Disposal; Section 1926.251 Rigging equipment for material handling,

(b) Subpart R - Steel Erection; Section 1926.753 Hoisting and rigging.

(Whilst this standard is related to Steel Erection, JSSS requires these technical requirements to apply to Hoisting Operations and associated rigging requirements in construction works generally)

(c) Subpart CC - Cranes and Derricks in Construction; Section 1926.1413 Wire Rope - Inspection and Section 1926.1414 – Wire Rope - Selection and installation criteria;

5.2 HOISTING OPERATIONS

5.2.1 Instruction for Contractor's Personnel

Further to the requirements of JSSS 1.6 [*Contractor's Safety Plan*], JSSS 1.7 [*Contractor's Method Statements*] and JSSS 1.13.2 [*Contractor's*

で規定済み
(1) 揚貨機械による作業内容、作業方法、作業範囲→E6.2.1 (1)(a)/(b)で規定済み
(2) 揚貨機械の種類、定格荷重等の能力→E6.2.1 (2)(a)で規定済み
(3) 玉掛け用具の種類、許容荷重→E6.2.1 (2) (b)で規定済み
(4) 揚貨作業の場所→E6.2.1 (1)(a)で規定済み
(5) 高圧線、危険物貯蔵庫などの危険箇所とつり荷の移動・稼働制限範囲→E6.1.1 (1)(b)/(c), (2)(h)で規定済み
(6) 立入禁止箇所の特定と注意標識、柵の設置場所→規定なし（2.3.2.(1), 2.3.3(4)その他で立入禁止措置を規定済み）
(7) 揚貨作業周辺の安全な通路→E6.2.1 (1)(d)で規定済み
(8) 誘導者、監視員の配置場所→E6.2.1 (3)(b)で規定済み
(9) 揚貨機械の運転者又は操作者、玉掛け作業員→E6.2.1 (3)(a)で規定済み
(10) 揚貨機械に異常が発生したときの対処方法→E6.2.1 (3)(d)で規定済み
(11) 現場の隣地や公道における近隣住民・第三者への揚貨機械による危険性→E6.2.1 (1)(e)/(2)(c)で規定済み

include details of the following in the Method Statement and Safety Plan for Hoisting Operations and shall fully inform all Contractor's Personnel associated therewith of all requirements before the commencement of any such operations, including:

(1) Scope and Hoisting Operation Area
  (a) The scope of the required Hoisting Operation, the Total Load, nature of Goods to be hoisted, location, required methods and safety arrangements;
  (b) The Hoisting Operation area limits;
  (c) The environmental conditions, nearby areas for storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, Operational Areas or areas where other Dangerous Work is taking place;
  (d) The preservation of safe access, Walkways, and footpaths around the Hoisting Operations working area; and.
  (e) The potential danger of Hoisting Operations to other Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where the Works are being executed and who may be affected by such operations.
(2) Hoisting Operation and Rigging Requirements
  (a) The Rated Capacity of Hoisting Equipment and type to be used;
  (b) The Recommended Safe Working Load and type(s) of Rigging Equipment to be used;
  (c) Hazards associated with the Hoisting Operation;
  (d) Role and responsibility of the operator and each Rigger;
  (e) Establishing targets for the day;

include details of the following in the Method Statement and Safety Plan for Hoisting Operations and shall fully inform all Contractor's Personnel associated therewith of all requirements before the commencement of any such operations, including:

JC: all Contractor's Personnel は無理なので、Rigging / Hoisting Operation に関係する作業員に限定する。
As it is impossible to inform "all Contractor's Personnel", it is better to limit to workers involved rigging/hoisting operation.
NK: The "all" means that all personnel who are working in hoisting operations as mentioned "associated therewith of all requirements", therefore, no change is made. If necessary, NK ask MD to modify this phrase.

(1) Scope and Hoisting Operation Area
  (a) The scope of the required Hoisting Operation, the Total Load, nature of Goods to be hoisted, location, required methods and safety arrangements;
  (b) The Hoisting Operation area limits;
  (c) The environmental conditions, nearby areas for storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, Operational Areas or areas where other Dangerous Work is taking place;
  (d) The preservation of safe access, Walkways, and footpaths around the Hoisting Operations working area; and.
  (e) The potential danger of Hoisting Operations to other Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where the Works are being executed and who may be affected by such operations.
(2) Hoisting Operation and Rigging Requirements
  (a) The Rated Capacity of Hoisting Equipment and type to be used;
  (b) The Recommended Safe Working Load and type(s) of Rigging Equipment to be used;
  (c) Hazards associated with the Hoisting Operation;
  (d) Role and responsibility of the operator and each Rigger;
  (e) Establishing targets for the day;
  (f) Weight of Goods being hoisted;

Safety Management Activities], the Contractor shall include details of the following in the Method Statement and Safety Plan for Hoisting Operations and shall fully inform all Contractor's Personnel associated therewith of all requirements before the commencement of any such operations, including:

(1) Scope and Hoisting Operation Area
  (a) The scope of the required Hoisting Operation, the Total Load, nature of Goods to be hoisted, location, required methods and safety arrangements;
  (b) The Hoisting Operation area limits;
  (c) The environmental conditions, nearby areas for storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, Operational Areas or areas where other Dangerous Work is taking place;
  (d) The preservation of safe access, Walkways, and footpaths around the Hoisting Operations working area; and.
  (e) The potential danger of Hoisting Operations to other Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where the Works are being executed and who may be affected by such operations.
(2) Hoisting Operation and Rigging Requirements
  (a) The Rated Capacity of Hoisting Equipment and type to be used;
  (b) The Recommended Safe Working Load and type(s) of Rigging Equipment to be used;
  (c) Hazards associated with the Hoisting Operation;
  (d) Role and responsibility of the operator and each Rigger;

5.2.2 揚貨機械の運転者及び操作者

請負者は、本仕様書 4.1.4[建設機械の運転者及び操作者]に準じ、揚貨機械の運転者又は操作者の適正配置、運転者又は操作者の氏名の揚貨機械への明示、作業前の健康状態の確認等を行わなければならない。

→E6.2.2 で規定済み

5.2.3 安全教育と指導

請負者は、本仕様書 4.1.5[安全教育と指導]に準じ、ま

(f) Weight of Goods being hoisted;

(g) The shapes and characteristics of Goods being hoisted;

(h) The presence of any obstructions or Overhead Services and consequent restrictions on the movement and operation of Hoisting Equipment;

(i) Any limitations of Hosting Equipment; and

(j) Disconnecting techniques used to complete the task.

(3) Organisation

(a) The identity of operators, Riggers and any other workers associated with the Hoisting Operation;

(b) The identity of and location(s) for Signallers;

(c) The communication and signalling requirements (equipment to be used and standard signals); and

(d) The procedures in case of emergency.

5.2.2 Operators

(1) The Contractor shall select and assign operators and drivers (hereinafter referred to collectively as 'operators") of Hoisting Equipment in accordance with JSSS 1.16 [*Proper Placement of Contractor's Personnel*].

(2) The name of the assigned operator shall be posted on each unit of Hoisting Equipment.

5.2.3 Riggers

(1) The Contractor shall assign only Riggers for all Hoisting Operations and shall prohibit other workers from any involvement.

(2) The Contractor shall select and assign Riggers in accordance with JSSS 1.16 [Proper Placement of Contractor's Personnel].

(3) The names of all assigned Riggers shall be posted prominently in the working area of the Hoisting Operation.

5.2.4 afety Education and Training

(g) The shapes and characteristics of Goods being hoisted;

(h) The presence of any obstructions or Overhead Services and consequent restrictions on the movement and operation of Hoisting Equipment;

(i) Any limitations of Hosting Equipment; and

(j) Disconnecting techniques used to complete the task.

(3) Organisation

(a) The identity of operators, Riggers and any other workers associated with the Hoisting Operation;

(b) The identity of and location(s) for Signallers;

(c) The communication and signalling requirements (equipment to be used and standard signals); and

(d) The procedures in case of emergency.

JC: この意味は？organization 以外の話も含まれているので、タイトルを再考ください。

What is the meaning of this "Organisation"? Actually, this clause includes matters other than organisation. Please re-consider the title.

NK: Modified as right.

5.2.2 Operators

(1) The Contractor shall select and assign operators and drivers (hereinafter referred to collectively as 'operators") of Hoisting Equipment in accordance with JSSS 1.16 [*Proper Placement of Contractor's Personnel*].

(2) The name of the assigned operator shall be posted on each unit of Hoisting Equipment.

5.2.3 Riggers

(1) The Contractor shall assign only Riggers for all ~~Hoisting Operations~~ rigging and shall prohibit other workers from any involvement.

(2) The Contractor shall select and assign Riggers in accordance with JSSS 1.16 [Proper Placement of Contractor's Personnel].

(3) The names of all assigned Riggers shall be posted prominently in the working area of the Hoisting Operation.

5.2.4 Safety Education and Training

The Contractor shall provide health and safety education and training in accordance with JSSS 1.17

(e) Establishing targets for the day;

(f) Weight of Goods being hoisted;

(g) The shapes and characteristics of Goods being hoisted;

(h) The presence of any obstructions or Overhead Services and consequent restrictions on the movement and operation of Hoisting Equipment;

(i) Any limitations of Hosting Equipment; and

(j) Disconnecting techniques used to complete the task.

(3) Identification of Personnel

(a) The identity of operators, Riggers and any other workers associated with the Hoisting Operation;

(b) The identity of and location(s) for Signallers;

(4) The communication and signalling requirements (equipment to be used and standard signals); and

(5) The procedures in case of emergency.

5.2.2 Operators

(1) The Contractor shall select and assign operators and drivers (hereinafter referred to collectively as 'operators") of Hoisting Equipment in accordance with JSSS 1.16 [*Proper Placement of Contractor's Personnel*].

(2) The name of the assigned operator shall be posted on each unit of Hoisting Equipment.

5.2.3 Riggers

(1) The Contractor shall assign only Riggers for all rigging and shall prohibit other workers from any involvement.

(2) The Contractor shall select and assign Riggers in accordance with JSSS 1.16 [Proper Placement of Contractor's Personnel].

(3) The names of all assigned Riggers shall be posted prominently in the working area of the Hoisting Operation.

5.2.4 Safety Education and Training

The Contractor shall provide health and safety

た揚貨機械の特性に応じて揚貨機械の運転者又は操作者、揚貨作業に従事する作業員への教育を行わなければならない。**→E6.2.4 で規定済み**

5.2.4 揚貨機械の搬入時の点検

請負者は、揚貨機械の搬入時の点検は、本仕様書4.1.6[搬入時の点検]に準じ、行わなければならない。この点検には、本仕様書 6.2.2(1)及び(2)に規定の項目を含まなければならない。**→E6.2.5 (1)で規定済み**（before the commencement of the first and of all subsequent Hoisting Operations.としている）

5.2.5 揚貨機械の点検・整備

請負者は、本仕様書 4.1.7[建設機械の点検・整備]に準じ、揚貨機械の日常点検表、定期点検表の作成、次の日常及び定期点検と整備、エンジニアへの点検状況の報告を行わなければならない。揚貨機械の組立時完了時は日常点検及び定期点検の項目をすべて点検しなければならない。**→E6.2.5 (2)で規定済み（日常及び定期点検及びエンジニアへの報告等を削除するなど内容は異なる）**

(1) 日常点検

請負者は、本仕様書 4.1.8[日常点検]に準じて揚貨機械の日常点検、整備を、運転者又は操作者に揚貨機械の始業前に、請負者が準備した点検表に基づき行わせなければならない。この点検表には、揚貨機械の種類に応じて次の点検項目を含まなくてはならない。**→E6.2.5 (2) で規定済み**

(a) 巻過防止装置の機能 **→E6.2.5 (2)(a)で規定済み**

(b) ブレーキ、クラッチ及びコントローラーの機能 **→E6.2.5 (2)(b)で規定済み**

(c) ランウエイの上又はトロリが横行するレールの状態 **→E6.2.5 (2)(c)で規定済み**

(d) ワイヤロープが通っている箇所の状態 **→E6.2.5 (2)(d)で規定済み**

(e) ワイヤーロープの状態

(2) 定期点検

請負者は、本仕様書 4.1.9[定期点検]に準じて、揚貨機械の定期点検、整備を行わなければならない。この点検には、揚貨機械の種類に応じて次の点検を含まなくてはならない。

(a) 巻過防止装置、過負荷防止装置その他の安全装置、警報装置、ブレーキ及びクラッチの異常の有無**→E6.2.5 (2)(a)/(b)で規定済み**

(b) ワイヤロープ及びつりチエーンの損傷の有無 **→E6.2.5 (2)(e)で規定済み**

(c) フック等のつり具の損傷の有無 **→E6.2.5 (2)(d)で規定済み**

(d) ウインチの据付けの状態の異常の有無 **→規定なし(追記済み)**

(e) 配線、配電盤及びコントローラーの異常の有無**→E6.2.5 (2)(b)で規定済み**

The Contractor shall provide health and safety education and training in accordance with JSSS 1.17 [*Safety Training Generally*]. taking account of the characteristics of the Hoisting Operations, Hoisting Equipment and Rigging Equipment.

5.2.5 Inspection of Hoisting Equipment and Rigging Equipment

(1) Further to the requirements of JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the HSO shall ensure that all Hoisting Equipment and all Rigging Equipment is inspected and maintained when it is at the location of operation before the commencement of the first and of all subsequent Hoisting Operations.

(2) Inspections shall include all items necessary to ensure the safe performance of the Hoisting Operations including the following examples and any further requirements due to the characteristics of the Hoisting Operation and the capability and condition of the Hoisting Equipment and Rigging Equipment including condition and performance of:

(a) Over-winding prevention devices;

(b) Other safety devices including brakes, clutches and controllers;

(c) Rails for trolley and runway;

(d) Hooks, sheaves, blocks, pulleys and the like;

(e) Cables, ropes and the like; and

(f) Rigging Equipment.

[*Safety Training Generally*]. taking account of the characteristics of the Hoisting Operations, Hoisting Equipment and Rigging Equipment.

5.2.5 Inspection of Hoisting Equipment and Rigging Equipment

JC: 搬入時の点検について触れるようにしてください（その時点で怪しい機械を持ち込ませないということが大事）。

Please refer to inspection at the time of bringing in. (It is important to prohibit to bring defective equipment into the Site.)

NK: The inspection at mobilizing of Contractor's equipmnet at the site is specified in JSSS 4.2.1 (3). Duplicate specifying is avoided here. Inspection at the time of mobilization is added as (1) in 5.2.5 as right.

JC: ・4 章をリファーするよう追記ください。

・なぜ定期点検を消したのか意図を確認したく。

Please add to refer to Chapter 4. Would like to know the intention of deleting the periodic inspection.

NK: As same as the above, periodic inspection is specified in JSSS 4.2.1 (5). Periodic inspection is added as shown right in (4).

(1) Further to the requirements of JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the HSO shall ensure that all Hoisting Equipment and all Rigging Equipment is inspected and maintained when it is at the location of operation before the commencement of the first and of all subsequent Hoisting Operations.

(2) Inspections shall include all items necessary to ensure the safe performance of the Hoisting Operations including the following examples and any further requirements due to the characteristics of the Hoisting Operation and the capability and condition of the Hoisting Equipment and Rigging Equipment including condition and performance of:

(a) Over-winding prevention devices;

NK: over-loading prevention devices is added.

(b) Other safety devices including brakes, clutches and controllers;

(c) Rails for trolley and runway;

(d) Hooks, sheaves, blocks, pulleys and the like;

(e) Cables, ropes and the like; and

(f) Rigging Equipment.

education and training in accordance with JSSS 1.17 [*Safety Training Generally*]. taking account of the characteristics of the Hoisting Operations, Hoisting Equipment and Rigging Equipment.

5.2.5 Inspection of Hoisting Equipment and Rigging Equipment

(1) When the Hoisting Equipment is mobilised to the Site, the Contractor shall inspect the equipment complying with JSSS 4.2 [Inspeection, Maintenance and Repair], 4.2.1 [Requirement Generally] (3) to ensure that the equipment is free from defect and suitable for the hoisting operation planned.

(2) Further to the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] and JSSS 4.2 [Inspeection, Maintenance and Repair], the HSO shall ensure that all Hoisting Equipment and all Rigging Equipment is inspected and maintained when it is at the location of operation before the commencement of the first and of all subsequent Hoisting Operations.

(3) Inspections mentioned in (2) above shall include all items necessary to ensure the safe performance of the Hoisting Operations including the following examples and any further requirements due to the characteristics of the Hoisting Operation and the capability and condition of the Hoisting Equipment and Rigging Equipment including condition and performance of:

(a) Over-winding prevention devices, and over-load prevention devices;

(b) Other safety devices including brakes, clutches and controllers;

(c) Rails for trolley and runway;

(d) Hooks, sheaves, blocks, pulleys and the like;

(e) Cables, ropes and the like; and

(f) Rigging Equipment.

(4) Periodic inspection shall be made complying

			with JSSS 4.2.1 [Requirement Generally] (5) and include the following items: (a) Condition of over-winding prevention devices, overload prevention devices, other safety devices, brakes, and clutches; (b) Condition of wire ropes and hanging chains; (c) Condition of Lifting Equipment such as hooks; (d) Condition of placement of winches; and (e) Condition of electric wire, switchboard and controller.
	(3) No Hoisting Operation shall be allowed to commence until the HSO has certified that it is safe to do so.	(3) No Hoisting Operation shall be allowed to commence until the HSO has certified that it is safe to do so. JC: HSO が certify するのがじっさい実務的と考えられない。 It is not practical for the HSO to certify for hoisting operations. ((5) & (6) right: numbers are changed in accordance with addition of (2) and (4)) Inspection is argued here. So better to redraft as follows. "No Hoisting Equipment or Rigging Equipment shall not put in operation unless they are inspected in accordance with JSSS 4.1.7-4.1.9 and it is ensured that they are safe to be used." NK: Clause (5) is changed as right in accordance with JICA's comment.	(5) No Hoisting Equipment or Rigging Equipment shall put in operation unless they are inspected in accordance with JSSS 4.2.1 and it is ensured that they are safe to be used.
	(4) The Contractor shall prepare standard checklists for the above regular inspections and the HSO shall ensure that these are complied with, completed and signed and kept as a record in accordance with JSSS 1.31 [*Health and Safety Records*].	(4) The Contractor shall prepare standard checklists for the above regular inspections and the HSO shall ensure that these are complied with, completed and signed and kept as a record in accordance with JSSS 1.31 [*Health and Safety Records*]. JC: Ditto (It is not practical for the HSO to certify for hoisting operations.) NK: In (4), the HSO shall manage the inspection and maintenance in accordance with the Safety Plan and instruct improvement if the person in charge does not follow the the Safety Plan. (4) is modified as (5) in right.	(6) The Contractor shall prepare standard checklists for the above regular and periodic inspections and the HSO shall ensure that these are recorded check, repair and maintenance results, complied with and signed by the person in charge of check and maintenance and kept as a record in accordance with JSSS 1.31 [*Health and Safety Records*].
5.2.6 揚貨機械の運用時の安全措置 請負者は、本仕様書 4.1.10[運用時の安全措置]に準じ、揚貨機械と作業員の接触の防止、揚貨機械の安全対策を行うとともに、次の措置を講じなければならない。 (1) つり荷及び玉掛け用具の重量、作業範囲、作業半径・角度等の条件に見合った揚貨能力を持つ機械を選定すること。**→E6.2.6 (1)(3)(4)で規定済み** (2) 運転者及び玉掛け作業員が、揚貨機械の種類や作業状態に応じた定格荷重を常時知ることができよう定格荷重を、揚貨機械の適切な位置に表示すること。**→E6.2.6 (2)で規定済み** (3) 運転者及び玉掛け作業員に、つり荷及び玉掛け用具の合計重量が、定格荷重以下であることを確認させること。**→E6.2.6 (5)で規定済み**	**5.2.6 General Safety Measures for Hoisting Operations** The Contractor shall: (1) Select Hoisting Equipment which has a Rated Capacity and function compatible with the work conditions and requirements, including loads, surface conditions, access, working area, radius and angle of boom, etc. (2) Clearly display the Rated Capacity of the Hoisting Equipment so that all operators and	**5.2.6 General Safety Measures for Hoisting Operations** The Contractor shall: (1) Select Hoisting Equipment which has a Rated Capacity and function compatible with the work conditions and requirements, including loads, surface conditions, access, working area, radius and angle of boom, etc. (2) Clearly display the Rated Capacity of the Hoisting Equipment so that all operators and Riggers are fully aware at all times. (3) Select Rigging Equipment with Recommended Safe Working Load suitable for the Hoisting Operation.	**5.2.6 General Safety Measures for Hoisting Operations** The Contractor shall: (1) Select Hoisting Equipment which has a Rated Capacity and function compatible with the work conditions and requirements, including loads, surface conditions, access, working area, radius and angle of boom, etc. (2) Clearly display the Rated Capacity of the Hoisting Equipment so that all operators and Riggers are fully aware at all times. (3) Select Rigging Equipment with Recommended Safe Working Load suitable

(4) 揚貨作業中は、揚貨機械の安全装置を常時作動させること。**→E6.2.6 (6)で規定済み**

(5) 立入りの禁止

本仕様書2.3[立入禁止の措置]に従い、次の立入禁止の措置を講じること。

(a) 揚貨作業中は、つり荷の直下のほか、つり荷の移動範囲内で、つり荷の落下による危険のある場所への作業員の立入りを禁止すること。**→E6.2.6 (7)で規定済み**

(b) ワイヤロープが通っているシーブ又はその取付け部の破損により、当該ワイヤロープがはね、又は当該シーブ若しくはその取付具が飛来することによる作業員の危険を防止するため、当該ワイヤロープの内角側への作業員の立入りを禁止すること。**→E6.2.6 (7)で規定済み**

(c) 立入りを禁止した場所には、看板、標識等を設置し、作業員に立入禁止を周知すること。**→E6.2.6 (7)で規定済み**

(6) 合図

(a) 本仕様書 2.4.2[合図、信号等の統一]に従い、合図者を任命し運転者又は操作者と合図者に決められた合図で作業させること。**→E6.2.6 (8)(a)で規定済み**

(b) 合図者に、つり荷がよく見え、運転者又は操作者からもよく見える安全な位置で、かつ作業範囲外に位置して合図を行なわせること。**→E6.2.6 (8)(b)で規定済み**

(c) やむを得ず運転者又は操作者から見えない位置で合図する場合には、無線等で確実に合図が伝わる方法をとらせること。**→E6.2.6 (8)(c)で規定済み**

Riggers are fully aware at all times.

(3) Select Rigging Equipment with Recommended Safe Working Load suitable for the Hoisting Operation.

(4) Select Rigging Equipment compatible with the purpose, work conditions and requirements.

(5) Ensure that operators and Riggers confirm that the load on the Rigging Equipment is less than the Recommended Safe Working Load.

(6) Activate all safety devices of Hoisting Equipment throughout the entire operation time(s) of any Hoisting Operations.

(7) Prohibition of entry

Designate all Hoisting Operations as "Dangerous Work", enclose the entire working area which is subject to any risk by providing temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry – Dangerous Work*].

The Contractor shall be particularly aware and take all measures to prevent any risk of injury to persons arising from the Hoisting Operation but outside the immediate working area, due to tangling, snagging, rebound of broken ropes or cables, broken sheaves, droppage and the like.

(8) Signalling

(a) Signalling between operators, Riggers and any associated workers regarding the Hoisting and Rigging Operations, shall only be carried out by Riggers, (hereinafter referred to as signallers);

(b) Signallers shall be located in a safe place outside the immediate area where the Rigging and Hoisting Operations are taking place, but in a location where they can clearly see suspended loads and can also see the operator and also be seen by such personnel;

(c) When it is not possible for signallers to give direct visible signals to the operator, hand held radios must be provided and used; and

(d) Spotters shall be used only to keep any unauthorised personnel away from the working area.

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(4) Select Rigging Equipment compatible with the purpose, work conditions and requirements.

(5) Ensure that operators and Riggers confirm that the load on the Rigging Equipment is less than the Recommended Safe Working Load.

(6) Activate all safety devices of Hoisting Equipment throughout the entire operation time(s) of any Hoisting Operations.

(7) Prohibition of entry

Designate all Hoisting Operations as "Dangerous Work", enclose the entire working area which is subject to any risk by providing temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry – Dangerous Work*].

The Contractor shall ~~be particularly aware and~~ take ~~all~~ measures to ~~prevent~~ keep any unauthorised personnel off from any area subject to any risk of injury ~~to persons~~ arising from the Hoisting Operation ~~but outside the immediate working area~~, due to tangling, snagging, rebound of broken ropes or cables, broken sheaves, droppage and the like.

JC: modified.

(8) Signalling

(a) Signalling between operators, Riggers and any associated workers regarding the Hoisting and Rigging Operations, shall only be carried out by Riggers, (hereinafter referred to as signallers);

(b) Signallers shall be located in a safe place outside the immediate area where the Rigging and Hoisting Operations are taking place, but in a location where they can clearly see suspended loads and can also see the operator and also be seen by such personnel;

(c) When it is not possible for signallers to give direct visible signals to the operator, hand held radios or any other suitable communication tool must be provided and used; and

JC: modified.

(d) Spotters shall be used only to keep any unauthorised personnel away from the working area.

JC: Spotter と合図者は別に規定して、合図者は合図に専従することを書かなければならないのではないか？

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for the Hoisting Operation.

(4) Select Rigging Equipment compatible with the purpose, work conditions and requirements.

(5) Ensure that operators and Riggers confirm that the load on the Rigging Equipment is less than the Recommended Safe Working Load.

(6) Activate all safety devices of Hoisting Equipment throughout the entire operation time(s) of any Hoisting Operations.

(7) Prohibition of entry

Designate all Hoisting Operations as "Dangerous Work", enclose the entire working area which is subject to any risk by providing temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry – Dangerous Work*].

The Contractor shall ~~be particularly aware and~~ take ~~all~~ measures to ~~prevent~~ keep any unauthorised personnel off from any area subject to any risk of injury ~~to persons~~ arising from the Hoisting Operation ~~but outside the immediate working area~~, due to tangling, snagging, rebound of broken ropes or cables, broken sheaves, droppage and the like.

(8) Signalling

(a) Signalling between operators, Riggers and any associated workers regarding the Hoisting and Rigging Operations, shall only be carried out by Riggers, (hereinafter referred to as signallers);

(b) Signallers shall be located in a safe place outside the immediate area where the Rigging and Hoisting Operations are taking place, but in a location where they can clearly see suspended loads and can also see the operator and also be seen by such personnel;

(c) When it is not possible for signallers to give direct visible signals to the operator, hand held radios or any other suitable communication tool must be provided and used; and

(d) In addition, Spotters shall be placed and used only to keep any unauthorised personnel away from the working area.

(7) 玉掛け作業
(a) 本仕様書 6.4[玉掛け作業]にもとづき、玉掛け作業をおこなうこと。**→規定なし（重複）**
(b) 揚貨機体の安定、吊り荷の重心、玉掛けの状態を確認すること。**→規定なし（重複）**
(8) 荷の吊り上げ作業
(a) 荷を吊り上げるとき、つり具がつり荷の重心の真上にあることを確認すること。**→E6.2.6 (9)(a)で規定済み**
(b) 荷の吊り上げを開始するとき、吊り上げ面から30 ㎝吊り上げた状態でつり荷を一旦停止し、つり荷の安定を確認すること。**→E6.2.6 (9)(b)で規定済み**
(c) 旋回を行うとき、旋回範囲内に人や障害物がないことを確認すること。**→E6.2.6 (9)(c)で規定済み**
(d) つり荷を安全な高さまで吊り上げた後、静かに旋回すること。**→E6.2.6 (9)(d)で規定済み**
(e) 常にブームの先端の動きやつり荷の状態に注意すること。**→E6.2.6 (9)(e)で規定済み**
(f) 荷下しは一気に着床させず、着床直前に一旦停止し、着床場所の状態や荷の位置を確認した後、静かに下すこと。**→E6.2.6 (9)(f)で規定済み**
(9) 運転者又は操作者は、荷を吊り上げたままで運転席を離れないこと。**→E6.2.6 (10)で規定済み**
(10) 作業中の揚貨機械の異常に関する措置
(a) 運転者又は操作者は、作業中に機械に異常音、発熱、臭気、異常動作等が認められたときは、直ちに作業を中止すること。**→E6.2.6 (11)(a)で規定済み**
(b) 機械の異常作動の原因を調べ、必要な修理を行うこと。**→E6.2.6 (11)(b)で規定済み**
(c) 機械の正常動作を確認した後でなければ、作業を再開しないこと。**→E6.2.6 (11)(c)で規定済み**

(9) During Hoisting Operations:
(a) Check if the hoisting points, hooks and the like are positioned above the centre of gravity of the load to be hoisted;
(b) At commencement of all Hoisting Operations, stop the hoist at 30 cm from hoisting level, to check stability and ensure that all is in order before proceeding;
(c) Ensure that there are no persons and objects within the turning area when the Hoisting Equipment turns;
(d) After hoisting loads up to the safe height, adjust the boom gently;
(e) Always pay attention to the edge of boom and the condition of suspended loads; and
(f) When unloading or detaching loads, stop once before landing and check the condition of the landing place and the load and then continue to lower gently.

(10) Operators shall never leave their seat or leave the controls while Hoisting Operations are in progress.

(11) Defects with Hoisting Equipment during operation
(a) If operators notice any defect or abnormality in the Hoisting Equipment during Hoisting Operations (such as abnormal noise, temperature, smell, etc.) the operator shall stop the Hoisting Operation immediately;
(b) The operator shall then identify the cause of defect or abnormality and make necessary repairs by using authorised and qualified specialist mechanics, electricians or representative technical engineers authorised by the hoisting Equipment manufacturer; and

Should spotter and signallers be stipulated separately, and the signallers be described that he shall dedicate to the signal?

NK: As provided in (8) (a)~(c), the Riggers (signallers) carry only signalling and rigging. (d) is modified as right to clarify that Spotters are placed to keep any unauthorised personnel away from the working area.

(9) During Hoisting Operations:
(a) Check if the hoisting points, hooks and the like are positioned above the centre of gravity of the load to be hoisted;
(b) At commencement of all Hoisting Operations, stop the hoist at 30 cm from hoisting level, to check stability and ensure that all is in order before proceeding;
(c) Ensure that there are no persons and objects within the turning area when the Hoisting Equipment turns;
(d) After hoisting loads up to the safe height, adjust the boom gently;
(e) Always pay attention to move of the edge of boom and the condition of suspended loads; and
(f) When unloading or detaching loads, stop once before landing and check the condition of the landing place and the load and then continue to lower gently.

(10) Ensure that the operators ~~shall~~ leave their seat or leave the controls while Hoisting Operations are in progress.

JC: modified.

(11) Defects with Hoisting Equipment during operation
(a) Ensure that, if operators notice any defect or abnormality in the Hoisting Equipment during Hoisting Operations (such as abnormal noise, temperature, smell, etc.) the operator shall stop the Hoisting Operation immediately;
(b) ~~The operator shall then~~ Identify the cause of defect or abnormality and make necessary repairs by using authorised and qualified specialist mechanics, electricians or representative technical engineers authorised by the hoisting Equipment manufacturer; and
(c) ~~The HSO shall ensure that no Hoisting Operation shall resume unless the above has been complied with and the~~

(9) During Hoisting Operations:
(a) Check if the hoisting points, hooks and the like are positioned above the centre of gravity of the load to be hoisted;
(b) At commencement of all Hoisting Operations, stop the hoist at 30 cm from hoisting level, to check stability and ensure that all is in order before proceeding;
(c) Ensure that there are no persons and objects within the turning area when the Hoisting Equipment turns;
(d) After hoisting loads up to the safe height, adjust the boom gently;
(e) Always pay attention to move of the edge of boom and the condition of suspended loads; and
(f) When unloading or detaching loads, stop once before landing and check the condition of the landing place and the load and then continue to lower gently.

(10) Ensure that the operators ~~shall~~ never leave their seat or leave the controls while Hoisting Operations are in progress.

(11) Defects with Hoisting Equipment during operation
(a) Ensure that, if operators notice any defect or abnormality in the Hoisting Equipment during Hoisting Operations (such as abnormal noise, temperature, smell, etc.) the operator shall stop the Hoisting Operation immediately;
(b) ~~The operator shall then~~ Identify the cause of defect or abnormality and make necessary repairs by using authorised and qualified specialist mechanics, electricians or representative technical engineers authorised by the hoisting Equipment manufacturer; and
(c) Ensure that the repaired Hoisting Equipment shall not be put in operation

(11) 揚貨機械で使用するワイヤロープが、本仕様書 4.1.10(6)[建設機械のワイヤロープ]の(a)から(d)に規定のいずれかの状態のときは、交換したうえで切り捨て等の措置を講ずること。

(12) 本仕様書 2.7[悪天候及び地震時の対策]及び 4.1.10(8)[悪天候時の対策]の措置に加えて、悪天候時には揚貨機械が不安定な状態になることを回避するために、次のような措置を講じること。**→E6.2.6 (13)(a)/(b)で規定済み。**

(a) 悪天候時には、ジブを倒す又はマスト等をアンカー等で固定すること**→E6.2.6 (13)(c)で規定済み。**

(b) 悪天候及び地震の後に作業を行なうときは、作業前に本仕様書 6.2.2[揚貨機械の点検・整備]に規定の日常点検表及び定期点検表にもとづき、揚貨機械の各部分の点検を行なうこと。**→規定なし(追記済み)**

(13) 揚貨機械の目的外使用の禁止

(c) The HSO shall ensure that no Hoisting Operation shall resume unless the above has been complied with and the Hoisting Equipment has been re-inspected by him and certified in accordance with JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment.*

(12) Condition of Ropes, Slings and Chains

The Contractor shall ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

(13) Adverse Weather

(a) The Contractor shall ensure that Hoisting Equipment is left in a safe condition when not in use and particularly if adverse climatic conditions can be anticipated;

(b) All anchors, outriggers and supports are secure and adequate to fix and support the Hoisting Equipment in position during any adverse climatic conditions; and

(c) Booms and jibs shall be secured when not in use to prevent any instability or collapse.

(14) Prohibition of Use

~~Hoisting Equipment has been re-inspected by him and certified in accordance with JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment.*~~ Ensure that the repaired Hoisting Equipment shall not be put in operation unless certified by the HSO in accordance with JSSS 6.2.5.

JC: 6.2.5 のコメントを参照して適宜修正ください。特に、HSO が permission to use を出すことが現実的とも思えません。

Please modify this part referring to the comment for 5.2.5. Especially, it is not realistic for the HSO to give "permission to use".

NK: The HSO is ultimately responsible for the safety of the Hoisting Equipment, too. As considering the realistic condition at the Site, (c) is modified as right. As 5.2.5 has been modified, referring to 5.2.5 is deleted.

(12) Condition of Ropes, Slings and Chains

The Contractor shall ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

(13) Adverse Weather

(a) The Contractor shall ensure that Hoisting Equipment is left in a safe condition when not in use and particularly if adverse climatic conditions can be anticipated;

(b) All anchors, outriggers and supports are secure and adequate to fix and support the Hoisting Equipment in position during any adverse climatic conditions; and

(c) Booms and jibs shall be secured when not in use to prevent any instability or collapse.

JC: 長期間使用しない場合の措置と、悪天候時の措置が混ざっていて混乱しているのではないでしょうか。

Isn't it confusing that measures for long periods of non-use and measures for bad weather are mixed? (5.2.6 (13) (a)~(c))

NK: (a) to (c) are revised for countermeasures to secure Hoisting Equipment during adverse climatic conditions.

A general sentence is added for (13), and (d) is added from Japanese draft for safety inspection before resuming work.

(14) Prohibition of Use

Hoisting Equipment shall never be used for transporting or hoisting Contractor's Personnel.

unless certified by the HSO.

(12) Condition of Ropes, Slings and Chains

The Contractor shall ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

(13) Adverse Weather

The Contractor shall take the following measures in addition to JSSS 2.7 [ADVERSE WEATHER REQUIREMENTS]:

(a) The Contractor shall ensure that Hoisting Equipment is left in a safe condition when ~~not in use and particularly if~~ adverse climatic conditions can be anticipated;

(b) All anchors, outriggers and supports are secure and adequate to fix and support the Hoisting Equipment in position during any adverse climatic conditions; and

(c) Booms and jibs shall be secured ~~when not in use~~ to prevent any instability or collapse.

(d) Before resuming hoisting work after the adverse weather, inspect Hoisting Equipment using the daily and periodic checklists specified in JSSS 6.2.5 [Inspection of Hoisting Equipment and Rigging Equipment].

(14) Prohibition of Use of Hoisting Equipment

Hoisting Equipment shall never be used for transporting or hoisting Contractor's Personnel unless the following all measures

(a) 作業員の運搬や作業員をつり上げて作業をしないこと。→E6.2.6 (13)(a)で規定済み

(b) 作業の性質上やむを得ない場合又は安全な作業の遂行上必要な場合は、揚貨機械のつり具に専用のとう乗設備を設けて、次の全ての措置を講じて、作業員の運搬又はつり上げての作業をおこなうこと。→規定なし（以下、英文においては作業員の搭乗を認めない。）右のように追記済み）

(i) 揚貨機械に使用するワイヤロープは、荷重に対して安全係数が 10 以上であること。→規定なし

(ii) とう乗設備の転位及び脱落を防止する措置をとること。→規定なし

(iii) 作業員に墜落制止用器具等を使用させること。→規定なし

(iv) とう乗設備ととう乗者との総重量の 1.3 倍に相当する重量に500kgを加えた値が、当該揚貨機械の定格荷重をこえないこと。→規定なし

(v) とう乗設備を下降させるときは、動力下降の方法をとること。→規定なし

5.3 クレーン

5.3.1 設置・組立・解体

請負者は、クレーンの設置・組立・解体を行うときは、次の措置を講じなければならない。

(1) クレーンの設置、組立、解体は、クレーンの専門家の指揮のもとに行うこと。→E6.3.1 前文で規定済み

(2) クレーンの設置場所を調査し、障害物がある場合は、適切な設置方法を検討すること。→E6.3.1 (1)で規定済み

(3) 走行レーンがあるクレーンの場合は、走行する範囲の状況を調査し、安全を確保すること。→E6.3.1 (2)で規定済み

(4) クレーンの設計に従い、基礎の建設、据え付けを行うこと。→E6.3.1 (3)で規定済み

(5) クレーンの据付後、当該国の規則に基づき、又は規則がない場合はクレーンの製造者のマニュアルに従い、組立時検査、荷重試験及び安定度試験を実施すること。→E6.3.1 (4)で規定済み

(6) クレーンの組立後の点検は、本仕様書 6.2.2[揚貨機械の点検・整備]の規定に従い行うこと。→規定なし(4 章で共通事項として規定済)

5.3.2 運転と操作

請負者は、クレーンによる揚貨作業を行うときは、本仕様書 6.1.7[揚貨機械の運用時の安全措置]の措置を講じるとともに、本仕様書 6.1.3[揚貨機械の運転者及び操作者]に従い、クレーンの運転者又は操作者の氏名を、クレーンの運転席又は操作盤に掲示すること。

5.4 移動式クレーン

本仕様書 6.1[揚貨作業]の規定に加え、移動式クレーンを用いる場合には次の措置を講じなければならない。

5.4.1 移動式クレーンの配置と据付

請負者は、移動式クレーンの配置及び据付を行うとき

Hoisting Equipment shall never be used for transporting or hoisting Contractor's Personnel.

5.3 HOISTING EQUIPMENT - CRANES

(Refer also to JSSS Chapter 4 [*Contractor's Equipment*])

5.3.1 Planning, Installation and Removal

Unless otherwise approved by the HSO, the Contractor shall employ an appropriately qualified, skilled and experienced crane specialist(s) to select the required type and capacity of crane, plan the Hoisting Operation including mobilising, assembly, erection, use, dismantling and removal of cranes. The Contractor's specialist shall:

(1) Investigate the location and position for installation, plan the appropriate installation method taking account of all Hoisting Operation requirements, site and working conditions, location of obstacles, etc.

(2) Investigate the working area and ensure the safety of the crane and any crane rails.

(3) Design and construct crane foundation, assemble and install the crane with proper structural design and in full compliance with the manufacturer's official instructions and recommendations.

(4) Conduct completion inspection, load test and stability test of the crane.

(5) Dismantle and remove and transport cranes in a planned and systematic manner in full compliance with the manufacturer's official

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JC: 日本語版にある、やむを得ず目的外使用する際の対処が消えている。日本語版の 6.2.6 の(13)揚貨機械の目的外使用の禁止の書き方を復活させてください。

Measures for hoisting Personnel by unavoidable reason which was in the Japanese draft are deleted. Reinstate the manner of writing for the stipulation of 5.2.6 (13) of Japanese version.

NK: In English version, hoisting personnel is simply prohibit without exception. (14) is replaced with provisions in Japanese version as right:

NK: Sentences of (14) in English will be review and edited by MD.

5.3 HOISTING EQUIPMENT - CRANES

(Refer also to JSSS Chapter 4 [*Contractor's Equipment*])

5.3.1 Planning, Installation and Removal

Unless otherwise approved by the HSO, the Contractor shall employ an appropriately qualified, skilled and experienced crane specialist(s) ~~to~~ and select the required type and capacity of crane, plan the Hoisting Operation including mobilising, assembly, erection, use, dismantling and removal of cranes. The Contractor's specialist shall:

(1) Investigate the location and position for installation, plan the appropriate installation method taking account of all Hoisting Operation requirements, site and working conditions, location of obstacles, etc.

(2) Investigate the working area and ensure the safety of the crane and any crane rails.

(3) Design and construct crane foundation, assemble and install the crane with proper structural design and in full compliance with the manufacturer's official instructions and recommendations.

(4) Conduct completion inspection, load test and stability test of the crane.

(5) Dismantle and remove and transport cranes in a planned and systematic manner in full compliance with the manufacturer's official instructions and recommendations.

5.3.2 Additional Requirements for Mobile cranes

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are taken for the case of existing unavoidable reason or essential for safe work procedures:

(a) Dedicated gondola for transporting or hoisting shall be provided;

(b) Prevention measures shall be taken to avoid turning and falling of gondola;

(c) The assumed load of the total of 1.3 times of total weight of gondola and workers plus 500 kg shall not exceed the Rated Capacity of the Hoisting Equipment

(d) Wires ropes of Hoisting Equipment shall be of safety factor of 10 or more against loads;

(e) Lowering the gondola shall be made by power (prohibit free drop); and

(f) Use of PFAS of Contractor's Personnel in the gondora shall be ensured.

5.3 HOISTING EQUIPMENT - CRANES

(Refer also to JSSS Chapter 4 [*Contractor's Equipment*])

5.3.1 Planning, Installation and Removal

Unless otherwise approved by the HSO, the Contractor shall employ an appropriately qualified, skilled and experienced crane specialist(s) ~~to~~ and select the required type and capacity of crane, plan the Hoisting Operation including mobilising, assembly, erection, use, dismantling and removal of cranes. The Contractor's specialist shall:

(1) Investigate the location and position for installation, plan the appropriate installation method taking account of all Hoisting Operation requirements, site and working conditions, location of obstacles, etc.

(2) Investigate the working area and ensure the safety of the crane and any crane rails.

(3) Design and construct crane foundation, assemble and install the crane with proper structural design and in full compliance with the manufacturer's official instructions and recommendations.

(4) Conduct completion inspection, load test and stability test of the crane.

(5) Dismantle and remove and transport cranes in a planned and systematic manner in full compliance with the manufacturer's official instructions and recommendations.

は、次の措置を講じなければならない。

(1) 移動式クレーンの作業範囲内に障害物がない位置に据え付けること。障害物がある場合は、障害物を回避する適切な作業方法を計画し、操作者、合図者に実施させること。→E6.3.2 (1)/(2)で規定済み

(2) 移動式クレーンは、十分な支持力のある場所に設置すること。→E6.3.2 (3)で規定済み

(3) 移動式クレーンが転倒するおそれがある場所を特定し、地盤が軟弱な場所、埋設物その他地下に存する工作物が損壊するおそれがある場所においては、移動式クレーンの転倒を防止するために必要な広さ及び強度を有する鉄板等を敷設したうえで作業を行うこと。→E6.3.2 (3)で規定済み

(4) 移動式クレーンのアウトリガーと地盤との間には、鉄板等の敷板を敷設し、アウトリガーの沈下を防止すること。→E6.3.2 (4)で規定済み

(5) アウトリガーを有する移動式クレーン又は拡幅式のクローラを有する移動式クレーンを用いて作業を行うときは、当該アウトリガー又はクローラを最大限に張り出すこと。ただし、アウトリガー又はクローラを最大限に張り出すことができない場合には、当該移動式クレーンに掛ける荷重が当該移動式クレーンのアウトリガー又はクローラの張り出し幅に応じた定格荷重を下回ることが確実に見込まれる事を確認して作業をすること。→E6.3.2 (5)/(6)で規定済み

(6) 移動式クレーンを用いて作業を行うときは、クレーンの運転者及び玉掛けをする者が当該クレーンの定格荷重を常時知ることができるよう、表示その他の措置を講じること。運転者及び玉掛けをする者に作業の開始前に定格荷重、旋回範囲の制限を確認させ、作業中はこれらを厳守させること。→E6.3.2 (7)で規定済み

5.4.2 運転と操作

請負者は、移動式クレーンの運転と操作をする場合は、本仕様書 6.1.7[揚貨機械の運用時の安全措置]の該当する措置を講じるとともに、次の措置を講じなければならない。

(1) 本仕様書 6.1.3[揚貨機械の運転者及び操作者]に従い、移動式クレーンの運転者の氏名を、クレーンの運転席の外側に掲示すること。→規定なし(4.3.1(8)で規定)

(2) 運転者に移動式クレーンに装備されている過負荷防止装置に、ブームの作業状態とアウトリガーの設置状態を正確にセットさせ、過負荷防止装置を作動させること。→規定なし(4.3.7で一部規定) 要追加

(3) 運転者に、作業開始後一定時間を経過したところで、一旦作業を停止し、アウトリガー又はクローラの状態を点検し、異常があれば作業を中断させること。→E6.3.2 (8)で規定済み

5.4.3 作業終了後の措置

請負者は、移動式クレーンの作業終了時には、運転手に次の措置を講じさせなければならない。

(1) つり具を安全な位置に固定させること。→E6.3.2 (9)(a)で規定済み

instructions and recommendations.

5.3.2 Additional Requirements for Mobile cranes

(1) Position mobile cranes where there are no obstacles within the operation range.

(2) Where obstacles exist, plan the appropriate operation to avoid the obstacles and ensure that operators and signallers comply with this plan.

(3) Ensue that ground has sufficient and even bearing capacity to avoid all risk of the crane subsiding and overturning. Where necessary or where there is any risk of damaging surface paving or underground services, provide temporary steel plates of suitable size, thickness and to support the crane and avoid any risk of overturning during operation.

(4) Provide steel plate load-spreader pads to support outriggers and prevent them from subsiding.

(5) Fully extend outriggers or extension type crawlers to the maximum position.

(6) When the outriggers or crawlers cannot be extended to the maximum position, adjust the Rated Capacity of the mobile cranes to suit lower capacity commensurate to the actual extension length of outriggers or crawlers.

(7) Ensure that the actual Rated Capacity of the mobile crane is clearly shown and also advised to operators and Riggers.

(8) Cease the Hoisting Operation from time to time and check upon the condition of the outriggers or crawlers, implement adequate remedial measures if there is any subsidence and prohibit continuation of the Hoisting Operation until the crane has been re-inspected and certified as safe by the HSO.

(9) After the Hoisting Operation and before demobilising

(1) Position mobile cranes where there are no obstacles within the operation range.

(2) Where obstacles exist, plan the appropriate operation to avoid the obstacles and ensure that operators and signallers comply with this plan.

(3) Ensue that ground has sufficient and even bearing capacity to avoid all risk of the crane subsiding and overturning. Where necessary or where there is any risk of damaging surface paving or underground services, provide temporary steel plates of suitable size, thickness and to support the crane and avoid any risk of overturning during operation.

(4) Provide steel plate load-spreader pads to support outriggers and prevent them from subsiding.

(5) Fully extend outriggers or extension type crawlers to the maximum position.

(6) When the outriggers or crawlers cannot be extended to the maximum position, adjust the Rated Capacity of the mobile cranes to suit lower capacity commensurate to the actual extension length of outriggers or crawlers.

(7) Ensure that the actual Rated Capacity of the mobile crane is clearly shown and also advised to operators and Riggers.

NK: Japanese version 5.4.2 (2) is added as (8) in right because this is specific requirement for mobile crane.

(8) Cease the Hoisting Operation from time to time and check upon the condition of the outriggers or crawlers, implement adequate remedial measures if there is any subsidence and prohibit continuation of the Hoisting Operation until the crane has been re-inspected and certified as safe by the HSO.

(10) After the Hoisting Operation ~~and before demobilising~~

JICA: 必要？ 言葉が強くありませんか。完全撤収の意味だとおかしいと思います。

Is this phrase necessary? The expression of the word “demobilising” is too strong that may mean complete

5.3.2 Additional Requirements for Mobile Cranes

(1) Position mobile cranes where there are no obstacles within the operation range.

(2) Where obstacles exist, plan the appropriate operation to avoid the obstacles and ensure that operators and signallers comply with this plan.

(3) Ensue that ground has sufficient and even bearing capacity to avoid all risk of the crane subsiding and overturning. Where necessary or where there is any risk of damaging surface paving or underground services, provide temporary steel plates of suitable size, thickness and to support the crane and avoid any risk of overturning during operation.

(4) Provide steel plate load-spreader pads to support outriggers and prevent them from subsiding.

(5) Fully extend outriggers or extension type crawlers to the maximum position.

(6) When the outriggers or crawlers cannot be extended to the maximum position, adjust the Rated Capacity of the mobile cranes to suit lower capacity commensurate to the actual extension length of outriggers or crawlers.

(7) Ensure that the actual Rated Capacity of the mobile crane is clearly shown and also advised to operators and Riggers.

(8) Activate the over-load prevention device of mobile crane and input accurately operation conditions of booms and outriggers.

(9) Cease the Hoisting Operation from time to time and check upon the condition of the outriggers or crawlers, implement adequate remedial measures if there is any subsidence and prohibit continuation of the Hoisting Operation until the crane has been re-inspected and certified as safe by the HSO.

(10) After the Hoisting Operation ~~and before demobilising~~

(a) When the mobile crane is not driven, fix the hooks of crane at the safe

(2) 走行する場合は、事前に次の事項を行うこと。
(a) 各部の固定ピン等を取り付けること。**→E6.3.2 (9)(b)で規定済み**
(b) 旋回ブレーキ、ウインチドラムをロックすること。**→E6.3.2 (9)(c)で規定済み**
(c) クレーン操作関係のスイッチは全て切り(off)にすること。**→E6.3.2 (9)(d)で規定済み**

5.5 玉掛け作業

5.5.1 玉掛け作業員

請負者は、玉掛け作業員以外のものに、玉掛け作業を行わせてはならない。

5.5.2 玉掛け用具

請負者は、玉掛け用具の破断等による揚貨作業での作業員の危険を防止するため、次の玉掛け用具に関する規定を遵守しなければならない。

(1) 玉掛け用具は、製造者と最大使用荷重（Working Limit Load）が確認できるものであることとし、現場で請負者が作成したものは用いてはならない **→E6.4.1 (1)/(2)で規定済み**
(2) 製造者が定めた用途及び最大使用荷重に従い適切に使用すること。**→E6.4.1 (3)(b)で規定済み**
(3) 次のいずれかの状態の玉掛け用具は使用してはならない。使用できない状態の玉掛け用具は、切断廃棄等の処分を行うこと。
(a) ワイヤロープの場合
(i) 一よりの間で素線数の 10%以上の素線の断線があるもの **→E6.4.1 (4)(a)(i)で規定済み**
(ii) 直径の減少が公称径の 7%を越えるもの **→E6.4.1 (4)(a)(ii)で規定済み**
(iii) キンクがあるもの **→E6.4.1 (4)(a)(iii)で規定済み**
(iv) 著しい形くずれ又は腐食があるもの **→E6.4.1 (4)(a)(iv)で規定済み**
(b) つりチェーンの場合
(i) 伸びが、当該つりチエーンが製造されたときの長さの 5%をこえるもの **→E6.4.1 (4)(b)(i)で規定済み**
(ii) リンクの断面の直径の減少が、当該つりチエーンが製造されたときの当該リンクの断面の直径の 10%をこえ

(a) Set the Crane in the safe position;
(b) Attach fixing pin on each part;
(c) Lock the brake of the turning device and winch drum; and
(d) Turn off all switches related with operation of cranes.

5.4 RIGGING EQUIPMENT

5.4.1 Hoisting and Rigging Equipment

(1) All items of Rigging Equipment shall be labelled to show all pertinent information, such as the name of the manufacturer, date of manufacture, the Recommended Safe Working Load, etc.

(2) The Contractor shall be prohibited from making his own Rigging Equipment at Site.

(3) Rigging Equipment shall only be used:

(a) When certified as safe to use by the HSO in accordance with JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*];

(b) Within the Recommended Safe Working Load; and

(c) In full compliance with the manufacturer's official instructions and recommendations.

(4) Rigging Equipment shall be removed from service, tagged as such and destroyed or removed from the Site, where required by the standards noted in JSSS 5.1.3 [*Compliance Standards*] including (but not limited to) the following conditions:

(a) Wire ropes

(i) Where one-tenth or more of the element wires are broken or cut in any one strand.

(a) Set the Crane in the safe position;
(b) Attach fixing pin on each part;
(c) Lock the brake of the turning device and winch drum; and
(d) Turn off all switches related with operation of cranes.

JC: 日本語版では走行する場合の事前対応事項でしたが、走行時のものと分けないのであればこの表現はおかしいのではないでしょうか。

These were measures before the equipment drives in Japanese draft. Is these proper if not separating measures "before" and "during" driving?

NK: In order to separate measures to take before driving, these are modified as right.

5.4 RIGGING EQUIPMENT

5.4.1 Hoisting and Rigging Equipment

(1) All items of Rigging Equipment shall be labelled to show all pertinent information, such as the name of the manufacturer, date of manufacture, the Recommended Safe Working Load, etc.

(2) The Contractor shall be prohibited from making his own Rigging Equipment at Site.

(3) Rigging Equipment shall only be used:

(a) When certified as safe to use by the HSO in accordance with JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*];

(b) Within the Recommended Safe Working Load; and

(c) In full compliance with the manufacturer's official instructions and recommendations.

(4) Rigging Equipment shall be removed from service, tagged as such and destroyed or removed from the Site, where required by the standards noted in JSSS 5.1.3 [*Compliance Standards*] including (but not limited to) the following conditions:

(a) Wire ropes

(i) Where one-tenth or more of the element wires are broken or cut in any one strand.

(ii) Where the reduction ratio of diameter due to use, exceeds 7%

removal of the equipment form the Site.

NK: Deleted.

(a) Set the Crane in the safe position;
(b) Attach fixing pin on each part;
(c) Lock the brake of the turning device and winch drum; and
(d) Turn off all switches related with operation of cranes.

5.4 RIGGING EQUIPMENT

5.4.1 Hoisting and Rigging Equipment

(1) All items of Rigging Equipment shall be labelled to show all pertinent information, such as the name of the manufacturer, date of manufacture, the Recommended Safe Working Load, etc.

(2) The Contractor shall be prohibited from making his own Rigging Equipment at Site.

(3) Rigging Equipment shall only be used:

(a) When certified as safe to use by the HSO in accordance with JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*];

(b) Within the Recommended Safe Working Load; and

(c) In full compliance with the manufacturer's official instructions and recommendations.

(4) Rigging Equipment shall be removed from service, tagged as such and destroyed or removed from the Site, where required by the standards noted in JSSS 5.1.3 [*Compliance Standards*] including (but not limited to) the following conditions:

(a) Wire ropes

(i) Where one-tenth or more of the element wires are broken or cut in any one strand.

position;

(b) When the mobile crane is driven, take the following measures before driving:

(i) Attach fixing pin on each part;

(ii) Lock the brake of the turning device and winch drum; and

(iii) Turn off all switches related with operation of cranes.

5.4 RIGGING EQUIPMENT

5.4.1 Hoisting and Rigging Equipment

(1) All items of Rigging Equipment shall be labelled to show all pertinent information, such as the name of the manufacturer, date of manufacture, the Recommended Safe Working Load, etc.

(2) The Contractor shall be prohibited from making his own Rigging Equipment at Site.

(3) Rigging Equipment shall only be used:

(a) When certified as safe to use by the HSO in accordance with JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*];

(b) Within the Recommended Safe Working Load; and

(c) In full compliance with the manufacturer's official instructions and recommendations.

(4) Rigging Equipment shall be removed from service, tagged as such and destroyed or removed from the Site, where required by the standards noted in JSSS 5.1.3 [*Compliance Standards*] including (but not limited to) the following conditions:

(a) Wire ropes

(i) Where one-tenth or more of the element wires are broken or cut in any one strand.

るもの →E6.4.1 (4)(b)(ii)で規定済み

(iii) き裂があるもの→E6.4.1 (4)(b)(iii)で規定済み

(c) フック、シャックルの場合

(i) 変形しているもの →E6.4.1 (4)(c)(i)で規定済み

(ii) き裂があるもの →E6.4.1 (4)(c)(ii)で規定済み

(d) 繊維ロープの場合

(i) ストランドが切断しているもの →E6.4.1 (4)(d)(i)で規定済み

(ii) 著しい損傷又は腐食があるもの →E6.4.1 (4)(d)(ii)で規定済み

5.5.3 玉掛け作業時の安全措置

請負者は、玉掛け作業を行うときは、つり荷の落下、衝突による作業員の危険を防止するため次の措置を講じなければならない。→E6.4.2 で規定済み

(1) 玉掛け用ワイヤロープの月例点検を明確にするため、月毎に異なる色のビニールテープ等で、玉掛け用ワイヤロープの見やすい位置に、ワイヤロープ点検済の色分け表示をすること。→E6.4.2 (1)で規定済み

(2) 作業を開始する前に使用する玉掛け用具の異常の有無について点検を行なうこと。→E6.4.2 (2)で規定済み

(3) 異常のある玉掛け用具は、切断廃棄等の処分をすること。→E6.4.2 (3)で規定済み

(4) 揚貨物の重量・形状に応じて適格な玉掛け具を選定して使用すること。→E6.4.2 (4)で規定済み

(5) 荷のつり上げ時に、玉掛けワイヤロープがつり具又は吊り荷の表面で滑らないように、適切な吊り角度、あて物の位置、玉掛け等の方法を選定すること。→E6.4.2 (5)で規定済み

(6) つり荷の重心位置を定めて、その真上で吊り上げること。→E6.4.2 (6)で規定済み

(7) クランプ等の小物やパイプ類などの滑りやすいものを吊り上げる場合は、適切な玉掛け方法によりつり荷の落下防止をすること。→規定なし((4)で規定)

(8) 荷を吊る際は、介錯ロープを吊り荷の端部に取り付け、吊り荷の移動の作業を行うこと。→E6.4.2 (7)で規定済み

(9) 玉掛け用具は、雨や粉じん等が防げる保管場所へ

(ii) Where the reduction ratio of diameter due to use, exceeds 7% of the original nominal diameter at the date of manufacture.

(iii) With kink or deformation.

(iv) With excessive wear, corrosion or defect.

(b) Chains

(i) Where elongation due to use exceeds 5% of the original nominal length at the date of manufacture.

(ii) Where the diameter of links has reduced by more than 10 % since the date of manufacture.

(iii) With excessive wear, cracks, corrosion or defect.

(c) Hooks, shackles

(i) Signs of deformation.

(ii) With excessive wear, cracks, corrosion or defect.

(d) Synthetic fibre ropes or slings

(i) Broken or cut strands.

(ii) With excessive wear or defect.

5.4.2 Further Safety Requirements for Rigging

The Contractor shall comply fully with the requirements of the standards noted in JSSS 5.1.3 [*Compliance Standards*] including taking the following measures to prevent the risk of injury:

(1) Attach colour-coded self-adhesive vinyl tape and labels for slings visibly indicating the month of inspection and whether suitable for use.

(2) Inspect all Rigging Equipment before start of works.

(3) Remove any unusable or defective Rigging Equipment from service, tag as such and destroy or remove from the Site.

(4) Select and use suitable Rigging Equipment depending on the weight and shape of loads.

(5) Apply appropriate set up, provide fittings and accessories including clips and friction pads during Hoisting Works to ensure that the hoisted load (including bundled loads) are secure and will not move or slip.

(6) Hoist loads at or above the centre of gravity.

(7) Attach guide ropes to the hoisted loads to

of the original nominal diameter at the date of manufacture.

(iii) With kink or deformation.

(iv) With excessive wear, corrosion or defect.

(b) Chains

(i) Where elongation due to use exceeds 5% of the original nominal length at the date of manufacture.

(ii) Where the diameter of links has reduced by more than 10 % since the date of manufacture.

(iii) With excessive wear, cracks, corrosion or defect.

(c) Hooks, shackles

(i) Signs of deformation.

(ii) With excessive wear, cracks, corrosion or defect.

(d) Synthetic fibre ropes or slings

(i) Broken or cut strands.

(ii) With excessive wear or defect.

5.4.2 Further Safety Requirements for Rigging

The Contractor shall fully comply ~~fully~~ with the requirements of the standards noted in JSSS 5.1.3 [*Compliance Standards*] including taking the following measures to prevent the risk of injury:

(1) Attach colour-coded self-adhesive vinyl tape and labels for slings visibly indicating the month of inspection and whether suitable for use.

(2) Inspect all Rigging Equipment before start of works.

~~(3) Remove any unusable or defective Rigging Equipment from service, tag as such and destroy or remove from the Site.~~

JC: 6.5.1(4)と重複していませんか。

Isn't this a duplication of 5.5.1 (4)?

NK: This (3) is duplication. Deleted.

(4) Select and use suitable Rigging Equipment depending on the weight and shape of loads.

(5) Apply appropriate set up, provide fittings and accessories including clips and friction pads during Hoisting Works to ensure that the hoisted load (including bundled loads) are secure and will not move or slip.

JC: 4. Sling methods are generally described. For example, BS

(ii) Where the reduction ratio of diameter due to use, exceeds 7% of the original nominal diameter at the date of manufacture.

(iv) With kink or deformation.

(v) With excessive wear, corrosion or defect.

(b) Chains

(i) Where elongation due to use exceeds 5% of the original nominal length at the date of manufacture.

(ii) Where the diameter of links has reduced by more than 10 % since the date of manufacture.

(iii) With excessive wear, cracks, corrosion or defect.

(c) Hooks, shackles

(i) Signs of deformation.

(ii) With excessive wear, cracks, corrosion or defect.

(d) Synthetic fibre ropes or slings

(i) Broken or cut strands.

(ii) With excessive wear or defect.

5.4.2 Further Safety Requirements for Rigging

The Contractor shall fully comply ~~fully~~ with the requirements of the standards noted in JSSS 5.1.3 [*Compliance Standards*] including taking the following measures to prevent the risk of injury:

(1) Attach colour-coded self-adhesive vinyl tape and labels for slings visibly indicating the month of inspection and whether suitable for use.

(2) Inspect all Rigging Equipment before start of works.

(3) Select and use suitable Rigging Equipment depending on the weight and shape of loads.

(4) Apply appropriate set up, provide fittings and accessories including clips and friction pads

整理して保管すること。→**E6.4.2 (8)で規定済み**	assist with positioning. (8) Securely store and protect Rigging Equipment to maintain in good condition and to prevent damage from rain, dust or contamination.	EN 13414 “Steel wire rope slings – Safety” NK: Tentatively add BS to (4) in right. (6) Hoist loads at or above the centre of gravity. (7) Attach guide ropes to the hoisted loads to assist with positioning. (8) Securely store and protect Rigging Equipment to maintain in good condition and to prevent damage from rain, dust or contamination.	during Hoisting Works to ensure that the hoisted load (including bundled loads) are secure and will not move or slip, for example, cable-laid slings referred to BS EN 13414-3 Steel wire rope slings – Safety, Part 3: Grommets and cable-laid slings. (5) Hoist loads at or above the centre of gravity. (6) Attach guide ropes to the hoisted loads to assist with positioning. (7) Securely store and protect Rigging Equipment to maintain in good condition and to prevent damage from rain, dust or contamination.

JICA Standard Safety Specification Preparation Study
5 HOISTING AND RIGGING (English R3 for Issue 2)

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2020.4.6 NK Eng. R3

JSSS in English R2 for Issue 2（2020/3/23）	JICA Comments on R2(2020/3/31) JC: JICA comments and revision in blue letters and underlined Red letters: last revision in R2 draft, NK: NK actions	JSSS in English R3 for Issue 2 (2020/3/25) Words in red color are added or modified ones from the last version.
5 HOISTING AND RIGGING **5.1 GENERAL REQUIREMENTS** 5.1.1 Scope 5.1.2 Definitions 5.1.3 Compliance Standards **5.2 HOISTING OPERATIONS** 5.2.1 Instruction for Contractor's Personnel 5.2.2 Operators 5.2.3 Riggers 5.2.4 Safety Education and Training 5.2.5 Inspection of Hoisting Equipment and Rigging Equipment 5.2.6 General Safety Measures for Hoisting Operations **5.3 HOISTING EQUIPMENT - CRANES** 5.3.1 Planning, Installation and Removal 5.3.2 Additional Requirements for Mobile Cranes **5.4 RIGGING EQUIPMENT** 5.4.1 Hoisting and Rigging Equipment 5.4.2 Further Safety Requirements for Rigging	**5 HOISTING AND RIGGING** **5.1 GENERAL REQUIREMENTS** 5.1.1 Scope 5.1.2 Definitions 5.1.3 Compliance Standards **5.2 HOISTING OPERATIONS** 5.2.1 Instruction for Contractor's Personnel 5.2.2 Operators 5.2.3 Riggers 5.2.4 Safety Education and Training 5.2.5 Inspection of Hoisting Equipment and Rigging Equipment 5.2.6 General Safety Measures for Hoisting Operations **5.3 HOISTING EQUIPMENT - CRANES** 5.3.1 Planning, Installation and Removal 5.3.2 Additional Requirements for Mobile Cranes **5.4 RIGGING EQUIPMENT** 5.4.1 Hoisting and Rigging Equipment 5.4.2 Further Safety Requirements for Rigging	**5 HOISTING AND RIGGING** **5.1 GENERAL REQUIREMENTS** 5.1.1 Scope 5.1.2 Definitions 5.1.3 Compliance Standards **5.2 HOISTING OPERATIONS** 5.2.1 Instruction for Contractor's Personnel 5.2.2 Operators 5.2.3 Riggers 5.2.4 Safety Education and Training 5.2.5 Inspection of Hoisting Equipment and Rigging Equipment 5.2.6 General Safety Measures for Hoisting Operations **5.3 HOISTING EQUIPMENT - CRANES** 5.3.1 Planning, Installation and Removal 5.3.2 Additional Requirements for Mobile Cranes **5.4 RIGGING EQUIPMENT** 5.4.1 Hoisting and Rigging Equipment 5.4.2 Further Safety Requirements for Rigging
5.1 GENERAL REQUIREMENTS **5.1.1 Scope** This Chapter contains examples of required safety measures for Hoisting Operations as defined in JSSS Annex 1.1 [*Definitions and Abbreviations*] and associated rigging requirements all as necessary to avoid risk of injury, death or damage to Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where the Works are being executed and who may be affected by such operations including neighbouring residents and other persons and property on adjacent areas, public roads and footpaths or buildings. **5.1.2 Definitions** Definitions of terms for the purpose of this Chapter are as follows. (1) "**Hoisting Equipment**" means Contractor's Equipment such as cranes, hoists, chain-blocks, pulleys and the like which constitute the prime mover which, when used with Rigging Equipment, permits loads to be hoisted or lowered and positioned. (2) "**Rigging Equipment**" means the ropes, webbing, chains and slings together with all associated accessories such as hooks, hoisting points, shackles, etc. which, when used with Hoisting Equipment permits loads to be hoisted or lowered and positioned.	**5.1 GENERAL REQUIREMENTS GENERAL REQUIREMENTS** **5.1.1 Scope** This Chapter contains examples of required safety measures for Hoisting Operations as defined in JSSS Annex 1.1 [*Definitions and Abbreviations*] and associated rigging requirements all as necessary to avoid risk of injury, death or damage to Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where the Works are being executed and who may be affected by such operations including neighbouring residents and other persons and property on adjacent areas, public roads and footpaths or buildings. **5.1.2 Definitions** Definitions of terms for the purpose of this Chapter are as follows. (1) "**Hoisting Equipment**" means Contractor's Equipment such as cranes, hoists, chain-blocks, pulleys and the like which constitute the prime mover which, when used with Rigging Equipment, permits loads to be hoisted or lowered and positioned. (2) "**Rigging Equipment**" means the ropes, webbing, chains and slings together with all associated accessories such as hooks, hoisting points, shackles, etc. which, when used with Hoisting Equipment permits loads to be hoisted or lowered and positioned.	**5.1 GENERAL REQUIREMENTS** **5.1.1 Scope** This Chapter contains examples of required safety measures for Hoisting Operations as defined in JSSS Annex 1.1 [Definitions and Abbreviations] and associated rigging requirements all as necessary to avoid risk of injury, death or damage to Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where the Works are being executed and who may be affected by such operations including neighbouring residents and other persons and property on adjacent areas, public roads and footpaths or buildings. **5.1.2 Definitions** Definitions of terms for the purpose of this Chapter are as follows. (1) "**Hoisting Equipment**" means Contractor's Equipment such as cranes, hoists, chain-blocks, pulleys and the like which constitute the prime mover which, when used with Rigging Equipment, permits loads to be hoisted or lowered and positioned. (2) "**Rigging Equipment**" means the ropes, webbing, chains and slings together with all associated accessories such as hooks, hoisting points, shackles, etc. ~~which,~~ when used with Hoisting Equipment permits loads to be hoisted or lowered and positioned. MD: Please check if "which" can be deleted.

(3) "**Rated Capacity**" means the maximum hoisting load for each type of Hoisting Equipment as officially recommended by the manufacturer. This will vary according to configuration of Hoisting Equipment and conditions of use such as length and angle of boom and other factors as officially recommended by the manufacturer.

(4) **ecommended Safe Working Load**" means the maximum safe working load for each type, size and capacity of Rigging Equipment as officially recommended by the manufacturer.

(5) "**Total Load**" means either the Rated Capacity or the "Recommended Safe Working Load", neither of which shall be exceeded.

(3) "**Rated Capacity**" means the maximum hoisting load for each type of Hoisting Equipment as officially recommended by the manufacturer. This will vary according to configuration of Hoisting Equipment and conditions of use such as length and angle of boom and other factors as ~~officially recommended~~ permitted by the manufacturer.

JC: OSHA1926.1401 の言い方に合わせました。また(4)の Safe Working Load については、OSHA は recommended としていますが、permitted で平仄を合わせました。

OSHA Subpart CC—Cranes and Derricks in Construction§1926.1401Definitions.
Rated capacity means the maximum working load permitted by the manufacturer under specified working conditions. Such working conditions typically include a specific combination of factors such as equipment configuration, radii, boom length, and other parameters of use.

The term is coincided with the expression in OSHA 1926.1401 to "permitted". As for "Safe Working Load" in (4), in OSHA "recommended" is used, but it is also changed to permitted" to accommodate with "permitted" in '(3).

NK: コメントに従い変更しました。Changed as commented.

JC: 5.2.5 に定義がない Lifting Equipment が残ってますが、小文字のそれが「揚貨機械」を表していますので、そこは記載ぶりを変更ください。
なお、日本のようにつり具=(フック)、その下が玉掛具という定義には、見た限り OSHA や豪州ではなってないと思いますので、その点も英文作成の際にはご留意下さい。
(要すれば、それらでは日本の定格荷重と違い rated capacity にはフックを含む。必要あれば BS 他でも確認の上、理解を共通化の上、和文と英文に齟齬がないようして下さい)
あるクレーン会社の説明書きの例:Rated Capacities include the mass of hooks, blocks, slings and auxiliary lifting devices. Their mass must be subtracted, from the listed Rated Capacity, to determine the equivalent net load.

There is "Lifting Equipment" in 5.25 (4) (c) which is not defined. Please modify the stipulation as "lifting equipment" is used to mean Hoisting Equipment.

In Japan, there is definition that lifting equipment means hook and rigging equipment means equipment below hook. On the other hand, there is no such definition in OSHA and Australia. Please keep in mind this.

(In short, the rated capacity used in OSHA and Australia includes weight of hook, which is excluded in Japan. If necessary, please check the definition in BS and make meaning of the rated capacity standardize.)

For example, a barouche of a crane company mentions: Rated Capacities include the mass of hooks, blocks, slings and auxiliary lifting devices. Their mass must be subtracted, from the listed Rated Capacity, to determine the equivalent net load.

NK: BS 61007-7:20108 defines as follows:
07 32022 lift rated load load (01) that a lift (01) has been built to carry and for which normal operation is guaranteed by the vendor

HSE Approved Code of Practice and guidance, Safe use of lifting equipment, Lifting Operations and Lifting Equipment Regulations 1998
Cranes 133 The crane used should be adequate and suitable for the task, have a freefall capability lock-out and should be equipped with appropriate devices such as a hoisting limiter, lowering limiter, rated capacity indicator and rated capacity limiter.

NK: UK では、Rated capacity の定義は HSE の ACOP にはなく、BS の規定のみです。和文は英文をもとに後日作成しますので、齟齬は無くなります。
In UK, there is no definition of rated capacity in HSE ACOP but BS 6100 is as above. JSSS in Japanese will be prepared by translating that in English, so there is no discrepancy between them.

(3) "**Rated Capacity**" means the maximum hoisting load for each type of Hoisting Equipment as officially recommended by the manufacturer. This will vary according to configuration of Hoisting Equipment and conditions of use such as length and angle of boom and other factors as permitted by the manufacturer.

(4) "**Safe Working Load**" means the maximum safe working load for each type, size and capacity of Rigging Equipment as permitted by the manufacturer.

(6) "**Rigger**" means a competent person who is certified by the HSO as suitable for assignment on Hoisting Operations/Rigging under this Section in accordance with JSSS 1.16 [*Proper Placement of Contractor's Personnel*].

5.1.3 Compliance Standards

(1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], for any items in this Chapter or relevant to the subject of this Chapter and which are not fully covered by JSSS, the Contractor shall comply with the technical requirements of the following standards in OSHA PART 1926 - Safety and Health Regulations for Construction:

(a) Subpart H - Materials Handling, Storage, Use, and Disposal; Section 1926.251 Rigging equipment for material handling,

(b) Subpart R - Steel Erection; Section 1926.753 Hoisting and rigging.

(Whilst this standard is related to Steel Erection, JSSS requires these technical requirements to apply to Hoisting Operations and associated rigging requirements in construction works generally)

(c) Subpart CC - Cranes and Derricks in Construction; Section 1926.1413 Wire Rope - Inspection and Section 1926.1414 – Wire Rope - Selection and installation criteria;

5.2 HOISTING OPERATIONS

5.2.1 Instruction for Contractor's Personnel

Further to the requirements of JSSS 1.6 [*Contractor's Safety Plan*], JSSS

(4) "~~**Recommended**~~ **Safe Working Load**" means the maximum safe working load for each type, size and capacity of Rigging Equipment as permitted by the manufacturer.

~~(5) "**Total Load**" means either the Rated Capacity or the "Recommended Safe Working Load", neither of which shall be exceeded.~~

JC: Total Load を使用している箇所は一か所(5.2.1)に限定される。文脈からすれば、Rated Capacity は機械に対して、Recommended Safe Working Load は吊具に対して使用しているようなので、Total Load を使用しない記載とするのは容易、且つその方が分かり易い。従って削除します。

The term "Total Load" is only once used in 5.2.1. "Rated Capacity" is used for equipment and "Recommended Safe Working Load" is used for rigging. Therefore, it seems that there is no problem to delete "Total Load" by modified stipulation. Deleted.

NK: "Total Load" is deleted.

(6) "**Rigger**" means a competent person who is certified by the HSO as suitable for assignment on Hoisting Operations/Rigging under this Section in accordance with JSSS 1.16 [*Proper Placement of Contractor's Personnel*].

5.1.3 Compliance Standards

(1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], for any items in this Chapter or relevant to the subject of this Chapter and which are not fully covered by JSSS, the Contractor shall comply with the technical requirements of the following standards in OSHA PART 1926 - Safety and Health Regulations for Construction:

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(b) Subpart R - Steel Erection; Section 1926.753 Hoisting and rigging.

(Whilst this standard is related to Steel Erection, JSSS requires these technical requirements to apply to Hoisting Operations and associated rigging requirements in construction works generally)

(c) Subpart CC - Cranes and Derricks in Construction; Section 1926.1413 Wire Rope - Inspection and Section 1926.1414 - Wire - Rope Selection and installation criteria;

JC12/26: 妥当性は要検討

Validity of clauses should be re-examined. (5.1.3 (1))

JC3/31: OSHA の引用部分の妥当性の確認をお願いしているのであって、Validity の確認をお願いしているわけではありません。

JC did not request to confirm the validity of OSHA requirements in (a) to (c) above but appropriateness to specify in JSSS.

NK: 内容を検討致しまして、上記のように変更しておりました。

Appropriateness of the clauses were examined and (c) is deleted and (a) is added.

5.2 HOISTING OPERATIONS

5.2.1 Instruction for Contractor's Personnel

Further to the requirements of JSSS 1.6 [*Contractor's Safety Plan*], JSSS 1.7 [*Contractor's Method Statements*] and JSSS 1.13.2 [*Contractor's*

(5) "**Rigger**" means a competent person who is certified by the HSO as suitable for assignment on Hoisting Operations/Rigging under this Section in accordance with JSSS 1.16 [Proper Placement of Contractor's Personnel].

5.1.3 Compliance Standards

(1) By reference to JSSS 1.4 [JSSS - Laws and Reference Standards], for any items in this Chapter or relevant to the subject of this Chapter and which are not fully covered by JSSS, the Contractor shall comply with the technical requirements of the following standards in OSHA PART 1926 - Safety and Health Regulations for Construction:

(a) Subpart H - Materials Handling, Storage, Use, and Disposal; Section 1926.251 Rigging equipment for material handling;

(b) Subpart R - Steel Erection; Section 1926.753 Hoisting and rigging (Whilst this standard is related to Steel Erection, JSSS requires these technical requirements to apply to Hoisting Operations and associated rigging requirements in construction works generally); and

(c) Subpart CC - Cranes and Derricks in Construction; Section 1926.1413 Wire Rope - Inspection and Section 1926.1414 - Wire Rope - Selection and installation criteria.

5.2 HOISTING OPERATIONS

5.2.1 Instruction for Contractor's Personnel

Further to the requirements of JSSS 1.6 [Contractor's Safety Plan], JSSS

1.7 [*Contractor's Method Statements*] and JSSS 1.13.2 [*Contractor's Safety Management Activities*], the Contractor shall include details of the following in the Method Statement and Safety Plan for Hoisting Operations and shall fully inform all Contractor's Personnel associated therewith of all requirements before the commencement of any such operations, including:	*Safety Management Activities*], the Contractor shall include details of the following in the Method Statement and Safety Plan for Hoisting Operations and shall fully inform all Contractor's Personnel associated ~~therewith of all requirements~~ with Hoisting Operation before the commencement of any such operations, including: JC: all requirements of what? というのが必ずしも明らかではありません。修文案をMD 氏に示して判断を仰いでください。 "all requirement" is not necessarily clear. Please, ask Mr. MD to review modified sentence by JC. NK: MD will review it.	1.7 [Contractor's Method Statements] and JSSS 1.13.2 [Contractor's Safety Management Activities], the Contractor shall include details of the following in the Method Statement and Safety Plan for Hoisting Operations and shall fully inform all Contractor's Personnel associated with Hoisting Operation before the commencement of any such operations, including:
(1) Scope and Hoisting Operation Area	(1) Scope, Area and Risk of the Hoisting Operation ~~Area~~ JC: 内容に合わせるための変更 The title is changed to coincide with the contents.	(1) Scope, Area and Risk of the Hoisting Operation
(a) The scope of the required Hoisting Operation, the Total Load, nature of Goods to be hoisted, location, required methods and safety arrangements;	(a) The scope of the required Hoisting Operation, ~~the Total Load~~, the Rated Capacity, Safe Working Load nature of Goods to be hoisted, location, required methods and safety arrangements;; JC: 5.1.2(5)に対するコメント参照 Please refer to the comment to 5.1.2(5).	(a) The scope of the required Hoisting Operation, the Rated Capacity, Safe Working Load, nature of Goods to be hoisted, location, required methods and safety arrangements;
(b) The Hoisting Operation area limits;	(b) The Hoisting Operation area limits; JC: ここに 5.3.1(1)に記載の内容のような ground conditions について追記しておいてください Please add description regarding ground conditions such as in 5.3.1 (1). NK: Added as (c).	(b) The Hoisting Operation area limits; (c) Requirements on the ground conditions for installation, appropriate installation method taking account of all Hoisting Operation requirements, site and working conditions, location of obstacles, etc.
(c) The environmental conditions, nearby areas for storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, Operational Areas or areas where other Dangerous Work is taking place;	(c) The working environment~~al conditions,~~ of the nearby areas to which particular attention should be paid（e.g. ~~for~~ storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, Operational Areas, or Overhead Services） ~~where other Dangerous Work is taking place~~; JC: 日本語版の趣旨は、揚貨作業で万が一のことが発生した場合に、重大な影響が発生する周辺環境ということだと思います。その趣旨に沿い、日本語版にもある高圧線の概念も入れて修正してみました。Dangerous Work は必ずしもここでは必要ないと思います（例えば、近隣で Confined space の作業をやることが必ずしもこれに該当しない）。 The point of this clause of the Japanese draft is that if any accident and the like occurs in hoisting operation and it would cause serious effects on nearby environment. Thus, overhead services are added which is in the Japanese draft. On the other hand, it is deemed that it is not necessary to state regarding Dangerous Works in this clause. (For example, a work in Confined Space near the hoisting operation is not applicable.) NK: Modified by JC.	(d) The working environment of the nearby areas to which particular attention should be paid (e.g. storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, Operational Areas, or Overhead Services);
(d) The preservation of safe access, Walkways, and footpaths around the Hoisting Operations working area; and.	(d) The preservation of safe access, Walkways, and footpaths around the Hoisting Operations working area; and. JC: 2 章でいう Passageway ではないですか。用語を再確認してください。 Isn't the term "Walkways" same as "the Passageway" in Chapter 2? Please, recheck the terms. NK: 第 2 章(Issue 3)は "Walkways"と"the Passageway"を定義しています。 Chapter 2 (Issue 3) defines as follows: 2.5.7.Temporary Access Around the Site	(e) The preservation of safe access, Walkways/Passageways, and footpaths around the Hoisting Operations working area; and

	"Walkways" mean pedestrian footpaths at ground level or ramped for the use of Contractor's Personnel. "Passageways" are the same as walkways but are covered by a roof and maybe also have sides in order to protect all personnel from falling objects or adjacent activities.	
	NK: modified as right.	
(e)	(e) The potential danger of Hoisting Operations to other Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where the Works are being executed and who may be affected by such operations.	(f) The potential danger of Hoisting Operations to other Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where the Works are being executed and who may be affected by such operations.
(f) The potential danger of Hoisting Operations to other Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where the Works are being executed and who may be affected by such operations.		
(2) Hoisting Operation and Rigging Requirements	(2) Hoisting Operation and Rigging Requirements	(2) Hoisting Operation and Rigging Requirements
(a) The Rated Capacity of Hoisting Equipment and type to be used;	(a) ~~The Rated Capacity of Hoisting Equipment and type to be used;~~ The type of Hoisting Equipment to be used and its Rated Capacity;	(a) The type of Hoisting Equipment to be used and its Rated Capacity;
	JC: type に応じて Rated Capacity が決まるので、順番を入れ替えました。 As the Rated Capacity is determined as per the type, the order is changed.	
	NK: Changed as JC modified.	
(b) The Recommended Safe Working Load and type(s) of Rigging Equipment to be used;	(b) ~~The Recommended Safe Working Load and type(s) of Rigging Equipment to be used;~~ The type(s) of Rigging Equipment to be used and their Safe Working Load;	(b) The type(s) of Rigging Equipment to be used and their Safe Working Load;
(c) Hazards associated with the Hoisting Operation;	(c) Hazards associated with the Hoisting Operation;	(c) Hazards associated with the Hoisting Operation;
(d) Role and responsibility of the operator and each Rigger;	(d) Role and responsibility of the operator and Rigger;	(d) Role and responsibility of the operator and Rigger;
(e) Establishing targets for the day;	~~(e) Establishing targets for the day;~~	
	JC: 安全スペックにはふさわしくない。削除。 This clause is not proper for a safety specification. Delete.	
	NK: Deleted as commented.	
(f) Weight of Goods being hoisted;	(f) Weight of Goods being hoisted;	(e) Weight of Goods being hoisted;
(g) The shapes and characteristics of Goods being hoisted;	(g) The shapes and characteristics of Goods being hoisted;	(f) The shapes and characteristics of Goods being hoisted;
(h) The presence of any obstructions or Overhead Services and consequent restrictions on the movement and operation of Hoisting Equipment;	(h) The presence of any obstructions or Overhead Services and consequent restrictions on the movement and operation of Hoisting Equipment;	(g) The presence of any obstructions or Overhead Services and consequent restrictions on the movement and operation of Hoisting Equipment;
(i) Any limitations of Hosting Equipment; and	(i) Any limitations of Hosting Equipment; and	
	JC: 今更ながら何を言っているのかよくわからない。Rated Capacity とかの話であれば既に記述しているので削除してください。 It is not clear what the meaning of this clause is. If it is about "Rated Capacity" or else, delete the clause because it has been stated before.	
	NK: This clause is quite vague and not useful for safety. Deleted.	
(j) Disconnecting techniques used to complete the task.	(j) Disconnecting techniques used to complete the task.	(i) ~~Disconnecting techniques used to complete the task~~.
	JC: 玉掛に関するハンドリングの話は、確かにここまで出てきていないので、記述することは正しいと思いますが、玉掛を外すときだけではなく、取り付ける時のことも記述されるべきです。また用語ですが、Disconnect ではなく、Remove (Removal)の方がよくないでしょうか。また「取り付ける」は米国の Department of Energy で出版した、Hoisting and Rigging Manual（PNNL-18129 で URL 検索すればでてきます）では hitched or rigged という表現で出てくるようです。いずれにせよ、この辺りの用語の使い方は MD 氏に確認してもらってください。 As there has been no provision about slinging regarding rigging so far, it would be right to describe about it here. However, it is necessary to mention not only "disconnecting" but also "connecting".	

(3) Identification of Personnel

(a) The identity of operators, Riggers and any other workers associated with the Hoisting Operation;

(b) The identity of and location(s) for Signallers;

(4) The communication and signalling requirements (equipment to be used and standard signals); and

(5) The procedures in case of emergency.

5.2.2 Operators

(1) The Contractor shall select and assign operators and drivers (hereinafter referred to collectively as 'operators") of Hoisting Equipment in accordance with JSSS 1.16 [*Proper Placement of Contractor's Personnel*].

(2) The name of the assigned operator shall be posted on each unit of Hoisting Equipment.

5.2.3 Riggers

(1) The Contractor shall assign only Riggers for all rigging and shall prohibit other workers from any involvement.

(2) The Contractor shall select and assign Riggers in accordance with JSSS 1.16 [Proper Placement of Contractor's Personnel].

(3) The names of all assigned Riggers shall be posted prominently in the working area of the Hoisting Operation.

5.2.4 Safety Education and Training

The Contractor shall provide health and safety education and training in accordance with JSSS 1.17 [*Safety Training Generally*]. taking account of the characteristics of the Hoisting Operations, Hoisting Equipment and Rigging Equipment.

5.2.5 Inspection of Hoisting Equipment and Rigging Equipment

(1) When the Hoisting Equipment is mobilised to the Site, the Contractor shall inspect the equipment complying with JSSS 4.2 [Inspection, Maintenance and Repair], 4.2.1 [Requirement Generally] (3) to ensure that the equipment is free from defect and suitable for the hoisting operation planned.

(2) Further to the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] and JSSS 4.2 [Inspection, Maintenance and Repair],

As for the term, "remove" is more appropriate to use than "disconnect". In addition, Hoisting and Rigging Manual (PNNL-1829) by Department of Energy of USA uses an expression "hitched or rigged".

Anyway, please ask Mr. MD to confirm how to use these terms.

NK: (j) is specified as mentioned in OSHA guide sheet, Rigging Process
https://www.osha.gov/dts/maritime/sltc/ships/rigging/rigging_process.html
The following are topics that should be discussed with workers prior to beginning rigging operations:
Disconnecting techniques used to complete the task.
MD to confirm the usage of terms.
However, as the requirements for rigging are provided in 5.4.1 and 5.4.2, NK thinks that it is not necessary to mention about disconnecting here.
Deleted tentatively.

(3) Identification of Personnel

(a) The identity of operators, Riggers and any other workers associated with the Hoisting Operation;

(b) The identity of and location(s) for Signallers;

(4) The communication and signalling requirements (equipment to be used and standard signals); and

(5) The procedures in case of emergency.

5.2.2 Operators

(1) The Contractor shall select and assign operators and drivers (hereinafter referred to collectively as 'operators") of Hoisting Equipment in accordance with JSSS 1.16 [*Proper Placement of Contractor's Personnel*].

(2) The name of the assigned operator shall be posted on each unit of Hoisting Equipment.

5.2.3 Riggers

(1) The Contractor shall assign only Riggers for all rigging and shall prohibit other workers from any involvement.

(2) The Contractor shall select and assign Riggers in accordance with JSSS 1.16 [Proper Placement of Contractor's Personnel].

(3) The names of all assigned Riggers shall be posted prominently in the working area of the Hoisting Operation.

5.2.4 Safety Education and Training

The Contractor shall provide health and safety education and training in accordance with JSSS 1.17 [*Safety Training Generally*]. taking account of the characteristics of the Hoisting Operations, Hoisting Equipment and Rigging Equipment.

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(1) When the Hoisting Equipment is mobilised to the Site, the Contractor shall inspect the equipment complying with JSSS 4.2 [Inspection, Maintenance and Repair], 4.2.1 [Requirement Generally] (3) to ensure that the equipment is free from defect and suitable for the hoisting operation planned.

(2) Further to the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] and JSSS 4.2 [Inspection, Maintenance and Repair], the HSO shall ensure that all Hoisting Equipment and all Rigging

(3) Identification of Personnel

(a) The identity of operators, Riggers and any other workers associated with the Hoisting Operation;

(b) The identity of and location(s) for Signallers;

(4) The communication and signalling requirements (equipment to be used and standard signals); and

(5) The procedures in case of emergency.

5.2.2 Operators

(1) The Contractor shall select and assign operators and drivers (hereinafter referred to collectively as 'operators") of Hoisting Equipment in accordance with JSSS 1.16 [Proper Placement of Contractor's Personnel].

(2) The name of the assigned operator shall be posted on each unit of Hoisting Equipment.

5.2.3 Riggers

(1) The Contractor shall assign only Riggers for all rigging and shall prohibit other workers from any involvement.

(2) The Contractor shall select and assign Riggers in accordance with JSSS 1.16 [Proper Placement of Contractor's Personnel].

(3) The names of all assigned Riggers shall be posted prominently in the working area of the Hoisting Operation.

5.2.4 Safety Education and Training

The Contractor shall provide health and safety education and training in accordance with JSSS 1.17 [Safety Training Generally]. taking account of the characteristics of the Hoisting Operations, Hoisting Equipment and Rigging Equipment.

5.2.5 Inspection of Hoisting Equipment and Rigging Equipment

(1) When the Hoisting Equipment is mobilised to the Site, the Contractor shall inspect the equipment complying with JSSS 4.2 [Inspection, Maintenance and Repair], 4.2.1 [Requirement Generally] (3) to ensure that the equipment is free from defect and suitable for the hoisting operation planned.

(2) Further to the requirements of JSSS 1.35 [Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment] and JSSS 4.2 [Inspection, Maintenance and Repair],

the HSO shall ensure that all Hoisting Equipment and all Rigging Equipment is inspected and maintained when it is at the location of operation before the commencement of the first and of all subsequent Hoisting Operations.

(3) Inspections mentioned in (2) above shall include all items necessary to ensure the safe performance of the Hoisting Operations including the following examples and any further requirements due to the characteristics of the Hoisting Operation and the capability and condition of the Hoisting Equipment and Rigging Equipment including condition and performance of:

(a) Over-winding prevention devices, and over-load prevention devices;

(b) Other safety devices including brakes, clutches and controllers;

(c) Rails for trolley and runway;

(d) Hooks, sheaves, blocks, pulleys and the like;

(e) Cables, ropes and the like; and

(f) Rigging Equipment.

(4) Periodic inspection shall be made complying with JSSS 4.2.1 [Requirement Generally] (5) and include the following items:

(a) Condition of over-winding prevention devices, overload prevention devices, other safety devices, brakes, and clutches;

(b) Condition of wire ropes and hanging chains;

(c) Condition of Lifting Equipment such as hooks;

Equipment is inspected and maintained when it is at the location of operation before the commencement of the first and of all subsequent Hoisting Operations.

(3) Inspections mentioned in (2) above shall include all items necessary to ensure the safe performance of the Hoisting Operations including the following examples and any further requirements due to the characteristics of the Hoisting Operation and the capability and condition of the Hoisting Equipment and Rigging Equipment including condition and performance of:

(a) Over-winding prevention devices, and over-load prevention devices;

JC: Anti-two blocking devices が一般的との指摘がありましたので、確認してください。
There is a pointing out that “Anti-two blocking devices” is more common than “Over-winding prevention devices”. Need to be confirmed.

NK: “Over-winding prevention devices”は主として日本で使われており、米国にもこの名称で特許登録されているケースがあります。しかし、指摘の通り海外では“Anti-two blocking devices”が一般的とみられます。NK としては、多くの日本製クレーンが多数使われていることから右のように併記することを提案します。
It is found that “Over-winding prevention devices” is used in mainly Japan. This is also patented in USA with this name. However, as pointed out it is more common to use “Anti-two blocking devices”. Thus, NK proposes to use both terms equally considering that many hoisting equipment manufactured in Japan are used in overseas construction works.

(b) Other safety devices including brakes, clutches and controllers;

(c) Rails for trolley and runways;

(d) Hooks, sheaves, blocks, pulleys and the like;

(e) Cables, ropes and the like; and

(f) Rigging Equipment.

(4) Periodic inspection shall be made complying with JSSS 4.2.1 [Requirement Generally] (5) and include the following items:

(a) Condition of over-winding prevention devices, overload prevention devices, other safety devices, brakes, and clutches;

(b) Condition of wire ropes and hanging chains;

(c) Condition of Lifting Equipment such as hooks;

JC: 5.1.2 へのコメント:5.2.5 に定義がない Lifting Equipment が残ってますが、小文字のそれが「揚貨機械」を表していますので、そこは記載ぶりを変更ください。
There is “Lifting Equipment” in 5.25 (4) (c) which is not defined. Please modify the stipulation as “lifting equipment” is used to mean Hoisting Equipment.

NK: UK では、Lifting Operations and Lifting Equipment Regulations 1998 のように、Lifting Equipment は JSSS の Hoisting Equipment を示しています。クレーン則では、つり具はフツク、グラブバケツト等としています。磁力又は陰圧により吸着させるつり具とも記述しています。混乱を避けるため Lifting Equipment を使用せず、(c)は Hoisting Equipment のフックへ変更します。
Lifting Equipment is used in Lifting Operations and Lifting Equipment Regulations, 1998 in UK. It is same meaning as Hoisting Equipment in JSSS. In Japanese Crane Regulations, lifting equipment are such as hooks, grab bucket,

the HSO shall ensure that all Hoisting Equipment and all Rigging Equipment is inspected and maintained when it is at the location of operation before the commencement of the first and of all subsequent Hoisting Operations.

(3) Inspections mentioned in (2) above shall include all items necessary to ensure the safe performance of the Hoisting Operations including the following examples and any further requirements due to the characteristics of the Hoisting Operation and the capability and condition of the Hoisting Equipment and Rigging Equipment including condition and performance of:

(a) Anti-two blocking devices (over-winding prevention devices), and over-load prevention devices;

(b) Other safety devices including brakes, clutches and controllers;

(c) Rails for trolley and runways;

(d) Hooks, sheaves, blocks, pulleys and the like;

(e) Cables, ropes and the like; and

(f) Rigging Equipment.

(4) Periodic inspection shall be made complying with JSSS 4.2.1 [Requirement Generally] (5) and include the following items:

(a) Condition of anti-two blocking devices (over-winding prevention devices), overload prevention devices, other safety devices, brakes, and clutches;

(b) Condition of wire ropes and hanging chains;

(c) Condition of ~~Lifting Equipment such as~~ hooks of the Hoisting Equipment’s;

(d) Condition of placement of winches; and

(e) Condition of electric wire, switchboard and controller.

(5) No Hoisting Equipment or Rigging Equipment shall put in operation unless they are inspected in accordance with JSSS 4.2.1 and it is ensured that they are safe to be used.

(6) The Contractor shall prepare standard checklists for the above regular and periodic inspections and the HSO shall ensure that these are recorded check, repair and maintenance results, complied with and signed by the person in charge of check and maintenance and kept as a record in accordance with JSSS 1.31 [*Health and Safety Records*].

5.2.6 General Safety Measures for Hoisting Operations

The Contractor shall:

(1) Select Hoisting Equipment which has a Rated Capacity and function compatible with the work conditions and requirements, including loads, surface conditions, access, working area, radius and angle of boom, etc.

(2) Clearly display the Rated Capacity of the Hoisting Equipment so that all operators and Riggers are fully aware at all times.

(3) Select Rigging Equipment with Recommended Safe Working Load suitable for the Hoisting Operation.

(4) Select Rigging Equipment compatible with the purpose, work conditions and requirements.

(5) Ensure that operators and Riggers confirm that the load on the Rigging Equipment is less than the Recommended Safe Working Load.

(6) Activate all safety devices of Hoisting Equipment throughout the entire operation time(s) of any Hoisting Operations.

(7) Prohibition of entry

Designate all Hoisting Operations as “Dangerous Work”, enclose the entire working area which is subject to any risk by providing temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry – Dangerous Work*].

magnet or negative pressure lifting equipment. To avoid confusion, JSSS does not use Lifting Equipment and (c) is modified as right.

(d) Condition of placement of winches; and

(e) Condition of electric wire, switchboard and controller.

(5) No Hoisting Equipment or Rigging Equipment shall put in operation unless they are inspected in accordance with JSSS 4.2.1 and it is ensured that they are safe to be used.

(6) The Contractor shall prepare standard checklists for the above regular and periodic inspections. The results of these inspections are to be recorded and ~~the HSO shall ensure that these are recorded check, repair and maintenance results, complied with and signed by the person in charge of check and maintenance and~~ kept ~~as a record~~ in accordance with JSSS 1.31 [*Health and Safety Records*].

JC: 記録をつけ保管するのは Hoisting に従事する責任者がやればよいと思います。HSO はその記録に対して必要に応じてアクセスし、必要な権限を行使する、と考えるならば、左記の修正案の通りとし、あえて HSO をここで出さなくてもよいとおもいます。
It is appropriate for the person in charge of hoisting operations to make records and keep them. HSO can access the records as necessary and exercise his authorities. Modified as above.

NK: JC 案に従い変更しました。
Modified as JC commented.

5.2.6 General Safety Measures for Hoisting Operations

The Contractor shall:

(1) Select Hoisting Equipment which has a Rated Capacity and function compatible with the work conditions and requirements, including loads, surface conditions, access, working area, radius and angle of boom, etc.

(2) Clearly display the Rated Capacity of the Hoisting Equipment so that all operators and Riggers are fully aware at all times.

(3) Select Rigging Equipment with ~~Recommended~~ Safe Working Load suitable for the Hoisting Operation.

JC: 5.1.2.(4)の修正に従い修正する。
JC modified in accordance with change in 5.1.2 (4).

NK: 右の通り変更しました。
Modified as JC commented.

(4) Select Rigging Equipment compatible with the purpose, work conditions and requirements.

(5) Ensure that operators and Riggers confirm that the load on the Rigging Equipment is less than the Recommended Safe Working Load.

(6) Activate all safety devices of Hoisting Equipment throughout the entire operation time(s) of any Hoisting Operations.

(7) Prohibition of entry

Designate all Hoisting Operations as “Dangerous Work”, enclose the entire working area which is subject to any risk by providing temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry – Dangerous Work*].

(d) Condition of placement of winches; and

(e) Condition of electric wire, switchboard and controller.

(5) No Hoisting Equipment or Rigging Equipment shall put in operation unless they are inspected in accordance with JSSS 4.2.1 and it is ensured that they are safe to be used.

(6) The Contractor shall prepare standard checklists for the above regular and periodic inspections. The results of these inspections are to be recorded and kept in accordance with JSSS 1.31 [Health and Safety Records].

5.2.6 General Safety Measures for Hoisting Operations

The Contractor shall:

(1) Select Hoisting Equipment which has a Rated Capacity and function compatible with the work conditions and requirements, including loads, surface conditions, access, working area, radius and angle of boom, etc.

(2) Clearly display the Rated Capacity of the Hoisting Equipment so that all operators and Riggers are fully aware at all times.

(3) Select Rigging Equipment with Safe Working Load suitable for the Hoisting Operation.

(4) Select Rigging Equipment compatible with the purpose, work conditions and requirements.

(5) Ensure that operators and Riggers confirm that the load on the Rigging Equipment is less than the Recommended Safe Working Load.

(6) Activate all safety devices of Hoisting Equipment throughout the entire operation time(s) of any Hoisting Operations.

(7) Prohibition of entry

Designate all Hoisting Operations as “Dangerous Work”, enclose the entire working area which is subject to any risk by providing temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [Prohibition of Entry – Dangerous Work].

The Contractor shall ~~be particularly aware and~~ take ~~all~~ measures to ~~prevent~~ keep any unauthorised personnel off from any area subject to any risk of injury ~~to persons~~ arising from the Hoisting Operation ~~but outside the immediate working area~~, due to tangling, snagging, rebound of broken ropes or cables, broken sheaves, droppage and the like.

(8) Signalling

(a) Signalling between operators, Riggers and any associated workers regarding the Hoisting and Rigging Operations, shall only be carried out by Riggers, (hereinafter referred to as signallers);

(b) Signallers shall be located in a safe place outside the immediate area where the Rigging and Hoisting Operations are taking place, but in a location where they can clearly see suspended loads and can also see the operator and also be seen by such personnel;

(c) When it is not possible for signallers to give direct visible signals to the operator, hand held radios or any other suitable communication tool must be provided and used; and

(d) In addition, Spotters shall be placed and used only to keep any unauthorised personnel away from the working area.

(9) During Hoisting Operations:

(a) Check if the hoisting points, hooks and the like are positioned above the centre of gravity of the load to be hoisted;

(b) At commencement of all Hoisting Operations, stop the hoist at 30 cm from hoisting level, to check stability and ensure that all is in order before proceeding;

(c) Ensure that there are no persons and objects within the turning area when the Hoisting Equipment turns;

(d) After hoisting loads up to the safe height, adjust the boom gently;

(e) Always pay attention to move of the edge of boom and the condition of suspended loads; and

(f) When unloading or detaching loads, stop once before landing and check the condition of the landing place and the load and then continue to lower gently.

(10) Ensure that the operators ~~shall~~ never leave their seat or leave the controls while Hoisting Operations are in progress.

The Contractor shall take measures to keep any ~~unauthorised~~ personnel off from any area subject to any risk of injury arising from the Hoisting Operation, due to fall of hoisted Goods, tangling, snagging, rebound of broken ropes or cables, broken sheaves, droppage and the like.

JC: 危険がある場所には誰も入ってはいけないということのはずです（authorised personnel ならつり荷の直下に入ってもよい、ということにはならない）
日本語版である「つり荷の落下の危険のある場所には入らせない」という一番重要な要素が抜けていたので付け足しました。

It should be that nobody can enter the place where there is danger. (It does not mean that authorized personnel can enter under the load.
The most important point has been missing in the original clause of Japanese draft that prohibition of entering where there is a risk of fall of hoisted good is reinstated.

NK: Changed as JC commented and modified as right.

(8) Signalling

(a) Signalling between operators, Riggers and any associated workers regarding the Hoisting and Rigging Operations, shall only be carried out by Riggers, (hereinafter referred to as signallers);

(b) Signallers shall be located in a safe place outside the immediate area where the Rigging and Hoisting Operations are taking place, but in a location where they can clearly see suspended loads and can also see the operator and also be seen by such personnel;

(c) When it is not possible for signallers to give direct visible signals to the operator, hand held radios or any other suitable communication tool must be provided and used; and

(d) In addition, Spotters shall be placed and used only to keep any unauthorised personnel away from the working area.

(9) During Hoisting Operations:

(a) Check if the hoisting points, hooks and the like are positioned above the centre of gravity of the load to be hoisted;

(b) At commencement of all Hoisting Operations, stop the hoist at 30 cm from hoisting level, to check stability and ensure that all is in order before proceeding;

(c) Ensure that there are no persons and objects within the turning area when the Hoisting Equipment turns;

(d) After hoisting loads up to the safe height, adjust the boom gently;

(e) Always pay attention to move of the edge of boom and the condition of suspended loads; and

(f) When unloading or detaching loads, stop once before landing and check the condition of the landing place and the load and then continue to lower gently.

(10) Ensure that the operators never leave their seat or leave the controls while Hoisting Operations are in progress.

(11) Defects with Hoisting Equipment during operation:

The Contractor shall keep any personnel off from any area subject to risk of injury arising from the Hoisting Operation due to fall of hoisted Goods, tangling, snagging, rebound of broken ropes or cables, broken sheaves, droppage and the like.

(8) Signalling

(a) Signalling between operators, Riggers and any associated workers regarding the Hoisting and Rigging Operations, shall only be carried out by Riggers, (hereinafter referred to as signallers);

(b) Signallers shall be located in a safe place outside the immediate area where the Rigging and Hoisting Operations are taking place, but in a location where they can clearly see suspended loads and can also see the operator and also be seen by such personnel;

(c) When it is not possible for signallers to give direct visible signals to the operator, hand held radios or any other suitable communication tool must be provided and used; and

(d) In addition, Spotters shall be placed and used only to keep any unauthorised personnel away from the working area.

(9) During Hoisting Operations:

(a) Check if the hoisting points, hooks and the like are positioned above the centre of gravity of the load to be hoisted;

(b) At commencement of all Hoisting Operations, stop the hoist at 30 cm from hoisting level, to check stability and ensure that all is in order before proceeding;

(c) Ensure that there are no persons and objects within the turning area when the Hoisting Equipment turns;

(d) After hoisting loads up to the safe height, adjust the boom gently;

(e) Always pay attention to move of the edge of boom and the condition of suspended loads; and

(f) When unloading or detaching loads, stop once before landing and check the condition of the landing place and the load and then continue to lower gently.

(10) Ensure that the operators never leave their seat or leave the controls while Hoisting Operations are in progress.

(11) Defects with Hoisting Equipment during operation:

(11) Defects with Hoisting Equipment during operation

(a) Ensure that, if operators notice any defect or abnormality in the Hoisting Equipment during Hoisting Operations (such as abnormal noise, temperature, smell, etc.) the operator shall stop the Hoisting Operation immediately;

(b) ~~The operator shall then~~ Identify the cause of defect or abnormality and make necessary repairs by using authorised and qualified specialist mechanics, electricians or representative technical engineers authorised by the hoisting Equipment manufacturer; and

(c) Ensure that the repaired Hoisting Equipment shall not be put in operation unless certified by the HSO.

(12) Condition of Ropes, Slings and Chains

The Contractor shall ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

(13) Adverse Weather

The Contractor shall take the following measures in addition to JSSS 2.7 [ADVERSE WEATHER REQUIREMENTS]:

(a) The Contractor shall ensure that Hoisting Equipment is left in a safe condition when ~~not in use and particularly if~~ adverse climatic conditions can be anticipated;

(b) All anchors, outriggers and supports are secure and adequate to fix and support the Hoisting Equipment in position during any adverse climatic conditions; and

(c) Booms and jibs shall be secured ~~when not in use~~ to prevent any instability or collapse.

(d) Before resuming hoisting work after the adverse weather, inspect Hoisting Equipment using the daily and periodic checklists specified in JSSS 6.2.5 [Inspection of Hoisting Equipment and Rigging Equipment].

(14) Prohibition of Use of Hoisting Equipment

Hoisting Equipment shall never be used for transporting or hoisting Contractor's Personnel unless the following all measures are taken for the case of existing unavoidable reason or essential for safe work procedures:

(a) Dedicated gondola for transporting or hoisting shall be provided;

(b) Prevention measures shall be taken to avoid turning and falling of gondola;

(c) The assumed load of the total of 1.3 times of total weight of gondola and workers plus 500 kg shall not exceed the Rated Capacity of the Hoisting Equipment

(a) Ensure that, if operators notice any defect or abnormality in the Hoisting Equipment during Hoisting Operations (such as abnormal noise, temperature, smell, etc.) the operator shall stop the Hoisting Operation immediately;

(b) Identify the cause of defect or abnormality and make necessary repairs by using authorised and qualified specialist mechanics, electricians or representative technical engineers authorised by the hoisting Equipment manufacturer; and

(c) Ensure that the repaired Hoisting Equipment shall not be put in operation unless certified by the HSO.

(12) Condition of Ropes, Slings and Chains

~~The Contractor shall~~ Ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

(13) Adverse Weather

~~The Contractor shall~~ Take the following measures in addition to JSSS 2.7 [Adverse Weather Requirements]:

(a) ~~The Contractor shall ensure that~~ Hoisting Equipment is left in a safe condition when adverse climatic conditions can be anticipated;

(b) All anchors, outriggers and supports are secure and adequate to fix and support the Hoisting Equipment in position during any adverse climatic conditions; and

(c) Booms and jibs shall be secured to prevent any instability or collapse.

(d) Before resuming hoisting work after the adverse weather, inspect Hoisting Equipment using the daily and periodic checklists specified in JSSS 6.2.5 [Inspection of Hoisting Equipment and Rigging Equipment].

(14) Prohibition of Inadequate Use of Hoisting Equipment

JC: 目的外
The expression that means "any other purpose other than designed or originally intended" was lacking. Added "Inadequate".

NK: JC の指摘通り修正しました。
The title is changed as JC modified.

Hoisting Equipment shall ~~never~~ not be used for transporting or hoisting Contractor's Personnel. Such inadequate use of Hoisting Equipment is exceptionally allowed in case ~~unless the following all measures are taken for the case of existing~~ it is justified by unavoidable reason and the following all measures are taken; ~~or essential for safe work procedures;~~

(a) Dedicated gondola for transporting or hoisting shall be provided;

(b) Prevention measures shall be taken to avoid turning and falling of gondola;

(c) The assumed load ~~of the total of~~ (i.e. 1.3 times of total weight of gondola and workers on board plus 500 kg) shall not exceed the Rated Capacity of the Hoisting Equipment;

(a) Ensure that, if operators notice any defect or abnormality in the Hoisting Equipment during Hoisting Operations (such as abnormal noise, temperature, smell, etc.) the operator shall stop the Hoisting Operation immediately;

(b) Identify the cause of defect or abnormality and make necessary repairs by using authorised and qualified specialist mechanics, electricians or representative technical engineers authorised by the hoisting Equipment manufacturer; and

(c) Ensure that the repaired Hoisting Equipment shall not be put in operation unless certified by the HSO.

(12) Condition of Ropes, Slings and Chains

Ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

(13) Adverse Weather

Take the following measures in addition to JSSS 2.7 [Adverse Weather Requirements]:

(a) Hoisting Equipment is left in a safe condition when adverse climatic conditions can be anticipated;

(b) All anchors, outriggers and supports are secure and adequate to fix and support the Hoisting Equipment in position during any adverse climatic conditions; and

(c) Booms and jibs shall be secured to prevent any instability or collapse.

(d) Before resuming hoisting work after the adverse weather, inspect Hoisting Equipment using the daily and periodic checklists specified in JSSS 6.2.5 [Inspection of Hoisting Equipment and Rigging Equipment].

(14) Prohibition of Inadequate Use of Hoisting Equipment

Hoisting Equipment shall not be used for transporting or hoisting Contractor's Personnel. Such inadequate use of Hoisting Equipment is exceptionally allowed in case it is justified by unavoidable reason and the following all measures are taken:

(a) Dedicated gondola for transporting or hoisting shall be provided;

(b) Prevention measures shall be taken to avoid turning and falling of gondola;

(c) The assumed load (i.e. 1.3 times of total weight of gondola and workers on board plus 500 kg) shall not exceed the Rated

(d) Wires ropes of Hoisting Equipment shall be of safety factor of 10 or more against loads;

(e) Lowering the gondola shall be made by power (prohibit free drop); and

(f) Use of PFAS of Contractor's Personnel in the gondora shall be ensured.

5.3 HOISTING EQUIPMENT - CRANES

(Refer also to JSSS Chapter 4 [*Contractor's Equipment*])

5.3.1 Planning, Installation and Removal

Unless otherwise approved by the HSO, the Contractor shall employ an appropriately qualified, skilled and experienced crane specialist(s) ~~to~~ and select the required type and capacity of crane, plan the Hoisting Operation including mobilising, assembly, erection, use, dismantling and removal of cranes. The Contractor's specialist shall:

(1) Investigate the location and position for installation, plan the appropriate installation method taking account of all Hoisting Operation requirements, site and working conditions, location of obstacles, etc.

(2) Investigate the working area and ensure the safety of the crane and any crane rails.

(3) Design and construct crane foundation, assemble and install the crane with proper structural design and in full compliance with the manufacturer's official instructions and recommendations.

(4) Conduct completion inspection, load test and stability test of the crane.

(5) Dismantle and remove and transport cranes in a planned and systematic manner in full compliance with the manufacturer's official instructions and recommendations.

5.3.2 Additional Requirements for Mobile Cranes

(1) Position mobile cranes where there are no obstacles within the operation range.

(2) Where obstacles exist, plan the appropriate operation to avoid the obstacles and ensure that operators and signallers comply with this plan.

(3) Ensue that ground has sufficient and even bearing capacity to avoid all risk of the crane subsiding and overturning. Where necessary or where there is any risk of damaging surface paving or underground services, provide temporary steel plates of suitable size, thickness and to support the crane and avoid any risk of overturning during operation.

(4) Provide steel plate load-spreader pads to support outriggers and prevent them from subsiding.

(5) Fully extend outriggers or extension type crawlers to the maximum position.

(6) When the outriggers or crawlers cannot be extended to the maximum position, adjust the Rated Capacity of the mobile cranes

(d) Wires ropes of Hoisting Equipment shall be of safety factor of 10 or more against loads;

(e) Lowering the gondola shall be made by power (prohibit free drop); and

(f) Use of PFAS of ~~Contractor's Personnel~~ the workers in the gondola shall be ensured.

JC: (c)と平仄をあわせる. Make same as (c).

5.3 HOISTING EQUIPMENT - CRANES

(Refer also to JSSS Chapter 4 [*Contractor's Equipment*])

5.3.1 Planning, Installation and Removal

Unless otherwise approved by the HSO, the Contractor shall employ an appropriately qualified, skilled and experienced crane specialist(s) and select the required type and capacity of crane, plan the Hoisting Operation including mobilising, assembly, erection, use, dismantling and removal of cranes. The Contractor's specialist shall:

(1) Investigate the location and position for installation, plan the appropriate installation method taking account of all Hoisting Operation requirements, site and working conditions, location of obstacles, etc.

(2) Investigate the working area and ensure the safety of the crane and any crane rails.

(3) Design and construct crane foundation, assemble and install the crane with proper structural design and in full compliance with the manufacturer's official instructions and recommendations.

(4) Conduct completion inspection, load test and stability test of the crane.

(5) Dismantle and remove and transport cranes in a planned and systematic manner in full compliance with the manufacturer's official instructions and recommendations.

5.3.2 Additional Requirements for Mobile Cranes

(1) Position mobile cranes where there are no obstacles within the operation range.

(2) Where obstacles exist, plan the appropriate operation to avoid the obstacles and ensure that operators and signallers comply with this plan.

(3) Ensue that ground has sufficient and even bearing capacity to avoid all risk of the crane subsiding and overturning. Where necessary or where there is any risk of damaging surface paving or underground services, provide temporary steel plates of suitable size, thickness and to support the crane and avoid any risk of overturning during operation.

(4) Provide steel plate load-spreader pads to support outriggers and prevent them from subsiding.

(5) Fully extend outriggers or extension type crawlers to the maximum position.

(6) When the outriggers or crawlers cannot be extended to the maximum position, adjust the Rated Capacity of the mobile cranes

Capacity of the Hoisting Equipment

(d) Wires ropes of Hoisting Equipment shall be of safety factor of 10 or more against loads;

(e) Lowering the gondola shall be made by power (prohibit free drop); and

(f) Use of PFAS of the workers in the gondola shall be ensured.

5.3 HOISTING EQUIPMENT - CRANES

(Refer also to JSSS Chapter 4 [Contractor's Equipment])

5.3.1 Planning, Installation and Removal

Unless otherwise approved by the HSO, the Contractor shall employ an appropriately qualified, skilled and experienced crane specialist(s) and select the required type and capacity of crane, plan the Hoisting Operation including mobilising, assembly, erection, use, dismantling and removal of cranes. The Contractor's specialist shall:

(1) Investigate the location and position for installation, plan the appropriate installation method taking account of all Hoisting Operation requirements, site and working conditions, location of obstacles, etc.

(2) Investigate the working area and ensure the safety of the crane and any crane rails.

(3) Design and construct crane foundation, assemble and install the crane with proper structural design and in full compliance with the manufacturer's official instructions and recommendations.

(4) Conduct completion inspection, load test and stability test of the crane.

(5) Dismantle and remove and transport cranes in a planned and systematic manner in full compliance with the manufacturer's official instructions and recommendations.

5.3.2 Additional Requirements for Mobile Cranes

(1) Position mobile cranes where there are no obstacles within the operation range.

(2) Where obstacles exist, plan the appropriate operation to avoid the obstacles and ensure that operators and signallers comply with this plan.

(3) Ensue that ground has sufficient and even bearing capacity to avoid all risk of the crane subsiding and overturning. Where necessary or where there is any risk of damaging surface paving or underground services, provide temporary steel plates of suitable size, thickness and to support the crane and avoid any risk of overturning during operation.

(4) Provide steel plate load-spreader pads to support outriggers and prevent them from subsiding.

(5) Fully extend outriggers or extension type crawlers to the maximum position.

(6) When the outriggers or crawlers cannot be extended to the maximum position, adjust the Rated Capacity of the mobile cranes

to suit lower capacity commensurate to the actual extension length of outriggers or crawlers.

(7) Ensure that the actual Rated Capacity of the mobile crane is clearly shown and also advised to operators and Riggers.

(8) Activate the over-load prevention device of mobile crane and input accurately operation conditions of booms and outriggers.

(9) Cease the Hoisting Operation from time to time and check upon the condition of the outriggers or crawlers, implement adequate remedial measures if there is any subsidence and prohibit continuation of the Hoisting Operation until the crane has been re-inspected and certified as safe by the HSO.

(10) After the Hoisting Operation ~~and before demobilising~~

(a) When the mobile crane is not driven, fix the hooks of crane at the safe position;

(b) When the mobile crane is driven, take the following measures before driving:

(i) Attach fixing pin on each part;

(ii) Lock the brake of the turning device and winch drum; and

(iii) Turn off all switches related with operation of cranes.

5.4 RIGGING EQUIPMENT

5.4.1 Hoisting and Rigging Equipment

(1) All items of Rigging Equipment shall be labelled to show all pertinent information, such as the name of the manufacturer, date of manufacture, the Recommended Safe Working Load, etc.

(2) The Contractor shall be prohibited from making his own Rigging Equipment at Site.

(3) Rigging Equipment shall only be used:

(a) When certified as safe to use by the HSO in accordance with JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*];

(b) Within the Recommended Safe Working Load; and

to suit lower capacity commensurate to the actual extension length of outriggers or crawlers.

(7) Ensure that the actual Rated Capacity of the mobile crane is clearly shown and also advised to operators and Riggers.

(8) Activate the over-load prevention device of mobile crane and input accurately operation conditions of booms and outriggers.

(9) Cease the Hoisting Operation from time to time and check upon the condition of the outriggers or crawlers, implement adequate remedial measures if there is any subsidence and prohibit continuation of the Hoisting Operation until the crane has been re-inspected and certified as safe by the HSO.

(10) After the Hoisting Operation

(a) When the mobile crane is not driven, fix the hooks of crane at the safe position;

(b) When the mobile crane is driven, take the following measures before driving:

(i) Attach fixing pin on each part;

(ii) ~~Lock~~ Apply the brake of the turning device and winch drum; and

JC: Lock the brake というのは日本語英語だと思います。
"Lock the brake" is a Japanese English expression.

NK: Modified as commented.

(iii) Turn off all switches related with operation of cranes

5.4 RIGGING EQUIPMENT

5.4.1 Hoisting and Rigging Equipment

(1) All items of Rigging Equipment shall be labelled to show all pertinent information, such as ~~the name of the manufacturer, date of manufacture,~~ the ~~Recommended~~ Safe Working Load, etc.

JC: pertinent information として、最終点検日、点検結果が何時まで有効かを記述してください。製造業者名は日本語版では入っていましたが、再考して不要と思います。
Please, add "date of the latest inspection" and "validated date of inspection result" as the pertinent information. Although in Japanese draft, "the name of the manufacturer" was included, as a result of re-consideration it was judged unnecessary.

NK: The clause is modified as per JC comment as right.

(2) The Contractor shall ~~be prohibited from making his own Rigging Equipment~~ use Rigging equipment fabricated by reputable manufacturers and shall not make or repair by himself at the Site.

JC: こういう言い方の方がよくないでしょうか？
Isn't this expression more appropriate in this case?

NK: The clause is modified as JC suggested.

(3) Rigging Equipment shall only be used:

(a) When certified as safe to use by the HSO in accordance with JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*];

to suit lower capacity commensurate to the actual extension length of outriggers or crawlers.

(7) Ensure that the actual Rated Capacity of the mobile crane is clearly shown and also advised to operators and Riggers.

(8) Activate the over-load prevention device of mobile crane and input accurately operation conditions of booms and outriggers.

(9) Cease the Hoisting Operation from time to time and check upon the condition of the outriggers or crawlers, implement adequate remedial measures if there is any subsidence and prohibit continuation of the Hoisting Operation until the crane has been re-inspected and certified as safe by the HSO.

(10) After the Hoisting Operation

(a) When the mobile crane is not driven, fix the hooks of crane at the safe position;

(b) When the mobile crane is driven, take the following measures before driving:

(i) Attach fixing pin on each part;

(ii) Apply the brake of the turning device and winch drum; and

(iii) Turn off all switches related with operation of cranes

5.4 RIGGING EQUIPMENT

5.4.1 Hoisting and Rigging Equipment

(1) All items of Rigging Equipment shall be labelled to show all pertinent information, such as the Safe Working Load, date of the latest inspection, expiration date, etc.

(2) The Contractor shall use Rigging equipment fabricated by reputable manufacturers and shall not make or repair by himself at the Site.

(3) Rigging Equipment shall only be used:

(a) When certified as safe to use by the HSO in accordance with JSSS 1.33 [Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment];

(c) In full compliance with the manufacturer's official instructions and recommendations.

(4) Rigging Equipment shall be removed from service, tagged as such and destroyed or removed from the Site, where required by the standards noted in JSSS エラー！参照元が見つかりません。 [*Compliance Standards*] including (but not limited to) the following conditions:

(a) Wire ropes

(i) Where one-tenth or more of the element wires are broken or cut in any one strand.

(ii) Where the reduction ratio of diameter due to use, exceeds 7% of the original nominal diameter at the date of manufacture.

(i) With kink or deformation.

(ii) With excessive wear, corrosion or defect.

(b) Chains

(i) Where elongation due to use exceeds 5% of the original nominal length at the date of manufacture.

(ii) Where the diameter of links has reduced by more than 10 % since the date of manufacture.

(iii) With excessive wear, cracks, corrosion or defect.

(c) Hooks, shackles

(i) Signs of deformation.

(ii) With excessive wear, cracks, corrosion or defect.

(d) Synthetic fibre ropes or slings

(i) Broken or cut strands.

(ii) With excessive wear or defect.

5.4.2 Further Safety Requirements for Rigging

The Contractor shall fully comply ~~fully~~ with the requirements of the standards noted in JSSS エラー！参照元が見つかりません。 [*Compliance Standards*] including taking the following measures to prevent the risk of injury:

(1) Attach colour-coded self-adhesive vinyl tape and labels for slings visibly indicating the month of inspection and whether suitable for use.

(2) Inspect all Rigging Equipment before start of works.

(b) Within the Recommended Safe Working Load; and

(c) In full compliance with the manufacturer's ~~official~~ instructions and recommendations.

JC: "official"は不要と思います。
"official" is not necessary.
NK: Deleted.

(4) Rigging Equipment shall be removed from service, tagged as such and destroyed or removed from the Site, where required by the standards noted in JSSS 6.1.3 [Compliance Standards] including (but not limited to) the following conditions:

(a) Wire ropes

(j) Where one-tenth or more of the element wires are broken or cut in any one strand.

(ii) Where the reduction ratio of diameter due to use, exceeds 7% of the original nominal diameter at the date of manufacture.

(iii) With kink or deformation.

(iv) With excessive wear, corrosion or defect.

(b) Chains

(i) Where elongation due to use exceeds 5% of the original nominal length at the date of manufacture.

(ii) Where the diameter of links has reduced by more than 10 % since the date of manufacture.

(iii) With excessive wear, cracks, corrosion or defect.

(c) Hooks, shackles

(i) Signs of deformation.

(ii) With excessive wear, cracks, corrosion or defect.

(d) Synthetic fibre ropes or slings

(j) Broken or cut strands.

(ii) With excessive wear or defect.

5.4.2 Further Safety Requirements for Rigging

The Contractor shall fully comply with the requirements of the standards noted in JSSS エラー！参照元が見つかりません。 [*Compliance Standards*] including taking the following measures to prevent the risk of injury:

(1) Attach colour-coded self-adhesive vinyl tape and labels for slings visibly indicating the month of inspection and whether suitable for use.

(2) Inspect all Rigging Equipment before start of works.

(3) Select and use suitable Rigging Equipment depending on the weight and shape of ~~loads~~ Goods.

JC: つり荷のことは前の方で Goods と呼んでいます。
"Goods" is used in this chapter for hoisting load.
NK: Changed to "Goods" as commented.

(4) Apply appropriate set up, provide fittings and accessories including

(b) Within the Recommended Safe Working Load; and

(c) In full compliance with the manufacturer's instructions and recommendations.

(4) Rigging Equipment shall be removed from service, tagged as such and destroyed or removed from the Site, where required by the standards noted in JSSS 6.1.3 [Compliance Standards] including (but not limited to) the following conditions:

(a) Wire ropes

(i) Where one-tenth or more of the element wires are broken or cut in any one strand.

(ii) Where the reduction ratio of diameter due to use, exceeds 7% of the original nominal diameter at the date of manufacture.

(iii) With kink or deformation.

(iv) With excessive wear, corrosion or defect.

(b) Chains

(i) Where elongation due to use exceeds 5% of the original nominal length at the date of manufacture.

(ii) Where the diameter of links has reduced by more than 10 % since the date of manufacture.

(iii) With excessive wear, cracks, corrosion or defect.

(c) Hooks, shackles

(i) Signs of deformation.

(ii) With excessive wear, cracks, corrosion or defect.

(d) Synthetic fibre ropes or slings

(i) Broken or cut strands.

(ii) With excessive wear or defect.

5.4.2 Further Safety Requirements for Rigging

The Contractor shall fully comply with the requirements of the standards noted in JSSS 6.1.3 [Compliance Standards] including taking the following measures to prevent the risk of injury:

(1) Attach colour-coded self-adhesive vinyl tape and labels for slings visibly indicating the month of inspection and whether suitable for use.

(2) Inspect all Rigging Equipment before start of works.

(3) Select and use suitable Rigging Equipment depending on the weight and shape of Goods.

(4) Apply appropriate set up, provide fittings and accessories including

(3) Select and use suitable Rigging Equipment depending on the weight and shape of loads. (4) Apply appropriate set up, provide fittings and accessories including clips and friction pads during Hoisting Works to ensure that the hoisted load (including bundled loads) are secure and will not move or slip, for example, cable-laid slings referred to BS EN 13414-3 Steel wire rope slings – Safety, Part 3: Grommets and cable-laid slings. (5) Hoist loads at or above the centre of gravity. (6) Attach guide ropes to the hoisted loads to assist with positioning. (7) Securely store and protect Rigging Equipment to maintain in good condition and to prevent damage from rain, dust or contamination.	clips and friction pads during Hoisting Works to ensure that the hoisted load (including bundled loads) are secure and will not move or slip, for example, cable-laid slings referred to BS EN 13414-3 Steel wire rope slings – Safety, Part 3: Grommets and cable-laid slings. (5) Hoist loads at or above the centre of gravity. (6) Attach guide ropes to the hoisted loads to assist with positioning. (7) Securely store and protect Rigging Equipment to maintain in good condition and to prevent damage from rain, dust or contamination.	clips and friction pads during Hoisting Works to ensure that the hoisted load (including bundled loads) are secure and will not move or slip, for example, cable-laid slings referred to BS EN 13414-3 Steel wire rope slings – Safety, Part 3: Grommets and cable-laid slings. (5) Hoist loads at or above the centre of gravity. (6) Attach guide ropes to the hoisted loads to assist with positioning. (7) Securely store and protect Rigging Equipment to maintain in good condition and to prevent damage from rain, dust or contamination.

JICA Standard Safety Specification Preparation Study
CHAPTER 5: HOISTING AND RIGGING (English Issue 3)

2019.12.19&2020.1.8 Japanese Final
2020.1.20 NK Issue 1
2020.2.13 JICA Comments
2020.3.10 NK English R2
2020.4.9 NK English R3

JSSS in English R2 for Issue 1	JSSS in English Issue 2 With comments by MD	JSSS in English Issue 3 赤字:NK コメント・対応案
CHAPTER 6 HOISTING AND RIGGING	**CHAPTER 5 HOISTING AND RIGGING**	**CHAPTER 5 HOISTING AND RIGGING**
6.1 GENERAL REQUIREMENT	**5.1 GENERAL REQUIREMENT**	**5.1 GENERAL REQUIREMENT**
6.1.1 Scope	5.1.1 Scope	5.1.1 Scope
6.1.2 Definitions	5.1.2 Definitions	5.1.2 Definitions
6.1.3 Compliance Standard	5.1.3 Compliance Standard	5.1.3 Compliance Standard
6.2 HOISTING OPERATIONS	**5.2 HOISTING OPERATIONS**	**5.2 HOISTING OPERATIONS**
6.2.1 Instruction for Contractor's Personnel	5.2.1 Instruction for Contractor's Personnel	5.2.1 Instruction for Contractor's Personnel
6.2.2 Operators	5.2.2 Operators and Riggers Generally	5.2.2 Operators and Riggers Generally
6.2.3 Riggers	5.2.3 Safety Education and Training	5.2.3 Safety Education and Training
6.2.4 Safety Education and Training	5.2.4 Inspection of Hoisting Equipment and Rigging Equipment	5.2.4 Inspection of Hoisting Equipment and Rigging Equipment
6.2.5 Inspection of Hoisting Equipment and Rigging Equipment	5.2.5 General Safety Measures for Hoisting Operations	5.2.5 General Safety Measures for Hoisting Operations
6.2.6 General Safety Measures for Hoisting Operations	**5.3 HOISTIGN EQUIPMENT_CRANES**	**5.3 HOISTIGN EQUIPMENT_CRANES**
6.3 HOISTIGN EQUIPMENT_CRANES	5.3.1 Planning, Installation and Removal	5.3.1 Planning, Installation and Removal
6.3.1 Planning, Installation and Removal	5.3.2 Additional Requirements for Mobile Cranes	5.3.2 Additional Requirements for Mobile Cranes
6.3.2 Additional Requirements for Mobile Cranes	**5.4 RIGGING EQUIPMENT**	**5.4 RIGGING EQUIPMENT**
6.4 RIGGING EQUIPMENT	5.4.1 Hoisting and Rigging Equipment	5.4.1 Hoisting and Rigging Equipment
6.4.1 Hoisting and Rigging Equipment	5.4.2 Further Safety Requirements for Rigging	5.4.2 Further Safety Requirements for Rigging
6.4.2 Further Safety Requirements for Rigging		
JICA Comments (2019/12/26) JC: Comment as a whole of the section. 1. It is necessary to describe in the section about the risk of hoisting and sling works, however, the draft seems to be mentioning general requirements only. It should be described concretely considering following matters. ・ Handling heavy objects ・ Insufficient maintenance of hoisting equipment, damage and wear of rigging ・ Improper slinging ・ Sling and signal by unqualified personnel ・ Hoisting using unsuitable equipment such as a backhoe 2. Maintenance of equipment should have been one of the themes for "Equipment in General (Chapter 4?)". Will it be mentioned here or in another part? 3. Figures of sling accessories, signal for crane work and enclosure of the lifting work area might be inserted in the section. 4. Sling methods are generally described. For example, BS EN 13414 "Steel wire rope slings – Safety" NK: 1. JSSS covers the comments except hoisting by backhoe because it is specified in 4.5.1 (1) & (5) as general. The comment will be reflected in 4.5.1.		

NK: 2. Maintenance is specified in 5.2.5 Inspection of Hoisting Equipment and Rigging Equipment. Some addition is made as commented.

NK: 3. Figures requested to be included are not attached because NK considers JSSS is specification to specify safety measures to be taken by the Contractor and the Conrtractor shall take various measures and study methods by themselves.

NK: 4. Sling methods shall be selected to meet JSSS requirements to safely hoist loads. BS EN 13414 "Steel wire rope slings – Safety is added in 5.4.2 Further Safety Requirements for Rigging (4).

6.1 GENERAL REQUIREMENTS

6.1.1. Scope

This Chapter contains examples of required safety measures for Hoisting Operations as defined in JSSS Annex 1.1 [*Definitions and Abbreviations*] and associated rigging requirements all as necessary to avoid risk of injury, death or damage to Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where the Works are being executed and who may be affected by such operations including neighbouring residents and other persons and property on adjacent areas, public roads and footpaths or buildings.

6.1.2. Definitions

Definitions of terms for the purpose of this Chapter are as follows.

(1) "**Hoisting Equipment**" means Contractor's Equipment such as cranes, hoists, chain-blocks, pulleys and the like which constitute the prime mover which, when used with Rigging Equipment, permits loads to be hoisted or lowered and positioned.

(2) "**Rigging Equipment**" means the ropes, webbing, chains and slings together with all associated accessories such as hooks, hoisting points, shackles, etc. ~~which,~~ when used with Hoisting Equipment permits loads to be hoisted or lowered and positioned.

MD: Please check if "which" can be deleted.

(3) "**Rated Capacity**" means the maximum hoisting load for each type

5.1 GENERAL REQUIREMENTS

5.1.1 Scope

~~This Chapter contains examples of required safety measures for Hoisting Operations as defined in JSSS Annex 1.1 [*Definitions and Abbreviations*] including associated Hoisting Equipment and Rigging Equipment, all as necessary to avoid risk of injury, death or damage to Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where the Works are being executed and who may be affected by such operations including neighbouring residents and other persons and property on adjacent areas, public roads and footpaths or buildings.~~

We have simplified the above clause to:

1) remove text that is covered by the contract

2) line it up more closely with the definition in Annex 1.1

3) specified the coverage more clearly so that it can be referred to as "Hoisting and Rigging".

We have/will change this consistently in all chapters in subsequent editing

(1) This Chapter specifies the safety requirements for Hoisting and Rigging Works which shall include:

(a) Hoisting Operations;

(b) Hoisting Equipment; and

(c) Rigging Equipment.

and hereinafter collectively referred to as "Hoisting and Rigging".

(2) General requirements for Contractor's Equipment for Hoisting and Rigging (including cranes) are included in JSSS 4.0 [*Contractor's Equipment*].

Additional particular requirements are contained in this Chapter.

5.1.2 Definitions

Definitions of terms for the purpose of this Chapter are as follows:

(1) "**Hoisting Equipment**" means Contractor's Equipment such as cranes, hoists, chain-blocks, pulleys and the like which constitute the prime mover which, when used with Rigging Equipment, permits loads to be hoisted or lowered and positioned.

(2) "**Rigging Equipment**" means the ropes, webbing, chains and slings together with all associated accessories such as hooks, hoisting points, shackles, etc. which, when used with Hoisting Equipment, permit loads to be hoisted or lowered, and positioned.

"Which" is correct as above.

(3) "**Rated Capacity**" means the maximum hoisting load for each type of Hoisting Equipment as officially permitted by the manufacturer.

5.1 GENERAL REQUIREMENTS

5.1.1 Scope

(1) This Chapter specifies the safety requirements for Hoisting and Rigging Works which shall include:

(d) Hoisting Operations;

(e) Hoisting Equipment; and

(f) Rigging Equipment.

and hereinafter collectively referred to as "Hoisting and Rigging".

(2) General requirements for Contractor's Equipment for Hoisting and Rigging (including cranes) are included in JSSS 4.0 [*Contractor's Equipment*].

Additional particular requirements are contained in this Chapter.

5.1.2 Definitions

Definitions of terms for the purpose of this Chapter are as follows:

(1) "**Hoisting Equipment**" means Contractor's Equipment such as cranes, hoists, chain-blocks, pulleys and the like which constitute the prime mover which, when used with Rigging Equipment, permits loads to be hoisted or lowered and positioned.

(2) "**Rigging Equipment**" means the ropes, webbing, chains and slings together with all associated accessories such as hooks, hoisting points, shackles, etc. which, when used with Hoisting Equipment, permit loads to be hoisted or lowered, and positioned.

(3) "**Rated Capacity**" means the maximum hoisting load for each type of Hoisting Equipment as officially permitted by the manufacturer. This will vary according to configuration of Hoisting Equipment and conditions of use such as length and angle of boom and other

of Hoisting Equipment as officially recommended by the manufacturer. This will vary according to configuration of Hoisting Equipment and conditions of use such as length and angle of boom and other factors as ~~officially recommended~~ permitted by the manufacturer.

JC2: The term is coincided with the expression in OSHA 1926.1401 to "permitted". As for "Safe Working Load" in (4), in OSHA "recommended" is used, but it is also changed to permitted" to accommodate with "permitted" in '(3).

OSHA Subpart CC—Cranes and Derricks in Construction§1926.1401Definitions.

Rated capacity means the maximum working load permitted by the manufacturer under specified working conditions. Such working conditions typically include a specific combination of factors such as equipment configuration, radii, boom length, and other parameters of use.

NK2: Changed as commented.

JC2: There is "Lifting Equipment" in 5.25 (4) (c) which is not defined. Please modify the stipulation as "lifting equipment" is used to mean Hoisting Equipment.

In Japan, there is definition that lifting equipment means hook and rigging equipment means equipment below hook. On the other hand, there is no such definition in OSHA and Australia. Please keep in mind this.

(In short, the rated capacity used in OSHA and Australia includes weight of hook, which is excluded in Japan. If necessary, please check the definition in BS and make meaning of the rated capacity standardize.)

For example, a barouche of a crane company mentions: Rated Capacities include the mass of hooks, blocks, slings and auxiliary lifting devices. Their mass must be subtracted, from the listed Rated Capacity, to determine the equivalent net load.

NK2: BS 61007-7:20108 defines as follows:
07 32022 lift rated load: load (01) that a lift (01) has been built to carry and for which normal operation is guaranteed by the vendor

HSE Approved Code of Practice and guidance, Safe use of lifting equipment, Lifting Operations and Lifting Equipment Regulations 1998
Cranes 133 The crane used should be adequate and suitable for the task, have a freefall capability lock-out and should be equipped with appropriate devices such as a hoisting limiter, lowering limiter, rated capacity indicator and rated capacity limiter.

NK2: In UK, there is no definition of rated capacity in HSE ACOP but BS 6100 is as above. JSSS in Japanese will be prepared by translating that in English, so there is no discrepancy between them.

(4) "~~**Recommended** **Safe Working Load**~~" means the maximum safe working load for each type, size and capacity of Rigging Equipment as officially recommended by the manufacturer.

JC1:It is understandable that the word of "Rated Capacity" is used for lifting equipment and "Recommended Safe Working Load" for sling. However, it is a little difficult to understand if they are used without defining them.

It is recommended to change the wording such that "Rated Hoisting Capacity" and "Maximum Rigging Working Load" respectively.

NK1: "Rated Capacity" is defined in OSHA as follows:

Subpart CC-Cranes and Derricks in Construction, 1926.1401 Definitions.

Rated capacity means the maximum working load permitted by the manufacturer under specified working conditions. Such working conditions typically include a specific combination of factors such as equipment configuration, radii, boom length, and other parameters of use.

NK propse to use the same term in JSSS as defined in OSHA so that readers of JSSS can easily understand "Rated Capacity".

NK1:"Recommended Safe Working Load" is used in OSHA as follows:

This will vary according to configuration of Hoisting Equipment and conditions of use such as length and angle of boom and other factors as permitted by the manufacturer.

(4) "**Safe Working Load**" means the maximum safe working load for each type, size and capacity of Rigging Equipment as officially recommended by the manufacturer.

"Recommended" can be deleted from above

~~(5) "**Total Load**" means either the Rated Capacity or the "Recommended Safe Working Load", neither of which shall be exceeded.~~

(6) "**Rigger**" means a competent person who is certified by the HSO as suitable for assignment to Hoisting and Rigging under this Chapter in accordance with JSSS 1.18 [*Proper Placement of Contractor's Personnel*].

I suggest editing as above

factors as permitted by the manufacturer.

(4) "**Safe Working Load**" means the maximum safe working load for each type, size and capacity of Rigging Equipment as officially recommended by the manufacturer.

(5) "**Rigger**" means a competent person who is certified by the HSO as suitable for assignment to Hoisting and Rigging under this Chapter in accordance with JSSS 1.18 [*Proper Placement of Contractor's Personnel*].

Subpart H-Materials Handling, Storage, Use, and Disposal, 1926.251 Rigging equipment for material handling. (a) General. (2) Employers must ensure that rigging equipment: (i) Has permanently affixed and legible identification markings as prescribed by the manufacturer that indicate the recommended safe working load;(ii) Not be loaded in excess of its recommended safe working load as prescribed on the identification markings by the manufacturer; and

NK propose to use the same term in JSSS as used in OSHA so that readers of JSSS can easily understand "Recommended Safe Working Load".

JC2: Deleted "Recommended"

(5) ~~"**Total Load**" means either the Rated Capacity or the "Recommended Safe Working Load", neither of which shall be exceeded.~~

JC2:The term "Total Load" is only once used in 5.2.1. "Rated Capacity" is used for equipment and "Recommended Safe Working Load" is used for rigging. Therefore, it seems that there is no problem to delete "Total Load" by modified stipulation. Deleted.

NK2: "Total Load" is deleted.

(6) "**Rigger**" means a competent person who is certified by the HSO as suitable for assignment on Hoisting Operations/Rigging under this Section in accordance with JSSS 1.16 [*Proper Placement of Contractor's Personnel*].

NK: OSHA used "rigger" as follows:

Subpart CC—Cranes and Derricks in Construction

1926.1404 Assembly/Disassembly—general requirements (applies to all assembly and disassembly operations).

(r) Rigging. (1) The rigging work is done by a qualified rigger.

OSHA Fact Sheet mentions as follows:

https://www.osha.gov/Publications/cranes-qualified-rigger-factsheet.html

Employers must use qualified riggers during hoisting activities for assembly and disassembly work (1926.1404(r)(1)).

Rigging work is a part of hoisting activities. NK ask if MD which suitable term is.

6.1.3. Compliance Standards

(1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], for any items in this Chapter or relevant to the subject of this Chapter and which are not fully covered by JSSS, the Contractor shall comply with the technical requirements of the following standards in OSHA PART 1926 - Safety and Health Regulations for Construction::

(a) Subpart H - Materials Handling, Storage, Use, and Disposal; Section 1926.251 Rigging equipment for material handling,

~~(b) OSHA PART 1926 Safety and Health Regulations for Construction, Subpart CC Cranes and Derricks in Construction; Section 1413 Wire Rope Inspection and Section 1414 Wire Rope Selection and installation criteria;~~

(c) ~~OSHA PART 1926.753 Safety and Health Regulations for Construction,~~ Subpart R- Steel Erection; Hoisting and rigging;

(Whilst this standard is related to Steel Erection, JSSS requires these technical requirements to apply to Hoisting Operations and associated rigging requirements in construction works generally)

5.1.3 Compliance Standards

(1) By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*], for any items in this Chapter or relevant to the subject of this Chapter and which are not fully covered by JSSS, the Contractor shall comply with the technical requirements of the following standards in OSHA PART 1926 - Safety and Health Regulations for Construction:

(a) Subpart H - Materials Handling, Storage, Use, and Disposal; Section 1926.251 Rigging equipment for material handling,

(b) Subpart R- Steel Erection; Hoisting and rigging;

(Whilst this standard is related to Steel Erection, JSSS requires these technical requirements to apply to Hoisting Operations and associated rigging requirements in construction works generally)

(c) Subpart CC - Cranes and Derricks in Construction; Section 1926.1413 Wire Rope - Inspection and Section 1926.1414 – Wire Rope - Selection and installation criteria.

5.1.3 Compliance Standards

(1) By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*], for any items in this Chapter or relevant to the subject of this Chapter and which are not fully covered by JSSS, the Contractor shall comply with the technical requirements of the following standards in OSHA PART 1926 - Safety and Health Regulations for Construction:

(a) Subpart H - Materials Handling, Storage, Use, and Disposal; Section 1926.251 Rigging equipment for material handling,

(b) Subpart R- Steel Erection; Hoisting and rigging;

(Whilst this standard is related to Steel Erection, JSSS requires these technical requirements to apply to Hoisting Operations and associated rigging requirements in construction works generally)

(c) Subpart CC - Cranes and Derricks in Construction; Section 1926.1413 Wire Rope - Inspection and Section 1926.1414 – Wire Rope - Selection and installation criteria.

(a) Subpart CC - Cranes and Derricks in Construction; Section 1926.1413 Wire Rope - Inspection and Section 1926.1414 – Wire Rope - Selection and installation criteria;

~~(d) OSHA Information Booklet on Sling safety, ref OSHA 3072, 1996 (revised) concerning the Use of Slings (composed of chains, wire rope fiber rope and synthetic web), Safe Lifting Practices and Maintenance of Slings.~~

JC1: Validity of clauses should be re-examined. (5.1.3 (1))

NK1: (c) is available in internet but information booklet, not regulation, so it is deleted.
https://www.scribd.com/document/28664578/OSHA-3072-Sling-Safety

For reference: There is Guidance on safe safe sling use issued by OSHA below.

https://www.osha.gov/dsg/guidance/slings/index.html

NK1: Addition of 1926.251Rigging equipment for material handling., Subpart H - Materials Handling, Storage, Use, is made as (a) and order of present (a) and (b) is changed to (b) and (c)

JC2: JC1 did not request to confirm the validity of OSHA requirements in (a) to (c) above but appropriateness to specify in JSSS.

NK2: Appropriateness of the clauses were examined and (c) is deleted and (a) is added.

6.2 HOISTING OPERATIONS

6.2.1. Instruction for Contractor's Personnel

Further to the requirements of JSSS 1.6 [*Contractor's Safety Plan*], JSSS 1.7 [*Contractor's Method Statements*] and JSSS 1.13.2 [*Contractor's Safety Management Activities*], the Contractor shall include details of the following in the Method Statement and Safety Plan for Hoisting Operations and shall fully inform all Contractor's Personnel associated ~~therewith of all requirements~~ with Hoisting Operation before the commencement of any such operations, including:

JC1: As it is impossible to inform "all Contractor's Personnel", it is better to limit to workers involved rigging/hoisting operation.

NK1: The "all" means that all personnel who are working in hoisting operations as mentioned "associated therewith of all requirements", therefore, no change is made. If necessary, NK ask MD to modify this phrase.

JC2: "all requirement" is not necessarily clear. Please, ask Mr. MD to review modified sentence by JC.

NK2: MD will review it.

(1) Scope ~~and Hoisting Operation Area~~, Area and Risk of the Hoisting Operation

JC2: The title is changed to coincide with the contents.

(a) The scope of the required Hoisting Operation, ~~the Total Load~~, the Rated Capacity, Safe Working Load, nature of Goods to be hoisted, location, required methods and safety arrangements;

JC2: Please refer to the comment to 5.1.2(5).

(b) The Hoisting Operation area limits;

(c) Requirements on the ground conditions for installation, appropriate installation method taking account of all Hoisting Operation requirements, site and working conditions, location of obstacles, etc.

JC2: Please add description regarding ground conditions such as in 5.3.1 (1).

5.2 HOISTING OPERATIONS

5.2.1 Instruction for Contractor's Personnel

Further to the requirements of JSSS 1.7 [*Contractor's Safety Plans*], JSSS 1.9 [*Contractor's Method Statements*] and JSSS 1.15 [*Contractor's Safety Management Activities*], the Contractor shall include details of the following in the Method Statement and Safety Plan for Hoisting Operations and shall fully inform all Contractor's Personnel associated with such Hoisting Operations of these requirements before the commencement of any such operations, including:

(1) Scope, Area and Risk of the Hoisting Operation

(a) The scope of the required Hoisting Operation, the Rated Capacity, Safe Working Load, nature of Goods to be hoisted, location, required methods and safety arrangements;

(b) The Hoisting Operation area limits;

(c) Requirements on the ground conditions for installation, appropriate installation method taking account of all Hoisting Operation requirements, site and working conditions, location of obstacles, etc.;

(d) The working environment of the nearby areas to which particular attention should be paid (e.g. storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, Operational Areas, or Overhead Services);

(e) The preservation of safe access, Walkways, Passageways and footpaths around the Hoisting Operations working area; and

(f) The potential danger of Hoisting Operations to other Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where the Works are being executed and who may be affected by such operations.

5.2 HOISTING OPERATIONS

5.2.1 Instruction for Contractor's Personnel

Further to the requirements of JSSS 1.7 [*Contractor's Safety Plans*], JSSS 1.9 [*Contractor's Method Statements*] and JSSS 1.15 [*Contractor's Safety Management Activities*], the Contractor shall include details of the following in the Method Statement and Safety Plan for Hoisting Operations and shall fully inform all Contractor's Personnel associated with such Hoisting Operations of these requirements before the commencement of any such operations, including:

(1) Scope, Area and Risk of the Hoisting Operation

(a) The scope of the required Hoisting Operation, the Rated Capacity, Safe Working Load, nature of Goods to be hoisted, location, required methods and safety arrangements;

(b) The Hoisting Operation area limits;

(c) Requirements on the ground conditions for installation, appropriate installation method taking account of all Hoisting Operation requirements, site and working conditions, location of obstacles, etc.;

(d) The working environment of the nearby areas to which particular attention should be paid (e.g. storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, Operational Areas, or Overhead Services);

(e) The preservation of safe access, Walkways, Passageways and footpaths around the Hoisting Operations working area; and

(f) The potential danger of Hoisting Operations to other Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where the Works are being executed and who may be affected by such operations.

(2) Hoisting Operation and Rigging Requirements

(a) The type of Hoisting Equipment to be used and its Rated

NK2: Added as (c).

(d) ~~The environmental conditions, nearby areas for storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, Operational Areas or areas where other Dangerous Work is taking place;~~ The working environment of the nearby areas to which particular attention should be paid (e.g. storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, Operational Areas, or Overhead Services);

JC2 The point of this clause of the Japanese draft is that if any accident and the like occurs in hoisting operation and it would cause serious effects on nearby environment. Thus, overhead services are added which is in the Japanese draft. On the other hand, it is deemed that it is not necessary to state regarding Dangerous Works in this clause. (For example, a work in Confined Space near the hoisting operation is not applicable.)

NK2: Modified by JC.

(e) The preservation of safe access, Walkways/Passageways, and footpaths around the Hoisting Operations working area; and

JC2: Isn't the term "Walkways" same as "the Passageway" in Chapter 2? Please, recheck the terms.

NK2: Chapter 2 (Issue 3) defines as follows:

2.5.7. Temporary Access Around the Site

"Walkways" mean pedestrian footpaths at ground level or ramped for the use of Contractor's Personnel.

"Passageways" are the same as walkways but are covered by a roof and maybe also have sides in order to protect all personnel from falling objects or adjacent activities.

NK: modified a sabove.

(f) The potential danger of Hoisting Operations to other Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where the Works are being executed and who may be affected by such operations.

(2) Hoisting Operation and Rigging Requirements

(a) ~~The Rated Capacity of Hoisting Equipment and type to be used;~~ The type of Hoisting Equipment to be used and its Rated Capacity;

JC2: As the Rated Capacity is determined as per the type, the order is changed.

NK2: Changed as JC modified.

(b) The Recommended Safe Working Load and type(s) of Rigging Equipment to be used;

(c) Hazards associated with the Hoisting Operation;

(d) Role and responsibility of the operator and each Rigger;

(e) Establishing targets for the day;

(f) Weight of Goods being hoisted;

(g) The shapes and characteristics of Goods being hoisted;

(h) The presence of any obstructions or Overhead Services and consequent restrictions on the movement and operation of Hoisting Equipment;

(2) Hoisting Operation and Rigging Requirements

(a) The type of Hoisting Equipment to be used and its Rated Capacity;

(b) The ~~Recommended~~ Safe Working Load and type(s) of Rigging Equipment to be used;

(c) Hazards associated with the Hoisting Operation;

(d) Role and responsibility of the operator and each Rigger;

(e) Establishing targets for the day;

(f) Weight of Goods being hoisted;

(g) The shapes and characteristics of Goods being hoisted;

(h) The presence of any obstructions or Overhead Services and consequent restrictions on the movement and operation of Hoisting Equipment; and

~~(i) Any limitations of Hosting Equipment; and~~

This can be deleted as you suggest.

(j) Connecting and disconnecting techniques.

I suggest this is included as above, which is simply altered.

(3) Identification of Personnel

(a) The identity of operators, Riggers and any other workers associated with the Hoisting Operation;

(b) The name of the authorised operator for each unit of Hoisting Equipment.

(c) The identity of and location(s) for Spotters;

Above is changed to be consistent with the definition

(d) The communication and signalling requirements (equipment to be used and standard signals); and

(e) The procedures in case of emergency.

Capacity;

(b) The Safe Working Load and type(s) of Rigging Equipment to be used;

(c) Hazards associated with the Hoisting Operation;

(d) Role and responsibility of the operator and each Rigger;

(e) Establishing targets for the day;

(f) Weight of Goods being hoisted;

(g) The shapes and characteristics of Goods being hoisted;

(h) The presence of any obstructions or Overhead Services and consequent restrictions on the movement and operation of Hoisting Equipment; and

(i) Connecting and disconnecting techniques.

(3) Identification of Personnel

(f) The identity of operators, Riggers and any other workers associated with the Hoisting Operation;

(g) The name of the authorised operator for each unit of Hoisting Equipment.

(h) The identity of and location(s) for Spotters;

(i) The communication and signalling requirements (equipment to be used and standard signals); and

(j) The procedures in case of emergency.

~~(i) Any limitations of Hosting Equipment; and~~

JC2: It is not clear what the meaning of this clause is. If it is about "Rated Capacity" or else, please delete the clause because it has been stated before.

NK2: This clause is quite vague and not useful for safety. Deleted.

~~(j) Disconnecting techniques used to complete the task.~~

JC2: As there has been no provision about slinging regarding rigging so far, it would be right to describe about it here. However, it is necessary to mention not only "disconnecting" but also "connecting".

As for the term, "remove" is more appropriate to use than "disconnect". In addition, Hoisting and Rigging Manual (PNNL-1829) by Department of Energy of USA uses an expression "hitched or rigged".

Anyway, please ask Mr. MD to confirm how to use these terms.

NK2: (j) is specified as mentioned in OSHA guide sheet, Rigging Process
https://www.osha.gov/dts/maritime/sltc/ships/rigging/rigging_process.html
The following are topics that should be discussed with workers prior to beginning rigging operations:
Disconnecting techniques used to complete the task.
MD to confirm the usage of terms.
However, as the requirements for rigging are provided in 5.4.1 and 5.4.2, NK thinks that it is not necessary to mention about disconnecting here.
Deleted tentatively.

(3) ~~Organisation~~ Identification of Personnel

(a) The identity of operators, Riggers and any other workers associated with the Hoisting Operation;

(b) The identity of and location(s) for Signallers;

(c) The communication and signalling requirements (equipment to be used and standard signals); and

(d) The procedures in case of emergency.

JC1: What is the meaning of this "Organisation"? Actually, this clause includes matters other than organisation. Please re-consider the title.

NK1: Modified as above.

6.2.2. Operators

(1) The Contractor shall select and assign operators and drivers (hereinafter referred to collectively as 'operators") of Hoisting Equipment in accordance with JSSS 1.16 [*Proper Placement of Contractor's Personnel*].

(2) The name of the assigned operator shall be posted on each unit of Hoisting Equipment.

6.2.3. Riggers

(1) The Contractor shall assign only Riggers for all ~~Hoisting Operations~~ rigging and shall prohibit other workers from any involvement.

(2) The Contractor shall select and assign Riggers in accordance with JSSS 1.16 [Proper Placement of Contractor's Personnel].

(3) The names of all assigned Riggers shall be posted prominently in the working area of the Hoisting Operation.

5.2.2 Operators and Riggers Generally

I have changed the above heading and combined the content as these re largely common requirements for both

No need for the following duplication:

~~(a) The Contractor shall select and assign operators and drivers (hereinafter referred to collectively as "operators") of Hoisting Equipment in accordance with JSSS 1.18 [*Proper Placement of Contractor's Personnel*].~~

Added for consistency with Chapter 4:

(1) The Contractor shall place signs on each unit of Hoisting Equipment showing the name of each authorised operator and clearly prohibiting all unauthorised persons from using, handling, operating or sitting at the controls of that equipment unit.

Following is added for consistency with Chapter 5

(2) Further to the requirements of JSSS 1.18 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that operators and Riggers are appropriately qualified, skilled and experienced in

5.2.2 Operators and Riggers Generally

(1) The Contractor shall place signs on each unit of Hoisting Equipment showing the name of each authorised operator and clearly prohibiting all unauthorised persons from using, handling, operating or sitting at the controls of that equipment unit.

(2) Further to the requirements of JSSS 1.18 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that operators and Riggers are appropriately qualified, skilled and experienced in operation of the Hoisting Equipment to which they are assigned and duly certified as such by the HSO.

(3) Operators and Riggers shall be fully aware of the following:

(a) Work procedures, possible risks and operation methods;

(b) The need to stop all work when any defect or abnormality is detected;

(c) Not to remove, interfere with or override any safety devices;

(d) The identity of and location(s) for Spotters and the communication and signalling requirements including equipment to be used and signals; and

operation of the Hoisting Equipment to which they are assigned and duly certified as such by the HSO.

(3) Operators and Riggers shall be fully aware of the following:

(a) Work procedures, possible risks and operation methods;

(b) The need to stop all work when any defect or abnormality is detected;

(c) Not to remove, interfere with or override any safety devices;

(d) The identity of and location(s) for Spotters and the communication and signalling requirements including equipment to be used and signals; and

(e) The procedures in case of emergency.

(4) In addition, operators shall:

(a) Safely and competently operate the Hoisting Equipment;

(b) Operate all safety devices including emergency alarm and stop devices;

(c) Inspect, clean, service and maintain the unit of Hoisting Equipment under their responsibility and control or ensure that other qualified persons perform these operations.

(5) The Contractor shall assign only Riggers for Hoisting Operations and shall prohibit other workers from any involvement.

(6) The names of all assigned Riggers shall be posted prominently in the working area of the Hoisting Operation.

6.2.4. Safety Education and Training

The Contractor shall provide health and safety education and training in accordance with JSSS 1.17 [*Safety Training Generally*]. taking account of the characteristics of the Hoisting Operations, Hoisting Equipment and Rigging Equipment.

5.2.3 Safety Training

Heading and content is amended as reference does not separately mention "education", which is not therefore necessary

The Contractor shall provide health and safety training in accordance with JSSS 1.19 [*Safety Training Generally*]. taking account of the characteristics of the Hoisting Operations, Hoisting Equipment and Rigging Equipment.

5.2.3 Safety Training

The Contractor shall provide health and safety training in accordance with JSSS 1.19 [*Safety Training Generally*]. taking account of the characteristics of the Hoisting Operations, Hoisting Equipment and Rigging Equipment.

6.2.5. Inspection of Hoisting Equipment and Rigging Equipment

JC1: Please refer to inspection at the time of bringing in. (It is important to prohibit to bring defective equipment into the Site.)

NK1: The inspection at mobilizing of Contractor's equipment at the site is specified in JSSS 4.2.1 (3). Duplicate specifying is avoided here. Inspection at the time of mobilization is added as (1) in 5.2.5 as above.

JC1: Please add to refer to Chapter 4. Would like to know the intention of deleting the periodic inspection.

NK1: As same as the above, periodic inspection is specified in JSSS 4.2.1 (5). Periodic inspection is added as shown right in (4).

(1) When the Hoisting Equipment is mobilised to the Site, the Contractor shall inspect the equipment complying with JSSS 4.2 [Inspection, Maintenance and Repair], 4.2.1 [Requirement Generally] (3) to ensure that the equipment is free from defect and suitable for the hoisting operation planned.

(2) Further to the requirements of JSSS 1.3~~3~~5 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] and JSSS 4.2 [Inspection, Maintenance and Repair], the HSO shall ensure that all Hoisting Equipment and all

5.2.4 Inspection of Hoisting Equipment and Rigging Equipment

(1) When the Hoisting Equipment is mobilised to the Site, the Contractor shall inspect the equipment complying with JSSS 4.2 [*Inspection, Maintenance and Repair*], to ensure that the equipment is free from defect and suitable for the planned Hoisting Operation.

I suggest that cross reference should be to the general sub-clause rather than the particular sub-sub-clause so as to provide wider reference and to assist with future coordination.

(2) Further to the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*] and JSSS 4.2 [*Inspection, Maintenance and Repair*], the HSO shall ensure that all Hoisting Equipment and all Rigging Equipment is inspected and maintained when it is at the location of operation before the commencement of the first and of all subsequent Hoisting Operations.

Rather than cross referencing to the sub-sub-clause above, just delete the separate number which makes it a separate paragraph of the same number

Inspections shall include all items necessary to ensure the safe

(e) The procedures in case of emergency.

(4) In addition, operators shall:

(a) Safely and competently operate the Hoisting Equipment;

(b) Operate all safety devices including emergency alarm and stop devices;

(c) Inspect, clean, service and maintain the unit of Hoisting Equipment under their responsibility and control or ensure that other qualified persons perform these operations.

(5) The Contractor shall assign only Riggers for Hoisting Operations and shall prohibit other workers from any involvement.

(6) The names of all assigned Riggers shall be posted prominently in the working area of the Hoisting Operation.

5.2.3 Safety Training

The Contractor shall provide health and safety training in accordance with JSSS 1.19 [*Safety Training Generally*]. taking account of the characteristics of the Hoisting Operations, Hoisting Equipment and Rigging Equipment.

5.2.4 Inspection of Hoisting Equipment and Rigging Equipment

(1) When the Hoisting Equipment is mobilised to the Site, the Contractor shall inspect the equipment complying with JSSS 4.2 [*Inspection, Maintenance and Repair*], to ensure that the equipment is free from defect and suitable for the planned Hoisting Operation.

(2) Further to the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*] and JSSS 4.2 [*Inspection, Maintenance and Repair*], the HSO shall ensure that all Hoisting Equipment and all Rigging Equipment is inspected and maintained when it is at the location of operation before the commencement of the first and of all subsequent Hoisting Operations.

Inspections shall include all items necessary to ensure the safe performance of the Hoisting Operations including the following examples and any further requirements due to the characteristics of the Hoisting Operation and the capability and condition of the Hoisting Equipment and Rigging Equipment including condition and performance of:

(a) Anti-two blocking devices (over-winding prevention

Rigging Equipment is inspected and maintained when it is at the location of operation before the commencement of the first and of all subsequent Hoisting Operations.

(3) Inspections mentioned in (2) above shall include all items necessary to ensure the safe performance of the Hoisting Operations including the following examples and any further requirements due to the characteristics of the Hoisting Operation and the capability and condition of the Hoisting Equipment and Rigging Equipment including condition and performance of:

(a) Anti-two blocking devices (over-winding prevention devices) ~~Over-winding prevention devices;~~ and over-load prevention devices;

NK1: over-loading prevention devices is added.

JC2: There is a pointing out that "Anti-two blocking devices" is more common than "Over-winding prevention devices". Need to be confirmed.

NK: It is found that "Over-winding prevention devices" is used in mainly Japan. This is also patented in USA with this name. However, as pointed out it is more common to use "Anti-two blocking devices". Thus, NK proposes to use both terms equally considering that many hoisting equipment manufactured in Japan are used in overseas construction works.

(b) Other safety devices including brakes, clutches and controllers;

(c) Rails for trolley and runway;

(d) Hooks, sheaves, blocks, pulleys and the like;

(e) Cables, ropes and the like; and

(f) Rigging Equipment.

(4) Periodic inspection shall be made complying with JSSS 4.2.1 [Requirement Generally] (5) and include the following items:

(a) Condition of over-winding prevention devices, ~~overload prevention devices~~ anti-two blocking devices (over-winding prevention devices), other safety devices, brakes, and clutches;

(b) Condition of wire ropes and hanging chains;

(c) Condition of ~~Lifting Equipment such as hooks;~~ hooks of the Hoisting Equipment's;

JC2: There is "Lifting Equipment" in 5.25 (4) (c) which is not defined. Please modify the stipulation as "lifting equipment" is used to mean Hoisting Equipment.

NK2: Lifting Equipment is used in Lifting Operations and Lifting Equipment Regulations, 1998 in UK. It is same meaning as Hoisting Equipment in JSSS. In Japanese Crane Regulations, lifting equipment are such as hooks, grab bucket, magnet or negative pressure lifting equipment. To avoid confusion, JSSS does not use Lifting Equipment and (c) is modified as above.

(d) Condition of placement of winches; and

(e) Condition of electric wire, switchboard and controller.

(5) ~~No Hoisting Operation shall be allowed to commence until the HSO has certified that it is safe to do so.~~ No Hoisting Equipment or Rigging Equipment shall put in operation unless they are inspected in accordance with JSSS 4.2.1 and it is ensured that they are safe to be used.

JC1: It is not practical for the HSO to certify for hoisting operations. ((5) & (6) right:

performance of the Hoisting Operations including the following examples and any further requirements due to the characteristics of the Hoisting Operation and the capability and condition of the Hoisting Equipment and Rigging Equipment including condition and performance of:

(a) Anti-two blocking devices (over-winding prevention devices) and over-load prevention devices;

(b) Other safety devices including brakes, clutches and controllers;

(c) Rails for trolley and runway;

(d) Hooks, sheaves, blocks, pulleys and the like;

(e) Cables, ropes and the like; and

(f) Rigging Equipment.

(3) Periodic inspection shall be made complying with JSSS 4.2 [*Inspection, Maintenance and Repair*] and include the following items:

(a) Condition of over-winding prevention devices, anti-two blocking devices (over-winding prevention devices), other safety devices, brakes, and clutches;

(b) Condition of wire ropes and hanging chains;

(c) Condition of the Hoisting Equipment's;

(d) Condition of placement of winches; and

(e) Condition of electric wire, switchboard and controller.

(4) No Hoisting Equipment or Rigging Equipment shall be put into operation unless it has been inspected in accordance with the requirements of JSSS 4.2 [*Inspection, Maintenance and Repair*], and it is ensured that it is safe to be used.

Above is included as suggested and edited.

(5) The Contractor shall prepare standard checklists for the above regular and periodic inspections. The results of these inspections shall be recorded and kept in accordance with JSSS 1.33 [*Health and Safety Records*].

devices) and over-load prevention devices;

(b) Other safety devices including brakes, clutches and controllers;

(c) Rails for trolley and runway;

(d) Hooks, sheaves, blocks, pulleys and the like;

(e) Cables, ropes and the like; and

(f) Rigging Equipment.

(3) Periodic inspection shall be made complying with JSSS 4.2 [*Inspection, Maintenance and Repair*] and include the following items:

(a) Condition of over-winding prevention devices, anti-two blocking devices (over-winding prevention devices), other safety devices, brakes, and clutches;

(b) Condition of wire ropes and hanging chains;

(c) Condition of the Hoisting Equipment's;

(d) Condition of placement of winches; and

(e) Condition of electric wire, switchboard and controller.

(4) No Hoisting Equipment or Rigging Equipment shall be put into operation unless it has been inspected in accordance with the requirements of JSSS 4.2 [*Inspection, Maintenance and Repair*], and it is ensured that it is safe to be used.

(5) The Contractor shall prepare standard checklists for the above regular and periodic inspections. The results of these inspections shall be recorded and kept in accordance with JSSS 1.33 [*Health and Safety Records*].

numbers are changed in accordance with addition of (2) and (4))

Inspection is argued here. So better to redraft as follows.

"No Hoisting Equipment or Rigging Equipment shall not put in operation unless they are inspected in accordance with JSSS 4.1.7-4.1.9 and it is ensured that they are safe to be used."

NK1: Clause (5) is changed as above in accordance with JICA's comment.

(6) ~~The Contractor shall prepare standard checklists for the above regular and periodic inspections and the HSO shall ensure that these are recorded check, repair and maintenance results, complied with and signed by the person in charge of check and maintenance inspections and the HSO shall ensure that these are complied with, completed and signed and kept as a record in accordance with JSSS 1.31 [*Health and Safety Records*].~~ The Contractor shall prepare standard checklists for the above regular and periodic inspections. The results of these inspections are to be recorded and kept in accordance with JSSS 1.31 [Health and Safety Records].

JC1: Ditto (It is not practical for the HSO to certify for hoisting operations.)

NK1: In (4), the HSO shall manage the inspection and maintenance in accordance with the Safety Plan and instruct improvement if the person in charge does not follow the Safety Plan. (4) is modified as (5) in right.

JC2: It is appropriate for the person in charge of hoisting operations to make records and keep them. HSO can access the records as necessary and exercise his authorities. Modified as above.

NK2: Modified as JC commented.

6.2.6. General Safety Measures for Hoisting Operations

The Contractor shall:

(1) Select Hoisting Equipment which has a Rated Capacity and function compatible with the work conditions and requirements, including loads, surface conditions, access, working area, radius and angle of boom, etc.

(2) Clearly display the Rated Capacity of the Hoisting Equipment so that all operators and Riggers are fully aware at all times.

(3) Select Rigging Equipment with ~~Recommended~~ Safe Working Load suitable for the Hoisting Operation.

JC2: modified in accordance with change in 5.1.2 (4).

NK: Modified as JC commented.

(4) Select Rigging Equipment compatible with the purpose, work conditions and requirements.

(5) Ensure that operators and Riggers confirm that the load on the Rigging Equipment is less than the Recommended Safe Working Load.

(6) Activate all safety devices of Hoisting Equipment throughout the entire operation time(s) of any Hoisting Operations.

(7) Prohibition of entry

Designate all Hoisting Operations as "Dangerous Work", enclose the entire working area which is subject to any risk by providing temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry – Dangerous Work*].

5.2.5 General Safety Measures for Hoisting Operations

The Contractor shall:

(1) Select Hoisting Equipment which has a Rated Capacity and function compatible with the work conditions and requirements, including loads, surface conditions, access, working area, radius and angle of boom, etc.

(2) Clearly display the Rated Capacity of the Hoisting Equipment so that all operators and Riggers are fully aware at all times.

(3) Select Rigging Equipment with Safe Working Load suitable for the Hoisting Operation.

(4) Select Rigging Equipment compatible with the purpose, work conditions and requirements.

(5) Ensure that operators and Riggers confirm that the load on the Rigging Equipment is less than the Safe Working Load.

(6) Activate all safety devices of Hoisting Equipment throughout the entire operation time(s) of any Hoisting Operations.

(7) Prohibition of entry

Designate all Hoisting Operations as "Dangerous Work", enclose the entire working area which is subject to any risk by providing temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry – Dangerous Work*].

The Contractor shall take measures to keep any unauthorised

5.2.5 General Safety Measures for Hoisting Operations

The Contractor shall:

(1) Select Hoisting Equipment which has a Rated Capacity and function compatible with the work conditions and requirements, including loads, surface conditions, access, working area, radius and angle of boom, etc.

(2) Clearly display the Rated Capacity of the Hoisting Equipment so that all operators and Riggers are fully aware at all times.

(3) Select Rigging Equipment with Safe Working Load suitable for the Hoisting Operation.

(4) Select Rigging Equipment compatible with the purpose, work conditions and requirements.

(5) Ensure that operators and Riggers confirm that the load on the Rigging Equipment is less than the Safe Working Load.

(6) Activate all safety devices of Hoisting Equipment throughout the entire operation time(s) of any Hoisting Operations.

(7) Prohibition of entry

Designate all Hoisting Operations as "Dangerous Work", enclose the entire working area which is subject to any risk by providing temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry – Dangerous Work*].

The Contractor shall take measures to keep any unauthorised

The Contractor shall ~~be particularly aware and~~ take ~~all~~ measures to ~~prevent~~ keep any unauthorised personnel off from any area subject to any risk of injury ~~to persons~~ arising from the Hoisting Operation ~~but outside the immediate working area~~, due to fall of hoisted Goods, tangling, snagging, rebound of broken ropes or cables, broken sheaves, droppage and the like.

JC1: modified.

JC2: It should be that nobody can enter the place where there is danger. (It does not mean that authorized personnel can enter under the load.
The most important point has been missing in the original clause of Japanese draft that prohibition of entering where there is a risk of fall of hoisted good is reinstated.

NK2: Changed as JC commented and modified as above.

(8) Signalling

(a) Signalling between operators, Riggers and any associated workers regarding the Hoisting and Rigging Operations, shall only be carried out by Riggers, (hereinafter referred to as signallers);

(b) Signallers shall be located in a safe place outside the immediate area where the Rigging and Hoisting Operations are taking place, but in a location where they can clearly see suspended loads and can also see the operator and also be seen by such personnel;

(c) When it is not possible for signallers to give direct visible signals to the operator, hand held radios or any other suitable communication tool must be provided and used; and

JC1: modified.

(d) In addition, Spotters shall be placed and ~~Spotters shall be~~ used only to keep any unauthorised personnel away from the working area.

JC1: Should spotter and signallers be stipulated separately, and the signallers be described that he shall dedicate to the signal?

NK1: As provided in (8) (a)-(c), the Riggers (signallers) carry only signalling and rigging. (d) is modified as above to clarify that Spotters are placed to keep any unauthorised personnel away from the working area.

(9) During Hoisting Operations:

(a) Check if the hoisting points, hooks and the like are positioned above the centre of gravity of the load to be hoisted;

(b) At commencement of all Hoisting Operations, stop the hoist at 30 cm from hoisting level, to check stability and ensure that all is in order before proceeding;

(c) Ensure that there are no persons and objects within the turning area when the Hoisting Equipment turns;

(d) After hoisting loads up to the safe height, adjust the boom gently;

(e) Always pay attention to move of the edge of boom and the condition of suspended loads; and

(f) When unloading or detaching loads, stop once before landing and check the condition of the landing place and the load and

personnel away from any area where there is any risk of injury arising from the Hoisting Operation, due to fall of hoisted Goods, tangling, snagging, rebound of broken ropes or cables, broken sheaves, droppage and the like.

(8) Signalling

(a) Signalling between operators, Riggers and any associated workers regarding the Hoisting and Rigging Operations, shall only be carried out by Riggers, (hereinafter referred to as signallers);

(b) Signallers shall be located in a safe place outside the immediate area where the Rigging and Hoisting Operations are taking place, but in a location where they can clearly see suspended loads and can also see the operator and also be seen by such personnel;

(c) When it is not possible for signallers to give direct visible signals to the operator, hand-held radios or other communication tool as approved by HSO must be provided and used; and

I suggest edit as above

(d) In addition, Spotters shall be placed and used only to keep any unauthorised personnel away from the working area.

(9) During Hoisting Operations:

(a) Check if the hoisting points, hooks and the like are positioned above the centre of gravity of the load to be hoisted;

(b) At commencement of all Hoisting Operations, stop the hoist at 30 cm from hoisting level, to check stability and ensure that all is in order before proceeding;

(c) Ensure that there are no persons and objects within the turning area when the Hoisting Equipment turns;

(d) After hoisting loads up to the safe height, adjust the boom gently;

(e) Always pay attention to any movement of the boom and the condition of suspended loads; and

I suggest edit as above

(f) When unloading or detaching loads, stop once before landing and check the condition of the landing place and the load and then continue to lower gently.

(10) Ensure that Operators shall never leave their seat or leave the controls while Hoisting Operations are in progress.

(11) Defects with Hoisting Equipment during operation

(a) Ensure that if operators notice any defect or abnormality in the Hoisting Equipment during Hoisting Operations (such as abnormal noise, temperature, smell, etc.) the operator shall stop the Hoisting Operation immediately;

(b) Identify the cause of the defect or abnormality and make necessary repairs by using authorised and qualified specialist mechanics, electricians or representative technical engineers authorised by the hoisting Equipment manufacturer; and

personnel away from any area where there is any risk of injury arising from the Hoisting Operation, due to fall of hoisted Goods, tangling, snagging, rebound of broken ropes or cables, broken sheaves, droppage and the like.

(8) Signalling

(a) Signalling between operators, Riggers and any associated workers regarding the Hoisting and Rigging Operations, shall only be carried out by Riggers, (hereinafter referred to as signallers);

(b) Signallers shall be located in a safe place outside the immediate area where the Rigging and Hoisting Operations are taking place, but in a location where they can clearly see suspended loads and can also see the operator and also be seen by such personnel;

(c) When it is not possible for signallers to give direct visible signals to the operator, hand-held radios or other communication tool as approved by HSO must be provided and used; and

(d) In addition, Spotters shall be placed and used only to keep any unauthorised personnel away from the working area.

(9) During Hoisting Operations:

(a) Check if the hoisting points, hooks and the like are positioned above the centre of gravity of the load to be hoisted;

(b) At commencement of all Hoisting Operations, stop the hoist at 30 cm from hoisting level, to check stability and ensure that all is in order before proceeding;

(c) Ensure that there are no persons and objects within the turning area when the Hoisting Equipment turns;

(d) After hoisting loads up to the safe height, adjust the boom gently;

(e) Always pay attention to any movement of the boom and the condition of suspended loads; and

(f) When unloading or detaching loads, stop once before landing and check the condition of the landing place and the load and then continue to lower gently.

(10) Ensure that Operators shall never leave their seat or leave the controls while Hoisting Operations are in progress.

(11) Defects with Hoisting Equipment during operation

(a) Ensure that if operators notice any defect or abnormality in the Hoisting Equipment during Hoisting Operations (such as abnormal noise, temperature, smell, etc.) the operator shall stop the Hoisting Operation immediately;

(b) Identify the cause of the defect or abnormality and make necessary repairs by using authorised and qualified specialist mechanics, electricians or representative technical engineers authorised by the hoisting Equipment manufacturer; and

(c) Ensure that the repaired Hoisting Equipment shall not be put in operation unless certified by the HSO.

then continue to lower gently.

(10) Ensure that the operators ~~Operators shall~~ never leave their seat or leave the controls while Hoisting Operations are in progress.

JC1: modified.

(11) Defects with Hoisting Equipment during operation

(a) Ensure that, If operators notice any defect or abnormality in the Hoisting Equipment during Hoisting Operations (such as abnormal noise, temperature, smell, etc.) the operator shall stop the Hoisting Operation immediately;

(b) ~~The operator shall then~~ identify the cause of defect or abnormality and make necessary repairs by using authorised and qualified specialist mechanics, electricians or representative technical engineers authorised by the hoisting Equipment manufacturer; and

(c) ~~The HSO shall ensure that no Hoisting Operation shall resume unless the above has been complied with and the Hoisting Equipment has been re-inspected by him and certified in accordance with JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*.~~ Ensure that the repaired Hoisting Equipment shall not be put in operation unless certified by the HSO.

JC1: Please modify this part referring to the comment for 5.2.5. Especially, it is not realistic for the HSO to give "permission to use".

NK1: The HSO is ultimately responsible for the safety of the Hoisting Equipment, too. As considering the realistic condition at the Site, (c) is modified as above. As 5.2.5 has been modified, referring to 5.2.5 is deleted.

(12) Condition of Ropes, Slings and Chains

~~The Contractor shall~~ ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

(13) Adverse Weather

~~The Contractor shall~~ take the following measures in addition to JSSS 2.7 [ADVERSE WEATHER REQUIREMENTS]:

(a) ~~The Contractor shall ensure that~~ Hoisting Equipment is left in a safe condition when ~~not in use and particularly if~~ adverse climatic conditions can be anticipated;

(b) All anchors, outriggers and supports are secure and adequate to fix and support the Hoisting Equipment in position during any adverse climatic conditions; and

(c) Booms and jibs shall be secured ~~when not in use~~ to prevent any instability or collapse.

(d) Before resuming hoisting work after the adverse weather, inspect Hoisting Equipment using the daily and periodic checklists specified in JSSS 6.2.5 [Inspection of Hoisting Equipment and Rigging Equipment].

JC1: Isn't it confusing that measures for long periods of non-use and measures for bad weather are mixed? (5.2.6 (13) (a)~(c))

NK1: (a) to (c) are revised for countermeasures to secure Hoisting Equipment during adverse climatic conditions.

(c) Ensure that the repaired Hoisting Equipment shall not be put in operation unless certified by the HSO.

(12) Condition of Ropes, Slings and Chains

Ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

(13) Adverse Weather

Take the following measures in addition to JSSS 2.7 [*Adverse Weather Requirements*]:

(a) Hoisting Equipment is left in a safe condition when not in use and particularly if adverse climatic conditions can be anticipated;

(b) All anchors, outriggers and supports are secure and adequate to fix and support the Hoisting Equipment in position during any adverse climatic conditions; and

(c) Booms and jibs shall be secured to prevent any instability or collapse.

(d) Before resuming any Hoisting Operation after any adverse weather, inspect Hoisting Equipment using the daily and periodic checklists specified in JSSS 5.2.4 [*Inspection of Hoisting Equipment and Rigging Equipment*].

(14) Use of Hoisting Equipment for Contractor's Personnel

As a general rule, Hoisting Equipment shall not be used for transporting or hoisting Contractor's Personnel.

In exceptional circumstances and if so approved by the HSO, use of Hoisting Equipment may be allowed when the following all measures are taken:

(a) Dedicated gondola for transporting or hoisting shall be provided;

(b) Prevention measures shall be taken to avoid turning and falling of gondola;

(c) The assumed load (i.e. 1.3 times of total weight of gondola and workers on board plus 500 kg) shall not exceed the Rated Capacity of the Hoisting Equipment;

(d) Wires and ropes of Hoisting Equipment shall have a safety factor of at least 10 against the assumed load;

(e) Lowering the gondola shall be by powered system which prevents any free drop; and

(f) Use of PFAS of any Contractor's Personnel in the gondola shall be ensured.

Please check editing of above

(12) Condition of Ropes, Slings and Chains

Ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

(13) Adverse Weather

Take the following measures in addition to JSSS 2.7 [*Adverse Weather Requirements*]:

(a) Hoisting Equipment is left in a safe condition when not in use and particularly if adverse climatic conditions can be anticipated;

(b) All anchors, outriggers and supports are secure and adequate to fix and support the Hoisting Equipment in position during any adverse climatic conditions; and

(c) Booms and jibs shall be secured to prevent any instability or collapse.

(d) Before resuming any Hoisting Operation after any adverse weather, inspect Hoisting Equipment using the daily and periodic checklists specified in JSSS 5.2.4 [*Inspection of Hoisting Equipment and Rigging Equipment*].

(14) Use of Hoisting Equipment for Contractor's Personnel

As a general rule, Hoisting Equipment shall not be used for transporting or hoisting Contractor's Personnel.

In exceptional circumstances and if so approved by the HSO, use of Hoisting Equipment may be allowed when the following all measures are taken:

(a) Dedicated gondola for transporting or hoisting shall be provided;

(b) Prevention measures shall be taken to avoid turning and falling of gondola;

(c) The assumed load (i.e. 1.3 times of total weight of gondola and workers on board plus 500 kg) shall not exceed the Rated Capacity of the Hoisting Equipment;

(d) Wires and ropes of Hoisting Equipment shall have a safety factor of at least 10 against the assumed load;

(e) Lowering the gondola shall be by powered system which prevents any free drop; and

(f) Use of PFAS of any Contractor's Personnel in the gondola shall be ensured.

A general sentence is added for (13), and (d) is added from Japanese draft for safety inspection before resuming work.

(14) Prohibition of Inadequate Use of Hoisting Equipment

JC2: The expression that means "any other purpose other than designed or originally intended" was lacking. Added "Inadequate".

NK2: The title is changed as JC modified.

~~Hoisting Equipment shall never be used for transporting or hoisting Contractor's Personnel unless the following all measures are taken for the case of existing unavoidable reason or essential for safe work procedures.~~

Hoisting Equipment shall not be used for transporting or hoisting Contractor's Personnel. Such inadequate use of Hoisting Equipment is exceptionally allowed in case it is justified by unavoidable reason and the following all measures are taken:

JC: modified.

(a) Dedicated gondola for transporting or hoisting shall be provided;

(b) Prevention measures shall be taken to avoid turning and falling of gondola;

(c) ~~The assumed load of the total of 1.3 times of total weight of gondola and workers plus 500 kg shall not exceed the Rated Capacity of the Hoisting Equipment.~~ The assumed load (i.e. 1.3 times of total weight of gondola and workers on board plus 500 kg) shall not exceed the Rated Capacity of the Hoisting Equipment;

JC: modified.

(d) Wires ropes of Hoisting Equipment shall be of safety factor of 10 or more against loads;

(e) Lowering the gondola shall be made by power (prohibit free drop); and

(f) Use of PFAS of ~~Contractor's Personnel~~ the workers in the gondora shall be ensured.

JC1: Measures for hoisting Personnel by unavoidable reason which was in the Japanese draft are deleted. Reinstate the manner of writing for the stipulation of 5.2.6 (13) of Japanese version.

NK1: In English version, hoisting personnel is simply prohibited without exception. (14) is replaced with provisions in Japanese version as above:

NK1: Sentences of (14) in English will be review and edited by MD.

JC2: Make same as (c).

6.3 HOISTING EQUIPMENT - CRANES

(Refer also to JSSS Chapter 4 [*Contractor's Equipment*])

6.3.1. Planning, Installation and Removal

Unless otherwise approved by the HSO, the Contractor shall employ an appropriately qualified, skilled and experienced crane specialist(s) ~~to~~ and select the required type and capacity of crane, plan the Hoisting Operation including mobilising, assembly, erection, use, dismantling and removal of cranes. The Contractor's specialist shall:

5.3 HOISTING EQUIPMENT - CRANES

(Refer also to JSSS Chapter 4 [*Contractor's Equipment*])

5.3.1 Planning, Installation and Removal

Unless otherwise approved by the HSO, the Contractor shall employ an appropriately qualified, skilled and experienced crane specialist(s) that shall select the required type and capacity of crane, plan the Hoisting Operation including mobilising, assembly, erection, use, dismantling and removal of cranes. The Contractor's specialist shall:

5.3 HOISTING EQUIPMENT - CRANES

(Refer also to JSSS Chapter 4 [*Contractor's Equipment*])

5.3.1 Planning, Installation and Removal

Unless otherwise approved by the HSO, the Contractor shall employ an appropriately qualified, skilled and experienced crane specialist(s) that shall select the required type and capacity of crane, plan the Hoisting Operation including mobilising, assembly, erection, use, dismantling and

(1) Investigate the location and position for installation, plan the appropriate installation method taking account of all Hoisting Operation requirements, site and working conditions, location of obstacles, etc. (2) Investigate the working area and ensure the safety of the crane and any crane rails. (3) Design and construct crane foundation, assemble and install the crane with proper structural design and in full compliance with the manufacturer's official instructions and recommendations. (4) Conduct completion inspection, load test and stability test of the crane. (5) Dismantle and remove and transport cranes in a planned and systematic manner in full compliance with the manufacturer's official instructions and recommendations.	(1) Investigate the location and position for installation, plan the appropriate installation method taking account of all Hoisting Operation requirements, site and working conditions, location of obstacles, etc. (2) Investigate the working area and ensure the safety of the crane and any crane rails. (3) Design and construct crane foundation, assemble and install the crane with proper structural design and in compliance with the manufacturer's written instructions. (4) Conduct completion inspection, load test and stability test of the crane. (5) Dismantle and remove and transport cranes in a planned and systematic manner in compliance with the manufacturer's written instructions.	removal of cranes. The Contractor's specialist shall: (1) Investigate the location and position for installation, plan the appropriate installation method taking account of all Hoisting Operation requirements, site and working conditions, location of obstacles, etc. (2) Investigate the working area and ensure the safety of the crane and any crane rails. (3) Design and construct crane foundation, assemble and install the crane with proper structural design and in compliance with the manufacturer's written instructions. (4) Conduct completion inspection, load test and stability test of the crane. (5) Dismantle and remove and transport cranes in a planned and systematic manner in compliance with the manufacturer's written instructions.
6.3.2. Additional Requirements for Mobile Cranes (1) Position mobile cranes where there are no obstacles within the operation range. (2) Where obstacles exist, plan the appropriate operation to avoid the obstacles and ensure that operators and signallers comply with this plan. (3) Ensue that ground has sufficient and even bearing capacity to avoid all risk of the crane subsiding and overturning. Where necessary or where there is any risk of damaging surface paving or underground services, provide temporary steel plates of suitable size, thickness and to support the crane and avoid any risk of overturning during operation. (4) Provide steel plate load-spreader pads to support outriggers and prevent them from subsiding. (5) Fully extend outriggers or extension type crawlers to the maximum position. (6) When the outriggers or crawlers cannot be extended to the maximum position, adjust the Rated Capacity of the mobile cranes to suit lower capacity commensurate to the actual extension length of outriggers or crawlers. (7) Ensure that the actual Rated Capacity of the mobile crane is clearly shown and also advised to operators and Riggers. (8) Activate the over-load prevention device of mobile crane and input accurately operation conditions of booms and outriggers. NK1: Japanese version 5.4.2 (2) is added as (8) in right because this is specific requirement for mobile crane. (9) Cease the Hoisting Operation from time to time and check upon the condition of the outriggers or crawlers, implement adequate remedial measures if there is any subsidence and prohibit continuation of the Hoisting Operation until the crane has been re-inspected and certified as safe by the HSO. (10) After the Hoisting Operation ~~and before demobilising~~ JC1: Is this phrase necessary? The expression of the word "demobilising" is too strong that may mean complete removal of the equipment form the Site. NK: Deleted.	5.3.2 Additional Requirements for Mobile cranes (1) Position mobile cranes where there are no obstacles within the operation range. (2) Where obstacles exist, plan the appropriate operation to avoid the obstacles and ensure that operators and signallers comply with this plan. (3) Ensue that ground has sufficient and even bearing capacity to avoid all risk of the crane subsiding and overturning. Where necessary or where there is any risk of damaging surface paving or underground services, provide temporary steel plates of suitable size, thickness and to support the crane and avoid any risk of overturning during operation. (4) Provide steel plate load-spreader pads to support outriggers and prevent them from subsiding. (5) Fully extend outriggers or extension type crawlers to the maximum position. (6) When the outriggers or crawlers cannot be extended to the maximum position, adjust the Rated Capacity of the mobile cranes to suit lower capacity commensurate to the actual extension length of outriggers or crawlers. (7) Ensure that the actual Rated Capacity of the mobile crane is clearly shown and also advised to operators and Riggers. (8) Activate the over-load prevention device of mobile cranes and accurately input the operational conditions of booms and outriggers. (9) Cease the Hoisting Operation from time to time and check upon the condition of the outriggers or crawlers, implement adequate remedial measures if there is any subsidence and prohibit continuation of the Hoisting Operation until the crane has been re-inspected and certified as safe by the HSO. (10) After the Hoisting Operation: (a) When the mobile crane is not driven, fix the hooks of crane at the safe position; (b) When the mobile crane is driven, take the following measures before driving:	5.3.2 Additional Requirements for Mobile cranes (1) Position mobile cranes where there are no obstacles within the operation range. (2) Where obstacles exist, plan the appropriate operation to avoid the obstacles and ensure that operators and signallers comply with this plan. (3) Ensue that ground has sufficient and even bearing capacity to avoid all risk of the crane subsiding and overturning. Where necessary or where there is any risk of damaging surface paving or underground services, provide temporary steel plates of suitable size, thickness and to support the crane and avoid any risk of overturning during operation. (4) Provide steel plate load-spreader pads to support outriggers and prevent them from subsiding. (5) Fully extend outriggers or extension type crawlers to the maximum position. (6) When the outriggers or crawlers cannot be extended to the maximum position, adjust the Rated Capacity of the mobile cranes to suit lower capacity commensurate to the actual extension length of outriggers or crawlers. (7) Ensure that the actual Rated Capacity of the mobile crane is clearly shown and also advised to operators and Riggers. (8) Activate the over-load prevention device of mobile cranes and accurately input the operational conditions of booms and outriggers. (9) Cease the Hoisting Operation from time to time and check upon the condition of the outriggers or crawlers, implement adequate remedial measures if there is any subsidence and prohibit continuation of the Hoisting Operation until the crane has been re-inspected and certified as safe by the HSO. (10) After the Hoisting Operation: (a) When the mobile crane is not driven, fix the hooks of crane at the safe position; (b) When the mobile crane is driven, take the following

(a) ~~Set the Crane in the safe position;~~

(b) ~~Attach fixing pin on each part;~~

(c) ~~Lock the brake of the turning device and winch drum; and~~

(d) ~~Turn off all switches related with operation of cranes.~~

(a) When the mobile crane is not driven, fix the hooks of crane at the safe position;

(b) When the mobile crane is driven, take the following measures before driving:

(i) Attach fixing pin on each part;

(ii) ~~Lock~~ Apply the brake of the turning device and winch drum; and

JC2: "Lock the brake" is a Japanese English expression.

NK2: Modified as commented.

(iii) Turn off all switches related with operation of cranes.

JC1: These were measures before the equipment drives in Japanese draft. Is these proper if not separating measures "before" and "during" driving?

NK2: In order to separate measures to take before driving, these are modified as above.

6.4 RIGGING EQUIPMENT

6.4.1 Hoisting and Rigging Equipment

(1) All items of Rigging Equipment shall be labelled to show all pertinent information, such as ~~the name of the manufacturer, date of manufacture, the Recommended Safe Working Load, etc.~~ the Safe Working Load, date of the latest inspection, expiration date, etc.

JC2: Please, add "date of the latest inspection" and "validated date of inspection result" as the pertinent information. Although in Japanese draft, "the name of the manufacturer" was included, as a result of re-consideration it was judged unnecessary.

NK2: The clause is modified as per JC comment as above.

(1) ~~The Contractor shall be prohibited from making his own Rigging Equipment at Site.~~ The Contractor shall use Rigging equipment fabricated by reputable manufacturers and shall not make or repair by himself at the Site.

JC2: Isn't this expression more appropriate in this case?

NK2: The clause is modified as JC suggested.

(2) Rigging Equipment shall only be used:

(a) When certified as safe to use by the HSO in accordance with JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*];

(b) Within the Recommended Safe Working Load; and

(c) In full compliance with the manufacturer's ~~official~~ instructions and recommendations.

JC2:"official" is not necessary.

NKs: Deleted.

(i) Attach fixing pin on each part;

(ii) Apply the brake of the turning device and winch drum; and

(iii) Turn off all switches related with operation of cranes.

5.4 RIGGING EQUIPMENT

5.4.1 Hoisting and Rigging Equipment

(1) All items of Rigging Equipment shall be labelled to show all pertinent information, such as the name of the manufacturer, date of manufacture, the Safe Working Load, date of the latest inspection, expiration date, etc.

I suggest edit as above and leaving in reference to manufacturer

(2) The Contractor shall obtain Rigging Equipment from reputable manufacturers approved by the HSO and shall not make or repair his own Rigging Equipment at the Site.

Ditto

(3) Rigging Equipment shall only be used:

(a) When certified as safe to use by the HSO in accordance with JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*];

(b) Within the ~~Recommended~~ Safe Working Load; and

(c) In compliance with the manufacturer's written instructions.

Ditto

(4) Rigging Equipment shall be removed from service, tagged as such and destroyed or removed from the Site, where required by the standards noted in JSSS 6.1.3 [*Compliance Standards*] including (but not limited to) the following conditions:

(a) Wire ropes

measures before driving:

(i) Attach fixing pin on each part;

(ii) Apply the brake of the turning device and winch drum; and

(iii) Turn off all switches related with operation of cranes.

5.4 RIGGING EQUIPMENT

5.4.1 Hoisting and Rigging Equipment

(1) All items of Rigging Equipment shall be labelled to show all pertinent information, such as the name of the manufacturer, date of manufacture, the Safe Working Load, date of the latest inspection, expiration date, etc.

(2) The Contractor shall obtain Rigging Equipment from reputable manufacturers approved by the HSO and shall not make or repair his own Rigging Equipment at the Site.

(3) Rigging Equipment shall only be used:

(a) When certified as safe to use by the HSO in accordance with JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*];

(b) Within the Safe Working Load; and

(c) In compliance with the manufacturer's written instructions.

(4) Rigging Equipment shall be removed from service, tagged as such and destroyed or removed from the Site, where required by the standards noted in JSSS 6.1.3 [*Compliance Standards*] including (but not limited to) the following conditions:

(a) Wire ropes

(i) Where one-tenth or more of the element wires are broken or cut in any one strand.

(ii) Where the reduction ratio of diameter due to use, exceeds 7% of the original nominal diameter at the date of manufacture.

(3) Rigging Equipment shall be removed from service, tagged as such and destroyed or removed from the Site, where required by the standards noted in JSSS 6.1.3 [*Compliance Standards*] including (but not limited to) the following conditions:

(a) Wire ropes

(i) Where one-tenth or more of the element wires are broken or cut in any one strand.

(ii) Where the reduction ratio of diameter due to use, exceeds 7% of the original nominal diameter at the date of manufacture.

(iii) With kink or deformation.

(iv) With excessive wear, corrosion or defect.

(b) Chains

(i) Where elongation due to use exceeds 5% of the original nominal length at the date of manufacture.

(ii) Where the diameter of links has reduced by more than 10 % since the date of manufacture.

(iii) With excessive wear, cracks, corrosion or defect.

(c) Hooks, shackles

(i) Signs of deformation.

(ii) With excessive wear, cracks, corrosion or defect.

(d) Synthetic fibre ropes or slings

(i) Broken or cut strands.

(ii) With excessive wear or defect.

6.5.1. Further Safety Requirements for Rigging

The Contractor shall fully comply ~~fully~~ with the requirements of the standards noted in JSSS 6.1.3 [*Compliance Standards*] including taking the following measures to prevent the risk of injury:

JC1: modified.

(1) Attach colour-coded self-adhesive vinyl tape and labels for slings visibly indicating the month of inspection and whether suitable for use.

(2) Inspect all Rigging Equipment before start of works.

(3) ~~Remove any unusable or defective Rigging Equipment from service, tag as such and destroy or remove from the Site.~~

JC1: Isn't this a duplication of 5.5.1 (4)?

NK1: This (3) is duplication. Deleted.

(3) Select and use suitable Rigging Equipment depending on the weight and shape of ~~loads~~ Goods.

JC2: "Goods" is used in this chapter for hoisting load.

NK2: Changed to "Goods" as commented.

(4) Apply appropriate set up, provide fittings and accessories including clips and friction pads during Hoisting Works to ensure that the hoisted load (including bundled loads) are secure and will not move or slip, for example, cable-laid slings referred to BS EN 13414-3 Steel wire rope slings – Safety, Part 3: Grommets and cable-laid slings.

(5) Hoist loads at or above the centre of gravity.

(6) Attach guide ropes to the hoisted loads to assist with positioning.

(7) Securely store and protect Rigging Equipment to maintain in good condition and to prevent damage from rain, dust or contamination.

(i) Where one-tenth or more of the element wires are broken or cut in any one strand.

(ii) Where the reduction ratio of diameter due to use, exceeds 7% of the original nominal diameter at the date of manufacture.

(iii) With kink or deformation.

(iv) With excessive wear, corrosion or defect.

(b) Chains

(i) Where elongation due to use exceeds 5% of the original nominal length at the date of manufacture.

(ii) Where the diameter of links has reduced by more than 10 % since the date of manufacture.

(iii) With excessive wear, cracks, corrosion or defect.

(c) Hooks, shackles

(i) Signs of deformation.

(ii) With excessive wear, cracks, corrosion or defect.

(d) Synthetic fibre ropes or slings

(i) Broken or cut strands.

(ii) With excessive wear or defect.

5.4.2 Further Safety Requirements for Rigging

The Contractor shall fully comply with the requirements of the standards noted in JSSS 6.1.3 [*Compliance Standards*] including taking the following measures to prevent the risk of injury:

(1) Attach colour-coded self-adhesive vinyl tape and labels for slings visibly indicating the month of inspection and whether suitable for use.

(2) Inspect all Rigging Equipment before start of works.

(3) Select and use suitable Rigging Equipment depending on the weight and shape of Goods.

(4) Apply appropriate set up, provide fittings and accessories including clips and friction pads during Hoisting Works to ensure that the hoisted load (including bundled loads) are secure and will not move or slip, for example, cable-laid slings referred to BS EN 13414-3 Steel wire rope slings – Safety, Part 3: Grommets and cable-laid slings.

(5) Hoist loads at or above the centre of gravity.

(6) Attach guide ropes to the hoisted loads to assist with positioning.

(iii) With kink or deformation.

(iv) With excessive wear, corrosion or defect.

(b) Chains

(i) Where elongation due to use exceeds 5% of the original nominal length at the date of manufacture.

(ii) Where the diameter of links has reduced by more than 10 % since the date of manufacture.

(iii) With excessive wear, cracks, corrosion or defect.

(c) Hooks, shackles

(i) Signs of deformation.

(ii) With excessive wear, cracks, corrosion or defect.

(d) Synthetic fibre ropes or slings

(i) Broken or cut strands.

(ii) With excessive wear or defect.

5.4.2 Further Safety Requirements for Rigging

The Contractor shall fully comply with the requirements of the standards noted in JSSS 6.1.3 [*Compliance Standards*] including taking the following measures to prevent the risk of injury:

(1) Attach colour-coded self-adhesive vinyl tape and labels for slings visibly indicating the month of inspection and whether suitable for use.

(2) Inspect all Rigging Equipment before start of works.

(3) Select and use suitable Rigging Equipment depending on the weight and shape of Goods.

(4) Apply appropriate set up, provide fittings and accessories including clips and friction pads during Hoisting Works to ensure that the hoisted load (including bundled loads) are secure and will not move or slip, for example, cable-laid slings referred to BS EN 13414-3 Steel wire rope slings – Safety, Part 3: Grommets and cable-laid slings.

(5) Hoist loads at or above the centre of gravity.

(6) Attach guide ropes to the hoisted loads to assist with positioning.

or slip, for example, cable-laid slings referred to BS EN 13414-3 Steel wire rope slings – Safety, Part 3: Grommets and cable-laid slings. JC1: 4. Sling methods are generally described. For example, BS EN 13414 “Steel wire rope slings – Safety” NK1: Tentatively add BS to (4) above. (5) Hoist loads at or above the centre of gravity. (6) Attach guide ropes to the hoisted loads to assist with positioning. (7) Securely store and protect Rigging Equipment to maintain in good condition and to prevent damage from rain, dust or contamination.		(7) Securely store and protect Rigging Equipment to maintain in good condition and to prevent damage from rain, dust or contamination.

JICA Comments on R2(2020/3/31) JC: JICA comments, Red letters: last revision in R2 draft, NK: NK actions	JSSS in English Issue 2 (2020/4/7 by MD) With comments by MD *MD Comments* NK: Comment	JSSS in English R3 for Issue 3 on Issue 2 of 2020/4/7 (2020/4/20) NK: Comment and Revision	
5 HOISTING AND RIGGING **5.1 GENERAL REQUIREMENTS** 5.1.1 Scope 5.1.2 Definitions 5.1.3 Compliance Standards **5.2 HOISTING OPERATIONS** 5.2.1 Instruction for Contractor's Personnel 5.2.2 Operators 5.2.3 Riggers 5.2.4 Safety Education and Training 5.2.5 Inspection of Hoisting Equipment and Rigging Equipment 5.2.6 General Safety Measures for Hoisting Operations **5.3 HOISTING EQUIPMENT - CRANES** 5.3.1 Planning, Installation and Removal 5.3.2 Additional Requirements for Mobile Cranes **5.4 RIGGING EQUIPMENT** 5.4.1 Hoisting and Rigging Equipment 5.4.2 Further Safety Requirements for Rigging	**CHAPTER 5 HOISTING AND RIGGING** **5.1 GENERAL REQUIREMENT** 5.1.1 Scope 5.1.2 Definitions 5.1.3 Compliance Standard **5.2 HOISTING OPERATIONS** 5.2.1 Instruction for Contractor's Personnel 5.2.2 Operators and Riggers Generally 5.2.3 Safety Education and Training 5.2.4 Inspection of Hoisting Equipment and Rigging Equipment 5.2.5 General Safety Measures for Hoisting Operations **5.3 HOISTIGN EQUIPMENT_CRANES** 5.3.1 Planning, Installation and Removal 5.3.2 Additional Requirements for Mobile Cranes **5.4 RIGGING EQUIPMENT** 5.4.1 Hoisting and Rigging Equipment 5.4.2 Further Safety Requirements for Rigging	**CHAPTER 5 HOISTING AND RIGGING** **5.1 GENERAL REQUIREMENT** 5.1.1 Scope 5.1.2 Definitions 5.1.3 Compliance Standard **5.2 HOISTING OPERATIONS** 5.2.1 Instruction for Contractor's Personnel 5.2.2 Operators and Riggers Generally 5.2.3 Safety Education and Training 5.2.4 Inspection of Hoisting Equipment and Rigging Equipment 5.2.5 General Safety Measures for Hoisting Operations **5.3 HOISTIGN EQUIPMENT_CRANES** 5.3.1 Planning, Installation and Removal 5.3.2 Additional Requirements for Mobile Cranes **5.4 RIGGING EQUIPMENT** 5.4.1 Hoisting and Rigging Equipment 5.4.2 Further Safety Requirements for Rigging	
5. HOISTING AND RIGGING **5.1 GENERAL REQUIREMENTS** **5.1.1 Scope** This Chapter contains examples of required safety measures for Hoisting Operations as defined in JSSS Annex 1.1 [*Definitions and Abbreviations*] and associated rigging requirements all as necessary to avoid risk of injury, death or damage to Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where the Works are being executed and who may be affected by such operations including neighbouring residents and other persons and property on adjacent areas, public roads and footpaths or buildings.	**5. HOISTING AND RIGGING** **5.1 GENERAL REQUIREMENTS** **5.1.1 Scope** ~~This Chapter contains examples of required safety measures for Hoisting Operations as defined in JSSS Annex 1.1 [*Definitions and Abbreviations*] including associated Hoisting Equipment and Rigging Equipment, all as necessary to avoid risk of injury, death or damage to Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where the Works are being executed and who may be affected by such operations including neighbouring residents and other persons and property on adjacent areas, public roads and footpaths or buildings.~~ *We have simplified the above clause to:* *1) remove text that is covered by the contract* *2) line it up more closely with the definition in Annex 1.1* *3) specified the coverage more clearly so that it can be referred to as "Hoisting and Rigging".* *We have/will change this consistently in all chapters in subsequent editing* (1) This Chapter specifies the safety requirements for Hoisting and Rigging Works which shall include: (a) Hoisting Operations; (b) Hoisting Equipment; and (c) Rigging Equipment. and hereinafter collectively referred to as "Hoisting and Rigging". (2) General requirements for Contractor's Equipment for Hoisting and Rigging (including cranes) are included in JSSS 4.0 [*Contractor's*	**5. HOISTING AND RIGGING** **5.1 GENERAL REQUIREMENTS** **5.1.1 Scope** (1) This Chapter specifies the safety requirements for Hoisting and Rigging Works which shall include: (a) Hoisting Operations; (b) Hoisting Equipment; and (c) Rigging Equipment. and hereinafter collectively referred to as "Hoisting and Rigging".	**6.**

5.1.2 Definitions

Definitions of terms for the purpose of this Chapter are as follows.

(1) "**Hoisting Equipment**" means Contractor's Equipment such as cranes, hoists, chain-blocks, pulleys and the like which constitute the prime mover which, when used with Rigging Equipment, permits loads to be hoisted or lowered and positioned.

(2) "**Rigging Equipment**" means the ropes, webbing, chains and slings together with all associated accessories such as hooks, hoisting points, shackles, etc. ~~which,~~ when used with Hoisting Equipment permits loads to be hoisted or lowered and positioned.

MD: Please check if "which" can be deleted.

(3) "**Rated Capacity**" means the maximum hoisting load for each type of Hoisting Equipment as officially recommended by the manufacturer. This will vary according to configuration of Hoisting Equipment and conditions of use such as length and angle of boom and other factors as ~~officially recommended~~ permitted by the manufacturer.

JC2: The term is coincided with the expression in OSHA 1926.1401 to "permitted". As for "Safe Working Load" in (4), in OSHA "recommended" is used, but it is also changed to permitted" to accommodate with "permitted" in '(3).

OSHA Subpart CC—Cranes and Derricks in Construction§1926.1401Definitions.

Rated capacity means the maximum working load permitted by the manufacturer under specified working conditions. Such working conditions typically include a specific combination of factors such as equipment configuration, radii, boom length, and other parameters of use.

NK2: Changed as commented.

JC2: There is "Lifting Equipment" in 5.25 (4) (c) which is not defined. Please modify the stipulation as "lifting equipment" is used to mean Hoisting Equipment.

In Japan, there is definition that lifting equipment means hook and rigging equipment means equipment below hook. On the other hand, there is no such definition in OSHA and Australia. Please keep in mind this.

(In short, the rated capacity used in OSHA and Australia includes weight of hook, which is excluded in Japan. If necessary, please check the definition in BS and make meaning of the rated capacity standardize.)

For example, a barouche of a crane company mentions: Rated Capacities include the mass of hooks, blocks, slings and auxiliary lifting devices. Their mass must be subtracted, from the listed Rated Capacity, to determine the equivalent net load.

NK2: BS 61007-7:20108 defines as follows:
07 32022 lift rated load load (01) that a lift (01) has been built to carry and for which normal operation is guaranteed by the vendor

HSE Approved Code of Practice and guidance, Safe use of lifting equipment, Lifting Operations and Lifting Equipment Regulations 1998
Cranes 133 The crane used should be adequate and suitable for the task, have a freefall capability lock-out and should be equipped with appropriate devices such as a hoisting limiter, lowering limiter, rated capacity indicator and rated capacity limiter.

NK2: In UK, there is no definition of rated capacity in HSE ACOP but BS 6100 is as

Equipment].

Additional particular requirements are contained in this Chapter.

5.1.2 Definitions

Definitions of terms for the purpose of this Chapter are as follows:

(1) "**Hoisting Equipment**" means Contractor's Equipment such as cranes, hoists, chain-blocks, pulleys and the like which constitute the prime mover which, when used with Rigging Equipment, permits loads to be hoisted or lowered and positioned.

(2) "**Rigging Equipment**" means the ropes, webbing, chains and slings together with all associated accessories such as hooks, hoisting points, shackles, etc. which, when used with Hoisting Equipment, permit loads to be hoisted or lowered, and positioned.

"Which" is correct as above.

(3) "**Rated Capacity**" means the maximum hoisting load for each type of Hoisting Equipment as officially permitted by the manufacturer. This will vary according to configuration of Hoisting Equipment and conditions of use such as length and angle of boom and other factors as permitted by the manufacturer.

(2) General requirements for Contractor's Equipment for Hoisting and Rigging (including cranes) are included in JSSS 4.~~0~~ [*Contractor's Equipment*].

Additional particular requirements are contained in this Chapter.

5.1.2 Definitions

Definitions of terms for the purpose of this Chapter are as follows:

(1) "**Hoisting Equipment**" means Contractor's Equipment such as cranes, hoists, chain-blocks, pulleys and the like which constitute the prime mover which, when used with Rigging Equipment, permits loads to be hoisted or lowered and positioned.

(2) "**Rigging Equipment**" means the ropes, webbing, chains and slings together with all associated accessories such as hooks, hoisting points, shackles, etc. which~~, when~~ used with Hoisting Equipment, permit loads to be hoisted or lowered, and positioned.

(3) "**Rated Capacity**" means the maximum hoisting load for each type of Hoisting Equipment as officially permitted by the manufacturer. This will vary according to configuration of Hoisting Equipment and conditions of use such as length and angle of boom and other factors as permitted by the manufacturer.

above. JSSS in Japanese will be prepared by translating that in English, so there is no discrepancy between them.

(4) "~~**Recommended** ~~**Safe Working Load**" means the maximum safe working load for each type, size and capacity of Rigging Equipment as officially recommended by the manufacturer.

JC1:It is understandable that the word of "Rated Capacity" is used for lifting equipment and "Recommended Safe Working Load" for sling. However, it is a little difficult to understand if they are used without defining them.

It is recommended to change the wording such that "Rated Hoisting Capacity" and "Maximum Rigging Working Load" respectively.

NK1:"Rated Capacity" is defined in OSHA as follows:

Subpart CC-Cranes and Derricks in Construction, 1926.1401 Definitions.

Rated capacity means the maximum working load permitted by the manufacturer under specified working conditions. Such working conditions typically include a specific combination of factors such as equipment configuration, radii, boom length, and other parameters of use.

NK propose to use the same term in JSSS as defined in OSHA so that readers of JSSS can easily understand "Rated Capacity".

NK1:"Recommended Safe Working Load" is used in OSHA as follows:

Subpart H-Materials Handling, Storage, Use, and Disposal, 1926.251 Rigging equipment for material handling. (a) General. (2) Employers must ensure that rigging equipment: (i) Has permanently affixed and legible identification markings as prescribed by the manufacturer that indicate the recommended safe working load;(ii) Not be loaded in excess of its recommended safe working load as prescribed on the identification markings by the manufacturer; and

NK propose to use the same term in JSSS as used in OSHA so that readers of JSSS can easily understand "Recommended Safe Working Load".

JC2: Deleted "Recommended"

(5) ~~"**Total Load**" means either the Rated Capacity or the "Recommended Safe Working Load", neither of which shall be exceeded.~~

JC2:The term "Total Load" is only once used in 5.2.1. "Rated Capacity" is used for equipment and "Recommended Safe Working Load" is used for rigging. Therefore, it seems that there is no problem to delete "Total Load" by modified stipulation. Deleted.

NK2: "Total Load" is deleted.

(6) "**Rigger**" means a competent person who is certified by the HSO as suitable for assignment on Hoisting Operations/Rigging under this Section in accordance with JSSS 1.16 [*Proper Placement of Contractor's Personnel*].

NK:OSHA used "rigger" as follows:

Subpart CC—Cranes and Derricks in Construction

1926.1404 Assembly/Disassembly—general requirements (applies to all assembly and disassembly operations).

(r) Rigging. (1) The rigging work is done by a qualified rigger.

OSHA Fact Sheet mentions as follows:

https://www.osha.gov/Publications/cranes-qualified-rigger-factsheet.html

Employers must use qualified riggers during hoisting activities for assembly and disassembly work (1926.1404(r)(1)).

Rigging work is a part of hoisting activities. NK ask if MD which suitable term is.

(4) "**Safe Working Load**" means the maximum safe working load for each type, size and capacity of Rigging Equipment as officially recommended by the manufacturer.

"Recommended" can be deleted from above

~~(5) "**Total Load**" means either the Rated Capacity or the "Recommended Safe Working Load", neither of which shall be exceeded.~~

(6) "**Rigger**" means a competent person who is certified by the HSO as suitable for assignment to Hoisting and Rigging under this Chapter in accordance with JSSS 1.18 [*Proper Placement of Contractor's Personnel*].

I suggest editing as above

(4) "**Safe Working Load**" means the maximum safe working load for each type, size and capacity of Rigging Equipment as officially recommended by the manufacturer.

(5) "**Rigger**" means a competent person who is certified by the HSO as suitable for assignment to Hoisting and Rigging under this Chapter in accordance with JSSS 1.18 [*Proper Placement of Contractor's Personnel*].

5.1.3 Compliance Standards

(1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], for any items in this Chapter or relevant to the subject of this Chapter and which are not fully covered by JSSS, the Contractor shall comply with the technical requirements of the following standards in OSHA PART 1926 - Safety and Health Regulations for Construction::

(a) Subpart H - Materials Handling, Storage, Use, and Disposal; Section 1926.251 Rigging equipment for material handling,

~~(b) OSHA PART 1926 Safety and Health Regulations for Construction, Subpart CC – Cranes and Derricks in Construction; Section 1413 – Wire Rope Inspection and Section 1414 – Wire Rope Selection and installation criteria;~~

(c) ~~OSHA PART 1926.753 Safety and Health Regulations for Construction,~~ Subpart R- Steel Erection; Hoisting and rigging;

(Whilst this standard is related to Steel Erection, JSSS requires these technical requirements to apply to Hoisting Operations and associated rigging requirements in construction works generally)

(a) Subpart CC - Cranes and Derricks in Construction; Section 1926.1413 Wire Rope - Inspection and Section 1926.1414 – Wire Rope - Selection and installation criteria;

~~(d) OSHA Information Booklet on Sling safety, ref OSHA 3072, 1996 (revised) concerning the Use of Slings (composed of chains, wire rope fiber rope and synthetic web), Safe Lifting Practices and Maintenance of Slings.~~

JC1: Validity of clauses should be re-examined. (5.1.3 (1))
NK1: (c) is available in internet but information booklet, not regulation, so it is deleted.
https://www.scribd.com/document/28664578/OSHA-3072-Sling-Safety
For reference: There is Guidance on safe safe sling use issued by OSHA below.
https://www.osha.gov/dsg/guidance/slings/index.html
NK1: Addition of 1926.251Rigging equipment for material handling., Subpart H - Materials Handling, Storage, Use, is made as (a) and order of present (a) and (b) is changed to (b) and (c)

JC2: JC1 did not request to confirm the validity of OSHA requirements in (a) to (c) above but appropriateness to specify in JSSS.

NK2: Appropriateness of the clauses were examined and (c) is deleted and (a) is added.

5.2 HOISTING OPERATIONS

5.2.1 Instruction for Contractor's Personnel

Further to the requirements of JSSS 1.6 [*Contractor's Safety Plan*], JSSS 1.7 [*Contractor's Method Statements*] and JSSS 1.13.2 [*Contractor's Safety Management Activities*], the Contractor shall include details of the following in the Method Statement and Safety Plan for Hoisting Operations and shall fully inform all Contractor's Personnel associated ~~therewith of all requirements~~ with Hoisting Operation before the commencement of any such operations, including:

JC1: As it is impossible to inform "all Contractor's Personnel", it is better to limit to workers involved rigging/hoisting operation.

5.1.3 Compliance Standards

(1) By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*], for any items in this Chapter or relevant to the subject of this Chapter and which are not fully covered by JSSS, the Contractor shall comply with the technical requirements of the following standards in OSHA PART 1926 - Safety and Health Regulations for Construction:

(a) Subpart H - Materials Handling, Storage, Use, and Disposal; Section 1926.251 Rigging equipment for material handling,

(b) Subpart R- Steel Erection; Hoisting and rigging;

(Whilst this standard is related to Steel Erection, JSSS requires these technical requirements to apply to Hoisting Operations and associated rigging requirements in construction works generally)

(c) Subpart CC - Cranes and Derricks in Construction; Section 1926.1413 Wire Rope - Inspection and Section 1926.1414 – Wire Rope - Selection and installation criteria.

5.2 HOISTING OPERATIONS

5.2.1 Instruction for Contractor's Personnel

Further to the requirements of JSSS 1.7 [*Contractor's Safety Plans*], JSSS 1.9 [*Contractor's Method Statements*] and JSSS 1.15 [*Contractor's Safety Management Activities*], the Contractor shall include details of the following in the Method Statement and Safety Plan for Hoisting Operations and shall fully inform all Contractor's Personnel associated with such Hoisting Operations of these requirements before the commencement of any such operations, including:

5.1.3 Compliance Standards

(6) By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*], for any items in this Chapter or relevant to the subject of this Chapter and which are not fully covered by JSSS, the Contractor shall comply with the technical requirements of the following standards in OSHA PART 1926 - Safety and Health Regulations for Construction:

(a) Subpart H - Materials Handling, Storage, Use, and Disposal; Section 1926.251 Rigging equipment for material handling,

(b) Subpart R- Steel Erection; Hoisting and rigging;

(Whilst this standard is related to Steel Erection, JSSS requires these technical requirements to apply to Hoisting Operations and associated rigging requirements in construction works generally)

(c) Subpart CC - Cranes and Derricks in Construction; Section 1926.1413 Wire Rope - Inspection and Section 1926.1414 – Wire Rope - Selection and installation criteria.

5.2 HOISTING OPERATIONS

5.2.1 Instruction for Contractor's Personnel

Further to the requirements of JSSS 1.7 [*Contractor's Safety Plans*], JSSS 1.9 [*Contractor's Method Statements*] and JSSS 1.15 [*Contractor's Safety Management Activities*], the Contractor shall include details of the following in the Method Statement and Safety Plan for Hoisting Operations and shall fully inform all Contractor's Personnel associated with such Hoisting Operations of these requirements before the commencement of any such operations, including:

NK1: The “all” means that all personnel who are working in hoisting operations as mentioned “associated therewith of all requirements”, therefore, no change is made. If necessary, NK ask MD to modify this phrase.

JC2: “all requirement” is not necessarily clear. Please, ask Mr. MD to review modified sentence by JC.

NK2: MD will review it.

(1) Scope ~~and Hoisting Operation Area~~, Area and Risk of the Hoisting Operation

JC2: The title is changed to coincide with the contents.

(a) The scope of the required Hoisting Operation, ~~the Total Load~~, the Rated Capacity, Safe Working Load, nature of Goods to be hoisted, location, required methods and safety arrangements;

JC2: Please refer to the comment to 5.1.2(5).

(b) The Hoisting Operation area limits;

(c) Requirements on the ground conditions for installation, appropriate installation method taking account of all Hoisting Operation requirements, site and working conditions, location of obstacles, etc.

JC2: Please add description regarding ground conditions such as in 5.3.1 (1).

NK2: Added as (c).

(d) ~~The environmental conditions, nearby areas for storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, Operational Areas or areas where other Dangerous Work is taking place;~~ The working environment of the nearby areas to which particular attention should be paid (e.g. storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, Operational Areas, or Overhead Services);

JC2 The point of this clause of the Japanese draft is that if any accident and the like occurs in hoisting operation and it would cause serious effects on nearby environment. Thus, overhead services are added which is in the Japanese draft. On the other hand, it is deemed that it is not necessary to state regarding Dangerous Works in this clause. (For example, a work in Confined Space near the hoisting operation is not applicable.)

NK2: Modified by JC.

(e) The preservation of safe access, Walkways/Passageways, and footpaths around the Hoisting Operations working area; and

JC2: Isn’t the term “Walkways” same as “the Passageway” in Chapter 2? Please, recheck the terms.

NK2: Chapter 2 (Issue 3) defines as follows:

2.5.7.Temporary Access Around the Site

“Walkways” mean pedestrian footpaths at ground level or ramped for the use of Contractor’s Personnel.

“Passageways” are the same as walkways but are covered by a roof and maybe also have sides in order to protect all personnel from falling objects or adjacent activities.

NK: modified a sabove.

(f) The potential danger of Hoisting Operations to other Contractor’s Personnel, Employer’s Personnel and any other

(1) Scope, Area and Risk of the Hoisting Operation

(a) The scope of the required Hoisting Operation, the Rated Capacity, Safe Working Load, nature of Goods to be hoisted, location, required methods and safety arrangements;

(b) The Hoisting Operation area limits;

(c) Requirements on the ground conditions for installation, appropriate installation method taking account of all Hoisting Operation requirements, site and working conditions, location of obstacles, etc.;

(d) The working environment of the nearby areas to which particular attention should be paid (e.g. storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, Operational Areas, or Overhead Services);

(e) The preservation of safe access, Walkways, Passageways and footpaths around the Hoisting Operations working area; and

(f) The potential danger of Hoisting Operations to other Contractor’s Personnel, Employer’s Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where the Works are being executed and who may be affected by such operations.

(1) Scope, Area and Risk of the Hoisting Operation

(a) The scope of the required Hoisting Operation, the Rated Capacity, Safe Working Load, nature of Goods to be hoisted, location, required methods and safety arrangements;

(b) The Hoisting Operation area limits;

(c) Requirements on the ground conditions for installation, appropriate installation method taking account of all Hoisting Operation requirements, site and working conditions, location of obstacles, etc.;

(d) The working environment of the nearby areas to which particular attention should be paid (e.g. storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, Operational Areas, or Overhead Services);

(e) The preservation of safe access, ~~, W~~ and walkways, ~~Passageways and footpaths~~ around the Hoisting Operations working area; and

NK: Please review the above based on the last modification in 6.4 WALKWAYS, LADDERS AND STEPLADDERS

(f) The potential danger of Hoisting Operations to other Contractor’s Personnel, Employer’s Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where the Works are being executed and who may be affected by such operations.

persons that are on the Site, adjacent to the Site and other places (if any) where the Works are being executed and who may be affected by such operations.

(2) Hoisting Operation and Rigging Requirements

(a) ~~The Rated Capacity of Hoisting Equipment and type to be used;~~ The type of Hoisting Equipment to be used and its Rated Capacity;

JC2: As the Rated Capacity is determined as per the type, the order is changed.

NK2: Changed as JC modified.

(b) The Recommended Safe Working Load and type(s) of Rigging Equipment to be used;

(c) Hazards associated with the Hoisting Operation;

(d) Role and responsibility of the operator and each Rigger;

(e) Establishing targets for the day;

(f) Weight of Goods being hoisted;

(g) The shapes and characteristics of Goods being hoisted;

(h) The presence of any obstructions or Overhead Services and consequent restrictions on the movement and operation of Hoisting Equipment;

~~(i) Any limitations of Hosting Equipment; and~~

JC2: It is not clear what the meaning of this clause is. If it is about "Rated Capacity" or else, please delete the clause because it has been stated before.

NK2: This clause is quite vague and not useful for safety. Deleted.

~~(j) Disconnecting techniques used to complete the task.~~

JC2: As there has been no provision about slinging regarding rigging so far, it would be right to describe about it here. However, it is necessary to mention not only "disconnecting" but also "connecting".

As for the term, "remove" is more appropriate to use than "disconnect". In addition, Hoisting and Rigging Manual (PNNL-1829) by Department of Energy of USA uses an expression "hitched or rigged".

Anyway, please ask Mr. MD to confirm how to use these terms.

NK2: (j) is specified as mentioned in OSHA guide sheet, Rigging Process
https://www.osha.gov/dts/maritime/sltc/ships/rigging/rigging_process.html
The following are topics that should be discussed with workers prior to beginning rigging operations:
Disconnecting techniques used to complete the task.
MD to confirm the usage of terms.
However, as the requirements for rigging are provided in 5.4.1 and 5.4.2, NK thinks that it is not necessary to mention about disconnecting here.
Deleted tentatively.

(3) ~~Organisation~~ Identification of Personnel

(a) The identity of operators, Riggers and any other workers associated with the Hoisting Operation;

(b) The identity of and location(s) for Signallers;

(c) The communication and signalling requirements (equipment

(2) Hoisting Operation and Rigging Requirements

(a) The type of Hoisting Equipment to be used and its Rated Capacity;

(b) The ~~Recommended~~ Safe Working Load and type(s) of Rigging Equipment to be used;

(c) Hazards associated with the Hoisting Operation;

(d) Role and responsibility of the operator and each Rigger;

(e) Establishing targets for the day;

(f) Weight of Goods being hoisted;

(g) The shapes and characteristics of Goods being hoisted;

(h) The presence of any obstructions or Overhead Services and consequent restrictions on the movement and operation of Hoisting Equipment; and

~~(i) Any limitations of Hosting Equipment; and~~

This can be deleted as you suggest.

(j) Connecting and disconnecting techniques.

I suggest this is included as above, which is simply altered.

(3) Identification of Personnel

(a) The identity of operators, Riggers and any other workers associated with the Hoisting Operation;

(b) The name of the authorised operator for each unit of Hoisting Equipment.

(c) The identity of and location(s) for Spotters;

Above is changed to be consistent with the definition

(d) The communication and signalling requirements (equipment

(2) Hoisting Operation and Rigging Requirements

(a) The type of Hoisting Equipment to be used and its Rated Capacity;

(b) The Safe Working Load and type(s) of Rigging Equipment to be used;

(c) Hazards associated with the Hoisting Operation;

(d) Role and responsibility of the operator and each Rigger;

(e) Establishing targets for the day;

(f) Weight of Goods being hoisted;

(g) The shapes and characteristics of Goods being hoisted;

(h) The presence of any obstructions or Overhead Services and consequent restrictions on the movement and operation of Hoisting Equipment; and

(i) Connecting and disconnecting techniques.

(3) Identification of Personnel

(a) The identity of operators, Riggers and any other workers associated with the Hoisting Operation;

(b) The name of the authorised operator for each unit of Hoisting Equipment.

(c) The identity of and location(s) for Spotters;

(d) The communication and signalling requirements (equipment to be used and standard signals); and

to be used and standard signals); and

(d) The procedures in case of emergency.

JC1: What is the meaning of this "Organisation"? Actually, this clause includes matters other than organisation. Please re-consider the title.

NK1: Modified as above.

5.2.2 Operators

(1) The Contractor shall select and assign operators and drivers (hereinafter referred to collectively as 'operators") of Hoisting Equipment in accordance with JSSS 1.16 [*Proper Placement of Contractor's Personnel*].

(2) The name of the assigned operator shall be posted on each unit of Hoisting Equipment.

5.2.3 Riggers

(1) The Contractor shall assign only Riggers for all ~~Hoisting Operations~~ rigging and shall prohibit other workers from any involvement.

(2) The Contractor shall select and assign Riggers in accordance with JSSS 1.16 [Proper Placement of Contractor's Personnel].

(3) The names of all assigned Riggers shall be posted prominently in the working area of the Hoisting Operation.

to be used and standard signals); and

(e) The procedures in case of emergency.

5.2.2 Operators and Riggers Generally

I have changed the above heading and combined the content as these re largely common requirements for both

No need for the following duplication:

~~(a) The Contractor shall select and assign operators and drivers (hereinafter referred to collectively as 'operators") of Hoisting Equipment in accordance with JSSS 1.18 [*Proper Placement of Contractor's Personnel*].~~

Added for consistency with Chapter 4:

(1) The Contractor shall place signs on each unit of Hoisting Equipment showing the name of each authorised operator and clearly prohibiting all unauthorised persons from using, handling, operating or sitting at the controls of that equipment unit.

Following is added for consistency with Chapter 5

(2) Further to the requirements of JSSS 1.18 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that operators and Riggers are appropriately qualified, skilled and experienced in operation of the Hoisting Equipment to which they are assigned and duly certified as such by the HSO.

(3) Operators and Riggers shall be fully aware of the following:

(a) Work procedures, possible risks and operation methods;

(b) The need to stop all work when any defect or abnormality is detected;

(c) Not to remove, interfere with or override any safety devices;

(d) The identity of and location(s) for Spotters and the communication and signalling requirements including equipment to be used and signals; and

(e) The procedures in case of emergency.

(4) In addition, operators shall:

(a) Safely and competently operate the Hoisting Equipment;

(b) Operate all safety devices including emergency alarm and stop devices;

(c) Inspect, clean, service and maintain the unit of Hoisting Equipment under their responsibility and control or ensure that other qualified persons perform these operations.

(5) The Contractor shall assign only Riggers for Hoisting Operations and shall prohibit other workers from any involvement.

(6) The names of all assigned Riggers shall be posted prominently in the working area of the Hoisting Operation.

(e) The procedures in case of emergency.

5.2.2 Operators and Riggers Generally

(1) The Contractor shall place signs on each unit of Hoisting Equipment showing the name of each authorised operator and clearly prohibiting all unauthorised persons from using, handling, operating or sitting at the controls of that equipment unit.

(2) Further to the requirements of JSSS 1.18 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that operators and Riggers are appropriately qualified, skilled and experienced in operation of the Hoisting Equipment to which they are assigned and duly certified as such by the HSO.

(3) Operators and Riggers shall be fully aware of the following:

(a) Work procedures, possible risks and operation methods;

(b) The need to stop all work when any defect or abnormality is detected;

(c) Not to remove, interfere with or override any safety devices;

(d) The identity of and location(s) for Spotters and the communication and signalling requirements including equipment to be used and signals; and

(e) The procedures in case of emergency.

(4) In addition, operators shall:

(a) Safely and competently operate the Hoisting Equipment;

(b) Operate all safety devices including emergency alarm and stop devices;

(c) Inspect, clean, service and maintain the unit of Hoisting Equipment under their responsibility and control or ensure that other qualified persons perform these operations.

NK: Please refer to the comment on 4.1.6 (3) (b) copied below.
JCA12: Isn't this the operator's responsibility but equipment supervisor?
NK: As commented, it is supervisor's duty to control these aspects. Deleted.
MD: Do not agree. The supervisor (whoever he is) may be responsible for managing servicing and maintenance but the operator is the primary person, he should not start or continue to use any equipment that he knows requires repair, service or maintenance.
NK6/19: the last paragraph "that other qualified persons perform these operations" is difficult to understand. Does it mean Operators shall control performing each other's operation?
NK propose as follows: to add (c)/(d) Ensure that other qualified persons safely operate Contractor's Equipment.

(5) The Contractor shall assign only Riggers for Hoisting Operations and shall prohibit other workers from any involvement.

(6) The names of all assigned Riggers shall be posted prominently in the working area of the Hoisting Operation.

5.2.4 Safety Education and Training

The Contractor shall provide health and safety education and training in accordance with JSSS 1.17 [*Safety Training Generally*]. taking account of the characteristics of the Hoisting Operations, Hoisting Equipment and Rigging Equipment.

5.2.5 Inspection of Hoisting Equipment and Rigging Equipment

JC1: Please refer to inspection at the time of bringing in. (It is important to prohibit to bring defective equipment into the Site.)

NK1: The inspection at mobilizing of Contractor's equipment at the site is specified in JSSS 4.2.1 (3). Duplicate specifying is avoided here. Inspection at the time of mobilization is added as (1) in 5.2.5 as above.

JC1: Please add to refer to Chapter 4. Would like to know the intention of deleting the periodic inspection.

NK1: As same as the above, periodic inspection is specified in JSSS 4.2.1 (5). Periodic inspection is added as shown right in (4).

(1) When the Hoisting Equipment is mobilised to the Site, the Contractor shall inspect the equipment complying with JSSS 4.2 [Inspection, Maintenance and Repair], 4.2.1 [Requirement Generally] (3) to ensure that the equipment is free from defect and suitable for the hoisting operation planned.

(2) Further to the requirements of JSSS 1.3~~3~~5 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] and JSSS 4.2 [Inspection, Maintenance and Repair], the HSO shall ensure that all Hoisting Equipment and all Rigging Equipment is inspected and maintained when it is at the location of operation before the commencement of the first and of all subsequent Hoisting Operations.

(3) Inspections mentioned in (2) above shall include all items necessary to ensure the safe performance of the Hoisting Operations including the following examples and any further requirements due to the characteristics of the Hoisting Operation and the capability and condition of the Hoisting Equipment and Rigging Equipment including condition and performance of:

(a) Anti-two blocking devices (over-winding prevention devices)~~Over winding prevention devices;~~ and over-load prevention devices;

NK1: over-loading prevention devices is added.

JC2: There is a pointing out that "Anti-two blocking devices" is more common than "Over-winding prevention devices". Need to be confirmed.

NK: It is found that "Over-winding prevention devices" is used in mainly Japan. This is also patented in USA with this name. However, as pointed out it is more common to use "Anti-two blocking devices". Thus, NK proposes to use both terms equally considering that many hoisting equipment manufactured in Japan are used in overseas construction works.

(b) Other safety devices including brakes, clutches and controllers;

(c) Rails for trolley and runway;

5.2.3 Safety Training

Heading and content is amended as reference does not separately mention "education", which is not therefore necessary

The Contractor shall provide health and safety training in accordance with JSSS 1.19 [*Safety Training Generally*]. taking account of the characteristics of the Hoisting Operations, Hoisting Equipment and Rigging Equipment.

5.2.4 Inspection of Hoisting Equipment and Rigging Equipment

(1) When the Hoisting Equipment is mobilised to the Site, the Contractor shall inspect the equipment complying with JSSS 4.2 [*Inspection, Maintenance and Repair*], to ensure that the equipment is free from defect and suitable for the planned Hoisting Operation.

I suggest that cross reference should be to the general sub-clause rather than the particular sub-sub-clause so as to provide wider reference and to assist with future coordination.

(2) Further to the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*] and JSSS 4.2 [*Inspection, Maintenance and Repair*], the HSO shall ensure that all Hoisting Equipment and all Rigging Equipment is inspected and maintained when it is at the location of operation before the commencement of the first and of all subsequent Hoisting Operations.

Rather than cross referencing to the sub-sub-clause above, just delete the separate number which makes it a separate paragraph of the same number

Inspections shall include all items necessary to ensure the safe performance of the Hoisting Operations including the following examples and any further requirements due to the characteristics of the Hoisting Operation and the capability and condition of the Hoisting Equipment and Rigging Equipment including condition and performance of:

(a) Anti-two blocking devices (over-winding prevention devices) and over-load prevention devices;

(b) Other safety devices including brakes, clutches and controllers;

(c) Rails for trolley and runway;

(d) Hooks, sheaves, blocks, pulleys and the like;

(e) Cables, ropes and the like; and

(f) Rigging Equipment.

5.2.3 Safety Training

The Contractor shall provide health and safety training in accordance with JSSS 1.19 [*Safety Training Generally*]. taking account of the characteristics of the Hoisting Operations, Hoisting Equipment and Rigging Equipment.

5.2.4 Inspection of Hoisting Equipment and Rigging Equipment

(1) When the Hoisting Equipment is mobilised to the Site, the Contractor shall inspect the equipment complying with JSSS 4.2 [*Inspection, Maintenance and Repair*], to ensure that the equipment is free from defect and suitable for the planned Hoisting Operation.

(2) Further to the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*] and JSSS 4.2 [*Inspection, Maintenance and Repair*], the HSO shall ensure that all Hoisting Equipment and all Rigging Equipment is inspected and maintained when it is at the location of operation before the commencement of the first and of all subsequent Hoisting Operations.

Inspections shall include all items necessary to ensure the safe performance of the Hoisting Operations including the following examples and any further requirements due to the characteristics of the Hoisting Operation and the capability and condition of the Hoisting Equipment and Rigging Equipment including condition and performance of:

(a) Anti-two blocking devices (over-winding prevention devices) and over-load prevention devices;

(b) Other safety devices including brakes, clutches and controllers;

(c) Rails for trolley and runway;

(d) Hooks, sheaves, blocks, pulleys and the like;

(e) Cables, ropes and the like; and

(f) Rigging Equipment.

(d) Hooks, sheaves, blocks, pulleys and the like;

(e) Cables, ropes and the like; and

(f) Rigging Equipment.

(4) Periodic inspection shall be made complying with JSSS 4.2.1 [Requirement Generally] (5) and include the following items:

(a) Condition of over-winding prevention devices, ~~overload prevention devices~~ anti-two blocking devices (over-winding prevention devices), other safety devices, brakes, and clutches;

(b) Condition of wire ropes and hanging chains;

(c) Condition of ~~Lifting Equipment such as hooks;~~ hooks of the Hoisting Equipment's;

JC2: There is "Lifting Equipment" in 5.25 (4) (c) which is not defined. Please modify the stipulation as "lifting equipment" is used to mean Hoisting Equipment.

NK2: Lifting Equipment is used in Lifting Operations and Lifting Equipment Regulations, 1998 in UK. It is same meaning as Hoisting Equipment in JSSS. In Japanese Crane Regulations, lifting equipment are such as hooks, grab bucket, magnet or negative pressure lifting equipment. To avoid confusion, JSSS does not use Lifting Equipment and (c) is modified as above.

(d) Condition of placement of winches; and

(e) Condition of electric wire, switchboard and controller.

(5) ~~No Hoisting Operation shall be allowed to commence until the HSO has certified that it is safe to do so.~~ No Hoisting Equipment or Rigging Equipment shall put in operation unless they are inspected in accordance with JSSS 4.2.1 and it is ensured that they are safe to be used.

JC1: It is not practical for the HSO to certify for hoisting operations. ((5) & (6) right: numbers are changed in accordance with addition of (2) and (4))

Inspection is argued here. So better to redraft as follows.

"No Hoisting Equipment or Rigging Equipment shall not put in operation unless they are inspected in accordance with JSSS 4.1.7-4.1.9 and it is ensured that they are safe to be used."

NK1: Clause (5) is changed as above in accordance with JICA's comment.

(6) ~~The Contractor shall prepare standard checklists for the above regular and periodic inspections and the HSO shall ensure that these are recorded check, repair and maintenance results, complied with and signed by the person in charge of check and maintenance inspections and the HSO shall ensure that these are complied with, completed and signed and kept as a record in accordance with JSSS 1.31 [*Health and Safety Records*].~~ The Contractor shall prepare standard checklists for the above regular and periodic inspections. The results of these inspections are to be recorded and kept in accordance with JSSS 1.31 [Health and Safety Records].

JC1: Ditto (It is not practical for the HSO to certify for hoisting operations.)

NK1: In (4), the HSO shall manage the inspection and maintenance in accordance with the Safety Plan and instruct improvement if the person in charge does not follow the Safety Plan. (4) is modified as (5) in right.

JC2: It is appropriate for the person in charge of hoisting operations to make records and keep them. HSO can access the records as necessary and exercise his authorities. Modified as above.

NK2: Modified as JC commented.

(3) Periodic inspection shall be made complying with JSSS 4.2 [*Inspection, Maintenance and Repair*] and include the following items:

(a) Condition of over-winding prevention devices, anti-two blocking devices (over-winding prevention devices), other safety devices, brakes, and clutches;

(b) Condition of wire ropes and hanging chains;

(c) Condition of the Hoisting Equipment's;

(d) Condition of placement of winches; and

(e) Condition of electric wire, switchboard and controller.

(4) No Hoisting Equipment or Rigging Equipment shall be put into operation unless it has been inspected in accordance with the requirements of JSSS 4.2 [*Inspection, Maintenance and Repair*], and it is ensured that it is safe to be used.

Above is included as suggested and edited.

(5) The Contractor shall prepare standard checklists for the above regular and periodic inspections. The results of these inspections shall be recorded and kept in accordance with JSSS 1.33 [*Health and Safety Records*].

(3) Periodic inspection shall be made complying with JSSS 4.2 [*Inspection, Maintenance and Repair*] and include the following items:

(a) Condition of over-winding prevention devices, anti-two blocking devices (over-winding prevention devices), other safety devices, brakes, and clutches;

(b) Condition of wire ropes and hanging chains;

(c) Condition of the Hoisting Equipment's;

(d) Condition of placement of winches; and

(e) Condition of electric wire, switchboard and controller.

(4) No Hoisting Equipment or Rigging Equipment shall be put into operation unless it has been inspected in accordance with the requirements of JSSS 4.2 [*Inspection, Maintenance and Repair*], and it is ensured that it is safe to be used.

(5) The Contractor shall prepare standard checklists for the above regular and periodic inspections. The results of these inspections shall be recorded and kept in accordance with JSSS 1.33 [*Health and Safety Records*].

5.2.6 General Safety Measures for Hoisting Operations

The Contractor shall:

(1) Select Hoisting Equipment which has a Rated Capacity and function compatible with the work conditions and requirements, including loads, surface conditions, access, working area, radius and angle of boom, etc.

(2) Clearly display the Rated Capacity of the Hoisting Equipment so that all operators and Riggers are fully aware at all times.

(3) Select Rigging Equipment with ~~Recommended~~ Safe Working Load suitable for the Hoisting Operation.

JC2: modified in accordance with change in 5.1.2 (4).
NK: Modified as JC commented.

(4) Select Rigging Equipment compatible with the purpose, work conditions and requirements.

(5) Ensure that operators and Riggers confirm that the load on the Rigging Equipment is less than the Recommended Safe Working Load.

(6) Activate all safety devices of Hoisting Equipment throughout the entire operation time(s) of any Hoisting Operations.

(7) Prohibition of entry

Designate all Hoisting Operations as "Dangerous Work", enclose the entire working area which is subject to any risk by providing temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry – Dangerous Work*].

The Contractor shall ~~be particularly aware and~~ take ~~all~~ measures to ~~prevent~~ keep any unauthorised personnel off from any area subject to any risk of injury ~~to persons~~ arising from the Hoisting Operation ~~but outside the immediate working area~~, due to fall of hoisted Goods, tangling, snagging, rebound of broken ropes or cables, broken sheaves, droppage and the like.

JC1: modified.

JC2: It should be that nobody can enter the place where there is danger. (It does not mean that authorized personnel can enter under the load.
The most important point has been missing in the original clause of Japanese draft that prohibition of entering where there is a risk of fall of hoisted good is reinstated.

NK2: Changed as JC commented and modified as above.

(8) Signalling

(a) Signalling between operators, Riggers and any associated workers regarding the Hoisting and Rigging Operations, shall only be carried out by Riggers, (hereinafter referred to as signallers);

(b) Signallers shall be located in a safe place outside the immediate area where the Rigging and Hoisting Operations are taking place, but in a location where they can clearly see suspended loads and can also see the operator and also be seen by such personnel;

5.2.5 General Safety Measures for Hoisting Operations

The Contractor shall:

(1) Select Hoisting Equipment which has a Rated Capacity and function compatible with the work conditions and requirements, including loads, surface conditions, access, working area, radius and angle of boom, etc.

(2) Clearly display the Rated Capacity of the Hoisting Equipment so that all operators and Riggers are fully aware at all times.

(3) Select Rigging Equipment with Safe Working Load suitable for the Hoisting Operation.

(4) Select Rigging Equipment compatible with the purpose, work conditions and requirements.

(5) Ensure that operators and Riggers confirm that the load on the Rigging Equipment is less than the Safe Working Load.

(6) Activate all safety devices of Hoisting Equipment throughout the entire operation time(s) of any Hoisting Operations.

(7) Prohibition of entry

Designate all Hoisting Operations as "Dangerous Work", enclose the entire working area which is subject to any risk by providing temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry – Dangerous Work*].

The Contractor shall take measures to keep any unauthorised personnel away from any area where there is any risk of injury arising from the Hoisting Operation, due to fall of hoisted Goods, tangling, snagging, rebound of broken ropes or cables, broken sheaves, droppage and the like.

(8) Signalling

(a) Signalling between operators, Riggers and any associated workers regarding the Hoisting and Rigging Operations, shall only be carried out by Riggers, (hereinafter referred to as signallers);

(b) Signallers shall be located in a safe place outside the immediate area where the Rigging and Hoisting Operations are taking place, but in a location where they can clearly see suspended loads and can also see the operator and also be seen by such personnel;

5.2.5 General Safety Measures for Hoisting Operations

The Contractor shall:

(1) Select Hoisting Equipment which has a Rated Capacity and function compatible with the work conditions and requirements, including loads, surface conditions, access, working area, radius and angle of boom, etc.

(2) Clearly display the Rated Capacity of the Hoisting Equipment so that all operators and Riggers are fully aware at all times.

(3) Select Rigging Equipment with Safe Working Load suitable for the Hoisting Operation.

(4) Select Rigging Equipment compatible with the purpose, work conditions and requirements.

(5) Ensure that operators and Riggers confirm that the load on the Rigging Equipment is less than the Safe Working Load.

(6) Activate all safety devices of Hoisting Equipment throughout the entire operation time(s) of any Hoisting Operations.

(7) Prohibition of entry

Designate all Hoisting Operations as "Dangerous Work", enclose the entire working area which is subject to any risk by providing temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry – Dangerous Work*].

The Contractor shall take measures to keep any unauthorised personnel away from any area where there is any risk of injury arising from the Hoisting Operation, due to fall of hoisted Goods, tangling, snagging, rebound of broken ropes or cables, broken sheaves, droppage and the like.

(8) Signalling

(a) Signalling between operators, Riggers and any associated workers regarding the Hoisting and Rigging Operations, shall only be carried out by Riggers, (hereinafter referred to as signallers);

(b) Signallers shall be located in a safe place outside the immediate area where the Rigging and Hoisting Operations are taking place, but in a location where they can clearly see suspended loads and can also see the operator and also be seen by such personnel;

(c) When it is not possible for signallers to give direct visible signals to the operator, hand held radios or any other suitable communication tool must be provided and used; and

JC1: modified.

(d) In addition, Spotters shall be placed and ~~Spotters shall be~~ used only to keep any unauthorised personnel away from the working area.

JC1: Should spotter and signallers be stipulated separately, and the signallers be described that he shall dedicate to the signal?

NK1: As provided in (8) (a)-(c), the Riggers (signallers) carry only signalling and rigging. (d) is modified as above to clarify that Spotters are placed to keep any unauthorised personnel away from the working area.

(9) During Hoisting Operations:

(a) Check if the hoisting points, hooks and the like are positioned above the centre of gravity of the load to be hoisted;

(b) At commencement of all Hoisting Operations, stop the hoist at 30 cm from hoisting level, to check stability and ensure that all is in order before proceeding;

(c) Ensure that there are no persons and objects within the turning area when the Hoisting Equipment turns;

(d) After hoisting loads up to the safe height, adjust the boom gently;

(e) Always pay attention to move of the edge of boom and the condition of suspended loads; and

(f) When unloading or detaching loads, stop once before landing and check the condition of the landing place and the load and then continue to lower gently.

(10) Ensure that the operators ~~Operators shall~~ never leave their seat or leave the controls while Hoisting Operations are in progress.

JC1: modified.

(11) Defects with Hoisting Equipment during operation

(a) Ensure that, If operators notice any defect or abnormality in the Hoisting Equipment during Hoisting Operations (such as abnormal noise, temperature, smell, etc.) the operator shall stop the Hoisting Operation immediately;

(b) ~~The operator shall then~~ identify the cause of defect or abnormality and make necessary repairs by using authorised and qualified specialist mechanics, electricians or representative technical engineers authorised by the hoisting Equipment manufacturer; and

(c) ~~The HSO shall ensure that no Hoisting Operation shall resume unless the above has been complied with and the Hoisting Equipment has been re-inspected by him and certified in accordance with JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*.~~ Ensure that the repaired Hoisting Equipment shall not be put in operation unless certified by the HSO.

JC1: Please modify this part referring to the comment for 5.2.5. Especially, it is not

(c) When it is not possible for signallers to give direct visible signals to the operator, hand-held radios or other communication tool as approved by HSO must be provided and used; and

I suggest edit as above

(d) In addition, Spotters shall be placed and used only to keep any unauthorised personnel away from the working area.

(9) During Hoisting Operations:

(a) Check if the hoisting points, hooks and the like are positioned above the centre of gravity of the load to be hoisted;

(b) At commencement of all Hoisting Operations, stop the hoist at 30 cm from hoisting level, to check stability and ensure that all is in order before proceeding;

(c) Ensure that there are no persons and objects within the turning area when the Hoisting Equipment turns;

(d) After hoisting loads up to the safe height, adjust the boom gently;

(e) Always pay attention to any movement of the boom and the condition of suspended loads; and

I suggest edit as above

(f) When unloading or detaching loads, stop once before landing and check the condition of the landing place and the load and then continue to lower gently.

(10) Ensure that Operators shall never leave their seat or leave the controls while Hoisting Operations are in progress.

(11) Defects with Hoisting Equipment during operation

(a) Ensure that if operators notice any defect or abnormality in the Hoisting Equipment during Hoisting Operations (such as abnormal noise, temperature, smell, etc.) the operator shall stop the Hoisting Operation immediately;

(b) Identify the cause of the defect or abnormality and make necessary repairs by using authorised and qualified specialist mechanics, electricians or representative technical engineers authorised by the hoisting Equipment manufacturer; and

(c) Ensure that the repaired Hoisting Equipment shall not be put in operation unless certified by the HSO.

(c) When it is not possible for signallers to give direct visible signals to the operator, hand-held radios or other communication tool as approved by HSO must be provided and used; and

(d) In addition, Spotters shall be placed and used only to keep any unauthorised personnel away from the working area.

(9) During Hoisting Operations:

(a) Check if the hoisting points, hooks and the like are positioned above the centre of gravity of the load to be hoisted;

(b) At commencement of all Hoisting Operations, stop the hoist at 30 cm from hoisting level, to check stability and ensure that all is in order before proceeding;

(c) Ensure that there are no persons and objects within the turning area when the Hoisting Equipment turns;

(d) After hoisting loads up to the safe height, adjust the boom gently;

(e) Always pay attention to any movement of the boom and the condition of suspended loads; and

(f) When unloading or detaching loads, stop once before landing and check the condition of the landing place and the load and then continue to lower gently.

(10) Ensure that Operators shall never leave their seat or leave the controls while Hoisting Operations are in progress.

(11) Defects with Hoisting Equipment during operation

(a) Ensure that if operators notice any defect or abnormality in the Hoisting Equipment during Hoisting Operations (such as abnormal noise, temperature, smell, etc.) the operator shall stop the Hoisting Operation immediately;

(b) Identify the cause of the defect or abnormality and make necessary repairs by using authorised and qualified specialist mechanics, electricians or representative technical engineers authorised by the hoisting Equipment manufacturer; and

(c) Ensure that the repaired Hoisting Equipment shall not be put in operation unless certified by the HSO.

realistic for the HSO to give “permission to use”.

NK1: The HSO is ultimately responsible for the safety of the Hoisting Equipment, too. As considering the realistic condition at the Site, (c) is modified as above. As 5.2.5 has been modified, referring to 5.2.5 is deleted.

(12) Condition of Ropes, Slings and Chains

~~The Contractor shall~~ ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

(13) Adverse Weather

~~The Contractor shall~~ take the following measures in addition to JSSS 2.7 [ADVERSE WEATHER REQUIREMENTS]:

(a) ~~The Contractor shall ensure that~~ Hoisting Equipment is left in a safe condition when ~~not in use and particularly if~~ adverse climatic conditions can be anticipated;

(b) All anchors, outriggers and supports are secure and adequate to fix and support the Hoisting Equipment in position during any adverse climatic conditions; and

(c) Booms and jibs shall be secured ~~when not in use~~ to prevent any instability or collapse.

(d) Before resuming hoisting work after the adverse weather, inspect Hoisting Equipment using the daily and periodic checklists specified in JSSS 6.2.5 [Inspection of Hoisting Equipment and Rigging Equipment].

JC1: Isn’t it confusing that measures for long periods of non-use and measures for bad weather are mixed? (5.2.6 (13) (a)~(c))

NK1: (a) to (c) are revised for countermeasures to secure Hoisting Equipment during adverse climatic conditions.

A general sentence is added for (13), and (d) is added from Japanese draft for safety inspection before resuming work.

(14) Prohibition of Inadequate Use of Hoisting Equipment

JC2: The expression that means “any other purpose other than designed or originally intended” was lacking. Added “Inadequate”.

NK2: The title is changed as JC modified.

~~Hoisting Equipment shall never be used for transporting or hoisting Contractor’s Personnel unless the following all measures are taken for the case of existing unavoidable reason or essential for safe work procedures:.~~

Hoisting Equipment shall not be used for transporting or hoisting Contractor’s Personnel. Such inadequate use of Hoisting Equipment is exceptionally allowed in case it is justified by unavoidable reason and the following all measures are taken:

JC: modified.

(a) Dedicated gondola for transporting or hoisting shall be provided;

(b) Prevention measures shall be taken to avoid turning and falling of gondola;

(c) ~~The assumed load of the total of 1.3 times of total weight of gondola and workers plus 500 kg shall not exceed the Rated Capacity of the Hoisting Equipment~~ The assumed load (i.e. 1.3 times of total weight of gondola and workers on board plus

(12) Condition of Ropes, Slings and Chains

Ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

(13) Adverse Weather

Take the following measures in addition to JSSS 2.7 [*Adverse Weather Requirements*]:

(a) Hoisting Equipment is left in a safe condition when not in use and particularly if adverse climatic conditions can be anticipated;

(b) All anchors, outriggers and supports are secure and adequate to fix and support the Hoisting Equipment in position during any adverse climatic conditions; and

(c) Booms and jibs shall be secured to prevent any instability or collapse.

(d) Before resuming any Hoisting Operation after any adverse weather, inspect Hoisting Equipment using the daily and periodic checklists specified in JSSS 5.2.4 [*Inspection of Hoisting Equipment and Rigging Equipment*].

(14) Use of Hoisting Equipment for Contractor’s Personnel

As a general rule, Hoisting Equipment shall not be used for transporting or hoisting Contractor’s Personnel.

In exceptional circumstances and if so approved by the HSO, use of Hoisting Equipment may be allowed when the following all measures are taken:

(a) Dedicated gondola for transporting or hoisting shall be provided;

(b) Prevention measures shall be taken to avoid turning and falling of gondola;

(c) The assumed load (i.e. 1.3 times of total weight of gondola and workers on board plus 500 kg) shall not exceed the Rated Capacity of the Hoisting Equipment;

(12) Condition of Ropes, Slings and Chains

Ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

(13) Adverse Weather

Take the following measures in addition to JSSS 2.7 [*Adverse Weather Requirements*]:

(a) Hoisting Equipment is left in a safe condition when not in use and particularly if adverse climatic conditions can be anticipated;

(b) All anchors, outriggers and supports are secure and adequate to fix and support the Hoisting Equipment in position during any adverse climatic conditions; and

(c) Booms and jibs shall be secured to prevent any instability or collapse.

(d) Before resuming any Hoisting Operation after any adverse weather, inspect Hoisting Equipment using the daily and periodic checklists specified in JSSS 5.2.4 [*Inspection of Hoisting Equipment and Rigging Equipment*].

(14) Use of Hoisting Equipment for Contractor’s Personnel

As a general rule, Hoisting Equipment shall not be used for transporting or hoisting Contractor’s Personnel.

In exceptional circumstances and if so approved by the HSO, use of Hoisting Equipment may be allowed when the following all measures are taken:

(a) Dedicated gondola for transporting or hoisting shall be provided;

(b) Prevention measures shall be taken to avoid turning and falling of gondola;

(c) The assumed load (i.e. 1.3 times of total weight of gondola and workers on board plus 500 kg) shall not exceed the Rated Capacity of the Hoisting Equipment;

500 kg) shall not exceed the Rated Capacity of the Hoisting Equipment;

JC: modified.

(d) Wires ropes of Hoisting Equipment shall be of safety factor of 10 or more against loads;

(e) Lowering the gondola shall be made by power (prohibit free drop); and

(f) Use of PFAS of ~~Contractor's Personnel~~ the workers in the gondora shall be ensured.

JC1: Measures for hoisting Personnel by unavoidable reason which was in the Japanese draft are deleted. Reinstate the manner of writing for the stipulation of 5.2.6 (13) of Japanese version.

NK1: In English version, hoisting personnel is simply prohibit without exception. (14) is replaced with provisions in Japanese version as above:

NK1: Sentences of (14) in English will be review and edited by MD.

JC2: Make same as (c).

5.3 HOISTING EQUIPMENT - CRANES

(Refer also to JSSS Chapter 4 [*Contractor's Equipment*])

5.3.1 Planning, Installation and Removal

Unless otherwise approved by the HSO, the Contractor shall employ an appropriately qualified, skilled and experienced crane specialist(s) ~~to~~ and select the required type and capacity of crane, plan the Hoisting Operation including mobilising, assembly, erection, use, dismantling and removal of cranes. The Contractor's specialist shall:

(1) Investigate the location and position for installation, plan the appropriate installation method taking account of all Hoisting Operation requirements, site and working conditions, location of obstacles, etc.

(2) Investigate the working area and ensure the safety of the crane and any crane rails.

(3) Design and construct crane foundation, assemble and install the crane with proper structural design and in full compliance with the manufacturer's official instructions and recommendations.

(4) Conduct completion inspection, load test and stability test of the crane.

(5) Dismantle and remove and transport cranes in a planned and systematic manner in full compliance with the manufacturer's official instructions and recommendations.

5.3.2 Additional Requirements for Mobile cranes

(1) Position mobile cranes where there are no obstacles within the operation range.

(2) Where obstacles exist, plan the appropriate operation to avoid the obstacles and ensure that operators and signallers comply with this plan.

(3) Ensue that ground has sufficient and even bearing capacity to avoid all risk of the crane subsiding and overturning. Where necessary or where there is any risk of damaging surface paving or underground

(d) Wires and ropes of Hoisting Equipment shall have a safety factor of at least 10 against the assumed load;

(e) Lowering the gondola shall be by powered system which prevents any free drop; and

(f) Use of PFAS of any Contractor's Personnel in the gondola shall be ensured.

Please check editing of above

5.3 HOISTING EQUIPMENT - CRANES

(Refer also to JSSS Chapter 4 [*Contractor's Equipment*])

5.3.1 Planning, Installation and Removal

Unless otherwise approved by the HSO, the Contractor shall employ an appropriately qualified, skilled and experienced crane specialist(s) that shall select the required type and capacity of crane, plan the Hoisting Operation including mobilising, assembly, erection, use, dismantling and removal of cranes. The Contractor's specialist shall:

(1) Investigate the location and position for installation, plan the appropriate installation method taking account of all Hoisting Operation requirements, site and working conditions, location of obstacles, etc.

(2) Investigate the working area and ensure the safety of the crane and any crane rails.

(3) Design and construct crane foundation, assemble and install the crane with proper structural design and in compliance with the manufacturer's written instructions.

(4) Conduct completion inspection, load test and stability test of the crane.

(5) Dismantle and remove and transport cranes in a planned and systematic manner in compliance with the manufacturer's written instructions.

5.3.2 Additional Requirements for Mobile cranes

(1) Position mobile cranes where there are no obstacles within the operation range.

(2) Where obstacles exist, plan the appropriate operation to avoid the obstacles and ensure that operators and signallers comply with this plan.

(3) Ensue that ground has sufficient and even bearing capacity to avoid all risk of the crane subsiding and overturning. Where necessary or where there is any risk of damaging surface paving or underground services, provide temporary steel plates of suitable size, thickness

(d) Wire ropes of Hoisting Equipment shall have a safety factor of at least 10 against the assumed load;

NK: Wire ropes shall be used for hoisting Personnel.

(e) Lowering the gondola shall be by powered system which prevents any free drop; and

(f) Use of PFAS of any Contractor's Personnel in the gondola shall be ensured.

5.3 HOISTING EQUIPMENT - CRANES

(Refer also to JSSS Chapter 4 [*Contractor's Equipment*])

5.3.1 Planning, Installation and Removal

Unless otherwise approved by the HSO, the Contractor shall employ an appropriately qualified, skilled and experienced crane specialist(s) that shall select the required type and capacity of crane, plan the Hoisting Operation including mobilising, assembly, erection, use, dismantling and removal of cranes. The Contractor's specialist shall:

(1) Investigate the location and position for installation, plan the appropriate installation method taking account of all Hoisting Operation requirements, site and working conditions, location of obstacles, etc.

(2) Investigate the working area and ensure the safety of the crane and any crane rails.

(3) Design and construct crane foundation, assemble and install the crane with proper structural design and in compliance with the manufacturer's written instructions.

(4) Conduct completion inspection, load test and stability test of the crane.

(5) Dismantle and remove and transport cranes in a planned and systematic manner in compliance with the manufacturer's written instructions.

5.3.2 Additional Requirements for Mobile cranes

(1) Position mobile cranes where there are no obstacles within the operation range.

(2) Where obstacles exist, plan the appropriate operation to avoid the obstacles and ensure that operators and signallers comply with this plan.

(3) Ensue that ground has sufficient and even bearing capacity to avoid all risk of the crane subsiding and overturning. Where necessary or where there is any risk of damaging surface paving or underground services, provide temporary steel plates of suitable size, thickness

services, provide temporary steel plates of suitable size, thickness and to support the crane and avoid any risk of overturning during operation.

(4) Provide steel plate load-spreader pads to support outriggers and prevent them from subsiding.

(5) Fully extend outriggers or extension type crawlers to the maximum position.

(6) When the outriggers or crawlers cannot be extended to the maximum position, adjust the Rated Capacity of the mobile cranes to suit lower capacity commensurate to the actual extension length of outriggers or crawlers.

(7) Ensure that the actual Rated Capacity of the mobile crane is clearly shown and also advised to operators and Riggers.

(8) Activate the over-load prevention device of mobile crane and input accurately operation conditions of booms and outriggers.

NK1: Japanese version 5.4.2 (2) is added as (8) in right because this is specific requirement for mobile crane.

(9) Cease the Hoisting Operation from time to time and check upon the condition of the outriggers or crawlers, implement adequate remedial measures if there is any subsidence and prohibit continuation of the Hoisting Operation until the crane has been re-inspected and certified as safe by the HSO.

(10) After the Hoisting Operation ~~and before demobilising~~

JC1: Is this phrase necessary? The expression of the word "demobilising" is too strong that may mean complete removal of the equipment form the Site.

NK: Deleted.

(a) ~~Set the Crane in the safe position;~~

(b) ~~Attach fixing pin on each part;~~

(c) ~~Lock the brake of the turning device and winch drum; and~~

(d) ~~Turn off all switches related with operation of cranes.~~

(a) When the mobile crane is not driven, fix the hooks of crane at the safe position;

(b) When the mobile crane is driven, take the following measures before driving:

(i) Attach fixing pin on each part;

(ii) ~~Lock~~ Apply the brake of the turning device and winch drum; and

JC2: "Lock the brake" is a Japanese English expression.

NK2: Modified as commented.

(iii) Turn off all switches related with operation of cranes.

JC1: These were measures before the equipment drives in Japanese draft. Is these proper if not separating measures "before" and "during" driving?

NK2: In order to separate measures to take before driving, these are modified as above.

and to support the crane and avoid any risk of overturning during operation.

(4) Provide steel plate load-spreader pads to support outriggers and prevent them from subsiding.

(5) Fully extend outriggers or extension type crawlers to the maximum position.

(6) When the outriggers or crawlers cannot be extended to the maximum position, adjust the Rated Capacity of the mobile cranes to suit lower capacity commensurate to the actual extension length of outriggers or crawlers.

(7) Ensure that the actual Rated Capacity of the mobile crane is clearly shown and also advised to operators and Riggers.

(8) Activate the over-load prevention device of mobile cranes and accurately input the operational conditions of booms and outriggers.

(9) Cease the Hoisting Operation from time to time and check upon the condition of the outriggers or crawlers, implement adequate remedial measures if there is any subsidence and prohibit continuation of the Hoisting Operation until the crane has been re-inspected and certified as safe by the HSO.

(10) After the Hoisting Operation:

(a) When the mobile crane is not driven, fix the hooks of crane at the safe position;

(b) When the mobile crane is driven, take the following measures before driving:

(i) Attach fixing pin on each part;

(ii) Apply the brake of the turning device and winch drum; and

(iii) Turn off all switches related with operation of cranes.

and to support the crane and avoid any risk of overturning during operation.

(4) Provide steel plate load-spreader pads to support outriggers and prevent them from subsiding.

(5) Fully extend outriggers or extension type crawlers to the maximum position.

(6) When the outriggers or crawlers cannot be extended to the maximum position, adjust the Rated Capacity of the mobile cranes to suit lower capacity commensurate to the actual extension length of outriggers or crawlers.

(7) Ensure that the actual Rated Capacity of the mobile crane is clearly shown and also advised to operators and Riggers.

(8) Activate the over-load prevention device of mobile cranes and accurately input the operational conditions of booms and outriggers.

(9) Cease the Hoisting Operation from time to time and check upon the condition of the outriggers or crawlers, implement adequate remedial measures if there is any subsidence and prohibit continuation of the Hoisting Operation until the crane has been re-inspected and certified as safe by the HSO.

(10) After the Hoisting Operation:

(a) When the mobile crane is not driven, fix the hooks of crane at the safe position;

(b) When the mobile crane is driven, take the following measures before driving:

(i) Attach fixing pin on each part;

(ii) Apply the brake of the turning device and winch drum; and

(iii) Turn off all switches related with operation of cranes.

5.4 RIGGING EQUIPMENT

5.4.1 Hoisting and Rigging Equipment

(1) All items of Rigging Equipment shall be labelled to show all pertinent information, such as ~~the name of the manufacturer, date of manufacture, the Recommended Safe Working Load, etc.~~ the Safe Working Load, date of the latest inspection, expiration date, etc.

JC2: Please, add “date of the latest inspection” and “validated date of inspection result” as the pertinent information. Although in Japanese draft, “the name of the manufacturer” was included, as a result of re-consideration it was judged unnecessary.

NK2: The clause is modified as per JC comment as above.

(2) ~~The Contractor shall be prohibited from making his own Rigging Equipment at Site.~~ The Contractor shall use Rigging equipment fabricated by reputable manufacturers and shall not make or repair by himself at the Site.

JC2: Isn’t this expression more appropriate in this case?

NK2: The clause is modified as JC suggested.

(3) Rigging Equipment shall only be used:

(a) When certified as safe to use by the HSO in accordance with JSSS 1.33 [*Contractor’s Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*];

(b) Within the Recommended Safe Working Load; and

(c) In full compliance with the manufacturer’s ~~official~~ instructions and recommendations.

JC2:“official” is not necessary.

NKs: Deleted.

(4) Rigging Equipment shall be removed from service, tagged as such and destroyed or removed from the Site, where required by the standards noted in JSSS 5.1.3 [*Compliance Standards*] including (but not limited to) the following conditions:

(a) Wire ropes

(i) Where one-tenth or more of the element wires are broken or cut in any one strand.

(ii) Where the reduction ratio of diameter due to use, exceeds 7% of the original nominal diameter at the date of manufacture.

(iii) With kink or deformation.

(iv) With excessive wear, corrosion or defect.

(b) Chains

(i) Where elongation due to use exceeds 5% of the original nominal length at the date of manufacture.

(ii) Where the diameter of links has reduced by more than 10 % since the date of manufacture.

(iii) With excessive wear, cracks, corrosion or defect.

(c) Hooks, shackles

5.4 RIGGING EQUIPMENT

5.4.1 Hoisting and Rigging Equipment

(1) All items of Rigging Equipment shall be labelled to show all pertinent information, such as the name of the manufacturer, date of manufacture, the Safe Working Load, date of the latest inspection, expiration date, etc.

I suggest edit as above and leaving in reference to manufacturer

(2) The Contractor shall obtain Rigging Equipment from reputable manufacturers approved by the HSO and shall not make or repair his own Rigging Equipment at the Site.

Ditto

(3) Rigging Equipment shall only be used:

(a) When certified as safe to use by the HSO in accordance with JSSS 1.35 [*Contractor’s Equipment, Temporary Works, Safety Equipment and PPE*];

(b) Within the ~~Recommended~~ Safe Working Load; and

(c) In compliance with the manufacturer’s written instructions.

Ditto。

(4) Rigging Equipment shall be removed from service, tagged as such and destroyed or removed from the Site, where required by the standards noted in JSSS 5.1.3 [*Compliance Standards*] including (but not limited to) the following conditions:

(a) Wire ropes

(i) Where one-tenth or more of the element wires are broken or cut in any one strand.

(ii) Where the reduction ratio of diameter due to use, exceeds 7% of the original nominal diameter at the date of manufacture.

(iii) With kink or deformation.

(iv) With excessive wear, corrosion or defect.

(b) Chains

(i) Where elongation due to use exceeds 5% of the original nominal length at the date of manufacture.

(ii) Where the diameter of links has reduced by more than 10 % since the date of manufacture.

(iii) With excessive wear, cracks, corrosion or defect.

(c) Hooks, shackles

5.4 RIGGING EQUIPMENT

5.4.1 Hoisting and Rigging Equipment

(1) All items of Rigging Equipment shall be labelled to show all pertinent information, such as the name of the manufacturer, date of manufacture, the Safe Working Load, date of the latest inspection, expiration date, etc.

(2) The Contractor shall obtain Rigging Equipment from reputable manufacturers approved by the HSO and shall not make or repair his own Rigging Equipment at the Site.

(3) Rigging Equipment shall only be used:

(a) When certified as safe to use by the HSO in accordance with JSSS 1.35 [*Contractor’s Equipment, Temporary Works, Safety Equipment and PPE*];

(b) Within the Safe Working Load; and

(c) In compliance with the manufacturer’s written instructions.

(4) Rigging Equipment shall be removed from service, tagged as such and destroyed or removed from the Site, where required by the standards noted in JSSS 5.1.3 [*Compliance Standards*] including (but not limited to) the following conditions:

(5) Wire ropes

(a) Where one-tenth or more of the element wires are broken or cut in any one strand.

(b) Where the reduction ratio of diameter due to use, exceeds 7% of the original nominal diameter at the date of manufacture.

(c) With kink or deformation.

(d) With excessive wear, corrosion or defect.

(6) Chains

(a) Where elongation due to use exceeds 5% of the original nominal length at the date of manufacture.

(b) Where the diameter of links has reduced by more than 10 % since the date of manufacture.

(c) With excessive wear, cracks, corrosion or defect.

(7) Hooks, shackles

(a) Signs of deformation.

(b) With excessive wear, cracks, corrosion or defect.

(8) Synthetic fibre ropes or slings

(a) Broken or cut strands.

(b) With excessive wear or defect.

(i) Signs of deformation.

(ii) With excessive wear, cracks, corrosion or defect.

(d) Synthetic fibre ropes or slings

(i) Broken or cut strands.

(ii) With excessive wear or defect.

5.4.2 Further Safety Requirements for Rigging

The Contractor shall fully comply ~~fully~~ with the requirements of the standards noted in JSSS 5.1.3 [*Compliance Standards*] including taking the following measures to prevent the risk of injury:

JC1: modified.

(1) Attach colour-coded self-adhesive vinyl tape and labels for slings visibly indicating the month of inspection and whether suitable for use.

(2) Inspect all Rigging Equipment before start of works.

(3) ~~Remove any unusable or defective Rigging Equipment from service, tag as such and destroy or remove from the Site.~~

JC1: Isn't this a duplication of 5.5.1 (4)?

NK1: This (3) is duplication. Deleted.

(3) Select and use suitable Rigging Equipment depending on the weight and shape of ~~loads~~ Goods.

Jc2: "Goods" is used in this chapter for hoisting load.

NK2: Changed to "Goods" as commented.

(4) Apply appropriate set up, provide fittings and accessories including clips and friction pads during Hoisting Works to ensure that the hoisted load (including bundled loads) are secure and will not move or slip, for example, cable-laid slings referred to BS EN 13414-3 Steel wire rope slings – Safety, Part 3: Grommets and cable-laid slings.

JC1: 4. Sling methods are generally described. For example, BS EN 13414 "Steel wire rope slings – Safety"

NK1: Tentatively add BS to (4) above.

(5) Hoist loads at or above the centre of gravity.

(6) Attach guide ropes to the hoisted loads to assist with positioning.

(7) Securely store and protect Rigging Equipment to maintain in good condition and to prevent damage from rain, dust or contamination.

(i) Signs of deformation.

(ii) With excessive wear, cracks, corrosion or defect.

(d) Synthetic fibre ropes or slings

(i) Broken or cut strands.

(ii) With excessive wear or defect.

5.4.2 Further Safety Requirements for Rigging

The Contractor shall fully comply with the requirements of the standards noted in JSSS 5.1.3 [*Compliance Standards*] including taking the following measures to prevent the risk of injury:

(1) Attach colour-coded self-adhesive vinyl tape and labels for slings visibly indicating the month of inspection and whether suitable for use.

(2) Inspect all Rigging Equipment before start of works.

(3) Select and use suitable Rigging Equipment depending on the weight and shape of Goods.

(4) Apply appropriate set up, provide fittings and accessories including clips and friction pads during Hoisting Works to ensure that the hoisted load (including bundled loads) are secure and will not move or slip, for example, cable-laid slings referred to BS EN 13414-3 Steel wire rope slings – Safety, Part 3: Grommets and cable-laid slings.

(5) Hoist loads at or above the centre of gravity.

(6) Attach guide ropes to the hoisted loads to assist with positioning.

(7) Securely store and protect Rigging Equipment to maintain in good condition and to prevent damage from rain, dust or contamination.

5.4.2 Further Safety Requirements for Rigging

The Contractor shall fully comply with the requirements of the standards noted in JSSS 5.1.3 [*Compliance Standards*] including taking the following measures to prevent the risk of injury:

(1) Attach colour-coded self-adhesive vinyl tape and labels for slings visibly indicating the month of inspection and whether suitable for use.

(2) Inspect all Rigging Equipment before start of works.

(3) Select and use suitable Rigging Equipment depending on the weight and shape of Goods.

(4) Apply appropriate set up, provide fittings and accessories including clips and friction pads during Hoisting Works to ensure that the hoisted load (including bundled loads) are secure and will not move or slip, for example, cable-laid slings referred to BS EN 13414-3 Steel wire rope slings – Safety, Part 3: Grommets and cable-laid slings.

(5) Hoist loads at or above the centre of gravity.

(6) Attach guide ropes to the hoisted loads to assist with positioning.

(7) Securely store and protect Rigging Equipment to maintain in good condition and to prevent damage from rain, dust or contamination.

NK comment and change on 20200620
Changes
notes

JICA STANDARD SAFETY SPECIFICATION FOR PROJECT IMPLEMENTATION UNDER JAPANESE ODA

CHAPTER 5: HOISTING AND RIGGING

Japan International Cooperation Agency (JICA)

JICA STANDARD SAFETY SPECIFICATION (JSSS)
CHAPTER 5: HOISTING AND RIGGING

Table of Contents

5.1 GENERAL REQUIREMENTS

5.1.1 Scope

~~This Chapter contains examples of required safety measures for Hoisting Operations as defined in JSSS Annex 1.1 [*Definitions and Abbreviations*] including associated Hoisting Equipment and Rigging Equipment, all as necessary to avoid risk of injury, death or damage to Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where the Works are being executed and who may be affected by such operations including neighbouring residents and other persons and property on adjacent areas, public roads and footpaths or buildings.~~

We have simplified the above clause to:

1) remove text that is covered by the contract

2) line it up more closely with the definition in Annex 1.1

3) specified the coverage more clearly so that it can be referred to as "Hoisting and Rigging".

We have/will change this consistently in all chapters in subsequent editing

(1) This Chapter specifies the safety requirements for Hoisting and Rigging Works which shall include:

(a) Hoisting Operations;

(b) Hoisting Equipment; and

(c) Rigging Equipment.

and hereinafter collectively referred to as "Hoisting and Rigging".

(2) General requirements for Contractor's Equipment for Hoisting and Rigging (including cranes) are included in JSSS 4.0 [*Contractor's Equipment*].

Additional particular requirements are contained in this Chapter.

5.1.2 Definitions

Definitions of terms for the purpose of this Chapter are as follows:

(1) "**Hoisting Equipment**" means Contractor's Equipment such as cranes, hoists, chain-blocks, pulleys and the like which constitute the prime mover which, when used with Rigging Equipment, permits loads to be hoisted or lowered and positioned.

(2) "**Rigging Equipment**" means the ropes, webbing, chains and slings together with all associated accessories such as hooks, hoisting points, shackles, etc. which~~, when~~ used with Hoisting Equipment, permit loads to be hoisted or lowered, and positioned.

"Which" is correct as above.

NK: modified "which"

(3) "**Rated Capacity**" means the maximum hoisting load for each type of Hoisting Equipment as officially permitted by the manufacturer. This will vary according to configuration of Hoisting Equipment and conditions of use such as length and angle of boom and other factors as permitted by the manufacturer.

(4) "**Safe Working Load**" means the maximum safe working load for each type, size and capacity of Rigging Equipment as officially recommended by the manufacturer.

"Recommended" can be deleted from above

~~(5) "**Total Load**" means either the Rated Capacity or the "Recommended Safe Working Load", neither of which shall be exceeded.~~

(6) "**Rigger**" means a competent person who is certified by the HSO as suitable for assignment to Hoisting and Rigging under this Chapter in accordance with JSSS 1.18 [*Proper Placement of Contractor's Personnel*].

I suggest editing as above

5.1.3 Compliance Standards

(1) By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*], for any items in this Chapter or relevant to the subject of this Chapter and which are not fully covered by JSSS, the Contractor shall comply with the technical requirements of the following standards in OSHA PART 1926 - Safety and Health Regulations for Construction:

(a) Subpart H - Materials Handling, Storage, Use, and Disposal; Section 1926.251 Rigging equipment for material handling,

(b) Subpart R- Steel Erection; Hoisting and rigging;

(Whilst this standard is related to Steel Erection, JSSS requires these technical requirements to apply to Hoisting Operations and associated rigging requirements in construction works generally)

(c) Subpart CC - Cranes and Derricks in Construction; Section 1926.1413 Wire Rope - Inspection and Section 1926.1414 – Wire Rope - Selection and installation criteria.

5.2 HOISTING OPERATIONS

5.2.1 Instruction for Contractor's Personnel

Further to the requirements of JSSS 1.7 [*Contractor's Safety Plans*], JSSS 1.9 [*Contractor's Method Statements*] and JSSS 1.15 [*Contractor's Safety Management Activities*], the Contractor shall include details of the following in the Method Statement and Safety Plan for Hoisting Operations and shall fully inform all Contractor's Personnel associated with such Hoisting Operations of these requirements before the commencement of any such operations, including:

(1) Scope, Area and Risk of the Hoisting Operation

(a) The scope of the required Hoisting Operation, the Rated Capacity, Safe Working Load, nature of Goods to be hoisted, location, required methods and safety arrangements;

(b) The Hoisting Operation area limits;

(c) Requirements on the ground conditions for installation, appropriate installation method taking account of all Hoisting Operation requirements, site and working conditions, location of obstacles, etc.;

(d) The working environment of the nearby areas to which particular attention should be paid (e.g. storage of Dangerous Goods or Hazardous Substances, Hazardous Areas, Operational Areas, or Overhead Services);

(e) The preservation of safe access, ~~W~~ and walkways , ~~Passageways and footpaths~~ around the Hoisting Operations working area; and

NK: Please review the above based on the last modification in 6.4 WALKWAYS, LADDERS AND STEPLADDERS

(f) The potential danger of Hoisting Operations to other Contractor's Personnel, Employer's Personnel and any other persons that are on the Site, adjacent to the Site and other places (if any) where the Works are being executed and who may be affected by such operations.

(2) Hoisting Operation and Rigging Requirements

(a) The type of Hoisting Equipment to be used and its Rated Capacity;

(b) The ~~Recommended~~ Safe Working Load and type(s) of Rigging Equipment to be used;

(c) Hazards associated with the Hoisting Operation;

(d) Role and responsibility of the operator and each Rigger;

(e) Establishing targets for the day;

(f) Weight of Goods being hoisted;

(g) The shapes and characteristics of Goods being hoisted;

(h) The presence of any obstructions or Overhead Services and consequent restrictions on the movement and operation of Hoisting Equipment; and

~~(i) Any limitations of Hosting Equipment; and~~

This can be deleted as you suggest.

(j) Connecting and disconnecting techniques.

I suggest this is included as above, which is simply altered.

(3) Identification of Personnel

(a) The identity of operators, Riggers and any other workers associated with the Hoisting Operation;

(b) The name of the authorised operator for each unit of Hoisting Equipment.

(c) The identity of and location(s) for Spotters;

Above is changed to be consistent with the definition

(d) The communication and signalling requirements (equipment to be used and standard signals); and

(e) The procedures in case of emergency.

5.2.2 Operators and Riggers Generally

I have changed the above heading and combined the content as these re largely common requirements for both

No need for the following duplication:

~~(a) The Contractor shall select and assign operators and drivers (hereinafter referred to collectively as "operators") of Hoisting Equipment in accordance with JSSS 1.18 [*Proper Placement of Contractor's Personnel*].~~

Added for consistency with Chapter 4:

(1) The Contractor shall place signs on each unit of Hoisting Equipment showing the name of each authorised operator and clearly prohibiting all unauthorised persons from using, handling, operating or sitting at the controls of that equipment unit.

Following is added for consistency with Chapter 5

(2) Further to the requirements of JSSS 1.18 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that operators and Riggers are appropriately qualified, skilled and experienced in operation of the Hoisting Equipment to which they are assigned and duly certified as such by the HSO.

(3) Operators and Riggers shall be fully aware of the following:

(a) Work procedures, possible risks and operation methods;

(b) The need to stop all work when any defect or abnormality is detected;

(c) Not to remove, interfere with or override any safety devices;

(d) The identity of and location(s) for Spotters and the communication and signalling requirements including equipment to be used and signals; and

(e) The procedures in case of emergency.

(4) In addition, operators shall:

(a) Safely and competently operate the Hoisting Equipment;

(b) Operate all safety devices including emergency alarm and stop devices;

(c) Inspect, clean, service and maintain the unit of Hoisting Equipment under their responsibility and control or ensure that other qualified persons perform these operations.

NK: Please refer to the comment on 4.1.6 (3) (b) copied below.

JCA12: Isn't this the operator's responsibility but equipment supervisor?
NK: As commented, it is supervisor's duty to control these aspects. Deleted.
MD: Do not agree. The supervisor (whoever he is) may be responsible for managing servicing and maintenance but the operator is the primary person, he should not start or continue to use any equipment that he knows requires repair, service or maintenance.
NK6/19: the last paragraph "that other qualified persons perform these operations" is difficult to understand. Does it mean Operators shall control performing each other's operation?
NK propose as follows: to add (c)/(d) Ensure that other qualified persons safely operate Contractor's Equipment.

(5) The Contractor shall assign only Riggers for Hoisting Operations and shall prohibit other workers from any involvement.

(6) The names of all assigned Riggers shall be posted prominently in the working area of the Hoisting Operation.

5.2.3 Safety Training

Heading and content is amended as reference does not separately mention "education", which is not therefore necessary

The Contractor shall provide health and safety training in accordance with JSSS 1.19 [*Safety Training Generally*]. taking account of the characteristics of the Hoisting Operations, Hoisting Equipment and Rigging Equipment.

5.2.4 Inspection of Hoisting Equipment and Rigging Equipment

(1) When the Hoisting Equipment is mobilised to the Site, the Contractor shall inspect the equipment complying with JSSS 4.2 [*Inspection, Maintenance and Repair*], to ensure that the equipment is free from defect and suitable for the planned Hoisting Operation.

I suggest that cross reference should be to the general sub-clause rather than the particular sub-sub-clause so as to provide wider reference and to assist with future coordination.

(2) Further to the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*] and JSSS 4.2 [*Inspection, Maintenance and Repair*], the HSO shall ensure that all Hoisting Equipment and all Rigging Equipment is inspected and maintained when it is at the location of operation before the commencement of the first and of all subsequent Hoisting Operations.

Rather than cross referencing to the sub-sub-clause above, just delete the separate number which makes it a separate paragraph of the same number

Inspections shall include all items necessary to ensure the safe performance of the Hoisting Operations including the following examples and any further requirements due to the characteristics of the Hoisting Operation and the capability and condition of the Hoisting Equipment and Rigging Equipment including condition and performance of:

(a) Anti-two blocking devices (over-winding prevention devices) and over-load prevention devices;

(b) Other safety devices including brakes, clutches and controllers;

(c) Rails for trolley and runway;

(d) Hooks, sheaves, blocks, pulleys and the like;

(e) Cables, ropes and the like; and

(f) Rigging Equipment.

(3) Periodic inspection shall be made complying with JSSS 4.2 [*Inspection, Maintenance and Repair*] and include the following items:

(a) Condition of over-winding prevention devices, anti-two blocking devices (over-winding prevention devices), other safety devices, brakes, and clutches;

(b) Condition of wire ropes and hanging chains;

(c) Condition of the Hoisting Equipment's;

(d) Condition of placement of winches; and

(e) Condition of electric wire, switchboard and controller.

(4) No Hoisting Equipment or Rigging Equipment shall be put into operation unless it has been inspected in accordance with the requirements of JSSS 4.2 [*Inspection, Maintenance and Repair*], and it is ensured that it is safe to be used.

Above is included as suggested and edited.

(5) The Contractor shall prepare standard checklists for the above regular and periodic inspections. The results of these inspections shall be recorded and kept in accordance with JSSS 1.33 [*Health and Safety Records*].

5.2.5 General Safety Measures for Hoisting Operations

The Contractor shall:

(1) Select Hoisting Equipment which has a Rated Capacity and function compatible with the work conditions and requirements, including loads, surface conditions, access, working area, radius and angle of boom, etc.

(2) Clearly display the Rated Capacity of the Hoisting Equipment so that all operators and Riggers are fully aware at all times.

(3) Select Rigging Equipment with Safe Working Load suitable for the Hoisting Operation.

(4) Select Rigging Equipment compatible with the purpose, work conditions and requirements.

(5) Ensure that operators and Riggers confirm that the load on the Rigging Equipment is less than the Safe Working Load.

(6) Activate all safety devices of Hoisting Equipment throughout the entire operation time(s) of any Hoisting Operations.

(7) Prohibition of entry

Designate all Hoisting Operations as "Dangerous Work", enclose the entire working area which is subject to any risk by providing temporary fences or barriers, prevent entry of

any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry – Dangerous Work*].

The Contractor shall take measures to keep any unauthorised personnel away from any area where there is any risk of injury arising from the Hoisting Operation, due to fall of hoisted Goods, tangling, snagging, rebound of broken ropes or cables, broken sheaves, droppage and the like.

(8) Signalling

(a) Signalling between operators, Riggers and any associated workers regarding the Hoisting and Rigging Operations, shall only be carried out by Riggers, (hereinafter referred to as signallers);

(b) Signallers shall be located in a safe place outside the immediate area where the Rigging and Hoisting Operations are taking place, but in a location where they can clearly see suspended loads and can also see the operator and also be seen by such personnel;

(c) When it is not possible for signallers to give direct visible signals to the operator, hand-held radios or other communication tool as approved by HSO must be provided and used; and

I suggest edit as above

(d) In addition, Spotters shall be placed and used only to keep any unauthorised personnel away from the working area.

(9) During Hoisting Operations:

(a) Check if the hoisting points, hooks and the like are positioned above the centre of gravity of the load to be hoisted;

(b) At commencement of all Hoisting Operations, stop the hoist at 30 cm from hoisting level, to check stability and ensure that all is in order before proceeding;

(c) Ensure that there are no persons and objects within the turning area when the Hoisting Equipment turns;

(d) After hoisting loads up to the safe height, adjust the boom gently;

(e) Always pay attention to any movement of the boom and the condition of suspended loads; and

I suggest edit as above

(f) When unloading or detaching loads, stop once before landing and check the condition of the landing place and the load and then continue to lower gently.

(10) Ensure that Operators shall never leave their seat or leave the controls while Hoisting Operations are in progress.

(11) Defects with Hoisting Equipment during operation

(a) Ensure that if operators notice any defect or abnormality in the Hoisting Equipment during Hoisting Operations (such as abnormal noise, temperature, smell, etc.) the operator shall stop the Hoisting Operation immediately;

(b) Identify the cause of the defect or abnormality and make necessary repairs by using authorised and qualified specialist mechanics, electricians or representative technical engineers authorised by the hoisting Equipment manufacturer; and

(c) Ensure that the repaired Hoisting Equipment shall not be put in operation unless certified by the HSO.

(12) Condition of Ropes, Slings and Chains

Ensure that untested, uncertified, broken, damaged, deformed or defective ropes, chains or slings shall not be used.

(13) Adverse Weather

Take the following measures in addition to JSSS 2.7 [*Adverse Weather Requirements*]:

(a) Hoisting Equipment is left in a safe condition when not in use and particularly if adverse climatic conditions can be anticipated;

(b) All anchors, outriggers and supports are secure and adequate to fix and support the Hoisting Equipment in position during any adverse climatic conditions; and

(c) Booms and jibs shall be secured to prevent any instability or collapse.

(d) Before resuming any Hoisting Operation after any adverse weather, inspect Hoisting Equipment using the daily and periodic checklists specified in JSSS 5.2.4 [*Inspection of Hoisting Equipment and Rigging Equipment*].

(14) Use of Hoisting Equipment for Contractor's Personnel

As a general rule, Hoisting Equipment shall not be used for transporting or hoisting Contractor's Personnel.

In exceptional circumstances and if so approved by the HSO, use of Hoisting Equipment may be allowed when the following all measures are taken:

(a) Dedicated gondola for transporting or hoisting shall be provided;

(b) Prevention measures shall be taken to avoid turning and falling of gondola;

(c) The assumed load (i.e. 1.3 times of total weight of gondola and workers on board plus 500 kg) shall not exceed the Rated Capacity of the Hoisting Equipment;

(d) ~~Wires and ropes~~ Wire ropes of Hoisting Equipment shall have a safety factor of at least 10 against the assumed load;

NK: Wire ropes shall be used for hoisting Personnel.

(e) Lowering the gondola shall be by powered system which prevents any free drop; and

(f) Use of PFAS of any Contractor's Personnel in the gondola shall be ensured.

Please check editing of above

5.3 HOISTING EQUIPMENT - CRANES

(Refer also to JSSS Chapter 4 [*Contractor's Equipment*])

5.3.1 Planning, Installation and Removal

Unless otherwise approved by the HSO, the Contractor shall employ an appropriately qualified, skilled and experienced crane specialist(s) that shall select the required type and capacity of crane, plan the Hoisting Operation including mobilising, assembly, erection, use, dismantling and removal of cranes. The Contractor's specialist shall:

(1) Investigate the location and position for installation, plan the appropriate installation method taking account of all Hoisting Operation requirements, site and working conditions, location of obstacles, etc.

(2) Investigate the working area and ensure the safety of the crane and any crane rails.

(3) Design and construct crane foundation, assemble and install the crane with proper structural design and in compliance with the manufacturer's written instructions.

(4) Conduct completion inspection, load test and stability test of the crane.

(5) Dismantle and remove and transport cranes in a planned and systematic manner in compliance with the manufacturer's written instructions.

5.3.2 Additional Requirements for Mobile cranes

(1) Position mobile cranes where there are no obstacles within the operation range.

(2) Where obstacles exist, plan the appropriate operation to avoid the obstacles and ensure that operators and signallers comply with this plan.

(3) Ensue that ground has sufficient and even bearing capacity to avoid all risk of the crane subsiding and overturning. Where necessary or where there is any risk of damaging surface paving or underground services, provide temporary steel plates of suitable size, thickness and to support the crane and avoid any risk of overturning during operation.

(4) Provide steel plate load-spreader pads to support outriggers and prevent them from subsiding.

(5) Fully extend outriggers or extension type crawlers to the maximum position.

(6) When the outriggers or crawlers cannot be extended to the maximum position, adjust the Rated Capacity of the mobile cranes to suit lower capacity commensurate to the actual extension length of outriggers or crawlers.

(7) Ensure that the actual Rated Capacity of the mobile crane is clearly shown and also advised to operators and Riggers.

(8) Activate the over-load prevention device of mobile cranes and accurately input the operational conditions of booms and outriggers.

(9) Cease the Hoisting Operation from time to time and check upon the condition of the outriggers or crawlers, implement adequate remedial measures if there is any subsidence and prohibit continuation of the Hoisting Operation until the crane has been re-inspected and certified as safe by the HSO.

(10) After the Hoisting Operation:

(a) When the mobile crane is not driven, fix the hooks of crane at the safe position;

(b) When the mobile crane is driven, take the following measures before driving:

(i) Attach fixing pin on each part;

(ii) Apply the brake of the turning device and winch drum; and

(iii) Turn off all switches related with operation of cranes.

5.4 RIGGING EQUIPMENT

5.4.1 Hoisting and Rigging Equipment

(1) All items of Rigging Equipment shall be labelled to show all pertinent information, such as the name of the manufacturer, date of manufacture, the Safe Working Load, date of the latest inspection, expiration date, etc.

I suggest edit as above and leaving in reference to manufacturer

(1) The Contractor shall obtain Rigging Equipment from reputable manufacturers approved by the HSO and shall not make or repair his own Rigging Equipment at the Site.

Ditto

(2) Rigging Equipment shall only be used:

(a) When certified as safe to use by the HSO in accordance with JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*];

(b) Within the ~~Recommended~~ Safe Working Load; and

(c) In compliance with the manufacturer's written instructions.

Ditto

(3) Rigging Equipment shall be removed from service, tagged as such and destroyed or removed from the Site, where required by the standards noted in JSSS 5.1.3 [*Compliance Standards*] including (but not limited to) the following conditions:

(a) Wire ropes

(i) Where one-tenth or more of the element wires are broken or cut in any one strand.

(ii) Where the reduction ratio of diameter due to use, exceeds 7% of the original nominal diameter at the date of manufacture.

(iii) With kink or deformation.

(iv) With excessive wear, corrosion or defect.

(b) Chains

(i) Where elongation due to use exceeds 5% of the original nominal length at the date of manufacture.

(ii) Where the diameter of links has reduced by more than 10 % since the date of manufacture.

(iii) With excessive wear, cracks, corrosion or defect.

(c) Hooks, shackles

(i) Signs of deformation.

(ii) With excessive wear, cracks, corrosion or defect.

(d) Synthetic fibre ropes or slings

(i) Broken or cut strands.

(ii) With excessive wear or defect.

5.4.2 Further Safety Requirements for Rigging

The Contractor shall fully comply with the requirements of the standards noted in JSSS 5.1.3 [*Compliance Standards*] including taking the following measures to prevent the risk of injury:

(1) Attach colour-coded self-adhesive vinyl tape and labels for slings visibly indicating the month of inspection and whether suitable for use.

(2) Inspect all Rigging Equipment before start of works.

(3) Select and use suitable Rigging Equipment depending on the weight and shape of Goods.

(3) Apply appropriate set up, provide fittings and accessories including clips and friction pads during Hoisting Works to ensure that the hoisted load (including bundled loads) are secure and will not move or slip, for example, cable-laid slings referred to BS EN 13414-3 Steel wire rope slings – Safety, Part 3: Grommets and cable-laid slings.

(4) Hoist loads at or above the centre of gravity.

(5) Attach guide ropes to the hoisted loads to assist with positioning.

(6) Securely store and protect Rigging Equipment to maintain in good condition and to prevent damage from rain, dust or contamination.

検討経緯書

6 Temporary Works

2019.9.XX JICA PFD-J
2019.9.11 NK R0
2019.10.31NK R1

JSSS in Japanese （Provisional Final Draft R1 10/31）	JSSS in English R0（Provisional Final Draft XX）translated by NK 9/11	JSSS in English R1（Provisional Final Draft 10/31）translated by NK 10/31 Note: Words with underlines are addition/change from R0.
7 仮設工事 **7.1 一般事項** **7.1.1 仮設工事の留意点** (1) 全ての仮設構造物に関する設計、施工、使用及び解体を本仕様書に従って実施しなければならない。 ただし、請負者がリスクアセスメントにもとづき申請し、エンジニアが認めたものは、本仕様書で規定する要求事項の一部の規定を除外することができる。 (2) 請負者は仮設構造物の設計、施工、使用および解体に関する管理体制及び手法(procedural control)を定め、作業計画書又は安全衛生詳細計画書に記述しなければならない。かかる計画書は仮設構造物の種類に応じて、関連の本設工事にかかる両計画書に含めることでもよい。	**7 Temporary Works** **7.1 General** **7.1.1 General Requirement** (1) The Contractor shall execute design of the all Temporary Works (TW) in accordance with JSSS ~~7.1.3~~ other than specified in the Contract separately from JSSS. (2) The Contractor shall determine procedural control method of the management of design, construction and operation, and demolition of the TW and describe it in the Method Statement (MS) and the Particular Safety Plan (PSP). These MS and PSP may be included in those for construction of Main Works related with the TW. (3) The Contractor shall apply JSSS 7.1[General] to structures of TW for construction of the Main Works such as earth retaining structures, coffering, scaffoldings, platforms specified in JSSS and other structures such as concrete formwork supports, temporary bridge, temporary pier and so on.	**7 Temporary Works** **7.1 General** **7.1.1 General Requirement** (1) The Contractor shall execute design, construction, operation and demolition of the all Temporary Works (TW) in accordance with JSSS other than specified in the Contract separately from JSSS. When the Contractor requests the Engineer exemption of application of JSSS based on the results of risk assessment of Temporary Work and the Engineer agrees to the requests, a/some part(s) of JSSS may be exempted to apply to the TW. (2) The Contractor shall determine procedural control organization and method of the management of design, construction and operation, and demolition of the TW and describe it in the Method Statement (MS) and the Particular Safety Plan (PSP). These MS and PSP may be included in those for construction of Permanent Works related with the TW.
7.1.2 作業計画書及び安全衛生詳細計画書の作成 請負者は、本仕様書 1.3[安全衛生にかかわる計画書]に従い、次に規定する仮設工事又は仮設構造物（以下、本款では「仮設工事」という。）の作業計画書及び安全衛生詳細計画書（以下、本款では「計画書」という。）を、作成しなければならない。 (1) 計画書を作成しなければならない仮設工事 (a) 足場（つり足場、張出し足場以外の足場にあっては、高さが 5m 以上の構造のものに限る）の組立て、使用及び解体作業 (b) 型枠支保工の組立て、使用及び解体作業 (c) 明り掘削の高さ又は深さが 2m 以上である地山の掘削作業 (d) 土留め工（掘削の深さが 1.5mを超える場合には、原則として施工）の組立て、使用及び解体作業 (e) 上部構造の高さが 5m以上又は支間が 30m以上の橋梁の建設のための仮設工事 (f) 構造部材の高さが 5m 以上の構造物の建設のための仮設工事。なお、木造建築物は軒高が 5m 以上。 (g) 本契約で別途定める仮設工事及びエンジニアが指定する仮設工事 (3) 計画書の一部として作成すべき書類 仮設工事のリスクアセスメントにもとづき、仮設工事のリスクの程度に応じて次表に示す書類及びエンジアが指示する書類を、計画書の一部として作	**7.1.2 Method Statement (MS) and the Particular Safety Plan (PSP)** The Contractor shall ~~submit the Engineer~~ the MS and PSP (hereunder Plans) in accordance with JSSS 1.3[Plan for Safety and Health] for the following TW or temporary structures (hereunder TW): ~~(1) TWs depending on risk glade~~ ~~To execute risk analysis in accordance with JSSS 1.3.4[PSP](3) for TW except TW such as the following which the Contractor considers can be surely constructed without risk:~~ ~~(a) Temporary structures such as scaffoldings, falsework (concrete form supports) and platforms not higher than 2m which has no risk of failure or collapse,~~ ~~(b) Temporary excavation not deeper or higher than 1.5 m which has no risk of collapse of excavation surface or fall of ground material, and~~ ~~(c) TW which the Engineer give consent to the Contractor's opinion of TW's safety~~ ~~The Contractor shall include the following document specified in (3) below in the Plans depending of risk grade:~~ ~~(a) Low risk TW: Document A~~ ~~(b) Middle risk TW: Document B~~ ~~(c) High risk TW: Document C~~	**7.1.2 Method Statement (MS) and the Particular Safety Plan (PSP)** The Contractor shall prepare the MS and PSP (hereunder Plans) in accordance with JSSS 1.3[Plan for Safety and Health] for the following TW or temporary structures (hereunder called as TW): (1) TWs for which Plans shall be mandatory prepared (a) Erection, use and demolition of scaffolds with a height of 5 m or more, suspension scaffolds and outrigger scaffolds, (b) Erection, use and demolition of falseworks (concrete form supports), (c) Open excavation of 2m in height or depth, or more, (d) Erection, use and demolition of earth retaining and support system (in principle, the system shall be provided where excavation depth is 1.5 m or more.), (e) Temporary Works for construction of bridge which upper structure height is 5 m or more or span length is 30 m or more, (f) Temporary Works for construction of structure which structural member height is of 5m or more (in case construction of wooden building, eave height is of 5m or more), and (g) Temporary Works specified in the Contract separately from JSSS or instructed by the Engineer.

成すること。

No	書類	リスクの程度		
		低い	中程度	高い
1	リスクアセスメント	✔	✔	✔
2	設計照査の記録	✔	✔	✔
3	品質保証書(注 1)	✔	✔	✔
4	設計図(注 2)	✔	✔	✔
5	施工手順図(注 3)	－	✔	✔
6	モニタリング計画	－	－	✔

注記：

注：✔のある書類は、計画書の一部として作成すべき書類。

注1:GC4.9 に規定の品質保証システムにもとづく、設計の品質を保証する書類。

注 2:仮設工事で使用する材料の仕様及び主要寸法を含む仮設工事の平面図、横断図、縦断図等の設計図面(Design drawings)。

注 3：施工の手順を示す図面（Construction procedure/sequence/method drawings）

~~(2) TWs mandatory to submit Plans~~

~~The Contractor shall submit Plans of the following TWs regardless of the above (1). The Plans shall include the document specified in (3) below in the Plans depending of risk grade.~~

~~(a) Falsework (concrete form supports) which height is equal to or higher than 3.5 m,~~

~~(b) Scaffolding which height is equal to or higher than 10 m, suspension scaffoldings and outrigger scaffoldings, and~~

~~(c) TW specified in the Contract separately from the JSSS.~~

~~(3) Document to be submitted in Plans~~

~~The document to be submitted in Plans specified in above (1) and (2) is as follows:~~

~~(a) Document A consisting of risk assessment, design drawings, materials specification design check records and design quality assurance records which is specified in GC 4.9 [Quality Assurance],~~

~~(b) Document B consisting of risk assessment, design report and design calculations, design drawings, assembly drawings, materials specification design check records and design quality assurance records, and~~

~~(c) Document C consisting of risk assessment, design report and design calculations, design drawings, assembly drawings, materials specification, design check records, design quality assurance records, and monitoring plan.~~

~~(4) When the Engineer request the Contractor to submit documents for review of the safety other than above (a) and (b), the Contractor shall comply with it.~~

(2) Document to be included in Plans

The Contractor shall prepare document given in the following table depending on the risk grade evaluated by risk assessment of the Temporary Woks and that instructed by the Engineer. The document shall be included in the Plans.

No	Document (*1)	Grade of Risk		
		Low	Middle	High
1	Risk assessment	✔	✔	✔
2	Design check record	✔	✔	✔
3	Quality assurance document (*2)	✔	✔	✔
4	Design drawings (*3)	✔	✔	✔
5	Construction method drawings (*4)	-	✔	✔
6	Monitoring plan	-	-	✔

Note:

*1 Document marked with ✔ shall be prepared as a part of Plans.

*2 Document prepared in accordance with GC 4.9 Quality Assurance.

*3 Drawings to show design of Temporary Works including plans, cross and longitudinal sections, specifications and main dimensions of materials to be used.

*4 Drawings to show method/procedure/sequence of construction of Temporary Works.

7.1.3 仮設工事の設計及び設計照査

請負者は、本契約で別途に定めがない限り、次の規定を遵守し、仮設工事の設計及び設計照査を行わなければならない。

(1) 仮設工事の設計手順

請負者は仮設工事の設計及び安全に関する十分な知識と経験を持つ者（competent person）に設計を行わせなければならない。また、仮設工事の設計者とは異なる要員で、仮設工事にかかる設計の難易度に照らし合わせて十分な知識と経験を持つ者（competent person）に設計の照査をさせなければならない。

簡易な仮設工事でエンジニアから同意を得られる場合を除き、設計照査を行う者は、当該仮設工事に関する設計に関与していない者でなければならない。

(2) 仮設工事の設計

7.1.3 Method Statement (MS) and the Particular Safety Plan (PSP)

The Contractor shall make design and design check of TW in accordance with the following requirements other than specified in the Contract separately from JSSS.

(1) Design procedure of TW

The Contractor shall make the competent person (designer), who has sufficient knowledge and experience, design TW and another competent person (design checker) design check of TW. The design checker shall be different person from the designer depending difficulty of design of TW.

Except in case the Engineer concur to TW is simple, the design checker shall be person has no relation with the design of TW.

(2) Design procedure of TW

The designer shall make design report, design calculations, design

7.1.3 Method Statement (MS) and the Particular Safety Plan (PSP)

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Except in case the Engineer concur to TW is simple, the design checker shall be person has no relation with the design of TW.

(2) Design procedure of TW

The designer shall make design report, design calculations, design

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仮設工事の設計者は、仮設工事にかかる設計書、設計計算書、構造図、組立図、モニタリング計画を作成しなければならない。 仮設工事の設計者は、本款(4)に示す設計基準に基づき、必要に応じ以下の事項を考慮して設計を行わなければならない。 (a) 本設工事の設計、仕様書 (b) 地盤条件等の Site Data、アクセス、周辺環境等の現場での施工条件 (c) 本設工事の工程 (d) 仮設工事のために用いる機械及び材料、仮設工事の段取り (e) 本設工事の荷重 (f) 仮設工事が本設工事に与える荷重 (3) 仮設工事の設計照査 設計照査を行う者は、設計の適切性、正確性、設計要求事項への遵守の観点から設計照査を行わなくてはならない。 (4) 仮設工事の設計基準 仮設工事の設計では、本契約で別途に定めがない限り、以下の基準に準拠しなければならない。なお、基準は、契約の基準日時点での最新のものでなくてはならない。但し、請負者が適用する基準を別途提案し、エンジニアがこれに同意した場合には、この限りではない。 (a) BS 5975 Code of practice for temporary works procedures and the permissible stress design of falsework (b) BS 6031 Code of practice for earthworks (c) BS 8002 Code of practice for earth retaining structures (d) BS 8002 Code of practice for earth retaining structures (e) BS 8004 Code of practice for foundations (f) BS 8081 Code of Practice for grouted anchors (g) BS EN 12811-1 Temporary works equipment-Part 1: Scaffolds - Performance requirements and general design (h) BS EN 12812 Falsework. Performance requirements and general design (i) BS EN 1993 (all parts) Eurocode 1. Basis of structural design (j) BS EN 1992 (all parts) Eurocode 2. Design of concrete structures (k) BS EN 1993 (all parts) Eurocode 3. Design of steel structures (l) BS EN 1997-1 Eurocode 7. Geotechnical design. General rules	drawings, assembly drawings, materials specification and monitoring plan. The designer shall make design in accordance with design standards specified in (4) below and take into consideration of the followings: (a) Design and specifications of Main Works (b) Site Data such as geological conditions, access to the Site, construction conditions such as circumstances of the Site, (c) Construction programme of the Main Works, (d) Construction equipment, materials, methods for TW, (e) Loads from structures in Main Works, and (f) Loads of TW to structures in Main Works. (3) Design check of TW The design checker shall check the design from the points of view of adequacy, accuracy and compliance with design requirements. (4) Design standards of TW The design of TW shall be made in accordance with the following design standards other than specified in the Contract separately from JSSS. The design standards proposed by the Contractor and the Engineer concur to can be applied. (a) ~~Structural design:~~ BS EN 1993 (all parts) Eurocode 1. Basis of structural design. (b) ~~Concrete structures:~~ BS EN 1992 (all parts) Eurocode 2. Design of concrete structures (c) ~~Earthworks and Foundation:~~ BS 6031:2009 Code of practice for earthworks, BS EN 1997-1:2004+A1:2013 Eurocode 7. Geotechnical design. General rules, and BS 8004:2015 Code of practice for foundations (d) ~~Earth retaining structures:~~ BS 8002:2015 Code of practice for earth retaining structures and BS 8081:2015+A2:2018 Code of Practice for grouted anchors (e) ~~Cofferdam:~~ BS 8002:2015 Code of practice for earth retaining structures, 8 Cofferdams, basements, and strutted excavations (f) ~~Scaffolds:~~ BS EN 12811-1:2003 Temporary works equipment - Part 1: Scaffolds- Performance requirements and general design (g) ~~Falsework:~~ BS 5975:2008+A1:2011 Code of practice for temporary works procedures and the permissible stress design of falsework、Section 3: Falsework（Class A Falsework）, BS EN 12812：2008 Falsework. Performance requirements and general design（Class B Falsework）	drawings, construction method drawings, materials specification and monitoring plan. The designer shall make design in accordance with design standards specified in (4) below and take into consideration of the followings: (a) Design and specifications of Main Works (b) Site Data such as geological conditions, access to the Site, construction conditions such as circumstances of the Site, (c) Construction programme of the Main Works, (d) Construction equipment, materials, methods for TW, (e) Loads from structures in Main Works, and (f) Loads of TW to structures in Main Works. (3) Design check of TW The design checker shall check the design from the points of view of adequacy, accuracy and compliance with design requirements. (4) Design standards of TW The design of TW shall be made in accordance with the following design standards other than specified in the Contract separately from JSSS. The design standards proposed by the Contractor and the Engineer concurred can be applied. (a) BS 5975 Code of practice for temporary works procedures and the permissible stress design of falsework (b) BS 6031 Code of practice for earthworks (c) BS 8002 Code of practice for earth retaining structures (d) BS 8002 Code of practice for earth retaining structures (e) BS 8004 Code of practice for foundations (f) BS 8081 Code of Practice for grouted anchors (g) BS EN 12811-1 Temporary works equipment-Part 1: Scaffolds - Performance requirements and general design (h) BS EN 12812 Falsework. Performance requirements and general design (i) BS EN 1993 (all parts) Eurocode 1. Basis of structural design (j) BS EN 1992 (all parts) Eurocode 2. Design of concrete structures (k) BS EN 1993 (all parts) Eurocode 3. Design of steel structures (l) BS EN 1997-1 Eurocode 7. Geotechnical design. General rules

JSSS in Japanese （Provisional Final Draft R1 10/31）	JSSS in English R0（Provisional Final Draft XX）translated by NK 9/11	JSSS in English R1（Provisional Final Draft 10/31）translated by NK 10/31 Note: Words with underlines are addition/change from R0.
7.1.4 仮設工事の施工、使用、解体 請負者は仮設工事の施工、使用、解体にあたり、次の措置を取らなければならない。 (1) 設計及び作業計画書に示される手順に忠実に施工すること。 (2) 施工終了後の検査手順を定め、検査に合格した仮設工事のみ使用に供すること。 (3) 安全な使用を確保するため、使用中に必要なモニタリング、維持管理を行うこと。 (4) あらかじめ設計でその解体や変更が認められている場合を除き、使用中に変更を加えないこと。 (5) 本設工事を支持する目的で使用に供される仮設工事の場合、本設工事が十分な強度と安定性をもって自立することを確認してから、仮設工事にかかる荷重を外すこと。 (6) 仮設工事の解体は作業計画書においてあらかじめ定められた手順に従って行うこと。	**7.1.4 Construction, Operation and Demolition of TW** The Contractor shall take the following measures for the construction, operation and demolition of TW. (1) Construct and demolish TW exactly in accordance with design and MS, (2) Establish completion test procedure of TW and start use of the TW which passed the completion test, (3) Execute monitoring and maintenance of TW for safety use, (4) Prohibit in modifying or demolishing a part of TW in use other than designed so, (5) Remove loads to TW which supports the permanent structure of Main Works after confirmation that permanent structure has sufficient strength and stability, and (6) Demolish TW with the procedure pre-determined in the MS.	**7.1.4 Construction, Operation and Demolition of TW** The Contractor shall take the following measures for the construction, operation and demolition of TW. (1) Construct and demolish TW exactly in accordance with design and MS, (2) Establish completion test procedure of TW and start use of the TW which passed the completion test, (3) Execute monitoring and maintenance of TW for safety use, (4) Prohibit in modifying or demolishing a part of TW in use other than designed so, (5) Remove loads to TW which supports the permanent structure of Main Works after confirmation that permanent structure has sufficient strength and stability, and (6) Demolish TW with the procedure pre-determined in the MS.

2019.10.21 JICA PFD-J
2019.11.17 NK R1

Photos of Earth Retaining 土留め工の写真

http://www.lswce.com.sg/web/index_files/Page822.html

http://www.engineersdaily.com/2017/12/types-of-earth-retaining-structures-excavation-supports-and-their-applications.html
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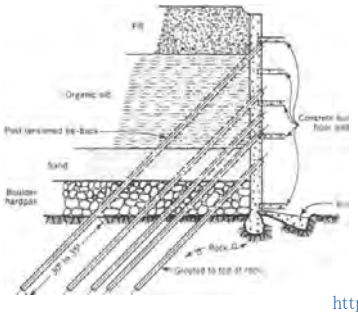

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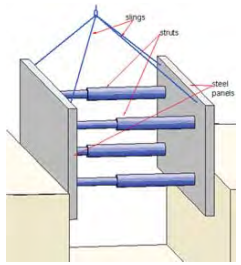
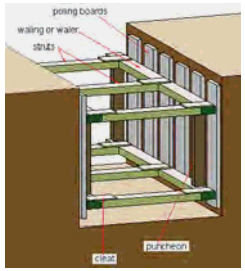




JSSS in Japanese （Provisional Final Draft R1 10/21）	JSSS in English R0（11/12）	JSSS in English R1（11/12）
7 仮設工事 **7.2 土留め工** **7.2.1 一般事項** (1) 本節で使用する用語の定義は以下のとおりである。 (a) 土留め工とは、明り掘削を行う場合に、周辺の地山の崩壊を防ぐことを目的として設けられる仮設構造物をいい、土留め壁と土留め支保工からなる。 (b) 土留め壁は、親杭横矢板壁、 鋼矢板壁、鋼管矢板壁、柱列式連続地中壁、地中連続壁等をいう。 (c) 土留め支保工は、腹起し、切りばり、火打ち、中間杭等からなる切りばり支保工、グラウンドアンカー支保工等をいう。 (2) 土質に見合った勾配を保って掘削できる場合を除き、掘削の深さが 1.5m を超える場合には、原則として、土留め工を施すものとする。	**7 Temporary Works** **7.2 Earth Retaining Works** **7.2.1 General** (1) The following words in this Section shall have the definitions stated: (a) Earth retaining works mean works to construct temporary structures consisting of earth retaining wall with/without support to avoid failure of the open-ground excavated for construction of Permanent Structures. (b) Earth retaining wall is such wall as soldier piles and lagging wall, steel sheet piles wall, steel pipe piles wall, contiguous bored piling wall, underground continuous wall. (c) Earth retaining support is such the shore strut type retaining support consisting of such as waling, strut, corner angle and intermediate pile and the retaining support with ground anchors etc. (2) The Contractor shall provide earth retaining for the excavation equal to or deeper than 1.5 m in principle other than the case that excavation can be made with safe slopes depending on the soil conditions.	**7 Temporary Works** **7.2 Earth Retaining Works** **7.2.1 General** (1) The following terms in this Section shall have the definitions stated: (a) Earth retaining works mean works to construct temporary structures consisting of earth retaining wall with/without support to avoid failure of the open-ground excavated for construction of Permanent Structures. (b) Earth retaining wall is such wall as soldier piles and lagging wall, steel sheet piles wall, steel pipe piles wall, contiguous bored piling wall, underground continuous wall. (c) Earth retaining support is such the shore strut type retaining support consisting of such as waling, strut, corner angle and intermediate pile and the retaining support with ground anchors etc. (2) The Contractor shall provide earth retaining for the excavation equal to or deeper than 1.5 m in principle other than the case that excavation can be made with safe slopes depending on the soil conditions.
7.2.2 計画及び設計時の留意事項 請負者は、土留め工の計画及び設計に当たり、次の事項に留意しなければな	**7.2.2 Point to Consider in Planning and Designing** The Contractor shall pay attention to the following matters when planning and	**7.2.2 Plan and Design of Earth Retaining Works** The Contractor shall take into account to the following when plan and design of

らない。

(1) 設置する箇所の地山の地質、地層、土質、き裂、含水量、湧水、地下水及び埋設物等の状態に応じた土留め工の設置を計画すること。

(2) 隣接する建築物への影響（地盤沈下、地下水位の変異等）については、本契約で別途定める規定を遵守し必要な対策を講じること。

(3) 土留め工周辺の土質に応じてボイリング、ヒービングに対する掘削の安全性を、設計時に確認すること。

(4) 土留め工の設計では、設計書、設計計算書、設計図（注）、~~組立図、材料仕様書~~、施工手順図（注）、モニタリング計画を作成すること。~~組立図には、矢板、中間杭、腹おこし、切りばり、グラウンドアンカー等の部材の配置、寸法及び材質並びに取付けの時期及び順序が示されなければならない。~~

注： 本仕様書 7.1.2［作業計画書及び安全衛生詳細計画書の作成］の(3)［計画書の一部として作成すべき書類］の下記の注 2 及び 3 である。

注 2:仮設工事で使用する材料の仕様及び主要寸法を含む仮設工事の平面図、横断図、縦断図等の設計図面(Design drawings)。

注 3:施工の手順を示す図面（Construction procedure/sequence/method drawings）

(5) 土留め工の設計書には、本仕様書 7.2.3 に示すモニタリング計画を含めること。

designing earth retaining works.

(1) Plan the earth retaining works according to the geology, strata, soil, cracks, water content, spring water, groundwater, buried objects, etc.

(2) Regarding the influence on adjacent buildings (land subsidence, groundwater level variation, etc.), take the necessary measures in accordance with the provisions stipulated separately in this Contract.

(3) Confirm the safety of excavation against boiling and heaving at the time of design according to the nature of soil around the earth retaining work.

(4) For the design of earth retaining works, prepare a design document, a design calculation document, design drawings, assembly drawings, material specifications, and a monitoring plan. The assembly drawings must show the arrangement, dimensions and materials of the members such as sheet piles, intermediate piles, waling, struts, ground anchors, and the timing and sequence of those installation.

(5) The design document of the earth retaining work shall include the monitoring plan shown in 7.2.3 of this Specification.

earth retaining works.

(1) To plan earth retaining works according to the conditions of geology, strata, soil, cracks, water content, water spring, groundwater, underground objects, etc. at and around the Site.

(2) To plan necessary measures to avoid influence by the earth retaining works to adjacent buildings and ground such as buildings/ground displacement, groundwater level change, etc., in accordance with the provisions stipulated in the Contract.

(3) To confirm the safety of excavation in the earth retaining works against boiling (*1) and heaving at the time of design according to the conditions of soil in and around the earth retaining works.

For MD, (*1) *BS 6100-3:2007*

03 25001 boiling displacement of soil (01) at the base of an excavation (01) or adjacent to the toe of an embankment (01) caused by pressure of water

(4) To make design and calculation reports, design drawings (*1), construction procedure(/sequence/method) drawings (*2) and monitoring plan in the design of earth retaining works.

(5) The design document of the earth retaining work shall include the monitoring plan shown in 7.2.3 of this Specification.

Note:
Definition of *1 and *2 is given as follows in JSSS 7.1.2［Method Statement (MS) and the Particular Safety Plan (PSP)], (2)[Document to be included in Plans].

*1 Design drawings mean drawings to show design of Temporary Works including plans, cross and longitudinal sections, specifications and main dimensions of materials to be used.

*2 Construction procedure drawings mean drawings to show method/procedure/sequence of construction of Temporary Works.

7.2.3 モニタリング計画

請負者は、施工中の土留め工の安全を確保し、周辺の地盤や建物等への影響をすみやかに察知するために、変位や挙動の目視点検及び計器計測によるモニタリング計画を、次に従い作成し、土留め工を管理しなければならない。

このモニタリング計画には、下記に示すモニタリングの実施方法について具体的に記述しなければならない。

以下の赤字の文章は後日削除
英訳時注意
（英文作成時に、MD 氏へ問合わせと変更必要事項）
JC: エンジニアが仮設の設計に関与しないという前提の下で、モニタリングだけ関与させるのが適当なのか判断しかねるため、MD 氏とも相談のうえ修文をお願いできますでしょうか。(他方、モニタリングにエンジニアを関与させるとなった場合、エンジニアが登場するのはこの目視点検のところからではなく、7.2.3 の冒頭文ではないかと考えます)

(1) モニタリングの実施

(a) 目視点検

目視点検の対象及び項目は、次表及び土留め工の特性に応じたものとし、それらを含む点検表を作成し、毎日点検すること。

7.2.3 Monitoring Plan

The Contractor shall create a monitoring plan in order to ensure the safety of the earth retaining work during construction and promptly detect any influence on the surrounding ground and buildings for managing the earth retaining work, by visual inspection of the displacement and behavior and measurement with the instrument as follows.

(1) Implementation of Monitoring

(a) Visual Inspection

Visual inspection shall be made daily based on the inspection checklist created for the objects and items in accordance with the following table and the characteristics of the earth retaining work.

Inspection Objects	Inspection Items
Earth Retaining Wall	Twisting of top end and vertical displacement of wall Crack, deflection, swelling of wall Water leak, sediment run-off from wall Gap of joint
Earth Retaining Support	Deflection, twist of waling Sink, floating up, twist of intermediate pile Vertical / horizontal displacement, twist of strut Gap of joint or crossing part, breakage, loosening

7.2.3 Monitoring Plan

The Contractor shall make a monitoring plan in order to ensure the safety of the earth retaining works during construction and promptly detect any influence to the adjacent buildings and ground by the construction of earth retaining works.

The monitoring shall be made with visual inspection and instrument measurement of displacement and behavior of the earth retaining works, adjacent buildings and ground. The monitoring plan shall be specifically prepared following the method of monitoring specified below.

Question to MD from JICA,
The Engineer is not involved in the design of TW.
Is the Engineer not involved in the planning of monitoring, too?
If the Engineer should be involved in the planning, please modify the description in 7.2.3.
Thank you.

(1) Implementation of monitoring

(a) Visual inspection

The Contractor shall prepare the inspection checklist of the visual inspection for the inspection objects and items shown in the table below

点検対象	点検項目
土留め壁	壁体天端の蛇行や上下方向の変位 壁体の亀裂、たわみ、はらみ出し 壁体からの漏水、土砂流出 接手部のずれ
土留め支保工	腹起しのたわみ、ねじれ 中間杭の沈下、浮き上がり、ねじれ 切ばりの上下・水平方向の変位、ねじれ 接手、交差部のずれ、ボルトの破損やゆるみ
周辺地盤	舗装面・地表面の亀裂、陥没 敷石・縁石の目地の開き
掘削底面	底面からの湧水、噴砂、 底面のふくれ上がり、湧水の濁り
周辺構造物	構造物の亀裂、傾斜
土留め工内の地下埋設物	埋設物の変位、埋設物の接続部のずれ

(b) 計器計測

(i) 別途契約書で定めがある場合はそれに従い、定めがない場合については、次表を参照のうえ、計器計測の計画を作成すること。

計測対象	計測項目
土留め壁	土留め壁の変位、土留め壁の応力、土留め壁に作用する土圧、水圧
土留め支保工	切ばりの軸力又は土留めアンカーの軸力
掘削底面	掘削底面の変位、水圧、湧水量
周辺地盤	周辺地盤の変位、地下水位
周辺構造物	構造物の変位
地下埋設物	地下埋設物の変位

(ii) 計器及び計測方法は計測の目的に合ったものを選定すること。

(iii) 計測位置は、その計測目的に合致し、安全管理上必要と思われる箇所で、土留め工設置期間を通じて連続的に観測が可能な箇所とし、必要な数とすること。

(2) モニタリングに基づく管理

(a) 目視点検による管理

目視点検で異常が見つかったときは、以下(b)の計器計測結果との照合、計測方法の見直し、あるいは緊急的な対策の実施等、異常の程度に応じ、必要な対策を実施すること。

(b) 計器計測による管理

本契約で別途に計器計測項目の管理値の定めがあるときはそれを基に、定めがない場合は設計上で許容された変位・応力等を基に管理限界値をまず設定し、必要に応じ、以下に示すような段階的な管理値を定めること。

計測値が各管理値に達した場合は、その管理値に応じた対策を実施すること。

(i) 一次管理値（観測の強化と二次管理値以上の値に達した場合の対策方法の検討・準備を開始する基準値）

(ii) 二次管理値（作業をいったん中断し、対策を開始する基準値）

(iii) 管理限界値（直ちに作業を中止し、作業員の立ち入りを禁止し、施工方法の見直しを含めた抜本的な対策を行う基準値）

	of bolts
Neighboring Ground	Cracks, cave-in of pavement / ground surface Open joint of paving stone / curve stone
Excavated Bottom	Spring water, sand boil from excavated bottom Heaving of excavated bottom, muddiness of spring water
Neighboring Structures	Crack, tilting of structures
Underground Installations within Earth Retaining Work	Displacement of underground utility, gap of joint

(b) Instrument Measurement

(i) Unless there is a separate provision in the Contract, create a measurement plan referring to the following table.

Measurement Objects	Measurement I
Earth Retaining Wall	Displacement, stress of retaining wall Earth pressure and water pressure acting
Earth Retaining Support	Axial force of strut / ground anchor
Neighboring Ground	Displacement of neighboring ground, gro
Excavated Bottom	Displacement of excavated bottom Water pressure of spring water, water infl
Neighboring Structures	Displacement of structure
Underground Installations	Displacement of underground utility

(ii) Select the instruments and measurement methods that suit the purpose of the measurement.

(iii) The number of measurement points shall be determined to match the purpose and be deemed necessary for safety management. The points of measurement shall be those possible for continuous observation throughout the earth retaining work installation period.

(2) Management Based on Monitoring

(a) Management by Visual Inspection

If an abnormality is found by visual inspection, the necessary measures shall be taken in accordance with the degree of abnormality, such as verification with the instrument measurement results in (b) below, review of the measurement method, or implementation of urgent countermeasures.

(b) Management by Instrument Measurement

Unless there is a stipulated set of control values for instrument measurement items in the Contract, determine control limit values based on the allowable displacement / stress in the design first, then the following stepwise control values shall be established as necessary.

When the measured value reaches each control value, implement measures according to the control value.

(i) Primary control value (reference value to start strengthening of observation and preparing countermeasures to be taken when the measurement value reaches the secondary control value)

(ii) Secondary control value (reference value to suspend work and start countermeasures)

(iii) Control limit value (reference value to stop work immediately, prohibit entry of workers, and take radical measures including review of construction method)

and depending on the characteristics of the earth retaining work.

The Contractor shall carry out the visual inspection daily using the inspection checklist.

Inspection Objects	Inspection Items
Earth Retaining Wall	Meander/horizontal displacement and vertical displacement of top of wall Crack, deflection and swelling of wall Water leakage, mud inflow through wall Gap of joint of walls
Earth Retaining Support	Deflection, twist of waling Settlement, floating up (displacement?), twist of intermediate pile Vertical / horizontal displacement, twist of strut Gap of joint or crossing part, breakage, loosening of bolts
Base of Excavation	Spring of water, sand boiling in the base Heaving of the base, muddiness of spring water
Neighboring/adjacent Ground	Cracks, cave-in/subsidence of pavement / ground surface Opening of joints of paving stone / curve stone
Neighboring/adjacent Structures	Crack, tilting/inclining of structures
Underground Utilities in Earth Retaining Work	Displacement, gap of joint of underground utility

(b) Instrument Measurement

(i) The Contractor shall prepare monitoring plan with instrument measurement in accordance with the provisions in the Contract. In case of no provision in the Contract, the monitoring plan shall be prepared referring to the following table.

Measurement Objects	Measurement Items
Earth Retaining Wall	Displacement, stress of retaining wall Earth pressure and water pressure acting on retaining wall
Earth Retaining Support	Axial force of strut / ground anchor
Base of Excavation	Displacement of base of excavation Water pressure of spring of water, water inflow
Neighboring/adjacent Ground	Displacement of neighboring/adjacent ground, ground water level
Neighboring Structures	Displacement of structures
Underground Utilities in Earth Retaining Work	Displacement of underground utilities

(ii) The Contractor shall select instruments and measurement methods that meet the purpose of the measurement.

(iii) The Contractor shall determine locations and numbers of measurement points which meet the purpose of measurement and need for safety management. The locations of measurement shall be where measurement can be continuously made throughout the period of earth retaining works are provided.

(2) Management based on Monitoring

(a) Management by Visual Inspection

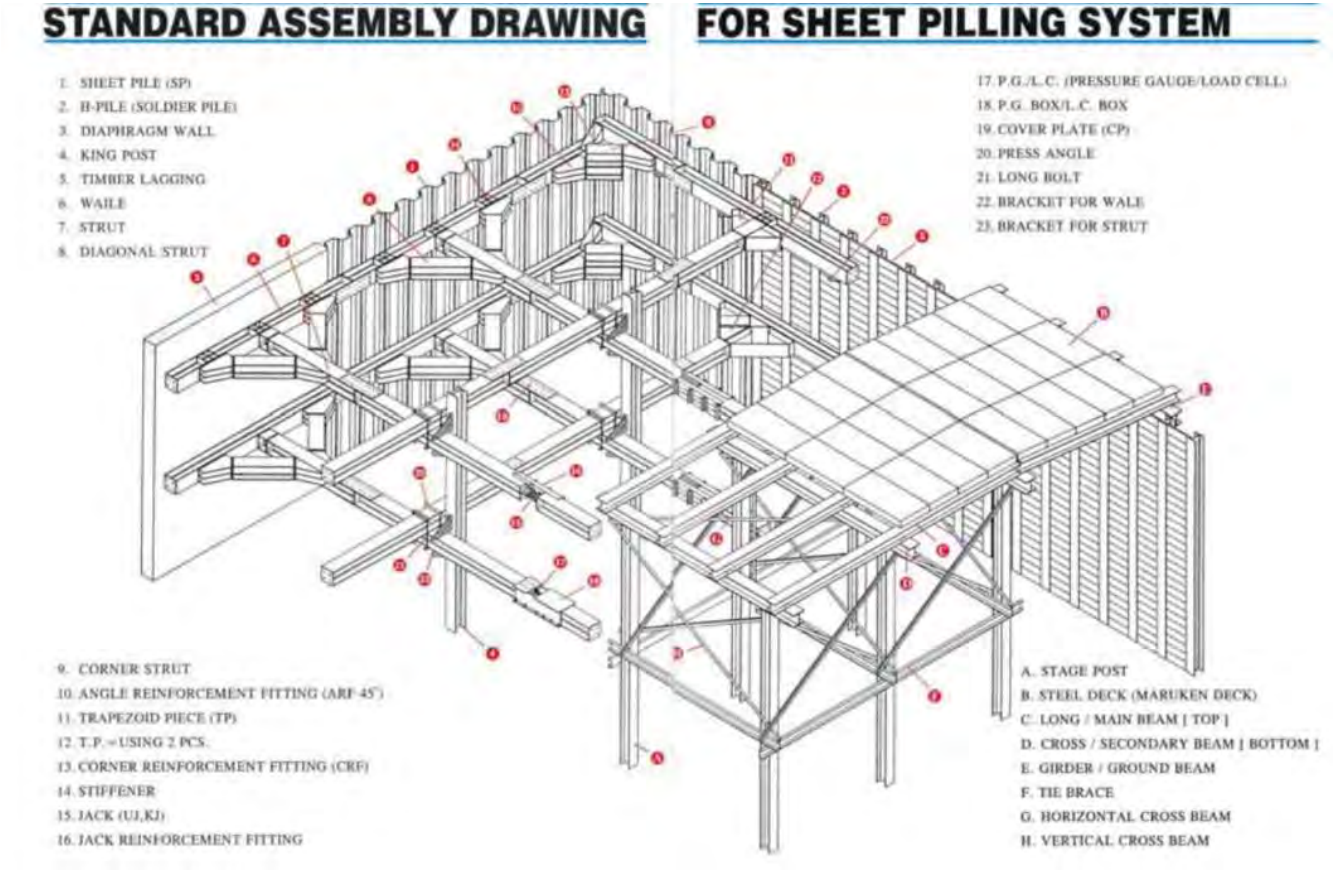
When the Contractor finds abnormality by visual inspection, the Contractor shall take necessary measures in accordance with the degree of abnormality, such as verification of visual inspection results with the instrument measurement results in (b) below, review of the measurement

		method, or implementation of urgent countermeasures. (b) Management by Instrument Measurement Unless the Contract specifies control values for instrument measurement items, the Contractor shall determine control limit values based on the allowable displacement / stress in the design at first, then the following stepwise control values shall be established as necessary. When the measured value reaches each control value, the Contractor shall implement measures according to the control value. (i) Primary control value (reference value to start strengthening of observation and preparing countermeasures to be taken when the measurement value reaches the secondary control value) (ii) Secondary control value (reference value to suspend work and commence to take countermeasures) (iii) Control limit value (reference value to stop work immediately, prohibit entry of workers, and take radical measures including review of construction method)
7.2.4 土留め工の施工時の安全管理上の措置 請負者は、土留め工の作業時には、下記の安全管理上の措置を講じなければならない。 (1) 土留め工の設計条件、設計内容等を十分理解した作業主任に作業を直接指揮させること。 (2) 上記 7.2.2(4)の材料仕様書に請負者が計画した品質の材料を使用するものとし、ひび割れ、変形又は腐食等のある不適切な材料を使用してはならない。 (3) 土留め工の組立ては、~~組立図~~施工手順図に示された順序に基づいて行うこと。~~組立図~~施工手順図と異なる施工を行う場合は、安全性の確認を行ったうえで、作業計画書を変更すること。 (4) 建設機械・揚貨機械を用いて土留め壁又は土留め支保工を施工する場合は、~~本仕様書 4.1.1[建設機械作業の一般的留意事項]~~ 本仕様書4[機械・器具・工具]、6[揚貨・玉掛作業]に規定の措置を講じること。 (5) 新たな掘削等の施工段階に進む前には、先の掘削における所定の部材が定められた位置に取り付けられていること及び土留め工が安定していることを確認すること。 (6) 土留め板は、掘削後すみやかに掘削面との間に隙間のないようにはめ込み、隙間が出来た時は、裏込め、くさび等で隙間の無いように固定すること。 (7) 土留め板の背面より漏水がある場合は、土砂の流出を防ぐ措置を講ずること。	**7.2.4 Safety Management Measures for Earth Retaining Works** The Contractor shall take the following safety management measures for earth retaining works. (1) Assign an Operation Leader who fully understands the design conditions and design details of the earth retaining work for supervising the work directly. (2) Use material of the quality planned by the Contractor in the material specifications described in 7.2.2 (4) above, and inappropriate materials with cracks, deformation or corrosion shall not be used. (3) Assemble the earth retaining work based on the procedure shown in the assembly drawing. When performing construction different from the assembly drawing, change the method statement after confirming safety. (4) When constructing an earth retaining wall or an earth retaining support using construction equipment, take the measures specified in 4.14.1 [General Notes on Construction Equipment Work] in this Specification. (5) Before proceeding to a new stage of excavation, make sure that the planned members for the previous stage are installed at the specified positions and that the earth retaining work is stable. (6) Immediately after excavation, mount laggings avoiding gap between laggings and the excavation surface. If any gap is found, fix the lagging with no gap by back filling or wedges. (7) If there is water leakage from the back of the lagging, take measures to prevent sediment outflow.	**7.2.4 Safety Management of Earth Retaining Works** The Contractor shall take the following safety management measures for earth retaining works. (1) Assign an Operation Leader who fully understands the design conditions and design details of the earth retaining works to directly lead the work. (2) Use material of the quality planned by the Contractor in the material specifications described in 7.2.2 (4) above, and inappropriate materials with cracks, deformation or corrosion shall not be used. (3) Construct the earth retaining work in accordance with the procedure shown in the construction procedure drawings. When the Contractor constructs the earth retaining work with the different procedure from shown in the construction procedure drawings, the Contractor shall confirm the safety of revised procedure and revise the method statement of the earth retaining work. (4) When constructing earth retaining walls or earth retaining supports using construction equipment, take the safety measures specified in JSSS 4[Contractor's Equipment] and 6[Lifting and Sling Works]. *(To MD, when we prepare Japanese JSSS, this seems good to specify these to avoid accident in the work. However, now I feel why we specify specially specify these Chapters though other safety measures are necessary and already specified in JSSS. Please revise this as well as other clauses.))* (5) Before proceeding to a new stage of excavation, make sure that the planned members for the previous stage are installed at the specified positions and the earth retaining work is stable. (6) Immediately after excavation, install laggings to avoid gaps between laggings and excavation surfaces. When any gap exists, fix the lagging to avoid gap by back filling or wedges. (7) When there is water leakage thorough laggings from excavated ground, take measures to prevent mud inflow to avoid collapse of ground.
7.2.5 切りばり支保工の作業での安全上の措置 請負者は、切りばり支保工の作業にあたっては、次の安全上の措置を講じなければならない。 (1) 切りばり及び腹おこしは、脱落を防止するため、矢板、杭等に確実に取り	**7.2.5 Safety Measures of Shore Strut Support Works** The Contractor shall take following safety measures in performing shore strut support works. (1) Be sure to install the strut and waling securely to sheet piles, soldier piles etc. to prevent falling off.	**7.2.5 Safety Measures of Waling and Strut Support Works** The Contractor shall take following safety measures in construct waling and strut support works. (1) Waling and struts shall be tightly installed on sheet piles, soldier piles etc. to prevent falling off of waling/struts.

付けること。 (2) 圧縮材（火打ちを除く）の継手は突合せ継手とし、部材全体が一つの直線となるようにすること。木材を圧縮材として用いる場合は、2 個以上の添え物を用いて真すぐに継ぐこと。火打ちの接手は、次の(3)に規定の接合によることとすること。 （ https://books.google.co.jp/books?id=4dpvBgAAQBAJ&pg=PA236&lpg=PA236&dq=%E5%9C%A7%E7%B8%AE%E6%9D%90%EF%BC%88%E7%81%AB%E6%89%93%E3%81%A1%E3%82%92%E9%99%A4%E3%81%8F%EF%BC%89%E3%81%AE%E7%B6%99%E6%89%8B&source=bl&ots=q10aHuZA5J&sig=ACfU3U3z9zTl9SyJl6I0Qg1PyvqGlL8mYQ&hl=ja&sa=X&ved=2ahUKEwiky6yDifDlAhXSFIgKHdXBDDwQ6AEwBHoECAcQAQ#v=onepage&q=%E5%9C%A7%E7%B8%AE%E6%9D%90%EF%BC%88%E7%81%AB%E6%89%93%E3%81%A1%E3%82%92%E9%99%A4%E3%81%8F%EF%BC%89%E3%81%AE%E7%B6%99%E6%89%8B&f=false） (3) 切りばり又は火打ちの接続部及び切りばりと切りばりとの交さ部は、当て板をあててボルトにより緊結し、溶接により接合する等の方法により堅固なものとすること。 (4) 中間杭を備えた土留め支保工にあっては、切りばりを当該中間杭に確実に取り付けること。 (5) 切りばりを土留め工の部材以外の建築物の柱等で支持する場合にあっては、当該支持物は、これにかかる荷重に耐えうるものとすること。 (6) 土留め壁と腹おこしの隙間は充填を行うこと。また、腹おこしと切りばりの接合部はスチフナー等で補強を行うこと。	(2) The joint of the compressive members (excluding corner angle) shall be a butt joint to make the entire member straight. When using wood as compressive members, connect them straight using two or more doubling plates. (3) The connection part of the strut or corner angle as well as the crossing part of two struts shall be made strong by using a backing plate and bolts, and welding them together. (4) For the earth retaining supports with intermediate piles, attach the struts to the intermediate pile securely. (5) When supporting the strut with a pillar of the building etc. other than the members of the earth retaining work, the support shall be able to withstand the load applied to it. (6) The gap between the earth retaining wall and the waling shall be filled. Also, the connection part of the strut and waling shall be reinforced with stiffeners.	(2) Compressive members (excluding diagonal struct) shall be joined by butt joint and be as entire member straight. When using wood as compressive members, they shall be jointed straightly using two or more doubling plates. diagonal struct shall be jointed as specified in (3) below. (3) Connection parts of struts or diagonal struct, crossing parts of two struts shall be made strong by using backing plate and bolts, and welding them together. (4) For earth retaining work with intermediate piles, fix struts on intermediate piles rigidly. (5) When fixing struts on pillars of the building, etc. other than members of earth retaining work, the support shall be able to withstand the load transmitted to them from struts. (6) Gap between earth retaining wall and waling shall be filled. (7) Connection parts of struts and waling shall be reinforced with stiffeners.
7.2.6 グラウンドアンカー工の作業での安全上の措置 請負者は、グラウンドアンカー工の作業にあたっては、次の安全上の措置を講じなければならない。 (1) ボーリングマシンの組立て、解体、変更又は移動の作業、ボーリングマシンによる削孔作業、アンカー（テンドン）鋼材の緊張作業、グラウト材の注入等の作業を行うときは、作業の方法、手順、安全上の措置を定め、これらを作業者に周知し、かつ、作業主任の直接の指揮の下に作業を行うこと。 (2) ボーリングマシンの操作は、指定の者以外の者にさせないこと。 (3) アンカー（テンドン）鋼材の緊張作業中、鋼材の破断等による作業員の危険を防止するため、緊張ジャッキの後方を立ち入り禁止とする等の安全措置を講じること。 (4) グラウト材の注入作業の前に、圧送ホース及び継ぎ手の破損の有無を点検すること。 (5) 作業に必要な安全帽、保護メガネ、手袋、安全靴等の保護具を、作業員に着用させること。	**7.2.6 Safety Measures of Ground Anchor Works** The Contractor shall take following safety measures in performing ground anchor works. (1) When assembling, disassembling, changing or moving a boring machine, drilling with a boring machine, tensioning an anchor tension steel (anchor tend (2) on) and grouting etc., establish method and procedure of the work and perform the work under the direct supervision of the Operation Leader. (3) Do not allow anyone other than the designated personnel to operate the boring machine. (4) Take safety measures such as prohibiting access to the rear of the tension jack to prevent the danger of workers due to breaking of the anchor (tendon) steel during tensioning. (5) Before grout injection, check for any damage in the pressure hose and joint. (6) Have the workers wear protective equipment such as safety helmets, protective glasses, gloves and safety shoes required for the work.	**7.2.6 Safety Measures of Ground Anchor Works** The Contractor shall take following safety measures in performing ground anchor works. (1) To determine work method and procedure, safety measures of the work of assembling, disassembling, changing or moving boring machine, drilling with boring machine, tensioning anchor steel (tendon) and grouting etc. (2) To perform the work under the direct lead of the Operation Leader. (3) Not to allow anyone other than the designated personnel to operate the boring machine. (4) To take safety measures such as prohibiting access to the rear of the tension jack to prevent the danger of workers by breaking of the anchor steel (tendon) during tensioning. (5) To check for any damage in the grout ~~pressures~~ hoses and joints before grout injection work. (6) To have the workers wear PPE such as safety helmets, protective glasses, gloves and safety shoes required for the work.
7.2.7 悪天候及び地震時の点検 請負者は、本仕様書 2.7[悪天候及び地震時の対策]に規定の悪天候又は地震後には、土留め工の作業に関して次の措置を講じなければならない。 (1) 土留め工又は土留め工内の作業を開始する前には、7.2.3（1）(a)[目視点検によるモニタリング]に規定の目視による点検及び同(b)[計器計測によるモニタリング]による計測値のチェックを行うこと。 (2) 土留め工に異常を認めたときは、直ちに補強し、又は補修すること。	**7.2.7 Inspection at Adverse Weather and Earthquake** The Contractor shall take the following measures for the earth retaining works after adverse weather or earthquake specified in 2.7 [Measures against Adverse Weather and Earthquake] in this Specification. (1) Before starting work on or within the earth retaining work, perform the visual inspection specified in 7.2.3 (1) (a) [Visual Inspection] and check the measured value as specified in (b) [Instrument Measurement]. (2) If any abnormality is found in the earth retaining work, immediately reinforce or repair it.	**7.2.7 Inspection at Adverse Weather and Earthquake** The Contractor shall take the following measures for the earth retaining works after adverse weather or earthquake specified in JSSS 2.7 [Adverse Weather Requirement]. (1) Before starting the work on or in the earth retaining work, perform the visual inspection specified in JSSS 7.2.3 (1) (a) [Visual Inspection] and check the measured values specified in (b) [Instrument Measurement]. (2) When any abnormality is found in the earth retaining work, immediately reinforce or repair it.
7.2.8 土砂及び器材等の置き方 (1) 土留め支保工の肩の部分に掘り出した土砂又は器材等を置く場合には、	**7.2.8 Placing Earth and Sand, Equipment** (1) When placing earth and sand excavated or equipment on the ground near the	**7.2.8 Placing Excavated Materials and Equipment** (1) When placing earth and sand excavated or equipment on the ground near the

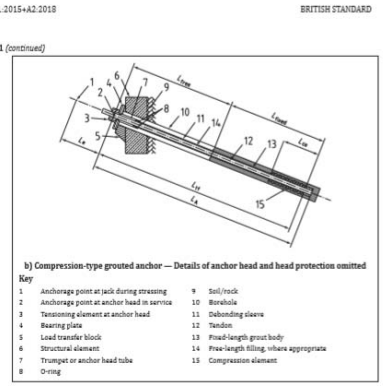
落下しない措置を講じること。 (2) 設計で考慮された荷重以上の器材等を土留め工の付近に置かないこと。	top part of the earth retaining support, take measures to prevent it from falling. (2) Do not place any equipment that exceeds the load considered in the design near the earth retaining work.	top part of the earth retaining work, take measures to prevent it from falling. (2) Do not place any equipment which weight and loads exceeds the load considered in the design of the earth retaining work.

https://dokumen.tips/documents/sheet-pile-569f5e12aefab.html



(NK Memo

BS 8081:2015+A2:201
3.1.28 tendon part of a ground ancho



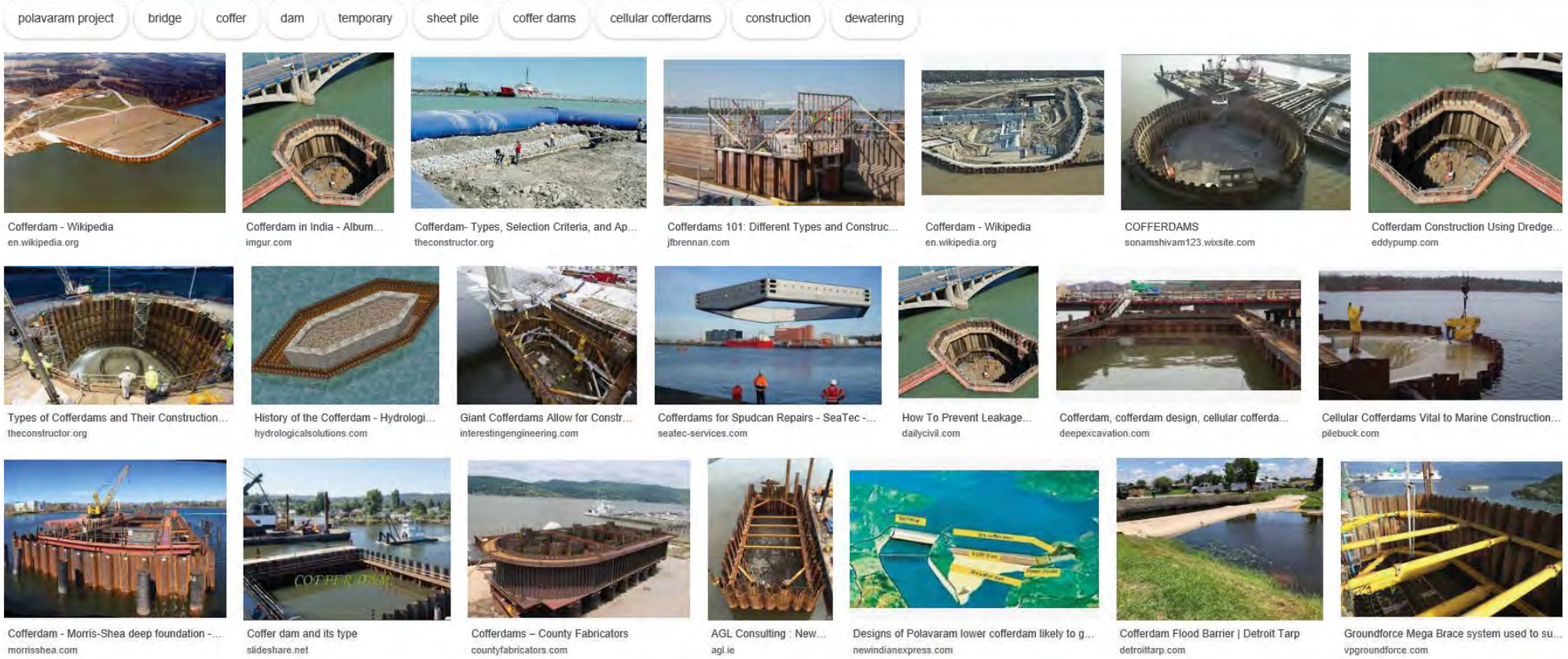
https://www.foundationrepairservices.com/blog/what-you-should-know-about-soldier-piles/

A soldier pile is a common retaining wall strategy in which H-shaped steel beams (“piles”) are drilled deep into the earth at regular intervals — usually 2 to 4 yards apart. In between each vertical pile, horizontal supports fill the gap, helping to spread the load. Known as “lagging walls,” these horizontal supports are most often made from precast concrete panels, steel girders or pressure-treated timber.

2019.11.12 JICA PFD-J
2019.11.17 NK R1

JSSS in Japanese （Provisional Final Draft R1 11/12）	JSSS in English R0（11/13）	JSSS in English R1（11/17）

Photos of Cofferdams 締切工の写真
https://www.google.co.jp/search?q=cofferdam&source=lnms&tbm=isch&sa=X&ved=0ahUKEwjN97GMwOPlAhUDH3AKHdjlA9oQ_AUIESgB&biw=1304&bih=685#spf=1573521435542

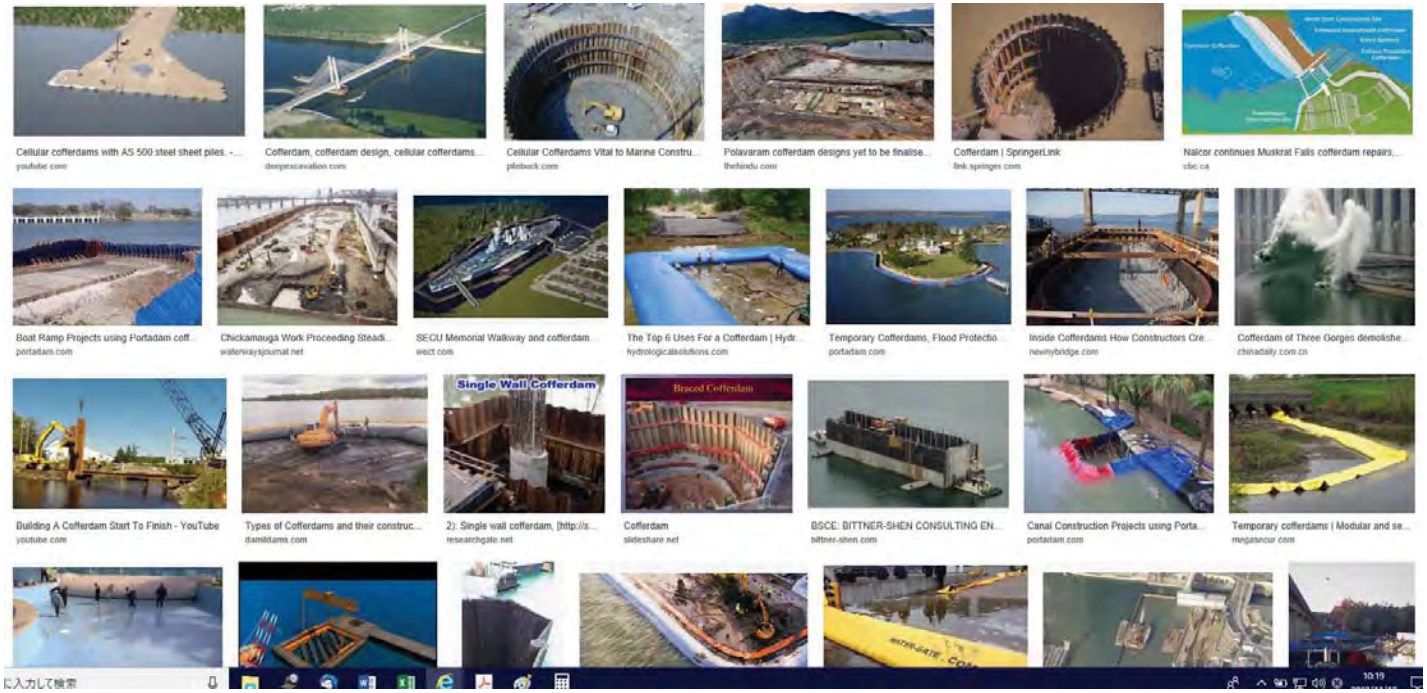


7　仮設工事	**7　Temporary Works**	**7　Temporary Works**
7.3　仮締切工	**7.3　Cofferdams**	**7.3　Cofferdams**
7.3.1　一般事項	**7.3.1　General**	**7.3.1　General**
仮締切工とは、現場内へ外部から入り込む水を遮断するために設置する仮設構造物をいい、本節では、土堤、ケーソン、一重鋼矢板、二重鋼矢板、切梁式鋼矢板等を扱う。	Cofferdam means temporary structures that are installed to prevent water intrusion from outside of the work spaces. In this section, earth dykes, caissons, single steel sheet piles, double steel sheet piles, and steel beam piles are stipulated.	Cofferdams means temporary structures that are constructed to prevent water intrusion from outside into the work site. This Section stipulates cofferdams such as earth dykes, caissons, single steel sheet piles, double steel sheet piles, and steel beam piles.
7.3.2　計画及び設計時の留意事項	**7.3.2　Points to Consider in Planning and Designing**	**7.3.2　Plan and Design of Cofferdams**
請負者は、仮締切工の計画及び設計に当たり、本仕様書「7.2 土留め工」の	The Contractor shall comply with 7.2.2 [Points to Consider in Planning and	The Contractor shall comply with JSSS 7.2 [Earth Retaining Works], 7.2.2 [Plan

JSSS in Japanese （Provisional Final Draft R1 11/12）	JSSS in English R0（11/13）	JSSS in English R1（11/17）
7.2.2[計画及び設計時の留意事項]に準拠するとともに、次の事項に留意しなければならない。 (1) Site Data に示される気象、海象、地震等のデータを十分考慮すること。 (2) 河川流量、水位、潮位、波高、余裕高、地震荷重、想定される外力等の設計条件について契約書の別の定めに従うこと。 (3) 既設堤防の開削を行い設置する仮締切の天端の高さは、施工期間中に想定される最大水量に耐えうるものにする。 (4) 既設堤防に接続して仮締切工を設定する場合で河積の減少が予想される場合においては、既設堤防の接続部の法面保護、接続部からの漏水、吸出し防止工を検討する。対策工については、別途契約書で定めがある場合はそれに従い、定めがない場合はエンジニアの指示に従うこと。 (5) 切ばりで支保する仮締切工では、洪水、波浪等により切ばり、腹起し等の取付部がゆるまないよう堅固な構造とすること。 (6) 浸水等の緊急時に備え、仮締切工からの避難のためにはしご、階段等の 2 つ以上の避難路を設置すること、及び救命浮器、救命胴衣、救命浮輪、ロープ等の救命用具の設置場所を計画すること。	Designing] of 7.2 [Earth Retaining Works], and pay attention to the following points when planning and designing cofferdams. (1) Consider the data of weather, sea conditions, earthquakes, etc. shown in Site Data. (2) Follow the other rules attached to the contract for design conditions such as river flow, water level, tide level, wave height, margin, seismic load, and assumed external force. (3) When excavating existing embankment to install cofferdam, design the top height of the cofferdam to withstand the maximum water volume expected during the construction period. (4) When a decrease of cross section area of river is expected in the process of cofferdam design that is planned to connect to the existing embankment, countermeasures for slope protection around the connecting area, water leakage from the connecting part, and suction prevention works have to be considered. Regarding countermeasures, if there is relevant provisions in the contract, follow that, otherwise follow the Engineer's instructions. (5) When designing cofferdam supported by cut beams, it should be considered with a solid structure so that the mounting parts such as cut beams and wailings will not loosen due to floods, waves, etc. (6) For preparing emergencies such as flooding, install two or more evacuation routes using ladders, stairs, etc. for evacuation from cofferdams. Also, plan where to install life-saving equipment such as lifebuoys, lifejackets, lifebuoys, and ropes.	and Design of Earth Retaining Works] and take into account to the following for the plan and design of the cofferdams. (1) To plan cofferdams taking into consideration the data of weather, maritime weather (meteorology?), earthquakes, etc. given in the Site Data. (2) To plan and design in accordance with the design conditions such as river discharge, river water level, tide level, wave height, freeboard, seismic load and other estimated external loads given in the Contract. (3) To plan the design level of the top of the cofferdam to withstand the maximum discharge expected during the construction period when the cofferdam is constructed by excavating in existing levee (flood bank). (4) In case decrease of river cross section area is expected by the construction of cofferdam connected with existing levee, measures for the levee shall be planned such as slope protection around the connecting parts of levee, and measures against water leakage/suction of soil through the connecting parts. The measures shall be planned in accordance with those given in the Contract, otherwise as instructed by the Engineer. (5) To design cofferdams supported by struts to be rigid structure so that jointed parts between struts, walings and others will not be loosened by floods, waves, etc. (6) To provide two or more evacuation ways in cofferdams by means of such as ladders, stairs, etc. to evacuate from cofferdams flooded. (7) To plan to provide places to install life-saving equipment such as buoyant apparatus, lifejackets, lifebuoy rings, and ropes.
7.3.3 モニタリング計画 請負者は、施工中の仮締切工の安全を確保し、周辺の地盤、既設構造物等への影響をすみやかに察知するために、変位や挙動の目視点検及び計器計測によるモニタリング計画を作成し、仮締切工を管理しなければならない。 モニタリング計画で計画すべきモニタリングの実施及びモニタリングにもとづく管理については、本仕様書「7.2 土留め工」の 7.2.3[モニタリング計画]に準拠して計画しなければならない。 モニタリング計画の点検項目及び計測項目は、7.2.3(1)及び(2)に規定の項目に準拠するとともに、仮締切工及び掘削底面の遮水に関する項目を含まなくてはならない。	**7.3.3 Monitoring Plan** The Contractor shall prepare a plan for visual inspection of displacement and dynamic state and instruments monitoring to secure the safety of cofferdam during its construction so as to immediately detect the influence on the surrounding ground and existing structures. Monitoring and management shall be planned in accordance with 7.2.3 [Monitoring Plan] of 7.2[Earth Retaining Works]. The inspection and measurement items in the monitoring plan shall conform to the items specified in 7.2.3 (1) and (2), and shall include items related to cofferdam and water shielding at the bottom of the excavation.	**7.3.3 Monitoring Plan** The Contractor shall make a monitoring plan in order to ensure the safety of the cofferdams during construction and promptly detect any influence to the adjacent buildings and ground by the construction of cofferdams. The monitoring and management shall be made with visual inspection and instrument measurement of displacement and behavior of the cofferdams, adjacent buildings and ground as stipulated in JSSS 7.2[Earth Retaining Works], 7.2.3 [Monitoring Plan]. The inspection and measurement items in the monitoring plan shall conform to the items specified in 7.2.3 (1) and (2), and shall include items related to cofferdams and seepage control work (water shielding) at the bottom of excavation.
7.3.4 仮締切工の施工時及び使用時の安全管理上の措置 請負者は、仮締切工の施工及び仮締切工の中での作業を安全に行うために、本仕様書 7.2.4[土留め工の施工時の安全管理上の措置]に準拠した安全管理の措置及び下記の措置を講じなければならない。 (1) 仮締切工の切ばり支保工の作業にあたっては、本仕様書 7.2.5[切りばり支保工の作業での安全上の措置]に準拠した安全上の措置を講じること。 (2) 異常事態時の連絡方法、避難方法、避難路、避難場所等の注事事項を、仮締切工の入口、仮締切工の中の作業場所等の請負者の要員が容易に認知できる見やすい場所に掲示すること。 (3) 一般の船舶等が航行する場所では、契約書の別の定めに従い、一般船	**7.3.4 Safety Management Measures during Construction and Operation of Cofferdam** The Contractor shall conduct safety management in accordance with 7.2.4 [Safety Management Measures for Earth Retaining Works] in order to secure the safe work condition for cofferdam construction or works in it. And the following measures shall be taken. (1) When carrying out the beam support work of cofferdam, safety measures shall be taken in accordance with 7.2.5 [Safety Measures of Shore Strut Support works]. (2) Post notices such as communication way, evacuation method, route and area in case of abnormal situation at easy-to-see places by the contractor's personnel such as the entrance of cofferdam and at the work space in it. (3) In places where ordinary ships navigate, take measures to prevent	**7.3.4 Safety Management of Cofferdams** The Contractor shall take the safety management measures for the cofferdams as stipulated in JSSS 7.2.4[Safety Management of Earth Retaining Works] in order to secure the safety at the time of construction and operation of cofferdams and construction works of Permanent Works in the cofferdams. The following measures shall be included in the safety management measures. (1) Safety measures in accordance with 7.2.5 [Safety Measures of Waling and Strut Support Works] for the waling and strut support work of cofferdam, (2) Post of notices such as emergency communication route, evacuation method, route and area in case of emergency at places where the Contractor's Personnel can easily see such as the entrance of cofferdams and the work places in cofferdams.

JSSS in Japanese （Provisional Final Draft R1 11/12）	JSSS in English R0（11/13）	JSSS in English R1（11/17）
船等との衝突や接触を防止するための措置を講じること。また、夜間や濃霧時の船舶等の仮締切工への衝突を防止するために、警告灯等を配置するなどの措置を講じること。 (4) 仮締切工からの異常な漏水又は仮締切工の内側の地盤からの異常な湧水がある場合は、作業員を避難させ、安全を確認したうえで、補強等の安全対策を講じた後でなければ、仮締切工内の作業を行わないこと。	collisions and accidental contact with ordinary ships, etc., in accordance with other provisions in the contract. In addition, measures such as placing warning lights shall be taken to prevent collisions with cofferdams by ships at night or during heavy fog. (4) When there is abnormal water leakage from cofferdam or spring water from the ground inside the cofferdam, evacuate the workers, and work shall not be resumed without taking safety measures such as reinforcement to ensure safety.	(3) Measures to prevent collisions with third parties' ships in places where third parties' ships navigate in accordance with stipulation in the Contract. (4) Measures such as placing warning lights to prevent collisions with cofferdams by ships at night or during heavy fog. (5) Evacuation of the workers working in the cofferdams when there is abnormal water leakage through cofferdams or spring water from the ground in the cofferdams. (6) Safety measures to resume works in cofferdams such as reinforcement of cofferdams to ensure safety of cofferdams and workers after above (5). The work in cofferdams shall not be resumed without taking the said safety measures.
7.3.5 悪天候及び地震時の点検 請負者は、悪天候及び地震時には、本仕様書 7.2.7[悪天候及び地震時の点検]に準拠した安全上の措置を講じなければならない。	**7.3.5 Inspection at Adverse Weather and Earthquake** The Contractor shall take safety measures in accordance with this specification 7.2.7 [Inspection at Adverse Weather and Earthquake] in adverse weather and earthquake.	**7.3.5 Inspection at Adverse Weather and Earthquake** The Contractor shall take safety measures in accordance with JSSS 7.2.7 [Inspection at Adverse Weather and Earthquake] at the time of adverse weather or earthquake. To MD, The JSSS Chapter 7 in Japanese is prepared to refer to Section 2.7 in Japanese. As Chapter 2 in English is prepared differently from JSSS in Japanese, Please modify Chapter 7 in accordance with the JSSS in English.
7.3.6 急激な水位上昇時の安全措置 請負者は、洪水、高潮、津波等による急激な水位上昇による仮締切工の破壊、仮締切工からの漏水や越流水による仮締切工内の浸水等の危険に備え、次の措置を講じなければならない。 (1) 緊急事態対応計画の作成と訓練 本仕様書 1.10[緊急事態対応計画及び緊急通報体制]の策定に当たっては、急激な水位上昇を対象にした緊急事態対応計画を作成すること。また、本仕様書 1.10 (3)に規定する訓練を行うこと。 (2) 情報の収集と対応 (a) 本仕様書 2.7.2[悪天候及び地震に備えた準備と点検]にもとづき、日ごろから急激な水位上昇等の緊急時に備えた準備と点検を行うこと。緊急時の準備には、情報の伝達手段・退避場所・避難ルートについて予め定め、請負者の要員に周知することを含めること。 (b) 本仕様書 2.7.3[気象及び地震情報の収集と対応]に準じて、気象、洪水、海象、津波、仮締切工箇所及び周辺の水位等の情報の収集と対応を行うこと。情報の収集に当たっては、発注者からの協力を得て普段から情報をもつ関係者から直接情報を得られるようにすること。 (3) 作業の中止 請負者は、急激な水位上昇のおそれがある場合には、次の措置を講じること。 (a) 急激な水位上昇が予想される場合は、緊急事態対応計画に従い、作業中止、安全な場所への退避、緊急通報体制の確認を含めた対応の準備を行うこと。	**7.3.6 Safety Measures for Sudden Water Level Rise** The Contractor shall take the following measures in preparation for the dangers of cofferdam due to sudden rise in water level by flood, storm surge, tsunami, etc., leakage from the cofferdam, and inundation in the cofferdam by overflow of water. (1) Preparation and training of emergency response plan When drawing up this JSSS 1.10 [Emergency Response Plan and Emergency Reporting System], an emergency response plan for sudden water level rise shall be worked out. In addition, training specified in 1.10 (3) shall be carried out. (2) Information collection and response (a) In accordance with 2.7.2 [Preparations and Inspections for Adverse Weather and Earthquakes], preparations and inspections for emergencies such as sudden rises in water levels shall be carried out on a daily basis. Preparation for emergencies shall include information transmission means, evacuation sites, and evacuation routes, and all these information shall be notified to the contractor's personnel. (b) In accordance with 2.7.3 [Collecting and Responding to Meteorological and Earthquake Information], collect information on weather, floods, sea conditions, tsunamis, surrounding condition of cofferdams, and surrounding water levels etc. and respond to it as needed. When collecting information, obtain cooperation from the Employer so that information can be obtained from relevant parties. (3) Suspension of works The Contractor shall take the following measures when there is a risk of a sudden rise in water level. (a) If a sudden rise in water level is anticipated, prepare for response according to the emergency response plan, including determination of	**7.3.6 Safety Measures for Sudden Water Level Rise** The Contractor shall take the following measures to prepare for the danger to workers in the cofferdams due to sudden rise in water level by flood, storm surge (high tide), tsunami, etc., leakage from the cofferdams and inundation in the cofferdams by overflow over cofferdams. (1) Preparation and training of emergency response plan When preparing JSSS 1.10 [Emergency Response Plan and Emergency Reporting System], an emergency response plan for sudden water level rise shall be prepared. In addition, training specified in 1.10 (3) shall be carried out. (2) Information collection and response (a) In accordance with 2.7.2 [Preparations and Inspections for Adverse Weather and Earthquakes], preparation and inspection for sudden rises in water levels shall be carried out regularly (*on a daily basis, on a day-to-day basis* ?). The preparation for emergency shall include decision of information transmission means, evacuation routes and evacuation places, and notice of all information related with the emergency to the Contractor's personnel. (b) In accordance with 2.7.3 [Collecting and Responding to Meteorological and Earthquake Information], collection of information about weather, floods, marine weather, tsunamis, water levels around or at cofferdams, and actions for the collected information. When collecting information, the Contractor may obtain cooperation from the Employer so that information can be obtained from relevant parties. (3) Suspension of works The Contractor shall take the following measures when there is risk of sudden rise in water level.

JSSS in Japanese（Provisional Final Draft R1 11/12）	JSSS in English R0（11/13）	JSSS in English R1（11/17）
(b) 仮締切工の設計洪水水位に近づいたとき、危険のおそれのある急激な水位の上昇と判断する時、又は水位の上昇による仮締切工の異常が発見されたときは、ただちに作業を中止し、作業員を安全な場所へ退避させること。 (c) 作業を再開する前には、仮締切工の異常の有無を、エンジニアとともに確認すること。異常が認められたときは直ちに補修すること。	works suspension, instructions for evacuation to safe areas, and confirmation of the emergency information transmission system. (b) When the water level approaches the design flood level of a cofferdam, when a sudden rise in water level that may cause danger is observed, or when an abnormality in the cofferdam due to the rising water level is identified, suspend works immediately and evacuate workers to a safe place. (c) Before resuming works, check with the Engineer for abnormalities in the cofferdams. If any abnormalities are identified, repair them immediately.	(a) To prepare for actions according to the emergency response plan when sudden rise in water level is anticipated. The preparation shall include determination of works suspension, instructions to workers to evacuate to safe areas, and confirmation of the emergency information transmission system. (b) To suspend works immediately and evacuate workers to a safe place, when the water level is reaching to the design flood level of cofferdams, when sudden rise in water level is judged to cause danger to cofferdams and workers, or when an abnormality in the cofferdam due to the rising water level is identified. (c) To check with the Engineer for abnormalities in the cofferdams before resuming works. If any abnormalities of cofferdams are identified, repair them immediately.


Single Wall Cofferdam
Braced Cofferdam

2019.10.21 NK drafted

Specification in Japanese （Provisional Final Version R0）	English Translation（Provisional Final Version 4）-1	English Translation（Provisional Final Version 4）-2 By SS
7.4 通路 **7.4.1 一般** (1) この節では、作業場に通ずる場所及び作業場内に設置する作業者が移動のために使用する通路、架設通路、移動はしご、脚立、非常口、避難通路について規定する。 (2) 請負者は、作業場に通ずる場所及び作業場内に、通路を設ける場合は、本仕様書 1.3.4「安全衛生詳細計画書」(1)の安全衛生詳細計画書に記載すべき事項に、次の事項を追加して、安全衛生詳細計画書を作成しなければならない。 (a) 通路の設置場所、設置期間 (b) 架設通路の構造・材質及び主要寸法（高さ及び長さがそれぞれ 10m 以上のものに限る） (c) 通路と建設機械の作業場所との分離 (d) 通路と車両の運行経路の分離	**7.4 Temporary Passage** **7.4.1 General** (1) In this section, it defines the place that accesses to the work place and the passages used by the workers installed in the work place, the construction passage, the movable ladder, the stepladder, the emergency exit, and the evacuation passage. (2) When the Contractor installs a passage in the place that accesses to the workplace and in the workplace, the Contractor shall comply with the items to be described in the detailed health and safety plan of this specification 1.3.4 “Detailed health and safety plan” (1). The following items should be added to create a detailed health and safety plan. (a) Location and period for setting up the passage (b) Structure, material, and main dimensions of the temporary passage (limited to a height and length of 10m or more each) (c) Separation of temporary passage and working place of construction machines (d) Separation of temporary passage and route of the vehicles	**7.4 Temporary Walkway** **7.4.1 General** (1) This Section specifies safety measures for workers to access to, move around and evacuate from the workplaces such as walkways, bridge type walkways, movable ladders, stepladders, emergency exit and evacuation passage. (2) The Contractor shall prepare the Safety Plan including the following items in addition to the items specified in JSSS 1.3.4 (1): (a) Location and available period of walkways provided, (b) Plans and sections, structure type, materials and main dimensions of bridge type walkways (which height and length are10m or more) (c) Separation of walkways from places where construction machines are moving, and (d) Separation of walkways from places where vehicles are running.
7.4.2 通路の設定 請負者は、通路の設置について、次に示す措置を講じなければならない。 (1) 作業場に通ずる場所及び作業場内には、作業者が使用するための次の措置を講じた安全な通路を設け、かつ、これを常時有効に保持すること。 (2) 前項(1)の通路で主要なものには、これを保持するため、通路であることを示す表示を行うこと。 (3) 通路には、正常の通行を妨げない程度に、採光又は照明の方法を講じること。ただし、常時通行の用に供しない地下室等で通行する作業者に、適当な照明具を所持させるときは、この限りでない。 (4) 通路は、用途に応じた幅とすること。 (5) 通路には、通行する者の視界を妨げる障害物を置いてはならない。 (6) 通路面は、つまずき、すべり、踏抜等の危険のない状態に保持すること。	**7.4.2 Setting Up Temporary Passage** The Contractor shall take all necessary measures to set up temporary passage including for example: (1) Providing safe passage in the place that accesses to the workplace and in the workplace with the following measures for workers to use and maintain it at all times. (2) Marking to indicate that it is a passage to maintain on the main passage stipulated in the paragraph (1). (3) Taking measures for lighting or lighting in the passage to the extent that normal passing is not hindered. Provided, however, that this shall not apply when workers passing in a basement or the like that are not used for regular passing possess appropriate lighting equipment. (4) Ensuring the width on the passage according to its purposes. (5) Leaving no obstacles on the passage that might obstacle the visibility of the workers to pass through. (6) Keeping the surface of the passage in a state where there is no danger such as tripping, slipping or stepping over.	**7.4.1 General** The Contractor shall take the following measures regarding temporary walkways: (1) To provide places leading to workplaces and ins the workplaces with safe walkways for workers, and maintain the said walkways effectively at all times, (2) To make the main ones of the walkways have signs indicating they are walkways in order to maintain their effectiveness, (3) To provide walkways with measures of lighting or illumination to the extent that they may not stand in the way of normal passage. However, this shall not apply to basements and others normally not used for passage, when passing workers are provided with an appropriate illumination tool, (4) To make walkways with sufficient widths corresponding to the purpose of use, (5) Not to place obstacles on walkways, and (6) To maintain the surface of the walkways in a condition that causes no stumbling, slips, treading on a prick, etc. (7) To provide temporary bridge type walkways with the followings: (a) To be of sound structure

(7) 架設通路は次に定めるものとすること。
(a) 丈夫な構造とすること。
(b) 勾配は 30° 以下とすること。ただし、階段を設けたもの又は高さが 2m 未満で丈夫な手すりを設けたものはこの限りでない。
(c) 勾配が 15° を超えるものには、踏桟その他のすべり止めを設けること。
(d) 墜落の危険のある箇所には、本仕様書 2.5.2［通路からの墜落防止措置］の(2)［架設通路］に規定した措置を講じること。
(8) 請負者は、高さ又は深さが 50cm を超える段差がある場所に通路を設ける場合には、作業員が安全に通行するための階段又ははしごを設置すること。
(9) 請負者は、高さ又は深さが 1.5m を超える箇所で作業を行うときは、作業員が安全に昇降するための設備を設けること。ただし、安全に昇降するための設備が設けられない場合は、施工法の変更等により、対応措置を講じること。

(7) The temporary passage shall be set up in the following manner.
(a) To be of sound structure
(b) To be at maximum 30° gradient. However, this does not apply to those provided with stairs or those provided with a handrail to be a sound structure at a height of less than 2m.
(c) Installing tread piers and other slip-proof measures where gradient of the passage is over 15° .
(d) Taking necessary measures for the places where there is a risk of falling specified in (2)[Temporary Passage] in 2.5.2[Falling Prevention Measures from Temporary Passage].
(8) The Contractor shall install a stair or ladder for workers to use in a safe manner when a passage is set up in the place where the height or depth exceeds 50cm.
(9) When the Contractor carries out work at a location where the height or depth exceeds 1.5m, the Contractor shall provide facilities for ascending and descending safely. However, if they are not provided, take measures by examining changes in construction methods.

(b) To make the gradient 30 degrees or less. However, this shall not apply to those equipped with stairs, or those of height of less than 2 m and equipped with sound handrails.
(c) For those having the slope exceeding 15 degrees, to provide step pieces or other slide-proof measures,
(d) To provide necessary measures in accordance with in 2.5.2[Falling Prevention Measures from Temporary Passage] (2)[Temporary Passage] at places where there is a risk of falling of workers.
(8) To provides stair or ladder for workers to safely move at places which height or depth difference exceeds 50cm.
(9) When carrying out a work at a place having a height or a depth exceeding 1.5 m, to provide facilities that enable the worker engaging in the work to go up and down safely. In case that such facilities to ascend or descend safely cannot be provided, to take other measures by the alternative construction method.

7.4.3 移動はしご、脚立

(1) 移動はしご
請負者は、作業員が移動はしごを使用して移動する必要のある場合は、次の措置を講じなければならない。
(a) 次に定めるところに適合した移動はしごを使用させること。
(i) 丈夫な構造とすること。
(ii) 材料は、著しい損傷、腐食等がないものであること。
(iii) 幅は、30cm 以上であること。
(iv) 踏み桟は、25 cm から 35cm の間隔で、且つ、等間隔であること。
(b) すべり止め装置の取付け及び転位を防止するために次のいずれかの措置等を講じること。
(i) はしごの上方を建築物に取付ける。
(i) 他の作業員がはしごの下方を支える。
(c) はしごの使用時には次の措置等を講じること。
(i) 据え付け角度は L（水平長）: H（高さ）は 1:4（75.5 度）とする。
(ii) はしごの上部の床からの突き出しは 100cm 以上とする。
(d) 移動はしごを継ないで使用することを禁止する。

(2) 脚立
請負者は、脚立を使って作業員に移動させるときは、次に定めるところに適合した脚立を使用させなければならない。

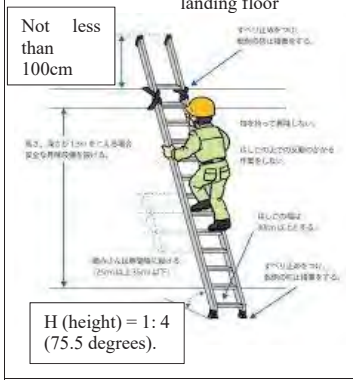
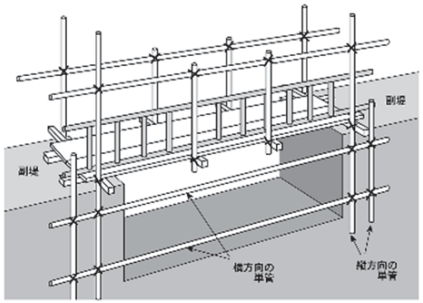
7.4.3 Movable Ladder and Stepladder

(1) Movable Ladder
The Contractor shall take the following measures if workers use movable ladders.
(a) Enforcing workers to use movable ladders specified in the following:
(i) To be of sound structure.
(ii) Without visible signs of defect, damage, corrosion, and shall otherwise in safe condition.
(iii) To be at least 30cm wide.
(iv) To have slip-proof steps with the interval of 25cm to 35cm and evenly spaced.
(b) Taking any of the following measures to install anti-slip device and prevent dislocation of the ladder:
(i) Fixing the top of the ladder to the building.
(ii) Having another worker support the lower part of the ladder.
(c) Taking the following measures when using a movable ladder:
(i) Installation angle should be L (horizontal length): H (height) = 1: 4 (75.5 degrees).
(ii) Ensuring the protrusion of the ladder above the floor should be at least 100cm.
(d) Prohibiting use of more than one movable ladder by connecting them:

(2) Stepladder

7.4.3 Movable Ladders and Stepladders

(1) Movable Ladders
The Contractor shall take the following measures when workers use movable ladders for their moving.
(a) Movable ladders shall meet the following requirements:
(i) To be of sound structure.
(ii) To be made of materials without damage, corrosion, etc.
(iii) To have the width of 30 cm or wider.
(iv) To have steps with the interval of 25cm to 35cm and evenly spaced.
(b) To take any of the following measures to prevent dislocation of ladder
(i) To fix the top of the ladder to the building.
(ii) To have another worker support the lower part of the ladder.
(c) To take the following measures when using movable ladder:
(i) To have the angle made by the foot and the floor of L (horizontal length): H (height) = 1: 4 (75.5 degrees).
(ii) To have the top of ladder be at least 100cm over the landing floor
(d) To prohibit to use of more than one movable ladder by connecting them:
(2) Stepladders
The Contractor shall take the following measures when workers use stepladders for their moving.
(a) To be of sound structure.
(b) To be made of materials without damage, corrosion, etc.

(a) 丈夫な構造とすること。 (b) 材料は、著しい損傷、腐食等がないものであること。 (c) 脚と水平面との角度を 75° 以下とし、かつ、折りたたみ式のものにあっては、脚と水平面との角度を確実に保つための金具等を備えるものであること。	The Contractor shall have workers use stepladders in accordance with the following when workers use them to move. (a) To be of sound structure. (b) Without visible signs of defect, damage, corrosion, and shall otherwise in safe condition. (c) The angle between the front rail and the floor shall not exceed 75 degrees and for folding stepladders they shall be equipped with a lock (such as a spreader with lock) to secure the angle made by the front rail and the floor.	(c) To have the angle made by the foot and the floor of 75 degrees or less, and for folding stepladders, to be equipped with fittings, etc., to keep the angle made by the foot and the floor secure.
7.4.4 非常口、避難通路 請負者は、常時使用しない避難用の出入口、通路及び避難用器具については、避難用である旨の表示をし、かつ、容易に利用できるように保持しておかなければならない。	**7.4.4 Emergency Exit and Evacuation Passage** The Contractor shall indicate that the doorway, passage, and evacuation equipment for evacuation that is not used at all times are for evacuation use and shall maintain them to be used easily as necessary.	**7.4.4 Emergency Exit and Evacuation Passage** The Contractor shall provide indications to emergency exits, emergency walkways or evacuation tools that are not used regularly showing that such exits, etc., are for emergency use, and maintain such exits, etc., in a readily available condition.
7.4.5 点検 請負者は、作業場に通ずる場所及び作業場内に設定した通路及び仮設通路が安全な状態に維持されているか否か、また資材の劣化等により通路としての機能に不具合が生じていないか、定期的に点検しなければならない。	**7.4.5 Inspection** The Contractor shall regularly check whether the place that accesses to the workplace, the passage set in the workplace and the temporary passage are maintained in a safe state, and that the function as the passage is not defective due to deterioration of materials.	**7.4.5 Inspection** The Contractor shall regularly check whether accesses to workplaces, walkways provided on workplaces and bridge type walkways are maintained to be safe and functioned and their materials are not deteriorated.
Ladder To take the following measures when using movable ladder: (i) To have the angle made by the foot and the floor of L (horizontal length): H (height) = 1: 4 (75.5 degrees). (ii) To have the top of ladder be at least 100cm over the landing floor  	Reference Bridge type walkway  図39-2 架設通路の固定方法	

2019.9.10 Japanese Final Draft
2019.10.4 10.21 NK drafted
2019.11.25 NK R1(Same as R0)

Specification in Japanese （Provisional Final Version R0）(9/10)	English Translation（Provisional Final Version 4）-1(10/4)	English Translation（Provisional Final Version 4）-2 (10/21 11/25) By SS
7.4 通路 **7.4.1 一般** (1) この節では、作業場に通ずる場所及び作業場内に設置する作業者が移動のために使用する通路、架設通路、移動はしご、脚立、非常口、避難通路について規定する。 (2) 請負者は、作業場に通ずる場所及び作業場内に、通路を設ける場合は、本仕様書 1.3.4「安全衛生詳細計画書」(1)の安全衛生詳細計画書に記載すべき事項に、次の事項を追加して、安全衛生詳細計画書を作成しなければならない。 (a) 通路の設置場所、設置期間 (b) 架設通路の構造・材質及び主要寸法（高さ及び長さがそれぞれ 10m 以上のものに限る） (c) 通路と建設機械の作業場所との分離 (d) 通路と車両の運行経路の分離	**7.4 Temporary Passage** **7.4.1 General** (1) In this section, it defines the place that accesses to the work place and the passages used by the workers installed in the work place, the construction passage, the movable ladder, the stepladder, the emergency exit, and the evacuation passage. (2) When the Contractor installs a passage in the place that accesses to the workplace and in the workplace, the Contractor shall comply with the items to be described in the detailed health and safety plan of this specification 1.3.4 “Detailed health and safety plan” (1). The following items should be added to create a detailed health and safety plan. (a) Location and period for setting up the passage (b) Structure, material, and main dimensions of the temporary passage (limited to a height and length of 10m or more each) (c) Separation of temporary passage and working place of construction machines (d) Separation of temporary passage and route of the vehicles	**7.4 Temporary Walkway** **7.4.1 General** (1) This Section specifies safety measures for workers to access to, move around and evacuate from the workplaces such as walkways, bridge type walkways, movable ladders, stepladders, emergency exit and evacuation passage. (2) The Contractor shall prepare the Safety Plan including the following items in addition to the items specified in JSSS 1.3.4 (1): (a) Location and available period of walkways provided, (b) Plans and sections, structure type, materials and main dimensions of bridge type walkways (which height and length are10m or more) (c) Separation of walkways from places where construction machines are moving, and (d) Separation of walkways from places where vehicles are running.
7.4.2 通路の設定 請負者は、通路の設置について、次に示す措置を講じなければならない。 (1) 作業場に通ずる場所及び作業場内には、作業者が使用するための次の措置を講じた安全な通路を設け、かつ、これを常時有効に保持すること。 (2) 前項(1)の通路で主要なものには、これを保持するため、通路であることを示す表示を行うこと。 (3) 通路には、正常の通行を妨げない程度に、採光又は照明の方法を講じること。ただし、常時通行の用に供しない地下室等で通行する作業者に、適当な照明具を所持させるときは、この限りでない。 (4) 通路は、用途に応じた幅とすること。 (5) 通路には、通行する者の視界を妨げる障害物を置いてはならない。	**7.4.2 Setting Up Temporary Passage** The Contractor shall take all necessary measures to set up temporary passage including for example: (1) Providing safe passage in the place that accesses to the workplace and in the workplace with the following measures for workers to use and maintain it at all times. (2) Marking to indicate that it is a passage to maintain on the main passage stipulated in the paragraph (1). (3) Taking measures for lighting or lighting in the passage to the extent that normal passing is not hindered. Provided, however, that this shall not apply when workers passing in a basement or the like that are not used for regular passing possess appropriate lighting equipment. (4) Ensuring the width on the passage according to its purposes. (5) Leaving no obstacles on the passage that might obstacle the visibility of the workers to pass through.	**7.4.1 General** The Contractor shall take the following measures regarding temporary walkways: (1) To provide places leading to workplaces and ins the workplaces with safe walkways for workers, and maintain the said walkways effectively at all times, (2) To make the main ones of the walkways have signs indicating they are walkways in order to maintain their effectiveness, (3) To provide walkways with measures of lighting or illumination to the extent that they may not stand in the way of normal passage. However, this shall not apply to basements and others normally not used for passage, when passing workers are provided with an appropriate illumination tool, (4) To make walkways with sufficient widths corresponding to the purpose of use, (5) Not to place obstacles on walkways, and (6) To maintain the surface of the walkways in a condition that causes no stumbling, slips, treading on a prick, etc. (7) To provide temporary bridge type walkways with the followings:

(6) 通路面は、つまずき、すべり、踏抜等の危険のない状態に保持すること。

(7) 架設通路は次に定めるものとすること。

(a) 丈夫な構造とすること。

(b) 勾配は 30° 以下とすること。ただし、階段を設けたもの又は高さが 2m 未満で丈夫な手すりを設けたものはこの限りでない。

(c) 勾配が 15° を超えるものには、踏桟その他のすべり止めを設けること。

(d) 墜落の危険のある箇所には、本仕様書 2.5.2［通路からの墜落防止措置］の(2)［架設通路］に規定した措置を講じること。

(8) 請負者は、高さ又は深さが 50cm を超える段差がある場所に通路を設ける場合には、作業員が安全に通行するための階段又ははしごを設置すること。

(9) 請負者は、高さ又は深さが 1.5m を超える箇所で作業を行うときは、作業員が安全に昇降するための設備を設けること。ただし、安全に昇降するための設備が設けられない場合は、施工法の変更等により、対応措置を講じること。

(6) Keeping the surface of the passage in a state where there is no danger such as tripping, slipping or stepping over.

(7) The temporary passage shall be set up in the following manner.

(a) To be of sound structure

(b) To be at maximum 30° gradient. However, this does not apply to those provided with stairs or those provided with a handrail to be a sound structure at a height of less than 2m.

(c) Installing tread piers and other slip-proof measures where gradient of the passage is over 15° .

(d) Taking necessary measures for the places where there is a risk of falling specified in (2)[Temporary Passage] in 2.5.2[Falling Prevention Measures from Temporary Passage].

(8) The Contractor shall install a stair or ladder for workers to use in a safe manner when a passage is set up in the place where the height or depth exceeds 50cm.

(9) When the Contractor carries out work at a location where the height or depth exceeds 1.5m, the Contractor shall provide facilities for ascending and descending safely. However, if they are not provided, take measures by examining changes in construction methods.

(a) To be of sound structure

(b) To make the gradient 30 degrees or less. However, this shall not apply to those equipped with stairs, or those of height of less than 2 m and equipped with sound handrails.

(c) For those having the slope exceeding 15 degrees, to provide step pieces or other slide-proof measures,

(d) To provide necessary measures in accordance with in 2.5.2[Falling Prevention Measures from Temporary Passage] (2)[Temporary Passage] at places where there is a risk of falling of workers.

(8) To provides stair or ladder for workers to safely move at places which height or depth difference exceeds 50cm.

(9) When carrying out a work at a place having a height or a depth exceeding 1.5 m, to provide facilities that enable the worker engaging in the work to go up and down safely. In case that such facilities to ascend or descend safely cannot be provided, to take other measures by the alternative construction method.

7.4.3 移動はしご、脚立

(1) 移動はしご

請負者は、作業員が移動はしごを使用して移動する必要のある場合は、次の措置を講じなければならない。

(a) 次に定めるところに適合した移動はしごを使用させること。

(i) 丈夫な構造とすること。

(ii) 材料は、著しい損傷、腐食等がないものであること。

(iii) 幅は、30cm 以上であること。

(iv) 踏み桟は、25 cm から 35cm の間隔で、且つ、等間隔であること。

(b) すべり止め装置の取付け及び転位を防止するために次のいずれかの措置等を講じること。

(i) はしごの上方を建築物に取付ける。

(i) 他の作業員がはしごの下方を支える。

(c) はしごの使用時には次の措置等を講じること。

(i) 据え付け角度は L（水平長）: H（高さ）は 1 : 4（75.5 度）とする。

(ii) はしごの上部の床からの突き出しは 100cm 以上とする。

(d) 移動はしごを継ないで使用することを禁止する。

(2) 脚立

7.4.3 Movable Ladder and Stepladder

(1) Movable Ladder

The Contractor shall take the following measures if workers use movable ladders.

(a) Enforcing workers to use movable ladders specified in the following:

(i) To be of sound structure.

(ii) Without visible signs of defect, damage, corrosion, and shall otherwise in safe condition.

(iii) To be at least 30cm wide.

(iv) To have slip-proof steps with the interval of 25cm to 35cm and evenly spaced.

(b) Taking any of the following measures to install anti-slip device and prevent dislocation of the ladder:

(i) Fixing the top of the ladder to the building.

(ii) Having another worker support the lower part of the ladder.

(c) Taking the following measures when using a movable ladder:

(i) Installation angle should be L (horizontal length): H (height) = 1: 4 (75.5 degrees).

(ii) Ensuring the protrusion of the ladder above the floor should be at least 100cm.

(d) Prohibiting use of more than one movable ladder by connecting them:

7.4.3 Movable Ladders and Stepladders

(1) Movable Ladders

The Contractor shall take the following measures when workers use movable ladders for their moving.

(a) Movable ladders shall meet the following requirements:

(i) To be of sound structure.

(ii) To be made of materials without damage, corrosion, etc.

(iii) To have the width of 30 cm or wider.

(iv) To have steps with the interval of 25cm to 35cm and evenly spaced.

(b) To take any of the following measures to prevent dislocation of ladder

(i) To fix the top of the ladder to the building.

(ii) To have another worker support the lower part of the ladder.

(c) To take the following measures when using movable ladder:

(i) To have the angle made by the foot and the floor of L (horizontal length): H (height) = 1: 4 (75.5 degrees).

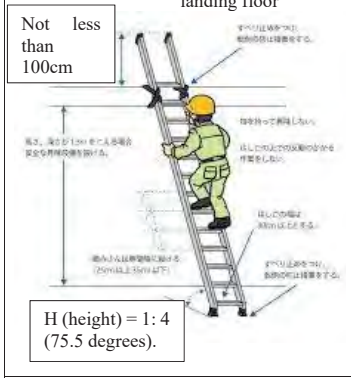
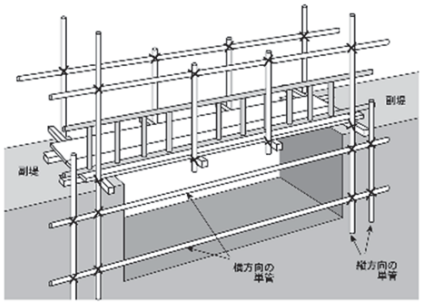
(ii) To have the top of ladder be at least 100cm over the landing floor

(d) To prohibit to use of more than one movable ladder by connecting them:

(2) Stepladders

The Contractor shall take the following measures when workers use stepladders for their moving.

(a) To be of sound structure.

請負者は、脚立を使って作業員に移動させるときは、次に定めるところに適合した脚立を使用させなければならない。 (a) 丈夫な構造とすること。 (b) 材料は、著しい損傷、腐食等がないものであること。 (c) 脚と水平面との角度を 75° 以下とし、かつ、折りたたみ式のものにあっては、脚と水平面との角度を確実に保つための金具等を備えるものであること。	(2) Stepladder The Contractor shall have workers use stepladders in accordance with the following when workers use them to move. (a) To be of sound structure. (b) Without visible signs of defect, damage, corrosion, and shall otherwise in safe condition. (c) The angle between the front rail and the floor shall not exceed 75 degrees and for folding stepladders they shall be equipped with a lock (such as a spreader with lock) to secure the angle made by the front rail and the floor.	(b) To be made of materials without damage, corrosion, etc. (c) To have the angle made by the foot and the floor of 75 degrees or less, and for folding stepladders, to be equipped with fittings, etc., to keep the angle made by the foot and the floor secure.
7.4.4 非常口、避難通路 請負者は、常時使用しない避難用の出入口、通路及び避難用器具については、避難用である旨の表示をし、かつ、容易に利用できるように保持しておかなければならない。	**7.4.4 Emergency Exit and Evacuation Passage** The Contractor shall indicate that the doorway, passage, and evacuation equipment for evacuation that is not used at all times are for evacuation use and shall maintain them to be used easily as necessary.	**7.4.4 Emergency Exit and Evacuation Passage** The Contractor shall provide indications to emergency exits, emergency walkways or evacuation tools that are not used regularly showing that such exits, etc., are for emergency use, and maintain such exits, etc., in a readily available condition.
7.4.5 点検 請負者は、作業場に通ずる場所及び作業場内に設定した通路及び仮設通路が安全な状態に維持されているか否か、また資材の劣化等により通路としての機能に不具合が生じていないか、定期的に点検しなければならない。	**7.4.5 Inspection** The Contractor shall regularly check whether the place that accesses to the workplace, the passage set in the workplace and the temporary passage are maintained in a safe state, and that the function as the passage is not defective due to deterioration of materials.	**7.4.5 Inspection** The Contractor shall regularly check whether accesses to workplaces, walkways provided on workplaces and bridge type walkways are maintained to be safe and functioned and their materials are not deteriorated.
Ladder To take the following measures when using movable ladder: (i) To have the angle made by the foot and the floor of L (horizontal length): H (height) = 1: 4 (75.5 degrees). (ii) To have the top of ladder be at least 100cm over the landing floor  	Reference Bridge type walkway  図39-2 架設通路の固定方法	

Specification in Japanese （Provisional Final 10/23）	English Translation（Draft R0 11/5）	
7.5 足場 **7.5.1 一般事項** (1) 足場とは作業のために設ける作業床及びそれを支持するものからなる仮設物のうち、作業構台を除くものをいう。 (2) 本節では鋼管足場、つり足場、移動式足場について、以下に規定する。 (3) 請負者は、足場からの墜落防止に対しては、本仕様書 2.5［墜落防止］、足場・作業床での作業に際して物体の飛来又は落下により工事関係者に危険を及ぼすおそれのある場合は、2.6［飛来落下の防止措置］に拠る規定に、各々従わねばならない。 (4) 請負者は、足場の安全事項についての当該国の法律及び本仕様書のいずれにも規定が無い事項は、次に示すいずれかの基準における規定を遵守しなければならない。 (a) 米国 OSHA PART 1926-Safety and Health Regulations for Construction, Subpart L-Scaffolds 及び ANSI/ASSP A10.8 – 2019 Scaffolding Safety Requirements equipment - Part 1: Scaffolds - Performance requirements and general design (b) 英国 BS EN12811-1:2003 Temporary works equipment - Part 1: Scaffolds - Performance requirements and general design (5) 足場の計画、設計は、その上で行う作業に従事する作業員、作業員が使用する道具等の重量を勘案した上載荷重を考慮し、本章 7.1.3[仮設構造物の設計及び設計照査]に基づき計画、設計すること。	**7.5 Scaffolding** **7.5.1 General** (1) “Scaffold” means a temporary structure consisting of a working floor provided for work and a support for it, excluding the work platform. (2) In this section, steel pipe scaffolds, suspension scaffolds and mobile scaffolds are defined as follows. (3) The Controator shall comply with the provisions in accordance with 2.5[Fall Prevention] for prevention of fall accidents, and 2.6[Prevention Measurs for Flying or Falling Objects] for the case a worker may be in danger due to flying or falling objects when working on a scaffold or a working floor. (4) The Contractor shall comply with the provisions in any of the following standards for matters that are not stipulated in either the target country's laws or safety specifications for the scaffolding. (a) OSHA PART 1926-Safety and Health Regulations for Construction, Subpart L-Scaffolds and ANSI/ASSP A10.8 – 2019 Scaffolding Safety Requirements equipment - Part 1: Scaffolds - Performance requirements and general design, USA. (b) BS EN12811-1:2003 Temporary works equipment - Part 1: Scaffolds - Performance requirements and general design, UK. (5) The planning and design of the scaffolding shall be carried out in accordance with 7.1.3 [Design and Verification of Temporary Structures] with taken into account the loading weight of the workers engaged in the work and tools used by the workers etc.	
7.5.2 鋼管足場 請負者は、次を遵守して計画、設計を行わなければならない。 (1) 鋼管で構成される足場（以下、「鋼管足場」という。）については、次に示す措置を講じること。 (a) 足場（脚輪を取り付けた移動式足場を除く。）の脚部には、足場の滑動又は沈下を防止するため、ベース金具を用い、かつ、敷板、敷角等を用い、根がらみを設けること。 (b) 鋼管の接続部又は交差部は、これに適合した金具を用いて、確実に接続し、又は緊結させること。 (c) 筋かいで補強すること。 (d) 鋼管足場の種類に応じ、風荷重等も考慮したうえで、足場の安定性を維持するために必要な壁つなぎ又は控えを設けること。	**7.5.2 Steel Pipe Scaffolding** The Contractor shall plan and design in accordance with the following. (1) For scaffolds composed of steel pipes, hereinafter refered to as steel pipe scaffolds, the following measures shall be taken: (a) For the leg of scaffolding (excluding mobile scaffolds with casters), to take measures such as providing bridge batten of foot posts with base fittings, and plankings, square timbers, etc., in order to prevent the scaffolds from sliding or settling, (b) Joint or fasten the jointing portions or crossing portions of steel pipes securely with suitable fittings, (c) Reinforce the scaffolding with bracings, (d) Depending on the type of steel pipe scaffolding, consider the wind load,	

	etc., and provide ties to walls or stays necessary to maintain the stability of the scaffolding.	
7.5.3 つり足場 請負者は、つり足場（ゴンドラのつり足場を除く。以下本節において同じ。）については、次の措置を講じなければならない。 (1) 作業床の最大積載荷重は、つりワイヤロープ及びつり鋼線の安全係数が 10 以上、つり鎖及びつりフックの安全係数が 5 以上並びにつり鋼帯並びにつり足場の下部及び上部の支点の安全係数が鋼材にあっては 2.5 以上、木材にあっては 5 以上となるように定めること。 (2) 次のいずれかに該当する材料を使用しないこと。 (a) つりワイヤロープ (i) ワイヤロープ一よりの間において素線（フィラ線を除く。以下同じ。）の数の 10%以上の素線が切断しているもの (ii) 直径の減少が公称径の 7%を超えるもの (iii) キンクしたもの (iv) 著しい形崩れ又は腐食があるもの (b) つり鎖 (i) 伸びが、つり鎖が製造されたときの長さの 5%を超えるもの (ii) リンクの断面の直径の減少が、当該つり鎖が製造されたときの当該リンクの断面の直径の 10%を超えるもの (iii) 亀裂があるもの (c) つり鋼線及びつり鋼帯 著しい損傷、変形又は腐食のあるもの (3) つり足場の設置時の措置 (a) 作業床は、幅を 40cm 以上とし、かつ、隙間がないようにすること。 (b) 床材は、転位し、又は脱落しないように、足場桁等に取り付けること。 (c) 足場桁、作業床等に控えを設ける等動揺又は転位を防止すること。 (4) 作業上の禁止事項 つり足場の上で、脚立、はしご等を用いて作業員に作業させないこと。	**7.5.3 Hanging Scaffolds** The Contractor shall take the following measures for hanging scaffolds (excluding gondola suspension scaffolds; the same applies hereinafter). (1) The maximum loading capacity of the working floor shall be so determined as to ensure the safety coefficient of 10 or more for hanging wire ropes and hanging steel wires, the safety coefficient of 5 or more for hanging chains and hanging hooks, and the safety coefficient of hanging steel bands and of fulcrums at the bottom and top of the hanging scaffoldings of 2.5 for steels and 5 or more for timber. (2) Do not use any of the folloeing materials. (a) Hanging wire ropes (i) Those with 10% or more of element wires (excluding filler wires) of which are cut in one strand of wire ropes. (ii) Those with reduction ratio of a diameter exceeding 7% of the nominal diameter (iii) Those with kink (iv) Those with marked deformation or corrosion (b) Hanging chains (i) Those with the elongation exceeding 5% of the original length at the time of manufacture. (ii) Those with a reduction ratio of a diameter of links of the said hanging chains exceeding 10% of the original diameter of the said links at the time of manufacture. (iii) Those with cracks (c) Hanging steel wires and hanging steel belts Those with marked damage or corrosion (3) Measures when setting up the scaffolding (a) The working floor to be with width of 40 cm or more, and without clearance between floor boards. (b) Fasten the floor materials to the scaffolding girder etc., in order to prevent them from displacing or coming off. (c) Take measures in order to prevent movement or displacement such as providing of stays to the scaffolding girders, working floors, etc. (4) Prohibited work Do not allow workers to work on the scaffolding using stepladders, ladders, etc.	
7.5.4 移動式足場 請負者は、移動式足場については、次の措置を講じなければならない。	**7.5.4 Mobile Scaffolds** The Contractor shall take the following measures for mobile scaffolds:	

(1) 移動式足場の選定

(a) 対象とする作業に適した、高さ、幅、長さの移動式足場を用いること。

(a) 移動式足場は、英国基準 BS EN1004 Mobile access and working towers made of Prefabricated elements に適合するもの、又はエンジニアが同等以上と認めたものを使用すること。

(2) 組立てに際しての留意事項

(a) 購入した移動式足場の場合、製造業者が作成する筋交いの必要性や安全に組立てできる高さ等を含む組立て手順を説明するマニュアルに従い、組立てに関し十分な知識と経験を持つ者（competent person）に組立てを行わせること。

(b) 組立てに際しては、建わく等の接続部は、使用中容易に離脱しないように確実に結合すること。

(3) 移動式足場の移動に関して次を遵守すること。

(a) 移動させるときは、路面の凹凸障害物等による転倒を防止するためあらかじめ、路面の状態を確認すること。

(b) 移動は、すべての脚輪のブレーキを解除した後に行うこと。

(c) 作業員や物を移動式足場に乗せた状態で移動させないこと。

(d) 送電線や上空に障害物がないことを確認すること。

(e) 移動中の動線およびその付近に、移動作業に従事する作業員以外の者を立ち入らせないこと。

(4) 移動式足場の定置（作業箇所において使用できる状態にすることをいう。）に関して次を遵守すること

(a) 作業員が無理のない姿勢で作業を行うため、移動式足場は、作業箇所に近接したところに定置させること。

(b) 脚輪のブレーキは、移動中を除き、常に作動させておくこと。ブレーキを作動させるときは、その効き具合を確認すること。又は、歯止め等で脚輪を確実に固定することとし、足場の一部を堅固な建設物に固定させること。

(c) 凹凸又は傾斜が著しい場所では移動式足場を使用してはならない。

(d) アウトリガーを有する移動式足場を定着したときは、アウトリガーの取付け状態、接地状態等について異常のないことを確認すること。

(5) 用途外の使用禁止

次の移動式足場の用途外の使用を禁止すること。

(a) 材料の吊り上げや物体の投下用のシュートの支えとして使用すること。

(b) シート（布）で覆うこと（sheeting）や強風にさらす目的に使用すること。

(c) グリットブラスト（防食研磨）又はウォータージェット用に使用すること。

(d) 作業床を、移動はしご、脚立、架台（trestles）等の支持台（support）と

(1) Selection of mobile scaffolds

(a) Use mobile scaffolds of height, width, and length that are suitable for the intended work.

(b) Use mobile scaffolds that comply with BS EN1004 Mobile access and working towers made of Pre-fabricated elements or that the engineer has admitted as equivalent or better.

(2) Precautions for assembly

(a) In the case of purchased mobile scaffolds, have a person who has sufficient knowledge and experience in assembly: competent person assemble according to the manual explaining the assembly procedure including the necessity of bracing created by the manufacturer and the height that can be safely assembled, etc.

(b) When assembling, connecting points on the building flame should be securely connected so that they are not easily detached during use.

(3) Observe the following points regarding movement of mobile scaffolds:

(a) Check the condition of the road surface in advance to prevent it from overturning due to irregularities or obstacles,

(b) Move after releasing the brakes on all the casters,

(c) Don’t move it in the situation workers or objects are on mobile scaffolds,

(d) Make sure that there are no obstacles in the transmission line or in the overhead space, and

(e) Don’t allow anyone other than workers engaged in moving work to enter on the flow line of a moving scaffolds and its vicinity.

(4) Comply with the following points regarding the placement of mobile scaffolds: referring to the condition of being able to be used at the work site:

(a) Mobile scaffolds shall be placed in close proximity to the work position so that workers can work in a safe posture,

(b) The brakes for the casters have to be activated at all times except during movement. When operating the brake, check its effectiveness beforehand. Or, fix the casters securely with pawls, etc., and fix a part of the scaffold to a firm structure,

(c) Mobile scaffolds shall not be used where there are significant irregularities orslopes, and

(d) When a mobile scaffold with outriggers is placed, make sure that there are no abnormalities in the outrigger mounting and grounding conditions.

(5) Prohibition of use for other purposes

Prohibit the use of mobile scaffolds for purposes other than the following:

(a) Use as a support for lifting materials or dropping objects,

(b) To be used for the purpose of covering with sheet (cloth) or exposing to strong wind,

して使用すること。	(c) Use for grit blasting or water jet, and (d) Use the working floor as a support for moving ladders, stepladders, trestles, etc.	
7.5.5 標識類の表示 請負者は、作業床の最大積載荷重及び足場の点検・維持管理の責任者名を、足場の見やすい箇所に表示しなければならない。	**7.5.5 Display of Signs** The Contractor shall display the maximum load capacity of the working floor and the name of the person in charge of inspection and maintenance of the scaffold in an easily visible location on the scaffold.	
7.5.6 組立、変更及び解体 請負者は、足場の組立、変更又は解体の作業を行うときは、次の措置を講じなければならない。 (1) 足場の組立て、解体又は変更の作業を行うときは、特定の作業の作業主任を任命し、作業を直接指揮させること。 (2) 作業の時期、範囲及び順序を、作業員に作業前に周知すること。 (3) 作業に際しては、作業員以外の者へ危害が及ばないよう、本仕様書 2.3[立入禁止の措置]に従い、柵・囲い等の設置により作業区域を明示したうえで、作業員以外の者の立入りを禁止すること。さらに、必要に応じて監視員を配置し、上記の立入禁止を徹底すること。 (4) 高さが 2m 以上の構造の足場の場合、足場材の緊結、取りはずし、受渡し等の作業には幅 40cm 以上の足場板を設けること。 (5) 上記(4)の作業には、墜落制止用器具を安全に取り付けるための設備等を設け、かつ、作業員に墜落制止用器具を使用させること。 (6) 高さ 2m 以上の箇所での作業及びスレート等の屋根の上での作業においては、次の作業床を設置すること。 (a) 床材は十分な強度を有するものを使用すること。また、幅は 40cm 以上とし、床材間のすき間は 3cm 以下とし、床材と建地との隙間は、12cm 未満とすること。床材は、転位又は脱落しないよう支持物に 2 箇所以上取り付けること (b) 床材を作業に応じて移動させる場合は、3 箇所以上の支持物にかけ、支点からの突出部の長さは 10cm 以上とし、かつ足場板長の 18 分の 1 以下とすること。また、足場板を長手方法に重ねるときは支点上で重ね、その重ねた部分の長さは 20cm 以上とすること。 (7) 足場の材料については、著しい損傷、変形又は腐食のないものを使用すること。木材については、強度上の著しい欠点となる割れ、虫食い、節等がなく、かつ、木皮を取り除いたものを使用すること。 (8) 落下による危険が生じるおそれがある場合、材料、器具、工具等の上げ下ろし時には、作業員につり網、つり袋を使用させること。 (9) 作業のため物体が落下することにより、作業員に危険を及ぼすおそれのあるときは、本仕様書 2.6[飛来落下の防止措置]の措置を講じるこ	**7.5.6 Assembly, Alteration and Dismantlement** The Contractor shall take the following measures when assembling, altering or dismantling of the scaffold: (1) When assembling, dismantling or alteing scaffolds, appoint an operation leader of specific work and direct the work, (2) Inform workers of the timing, scope and sequence of work before commencing the works, (3) In order to avoid danger to personnel other than workers, the work area shall be clearly specified by installing fences and enclosures in accordance with 2.3[Dangerous and Hazardous Area], and entry of persons other than workers shall be prohibited. In addition, surveillance personnel should be allocated as necessary to ensure that the above entry is prohibited, (4) For scaffolds with a height of 2m or more, when carrying out works of fastening, removing or handling over materials for scaffoldings, provide scaffolding boards having a width of 40 cm or more, (5) For the work of (4) above, install equipment to attach personal fall arrest system safely and have workers use it, (6) The following working floors shall be installed when working at locations with a height of 2m or more and working on roofs such as slate, (a) Use flooring with sufficient strength. And, the width of flooring shall be of 40cm or more, the clearance between flooring shall be of 3 cm or less, and the clearance between flooring and stanfards shall be of less than 12cm. Attach two or more floorings to the support to prevent dislocation or dropping. (b) When moving flooring material according to work, deliver to 3 or more supports, the length of projection from the fulcrums to be of 10cm or more, and is one-eighteenth of the length of the said scaffolding boards or less. When stacking the scaffolding plate in the longitudinal direction, stack it on the fulcrum, and length of the overlapped part shall be 20cm or more. (7) Use scaffolding material without marked damage, deformation or corrosion.	

と。 (10) 架空線等に近接して作業を行う場合には、本仕様書 3.2[架空線等上空施設一般] の措置を講じること。 (11) 悪天候のため、作業の実施について危険が予想されるときは、本仕様書 2.7[悪天候及び地震時の対策]の規定に従い、作業を中止すること。	For wood material, use it that has no cracks, worms, knots, etc., which are significant defects in strength, and from which the bark has been removed, (8) When there is a risk of falling, workers should be allowed to use a hanging net and a hanging bag when raising and lowering materials, instruments and tools, (9) Take measures in accordance with 2.6 [Prevention Measurs for Flying or Falling Objects] for the case when there is a risk of danger to workers due to falling objects during work, (10) Take measures in accordance with 3.2[Overhead Lines] for the case when working near overhead lines, etc., and (11) When dangers are expected in the performance of work, stop the work in accordance with 2.7[Coutermeasures under Bad Weather and Earthquakes].	
7.5.7 点検 請負者は、足場の組立、変更又は解体作業時、組立完成時、足場を使用する作業開始前、荒天及び中震後の作業開始前における点検について、次の措置を講じなければならない。 (1) 足場の組立完成時には、足場の組立等作業主任に、設計図通りの組立てであることを点検させ、設計図通りでない場合は手直しすること。 (2) 足場における作業を行うときは、その日の作業の開始前に、作業を行う箇所に設けた交差筋交い、さん、幅木、手摺及び中さん等の足場用墜落防止設備の取り外し及び脱落の有無について点検を行ない、異常を認めたときは直ちに補修を行うこと。 (3) 本仕様書 2.7[悪天候及び地震時の対策]に規定の悪天候若しくは地震又は足場の組立て、一部解体若しくは変更の後において、足場における作業を行うときは、作業開始前に、次の事項について点検を行ない、異常を認めたときは直ちに補修を行うこと。 (a) 床材の損傷、取付け及び掛渡しの状態 (b) 建地、布、腕木等の緊結部、接続部及び取付部の緩みの状態 (c) 緊結材及び緊結金具の損傷及び腐食の状態 (d) 足場用墜落防止設備の取り外し及び脱落の有無 (e) 幅木等の取付状態及び取り外しの有無 (f) 脚部の沈下及び滑動の状態(つり足場を除く) (g) 筋かい、控え、壁つなぎ等の補強材の取付状態及び取り外しの有無 (h) 建地、布及び腕木の損傷の有無 (i) 突りょうとつり索との取付部の状態及びつり装置の歯止めの機能 (4) 請負者は、上の(3)の規定に従い点検を行ったときは、次の事項を記録し、足場を使用する作業を行う仕事が終了するまでの間、これを保存すること。 (a) 点検の結果 (b) 点検の結果に基づいて行った補修等の措置を講じた場合は、措置	**7.5.7 Checkup** The Contractor shall take the following measures at the time of assembling, altering or dismantling of scaffolds, at the assembly completion, before the work using the scaffold, and the time of restart of work after the stormy weather and the medium earthquake. (1) When scaffolds assembly is completed, have the operation leader for scaffolds assembly check that the assembly is in accordance with the design drawing. And, if not, have him to direct to correct it. (2) When working on a scaffold, before the start of work, check the existence of removal and coming off of fall prevention equipment such as crossing, toe boards, handrails and middle bar etc., fix it right away when abnormalities are identified. (3) When the work is performed on the scaffolds after the bad weather or earthquake in accordance with 2.7[Coutermeasures under Bad Weather and Earthquakes], or after the assembly, partial disassembly or modification of the scaffolds, the following points shall be checked out before the commencement of the work, and if any abnormalities are identified, correct it immediately: (a) Condition of damage, mounting and placing of floor materials, (b) Condition of loosening at the fastening, connecting and mounting, portions of standards, ledgers, brackets, etc., (c) Condition of damage and corrosion of clamping materials and clamps, (d) Existence of removal and coming off of fall prevention equipment for scaffolds, (e) Condition of mounting and existence of removal of toe boards, (f) Condition of settling and sliding of foot portions (Excluding suspension scaffolding), (g) Condition of mounting and existence of removal of diagonal bracings, stays, ties to wall and other reinforcement materials,	

の内容	(h) Existence of damage of standards, ledgers and brackets, and (i) Condition of the mounting portion of projected girders and lifting cables, and the function of lifting devices. (4) When a contractor performs an inspection in accordance with the provisions of (3) above, the contractor shall record the following items and store them until the work that uses the scaffolding is completed: (a) Results of checkup, and (b) When measures such as repairs based on the results of the checkup are taken, the details of the measures.	
7.5.8 高所作業車を用いての作業の際の留意点 請負者は、高所作業車を用いて作業を行うときは、次の措置を講じなければならない。 (1) 作業主任 特定の作業の作業主任を任命し、作業を直接指揮させること。 (2) 高所作業車の設置、運転 (a) 高所作業車を作業場所に設置するときは、高所作業車の転倒又は転落による労働者の危険を防止するため、アウトリガーを完全に張出させること。また地盤の沈下防止対策をとること。 (b) 本仕様書 2.3[立入禁止の措置]に従い、作業区画を設置し、立入禁止措置を講じること。 (c) 高所作業車の製造者が定める運転に関する注意事項を作業員に遵守させること。 (d) 安全装置がある場合は、故意に機械の安全装置を解除させないこと。 (e) 請負者は、高所作業車を走行させるときは、次の措置を講じること。 (i) 作業床を所定の最低降下位置まで下げてから走行する。 (ii) 作業床において走行操作をしない車両の場合は、作業床に作業員を載せたまま走行してはならない。 (iii) 作業床において走行操作をする車両の場合は、平たん・堅固でない場所を走行してはならない。 (iv) 上記以外で、作業床において走行操作をしない車両の場合で、平坦で堅固な場所において作業床に作業員を載せたまま高所作業車を走行させるときは、次の措置を講じなければならない。 • 誘導者を配置し、その者に高所作業車を誘導させること。 • 一定の合図を定め、誘導者に当該合図を行わせること。 • あらかじめ、作業時における当該高所作業車の作業床の高さ及びブームの長さ等に応じた高所作業車の適正な制限速度を定め、それにより運転者に運転させること。	**7.5.8 Precautions for the Work with A Vehicle for Work at Height** The Contractor shall take the following measures when using a vehicle for work at height. (1) Operations leader Appoint an operation leader for a specific work and direct the work. (2) Placement and operation of a vehicle for work at height (a) When placing a vehicle for work at height in the work place, take necessary measures of projecting an outrigger and of preventing uneven settling of the ground in order to prevent workers from dangers due to overturning or falling of the said vehicle, etc. (b) In accordance with 2.3[Dangerous and Hazardous Area], specify work sections and take measures to prevent entry. (c) Ensure that workers comply with the driving precautions set by the manufacturer of the vehicle for work at height. (d) If there is a safety device, do not deliberately release the safety device of the machine. (e) The Contractor shall take the following measures when driving a vehicle for work at height: (i) Drive after lowering the working floor to the specified minimum descent position; (ii) In the case of a vehicle that are not operated on the working floor, the said vehivle shall not be driven with a worker on the working floor. (iii) In the case of a vehicle that are operated on the working floor, the said vehicle shall not be driven on non-level or non-firm places. (iv) Other than the above, in the case of a vehicle that are not operated on the working floor, the following measures shall be taken when driving the said vehicle in a level and firm place with a worker on the working floor: • Arrange a guide, and have the said person guide a vehicle for work at height,	

(f) 運転者が走行のため運転位置から離れる場合は、当該運転者に次の措置を講じさせること。

(i) 作業床に作業員が乗って作業を行っていない及び作業を行おうとしていない場合

- 作業床を最低降下位置に置かせること。
- 原動機を止め、かつ、停止の状態を保持するためのブレーキ(駐車ブレーキ)を確実にかける等の高所作業車の逸走を防止する措置をとらせること。

(ii) 作業床に作業員が乗って作業を行い、又は行おうとしている場合、当該高所作業車の停止の状態を保持するためのブレーキを確実にかける等の措置を講じさせること。

(iii) 高所作業車を用いて作業を行うときは、乗車席及び作業床以外の箇所に作業員を乗せてはならない。

(iv) 高所作業車を、その製造者が規定した制限荷重(高所作業車の構造及び材料に応じて、作業床に人又は荷を乗せて上昇させることができる最大の荷重。)を超えて使用させてはならない。

(3) 作業床の操作

作業床以外の箇所で作業床を操作するときは、作業床上の作業員と作業床以外の箇所で作業床を操作する者との間の連絡を確実にするため、本仕様書 2.4.2[合図の統一]に従い一定の合図を定め、当該合図を行う者を指名してその者に合図を行わせること。

(4) 作業床での作業

請負者は、高所作業車の作業床で作業を行う作業員の安全のために、次の措置を講じること。

(a) 作業員には、墜落制止用器具、保護帽等の保護具を使用させること。

(b) 作業床から現場の鉄骨などへの乗り移り、手摺りに足を掛け手作業する等の危険な行動を、作業員に禁じること。

(c) 本仕様書 2.7[悪天候及び地震時の対策]に従い悪天候のときは 2m 以上の高所作業を中止させなければならない。

(5) 高所作業車の点検、修理

(a) 本仕様書 4.1.6[搬入時の確認]、4.1.7[建設機械の点検・整備]、4.1.8[日常点検]、4.1.9[定期点検]に従い、高所作業車の点検を行うこと。

(b) 高所作業車の修理、作業床の装着又は取り外しの作業は、本仕様書 4.2.2[点検・修理作業時の安全確保]及び 4.2.3[アタッチメント等作業装置の装着及び取りはずし作業]に従い行うこと。

(6) 用途以外の使用禁止

高所作業車を、荷の吊り上げ等の当該高所作業車の主たる用途以外に

- Set fixed signals and have the guide set forth in the preceding item give the signals, and
- Set an appropriate working speed limit for the vehicle for work at height in advance corresponding to the height of the working floor and the length of the boom, etc. of the said vehicle for work at height, and have the operator operate the vehicle by them.

(f) Have the operator shall take the following measures when leaving the operatinbg position:

(i) When a worker is not working on the working floor or is not going to work,

- Put the working floor in the lowest position
- Stop a prime mover and take measures of setting the brake securely to keep the machine in stopped condition: parking brake, etc., in order to prevent a vehicle for work at height from breaking into a run.

(ii) If a worker is working on the working floor or is about to work, make sure to apply a brake to ensure that the work vehicle at high altitude is stopped,

(iii) When using a vehicle for work at height, workers shall not be boarded on other than the passenger seat and working floor, and

(iv) A vehicle for work at height must not be used beyond the limit load: maximum load that can be lifted by a person or load on the working floor, depending on the structure and material of the veicle specified by the manufacturer.

(3) Working floor operation

When operating the working floor at a place other than the working floor, in order to ensure communication between the worker on the working floor and the person operating the working floor at a place other than the working floor, establish a certain signal and designate persons who exchange signale and have them signal in accordance with 2.4.2[Unifying Signals].

(4) Work on the working floor

The Contractor shall take the following measures to ensure the safety of workers working on the working floor of a vehicle for work at height:

(a) Have workers use protective equipment such as fall prevention equipment and protective caps,

(b) Prohibit workers from performing dangerous actions such as transferring from the working floor to a steel frame at the work site, placing a foot on the handrail, and performing manual work, and

(c) When the weather is bad, stop work at a height of 2m or more in accordance with 2.7[Coutermeasures under Bad Weather and Earthquakes].

(5) Checkup and repair of a vehicle for work at height

使用してはならない。	(a) Carry out checkup on a vehicle for work at height in accordance with 4.1.6[Check at Delivery], 4.1.7[Checkup and Maintenance of Construction Machine], 4.1.8[Daily Checkup], and 4.1.9[Periodical Checkup] (b) Repair work of a vehicle for work at height, installation/removal of working floor shall be carried out following 4.2.2[Ensuring Safety during Checkup and Repair Work] and 4.2.3[Installation and Removal Work of Work Equipment such as Attachments]. (6) Prohibition of use for other purposes A vehicle for work at height must not be used for purposes other than the original use of the vehicle, such as lifting a load.	
7.5.9 脚立を用いての作業の際の留意事項 請負者は、脚立を用いての作業に際しては、次を遵守しなくてはならない。 (1) 脚立を用いての作業は、高さ 2m 以上は不可。2m 以上の高さの作業の場合は足場を組む等の他の措置をとること。 (2) 踏み面は、作業を安全に行なうため必要な面積を有すること。 (3) 開き止め金具は確実にロックすること。 (4) 脚立が安定しない場所には設置しない。 (5) 出入口やドアの前では使用しない。 (6) 天板に乗って、又は天板を跨いで作業をさせないこと。 (7) 脚立の上で作業する時は、天板を含め上から 3 段目以下の踏みさんに乗り作業をさせること。 (8) 脚立の上で作業する時は、3 点以上の支持によること。 (9) 上向き作業をしないこと。 (10) 踏みさん上に足場板をかけて作業を行う場合は、次を遵守すること。 (a) 脚立の中心線間の間隔は 1.8m 以下、足場板の幅は 40cm 以上とし、重ね長さは 20cm 以上として、3 以上の支持物にかけ渡すこと。 (b) 足場板の支点からの突出部の長さは 10cm 以上とし、かつ、作業員が当該突出部に足を掛けるおそれのない場合を除き、足場板の長さの 1/18 以下とすること。 (c) 足場板は丈夫なものを使用し、著しい損傷、変形または腐食のあるものを使用してはならない。	**7.5.9 Precautions for Steppladder Work** The Contractor shall comply with the following when working with the stepladder. (1) When working with a stepladder, a height of 2m or more is not possible. In the case of work more than 2m, take other measures such as building a scaffold. (2) The tread of the stepladder must have the necessary dimension for safe work. (3) Secure the locking clasp securely. (4) Do not install a stepladder in a place where is unstable. (5) Do not use in front of doorways or doors. (6) Do not step on or straddle the top plate to work. (7) When working on a stepladder, get on the step 3 and below from the top, including the top board. (8) When working on a stepladder, support at least three points. (9) Do not work in an upward position. (10) The following shall be complied with when performing work with a scaffolding board on the treads. (a) The distance between the center lines of the stepladders shall be 1.8m or less, the width of the scaffolding board shall be 40cm or more, and the overlap length shall be 20cm or more. (b) The length of projection of scaffolding boards from the fulcrums to be of 10 cm or more, and is one-eighteenth of the length of the said scaffolding boards or less, excluding when there is no possibility that workers will step on the said projections. (c) Use scaffolding boards with sound structure, without marked damage, deformation or corrosion.	

JSSS in Japanese （Provisional Final Draft R110/23）	JSSS in English R0（11/5）	JSSS in English R1（11/21）
		Contents 7.5 Scaffolds 7.5.1 General 7.5.2 Steel Pipe Scaffoldis 7.5.3 Interior Hung (Suspended) Scaffolds 7.5.4 Mobile Scaffolds 7.5.5 Display on scaffolds 7.5.6 Assembly, Alteration and Dismantlement 7.5.7 Inspection and Maintenace 7.5.8 Safety Measures for the Work with Mobile Elevating Work Platforms 7.5.9 Safety measure for Steppladder Work

BS EN 12811-1:2003

Temporary works equipment —
Part 1: Scaffolds — Performance requirements and general design

Key

h_s Scaffold height
b_s Scaffold bay width, centre to centre of standards
l_s Scaffold bay length, centre to centre of standards
h_l Scaffold lift height

1 Bracing in vertical plane ((transverse diagonal) (3.6) 2 Bracing in horizontal plane (3.5) 3 Side protection (3.19) 4 Bracket brace (-) 5 Node (3.13) 6 Bracing in vertical plane (longitudinal diagonal) (3.6) 7 Standard (3.21) 8 Transom (3.24) 9 Ledger (3.10) 10 Coupler(3.8)	11 Tie member (3.23) 12 Platform (3.15) 13 Bracket (-) 14 Bridging ledger (-) 15 Base plate (3.3) 16 Platform unit (3.16) 17 Horizontal frame (-) 18 Anchorage (3.1) 19 Vertical frame (-) 20 Fencing structure (5.5.5)	21 Principal guardrail (5.5.2) 22 Intermediate guardrail (5.5.3) 23 Toeboard (5.5.4) 24 Post (-) 25 Base jack (3.2) NOTE 1 The Figure is for component identification purposes only and does not show any requirements. NOTE 2 (-) These terms are not found in the text, but are useful to understand the various components that can be used with a working scaffold.

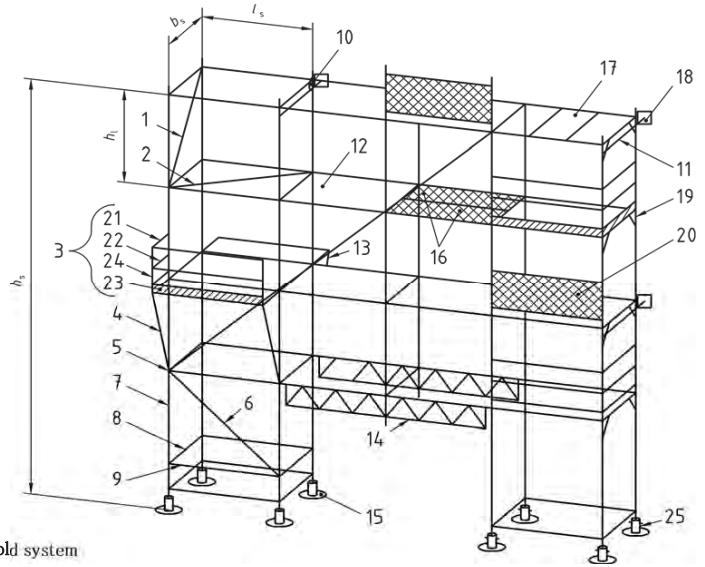


Figure 1 — Examples of typical components of a façade scaffold system

NOTES:
(1) See Figures D28 and D29 for access.
(2) See Section 8 for requirements for tube and coupler scaffolds.

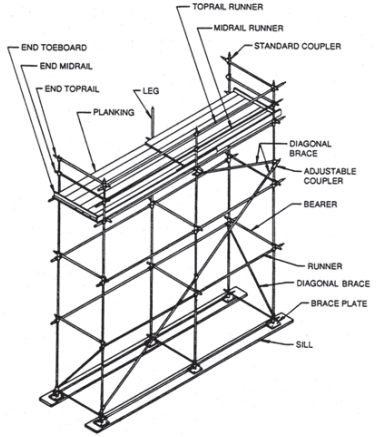


FIGURE D25 TUBE AND COUPLER SCAFFOLD

NOTES:
(1) See Figures D28 and D29 for access.
(2) See Section 10 for requirements for fabricated tubular frame scaffolds.

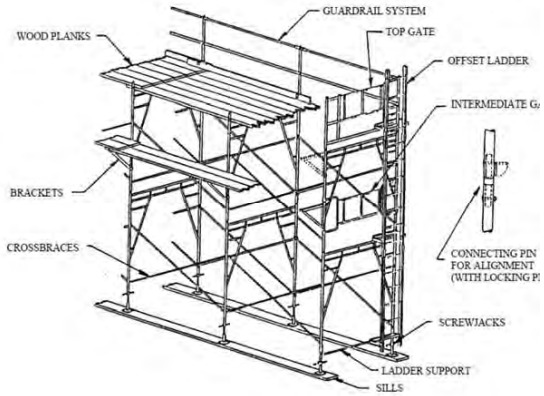


FIGURE D27 FABRICATED TUBULAR FRAME SCAFFOLD

NOTE:
See Section 16 for requirements for interior hung scaffolds.

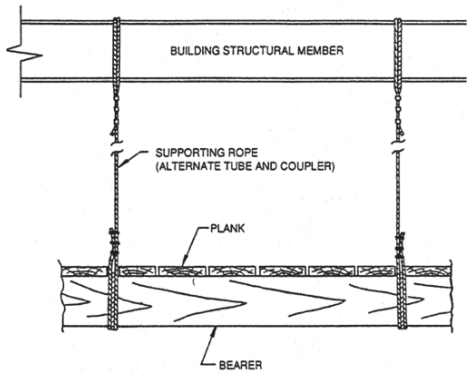


FIGURE D37 INTERIOR HUNG SCAFFOLD

7.5 足場

7.5.1 一般事項

(1) 足場とは作業のために設ける作業床及びそれを支持するものからなる仮設物のうち、作業構台を除くものをいう。

(2) 本節では鋼管足場、つり足場、移動式足場について、以下に規定する。

(3) 請負者は、足場からの墜落防止に対しては、本仕様書 2.5[墜落防止]、足場・作業床での作業に際して物体の飛来又は落下により工事関係者に危険を及ぼすおそれのある場合は、2.6[飛来落下の防止措置]に拠る規定に、各々従わねばならない。

(4) 請負者は、足場の安全事項についての当該国の法律及び本仕様書のいずれにも規定が無い事項は、次に示すいずれかの基準における規定を遵守しなければならない。

(a) 米国 OSHA PART 1926-Safety and Health Regulations for Construction, Subpart L-Scaffolds 及び ANSI/ASSP A10.8 – 2019 Scaffolding Safety Requirements equipment - Part 1: Scaffolds - Performance requirements and general design

(b) 英国 BS EN12811-1:2003 Temporary works equipment - Part 1: Scaffolds - Performance requirements and general design

(5) 足場の計画、設計は、その上で行う作業に従事する作業員、作業員が使用する道具等の重量を勘案した上載荷重を考慮し、本章 7.1.3[仮設構造物の設計及び設計照査]に基づき計画、設計すること。

7.5 Scaffolding

7.5.1 General

(1) "Scaffold" means a temporary structure consisting of a working floor provided for work and a support for it, excluding the work platform.

(2) In this section, steel pipe scaffolds, suspension scaffolds and mobile scaffolds are defined as follows.

(3) The Controator shall comply with the provisions in accordance with 2.5[Fall Prevention] for prevention of fall accidents, and 2.6[Prevention Measurs for Flying or Falling Objects] for the case a worker may be in danger due to flying or falling objects when working on a scaffold or a working floor.

(4) The Contractor shall comply with the provisions in any of the following standards for matters that are not stipulated in either the target country's laws or safety specifications for the scaffolding.

(a) OSHA PART 1926-Safety and Health Regulations for Construction, Subpart L-Scaffolds and ANSI/ASSP A10.8 – 2019 Scaffolding Safety Requirements equipment - Part 1: Scaffolds - Performance requirements and general design, USA.

(b) BS EN12811-1:2003 Temporary works equipment - Part 1: Scaffolds - Performance requirements and general design, UK.

(5) The planning and design of the scaffolding shall be carried out in accordance with 7.1.3 [Design and Verification of Temporary Structures] with taken into account the loading weight of the workers engaged in the work and tools used by the workers etc.

7.5 Scaffolds

7.5.1 General

(1) "Scaffold" means temporary structure to provide access for workers to construction works and work place. It consits of work floor and supports. It does not include work platform subscribed in JSSS 8[Work Stages].

(2) This section subscribes steel pipe scaffolds, suspension scaffolds (interior hung scaffold?), mobile scaffolds, mobile elevating work platforms and stepplader work.

(3) The Controator shall comply with the provisions in JSSS 2.5[Fall Prevention] for prevention of fall accidents and 2.6[Falling Objects] for the danger to workers by flying or falling objects when working on scaffolds or working floor.

(4) The Contractor shall comply with the provisions in any of the following standards for matters that are not stipulated in the Laws and JSSS regarding scaffold.

(a) OSHA PART 1926-Safety and Health Regulations for Construction, Subpart L-Scaffolds and ANSI/ASSP A10.8 – 2019 Scaffolding Safety Requirements equipment - Part 1: Scaffolds - Performance requirements and general design, USA.

(b) BS EN12811-1:2003 Temporary works equipment - Part 1: Scaffolds - Performance requirements and general design, UK.

(5) The planning and design of scaffolds shall be made in accordance with 7.1.3 [Design and Verification of Temporary Works] taking

		into account loads of weight of the workers, materials, tools, etc. to be placed on scaffolds, etc. *(To MD, are they called "Good" in GC?)*
7.5.2 鋼管足場 請負者は、次を遵守して計画、設計を行わなければならない。 (1) 鋼管で構成される足場(以下、「鋼管足場」という。)については、次に示す措置を講じること。 (a) 足場(脚輪を取り付けた移動式足場を除く。)の脚部には、足場の滑動又は沈下を防止するため、ベース金具を用い、かつ、敷板、敷角等を用い、根がらみを設けること。 (b) 鋼管の接続部又は交差部は、これに適合した金具を用いて、確実に接続し、又は緊結させること。 (c) 筋かいで補強すること。 (d) 鋼管足場の種類に応じ、風荷重等も考慮したうえで、足場の安定性を維持するために必要な壁つなぎ又は控えを設けること。	**7.5.2 Steel Pipe Scaffolding** The Contractor shall plan and design in accordance with the following. (1) For scaffolds composed of steel pipes, hereinafter refered to as steel pipe scaffolds, the following measures shall be taken: (a) For the leg of scaffolding (excluding mobile scaffolds with casters), to take measures such as providing bridge batten of foot posts with base fittings, and plankings, square timbers, etc., in order to prevent the scaffolds from sliding or settling, (b) Joint or fasten the jointing portions or crossing portions of steel pipes securely with suitable fittings, (c) Reinforce the scaffolding with bracings, (d) Depending on the type of steel pipe scaffolding, consider the wind load, etc., and provide ties to walls or stays necessary to maintain the stability of the scaffolding.	**7.5.2 Steel Pipe Scaffolds** The Contractor shall plan and design in accordance with the following. (2) For scaffolds composed of steel pipes, hereinafter refered to as steel pipe scaffolds, the following measures shall be taken: (a) At the leg of scaffolds (excluding mobile scaffolds with casters), provide measures to prevent the scaffolds from sliding or settling such as mud sill, base plates or others, (b) Joint or fasten joints or crossing portions of steel pipes tightly with suitable fittings, (c) Reinforce the scaffolds with bracings, (d) Depending on the type of steel pipe scaffolds, apply wind load, etc. and provide ties to walls or stays necessary to maintain the stability of the scaffolds.
7.5.3 つり足場 請負者は、つり足場(ゴンドラのつり足場を除く。以下本節において同じ。)については、次の措置を講じなければならない。 (1) 作業床の最大積載荷重は、つりワイヤロープ及びつり鋼線の安全係数が 10 以上、つり鎖及びつりフックの安全係数が 5 以上並びにつり鋼帯並びにつり足場の下部及び上部の支点の安全係数が鋼材にあっては 2.5 以上、木材にあっては 5 以上となるように定めること。 (2) 次のいずれかに該当する材料を使用しないこと。 (a) つりワイヤロープ (i) ワイヤロープ一よりの間において素線(フィラ線を除く。以下同じ。)の数の 10%以上の素線が切断しているもの (ii) 直径の減少が公称径の 7%を超えるもの (iii) キンクしたもの (iv) 著しい形崩れ又は腐食があるもの (b) つり鎖 (i) 伸びが、つり鎖が製造されたときの長さの 5%を超えるもの (ii) リンクの断面の直径の減少が、当該つり鎖が製造されたときの当該リンクの断面の直径の 10%を超えるもの (iii) 亀裂があるもの (c) つり鋼線及びつり鋼帯 著しい損傷、変形又は腐食のあるもの	**7.5.3 Hanging Scaffolds** The Contractor shall take the following measures for hanging scaffolds (excluding gondola suspension scaffolds; the same applies hereinafter). (1) The maximum loading capacity of the working floor shall be so determined as to ensure the safety coefficient of 10 or more for hanging wire ropes and hanging steel wires, the safety coefficient of 5 or more for hanging chains and hanging hooks, and the safety coefficient of hanging steel bands and of fulcrums at the bottom and top of the hanging scaffoldings of 2.5 for steels and 5 or more for timber. (2) Do not use any of the folloeing materials. (a) Hanging wire ropes (i) Those with 10% or more of element wires (excluding filler wires) of which are cut in one strand of wire ropes. (ii) Those with reduction ratio of a diameter exceeding 7% of the nominal diameter (iii) Those with kink (iv) Those with marked deformation or corrosion (b) Hanging chains (i) Those with the elongation exceeding 5% of the original length at the time of manufacture. (ii) Those with a reduction ratio of a diameter of links of the said hanging chains exceeding 10% of the original diameter of the	**7.5.3 Interior Hung (Suspended) Scaffolds** The Contractor shall take the following measures for interior hung scaffolds (excluding gondola suspended scaffolds; the same applies hereinafter). (1) The maximum loading capacity of the working floor shall be determined to ensure the safety factor of 10 or more for hanging wire ropes and hanging steel wires, 5 or more for hanging chains and hanging hooks, 2.5 or more for hanging steel bands and fulcrums at the bottom and top of the hanging scaffolds and 5 or more for timber. (2) Do not use any of the folloeing materials. (a) Hanging wire ropes (i) Those with 10% or more of element wires (excluding filler wires) of which are cut in one strand of wire ropes. (ii) Those with reduction ratio of a diameter exceeding 7% of the nominal diameter (iii) Those with kink (iv) Those with remarkable deformation or corrosion (b) Hanging chains (v) Those with the elongation exceeding 5% of the original length at the time of manufactured. (vi) Those with reduction of diameter of links of hanging

(3) つり足場の設置時の措置 (a) 作業床は、幅を 40cm 以上とし、かつ、隙間がないようにすること。 (b) 床材は、転位し、又は脱落しないように、足場桁等に取り付けること。 (c) 足場桁、作業床等に控えを設ける等動揺又は転位を防止すること。 (4) 作業上の禁止事項 つり足場の上で、脚立、はしご等を用いて作業員に作業させないこと。	said links at the time of manufacture. (iii) Those with cracks (c) Hanging steel wires and hanging steel belts Those with marked damage or corrosion (3) Measures when setting up the scaffolding (a) The working floor to be with width of 40 cm or more, and without clearance between floor boards. (b) Fasten the floor materials to the scaffolding girder etc., in order to prevent them from displacing or coming off. (c) Take measures in order to prevent movement or displacement such as providing of stays to the scaffolding girders, working floors, etc. (4) Prohibited work Do not allow workers to work on the scaffolding using stepladders, ladders, etc.	chains exceeding 10% of the original diameter at the time of manufactured. (vii) Those with cracks (c) Hanging steel wires and hanging steel belts Those with remarkable damage or corrosion (3) Measures when constructing scaffolds (a) Provide working floor of width of 40 cm or more, and without spaces between floor boards (planks). (b) Fasten the floor materials (planks) to the scaffold girder etc., to prevent them from displacing or coming off. (c) Take measures such as providing of stays to the scaffold girders, working floors, etc. to prevent movement or displacement (4) Prohibited work Work shall be prohibited using stepladders, ladders, etc. on the scaffolds.
7.5.4 移動式足場 請負者は、移動式足場については、次の措置を講じなければならない。 (1) 移動式足場の選定 (a) 対象とする作業に適した、高さ、幅、長さの移動式足場を用いること。 (a) 移動式足場は、英国基準 BS EN1004 Mobile access and working towers made of Prefabricated elements に適合するもの、又はエンジニアが同等以上と認めたものを使用すること。 (2) 組立てに際しての留意事項 (a) 購入した移動式足場の場合、製造業者が作成する筋交いの必要性や安全に組立てできる高さ等を含む組立て手順を説明するマニュアルに従い、組立てに関し十分な知識と経験を持つ者（competent person）に組立てを行わせること。 (b) 組立てに際しては、建わく等の接続部は、使用中容易に離脱しないように確実に結合すること。 (3) 移動式足場の移動に関して次を遵守すること。 (a) 移動させるときは、路面の凹凸障害物等による転倒を防止するためあらかじめ、路面の状態を確認すること。 (b) 移動は、すべての脚輪のブレーキを解除した後に行うこと。 (c) 作業員や物を移動式足場に乗せた状態で移動させないこと。 (d) 送電線や上空に障害物がないことを確認すること。 (e) 移動中の動線およびその付近に、移動作業に従事する作業員以外の者を立ち入らせないこと。	**7.5.4 Mobile Scaffolds** The Contractor shall take the following measures for mobile scaffolds: (1) Selection of mobile scaffolds (a) Use mobile scaffolds of height, width, and length that are suitable for the intended work. (b) Use mobile scaffolds that comply with BS EN1004 Mobile access and working towers made of Pre-fabricated elements or that the engineer has admitted as equivalent or better. (2) Precautions for assembly (a) In the case of purchased mobile scaffolds, have a person who has sufficient knowledge and experience in assembly: competent person assemble according to the manual explaining the assembly procedure including the necessity of bracing created by the manufacturer and the height that can be safely assembled, etc. (b) When assembling, connecting points on the building flame should be securely connected so that they are not easily detached during use. (3) Observe the following points regarding movement of mobile scaffolds: (a) Check the condition of the road surface in advance to prevent it from overturning due to irregularities or obstacles, (b) Move after releasing the brakes on all the casters, (c) Don’t move it in the situation workers or objects are on mobile scaffolds, (d) Make sure that there are no obstacles in the transmission line or in	**7.5.4 Mobile Scaffolds** The Contractor shall take the following measures for mobile scaffolds: (1) Selection of mobile scaffolds (a) Select mobile scaffolds of height, width, and length that are suitable for the work. (b) Select mobile scaffolds that comply with BS EN1004 Mobile access and working towers made of Pre-fabricated elements or the standards which is accepted by the Engineer as equivalent or better. (2) Safety measures at assembly of mobile scaffolds (a) Competent worker who has sufficient knowledge and experience in assembly of scaffolds shall assemble purchased (prefablicated) mobile scaffolds in accordance with the manual of the manufacturer directing the assembly procedure including the necessity of bracing and the height that can be safely assembled, etc. (b) When assembling, connecting points of flames shall be tightly fixeded so that they are not easily detached during use. (3) Safety measures at moving of mobile scaffolds (a) Check the condition of the surface of work floor in advance to prevent mobile scaffolds from overturning due to its irregularities or obstacles, (b) Move mobile scaffolds after releasing (put-off) brakes of all the casters, (c) Not move mobile scaffolds in the situation that workers or

(4) 移動式足場の定置（作業箇所において使用できる状態にすることをいう。）に関して次を遵守すること (a) 作業員が無理のない姿勢で作業を行うため、移動式足場は、作業箇所に近接したところに定置させること。 (b) 脚輪のブレーキは、移動中を除き、常に作動させておくこと。ブレーキを作動させるときは、その効き具合を確認すること。又は、歯止め等で脚輪を確実に固定することとし、足場の一部を堅固な建設物に固定させること。 (c) 凹凸又は傾斜が著しい場所では移動式足場を使用してはならない。 (d) アウトリガーを有する移動式足場を定着したときは、アウトリガーの取付け状態、接地状態等について異常のないことを確認すること。 (5) 用途外の使用禁止 次の移動式足場の用途外の使用を禁止すること。 (a) 材料の吊り上げや物体の投下用のシュートの支えとして使用すること。 (b) シート（布）で覆うこと（sheeting）や強風にさらす目的に使用すること。 (c) グリットブラスト（防食研磨）又はウォータージェット用に使用すること。 (d) 作業床を、移動はしご、脚立、架台（trestles）等の支持台（support）として使用すること。	the overhead space, and (e) Don't allow anyone other than workers engaged in moving work to enter on the flow line of a moving scaffolds and its vicinity. (4) Comply with the following points regarding the placement of mobile scaffolds: referring to the condition of being able to be used at the work site: (a) Mobile scaffolds shall be placed in close proximity to the work position so that workers can work in a safe posture, (b) The brakes for the casters have to be activated at all times except during movement. When operating the brake, check its effectiveness beforehand. Or, fix the casters securely with pawls, etc., and fix a part of the scaffold to a firm structure, (c) Mobile scaffolds shall not be used where there are significant irregularities orslopes, and (d) When a mobile scaffold with outriggers is placed, make sure that there are no abnormalities in the outrigger mounting and grounding conditions. (5) Prohibition of use for other purposes Prohibit the use of mobile scaffolds for purposes other than the following: (a) Use as a support for lifting materials or dropping objects, (b) To be used for the purpose of covering with sheet (cloth) or exposing to strong wind, (c) Use for grit blasting or water jet, and (d) Use the working floor as a support for moving ladders, stepladders, trestles, etc.	objects are on mobile scaffolds, (d) Make no obstacles in the moving areas or in the overhead space, and (e) Not allow anyone other than workers engaged in moving work to enter the moving areas of the moving scaffolds and its vicinity. (4) Comply with the following points regarding the placement of mobile scaffolds (Placement means action to make mobile scaffolds be in the condition that scaffolds is able to be used at the work site.) (a) Mobile scaffolds shall be placed in close proximity (at nearest place) to the work place so that workers can work in a safe posture, (b) The brakes for the casters shall be activated at all times except during movement. When operating the brake, check its effectiveness beforehand. Alternatively, fix the casters securely with pawls, etc., and fix a part of the scaffolds to a firm structure, (c) Mobile scaffolds shall not be used where there are significant irregularities or slopes, and (d) When mobile scaffolds with outriggers is placed, make sure that there are no abnormalities in the outrigger mounting and grounding conditions. (5) Prohibition of use for other purposes The use of mobile scaffolds shall be prohibited for the following purposes: (a) Use as a support for lifting materials or dropping objects, (b) Use for the purpose of covering with sheet (cloth) or exposing to strong wind, (c) Use for work of grit blasting or water jet (to avoid horizontal reaction force to the scaffolds by the work), and (d) Use as floor to support mobile ladders, stepladders, trestles, etc.
7.5.5 標識類の表示 請負者は、作業床の最大積載荷重及び足場の点検・維持管理の責任者名を、足場の見やすい箇所に表示しなければならない。	**7.5.5 Display of Signs** The Contractor shall display the maximum load capacity of the working floor and the name of the person in charge of inspection and maintenance of the scaffold in an easily visible location on the scaffold.	**7.5.5 Display on scaffolds** The Contractor shall post the maximum load capacity of the working floor and the name of the person in charge of inspection and maintenance of the scaffold in easy-to-see places on the scaffolds.
7.5.6 組立、変更及び解体 請負者は、足場の組立、変更又は解体の作業を行うときは、次の措置を講じなければならない。 (1) 足場の組立て、解体又は変更の作業を行うときは、特定の作業の作業主任を任命し、作業を直接指揮させること。	**7.5.6 Assembly, Alteration and Dismantlement** The Contractor shall take the following measures when assembling, altering or dismantling of the scaffold: (1) When assembling, dismantling or alteing scaffolds, appoint an operation leader of specific work and direct the work,	**7.5.6 Assembly, Alteration and Dismantlement** The Contractor shall take the following measures when assembling, altering or dismantling of the scaffolds: (1) When assembling, altering or dismantling scaffolds, appoint an Operation Leader to directly lead the work,

(2) 作業の時期、範囲及び順序を、作業員に作業前に周知すること。

(3) 作業に際しては、作業員以外の者へ危害が及ばないよう、本仕様書 2.3[立入禁止の措置]に従い、柵・囲い等の設置により作業区域を明示したうえで、作業員以外の者の立入りを禁止すること。さらに、必要に応じて監視員を配置し、上記の立入禁止を徹底すること。

(4) 高さが 2m 以上の構造の足場の場合、足場材の緊結、取りはずし、受渡し等の作業には幅 40cm 以上の足場板を設けること。

(5) 上記(4)の作業には、墜落制止用器具を安全に取り付けるための設備等を設け、かつ、作業員に墜落制止用器具を使用させること。

(6) 高さ 2m 以上の箇所での作業及びスレート等の屋根の上での作業においては、次の作業床を設置すること。

(a) 床材は十分な強度を有するものを使用すること。また、幅は 40cm 以上とし、床材間のすき間は 3cm 以下とし、床材と建地との隙間は、12cm 未満とすること。床材は、転位又は脱落しないよう支持物に 2 箇所以上取り付けること

(b) 床材を作業に応じて移動させる場合は、3 箇所以上の支持物にかけ、支点からの突出部の長さは 10cm 以上とし、かつ足場板長の 18 分の 1 以下とすること。また、足場板を長手方法に重ねるときは支点上で重ね、その重ねた部分の長さは 20cm 以上とすること。

(7) 足場の材料については、著しい損傷、変形又は腐食のないものを使用すること。木材については、強度上の著しい欠点となる割れ、虫食い、節等がなく、かつ、木皮を取り除いたものを使用すること。

(8) 落下による危険が生じるおそれがある場合、材料、器具、工具等の上げ下ろし時には、作業員につり網、つり袋を使用させること。

(9) 作業のため物体が落下することにより、作業員に危険を及ぼすおそれのあるときは、本仕様書 2.6[飛来落下の防止措置]の措置を講じること。

(10) 架空線等に近接して作業を行う場合には、本仕様書 3.2[架空線等上空施設一般] の措置を講じること。

(11) 悪天候のため、作業の実施について危険が予想されるときは、本仕様書 2.7[悪天候及び地震時の対策]の規定に従い、作業を中止すること。

(2) Inform workers of the timing, scope and sequence of work before commencing the works,

(3) In order to avoid danger to personnel other than workers, the work area shall be clearly specified by installing fences and enclosures in accordance with 2.3[Dangerous and Hazardous Area], and entry of persons other than workers shall be prohibited. In addition, surveillance personnel should be allocated as necessary to ensure that the above entry is prohibited,

(4) For scaffolds with a height of 2m or more, when carrying out works of fastening, removing or handling over materials for scaffoldings, provide scaffolding boards having a width of 40 cm or more,

(5) For the work of (4) above, install equipment to attach personal fall arrest system safely and have workers use it,

(6) The following working floors shall be installed when working at locations with a height of 2m or more and working on roofs such as slate,

(a) Use flooring with sufficient strength. And, the width of flooring shall be of 40cm or more, the clearance between flooring shall be of 3 cm or less, and the clearance between flooring and stanfards shall be of less than 12cm. Attach two or more floorings to the support to prevent dislocation or dropping.

(b) When moving flooring material according to work, deliver to 3 or more supports, the length of projection from the fulcrums to be of 10cm or more, and is one-eighteenth of the length of the said scaffolding boards or less. When stacking the scaffolding plate in the longitudinal direction, stack it on the fulcrum, and length of the overlapped part shall be 20cm or more.

(7) Use scaffolding material without marked damage, deformation or corrosion. For wood material, use it that has no cracks, worms, knots, etc., which are significant defects in strength, and from which the bark has been removed,

(8) When there is a risk of falling, workers should be allowed to use a hanging net and a hanging bag when raising and lowering materials, instruments and tools,

(9) Take measures in accordance with 2.6 [Prevention Measurs for Flying or Falling Objects] for the case when there is a risk of danger to workers due to falling objects during work,

(10) Take measures in accordance with 3.2[Overhead Lines] for the case when working near overhead lines, etc., and

(11) When dangers are expected in the performance of work, stop the work in accordance with 2.7[Coutermeasures under Bad Weather and Earthquakes].

(2) Inform workers of the timing, scope and sequence of work before commencing the works,

(3) In order to avoid danger to personnel other than workers, the work area shall be clearly specified by installing fences and enclosures in accordance with 2.3[Prohibition of Entry - Dangerous Work], and entry of persons other than workers shall be prohibited. In addition, Spotters shall be allocated as necessary to ensure that the above entry is prohibited,

(4) For scaffolds with a height of 2m or more, when carrying out works of fastening, removing or handling over materials for scaffoldings, provide planks having a width of 40 cm or more,

(5) For the work of (4) above, provide facilities to connect PFAS safely and have workers use it,

(6) The following working floors shall be provideded when working at locations with a height of 2m or more and working on roofs such as slate,

(a) Use planks with sufficient strength. The width of working floors shall be of 40cm or more. The clearance between planks shall be of 3 cm or less, and the clearance between floors and standards shall be of less than 12cm. Floors shall be fixed at two or more locations to the support to prevent dislocation or dropping.

(b) When moving floor materials according to work, put them on three (3) or more supports, the length of projection from the fulcrums to be of 10cm or more, and is one-eighteenth of the length of the said scaffolding boards or less. When stacking the scaffolds plate in the longitudinal direction, stack it on the fulcrum, and length of the overlapped part shall be 20cm or more. (*To MD, please refer to the figures at last page.)*

(7) Use scaffolds material without remarkable damage, deformation or corrosion. For wood material, use it that has no cracks, worms, knots, etc., which are significant defects in strength, and from which the bark has been removed,

(8) When there is a risk of falling, workers shall use a hanging net and a hanging bag when lfting and lowering materials, instruments and tools,

(9) Take measures in accordance with 2.6 [Falling Objects] for the case when there is a risk of danger to workers due to falling objects during work,

(10) Take measures in accordance with 3.2[Overhead Services] for the case when working near overhead lines, etc., and

(11) When dangers are expected in the work under adverse weather, stop the work in accordance with 2.7[Adversse Weather Requirements].

7.5.7 点検 請負者は、足場の組立、変更又は解体作業時、組立完成時、足場を使用する作業開始前、荒天及び中震後の作業開始前における点検について、次の措置を講じなければならない。 (1) 足場の組立完成時には、足場の組立等作業主任に、設計図通りの組立てであることを点検させ、設計図通りでない場合は手直しすること。 (2) 足場における作業を行うときは、その日の作業の開始前に、作業を行う箇所に設けた交差筋交い、さん、幅木、手摺及び中さん等の足場用墜落防止設備の取り外し及び脱落の有無について点検を行ない、異常を認めたときは直ちに補修を行うこと。 (3) 本仕様書 2.7[悪天候及び地震時の対策]に規定の悪天候若しくは地震又は足場の組立て、一部解体若しくは変更の後において、足場における作業を行うときは、作業開始前に、次の事項について点検を行ない、異常を認めたときは直ちに補修を行うこと。 (a) 床材の損傷、取付け及び掛渡しの状態 (b) 建地、布、腕木等の緊結部、接続部及び取付部の緩みの状態 (c) 緊結材及び緊結金具の損傷及び腐食の状態 (d) 足場用墜落防止設備の取り外し及び脱落の有無 (e) 幅木等の取付状態及び取り外しの有無 (f) 脚部の沈下及び滑動の状態(つり足場を除く) (g) 筋かい、控え、壁つなぎ等の補強材の取付状態及び取り外しの有無 (h) 建地、布及び腕木の損傷の有無 (i) ~~突りょうとつり索との取付部の状態及びつり装置の歯止めの機能~~ (NK: (i)はゴンドラ作業の規定であり、JSSS では対象としていないため、削除します。) (4) 請負者は、上の(3)の規定に従い点検を行ったときは、次の事項を記録し、足場を使用する作業を行う仕事が終了するまでの間、これを保存すること。 (a) 点検の結果 (b) 点検の結果に基づいて行った補修等の措置を講じた場合は、措置の内容	**7.5.7 Checkup** The Contractor shall take the following measures at the time of assembling, altering or dismantling of scaffolds, at the assembly completion, before the work using the scaffold, and the time of restart of work after the stormy weather and the medium earthquake. (1) When scaffolds assembly is completed, have the operation leader for scaffolds assembly check that the assembly is in accordance with the design drawing. And, if not, have him to direct to correct it. (2) When working on a scaffold, before the start of work, check the existence of removal and coming off of fall prevention equipment such as crossing, toe boards, handrails and middle bar etc., fix it right away when abnormalities are identified. (3) When the work is performed on the scaffolds after the bad weather or earthquake in accordance with 2.7[Coutermeasures under Bad Weather and Earthquakes], or after the assembly, partial disassembly or modification of the scaffolds, the following points shall be checked out before the commencement of the work, and if any abnormalities are identified, correct it immediately: (a) Condition of damage, mounting and placing of floor materials, (b) Condition of loosening at the fastening, connecting and mounting, portions of standards, ledgers, brackets, etc., (c) Condition of damage and corrosion of clamping materials and clamps, (d) Existence of removal and coming off of fall prevention equipment for scaffolds, (e) Condition of mounting and existence of removal of toe boards, (f) Condition of settling and sliding of foot portions (Excluding suspension scaffolding), (g) Condition of mounting and existence of removal of diagonal bracings, stays, ties to wall and other reinforcement materials, (h) Existence of damage of standards, ledgers and brackets, and (i) ~~Condition of the mounting portion of projected girders and lifting cables, and the function of lifting devices.~~ (4) When a contractor performs an inspection in accordance with the provisions of (3) above, the contractor shall record the following items and store them until the work that uses the scaffolding is completed: (a) Results of checkup, and (b) When measures such as repairs based on the results of the checkup are taken, the details of the measures.	**7.5.7 Inspection and Maintenace** The Contractor shall take the following measures at the time of assembling, altering or dismantling of scaffolds, at the assembly completion, before the work using the scaffold, and before the time of restart of work after the adverse weather and earthquake. (1) When scaffolds assembly is completed, make Operation Leader for scaffolds assembly check if the assembly is made in accordance with the design drawings. When not, correct it to meet the design drawings. (2) When work on a scaffold, before the start of work, check if the fall prevention facilities such as crossing, toe boards, handrails and middle bar etc. are removed or fell off (lost), fix it right away when abnormalities are identified (3) When the work resumes on the scaffolds after the adverse weather or earthquake in accordance with 2.7[adverse Weather], or after the assembly, altering or partial dismantle of the scaffolds, the following items shall be checked before the commencement of the work, and if any abnormalities are identified, correct it immediately. (a) Condition of damage, fixing and laying of floor materials, (b) Condition of loosening at the fastening, connecting and mounting, portions of standards, ledgers, brackets, etc., (c) Condition of damage and corrosion of clamping materials and clamps, (d) Existence of removal and fell off (lost) of fall prevention facilities in scaffolds, (e) Condition of mounting and existence of removal of toe boards, (f) Condition of settling and sliding of foot portions (Excluding suspension scaffolds), (g) Condition of mounting and existence of removal of diagonal bracings, stays, ties to wall and other reinforcement materials, (h) Existence of damage of standards, ledgers and transoms, and (4) When the Contractor inspects scaffolds in accordance with the provisions of (3) above, the Contractor shall record the following items and keep them until the work that uses the scaffolds is completed: (a) Results of cinspection, and (b) When measures such as repairs based on the results of the inspection are taken, the details of the measures.
7.5.8 高所作業車を用いての作業の際の留意点 請負者は、高所作業車を用いて作業を行うときは、次の措置を講じなければならない。	**7.5.8 Precautions for the Work with A Vehicle for Work at Height** The Contractor shall take the following measures when using a vehicle for work at height.	**7.5.8 Safety Measures for the Work with Mobile Elevating Work Platforms** The Contractor shall take the following measures when using mobile

(1) 作業主任

特定の作業の作業主任を任命し、作業を直接指揮させること。

(2) 高所作業車の設置、運転

(a) 高所作業車を作業場所に設置するときは、高所作業車の転倒又は転落による労働者の危険を防止するため、アウトリガーを完全に張出させること。また地盤の沈下防止対策をとること。

(b) 本仕様書 2.3[立入禁止の措置]に従い、作業区画を設置し、立入禁止措置を講じること。

(c) 高所作業車の製造者が定める運転に関する注意事項を作業員に遵守させること。

(d) 安全装置がある場合は、故意に機械の安全装置を解除させないこと。

(e) 請負者は、高所作業車を走行させるときは、次の措置を講じること。

(i) 作業床を所定の最低降下位置まで下げてから走行する。

(ii) 作業床において走行操作をしない車両の場合は、作業床に作業員を載せたまま走行してはならない。

(iii) 作業床において走行操作をする車両の場合は、平たん・堅固でない場所を走行してはならない。

(iv) 上記以外で、作業床において走行操作をしない車両の場合で、平坦で堅固な場所において作業床に作業員を載せたまま高所作業車を走行させるときは、次の措置を講じなければならない。

- 誘導者を配置し、その者に高所作業車を誘導させること。
- 一定の合図を定め、誘導者に当該合図を行わせること。
- あらかじめ、作業時における当該高所作業車の作業床の高さ及びブームの長さ等に応じた高所作業車の適正な制限速度を定め、それにより運転者に運転させること。

(f) 運転者が走行のため運転位置から離れる場合は、当該運転者に次の措置を講じさせること。

(i) 作業床に作業員が乗って作業を行っていない及び作業を行おうとしていない場合

- 作業床を最低降下位置に置かせること。
- 原動機を止め、かつ、停止の状態を保持するためのブレーキ(駐車ブレーキ)を確実にかける等の高所作業車の逸走を防止する措置をとらせること。

(ii) 作業床に作業員が乗って作業を行い、又は行おうとしている場合、当該高所作業車の停止の状態を保持するためのブレーキを確実にかける等の措置を講じさせること。

(iii) 高所作業車を用いて作業を行うときは、乗車席及び作業床以外の箇所に作業員を乗せてはならない。

(1) Operations leader

Appoint an operation leader for a specific work and direct the work.

(2) Placement and operation of a vehicle for work at height

(a) When placing a vehicle for work at height in the work place, take necessary measures of projecting an outrigger and of preventing uneven settling of the ground in order to prevent workers from dangers due to overturning or falling of the said vehicle, etc.

(b) In accordance with 2.3[Dangerous and Hazardous Area], specify work sections and take measures to prevent entry.

(c) Ensure that workers comply with the driving precautions set by the manufacturer of the vehicle for work at height.

(d) If there is a safety device, do not deliberately release the safety device of the machine.

(e) The Contractor shall take the following measures when driving a vehicle for work at height:

(i) Drive after lowering the working floor to the specified minimum descent position;

(ii) In the case of a vehicle that are not operated on the working floor, the said vehivle shall not be driven with a worker on the working floor.

(iii) In the case of a vehicle that are operated on the working floor, the said vehicle shall not be driven on non-level or non-firm places.

(iv) Other than the above, in the case of a vehicle that are not operated on the working floor, the following measures shall be taken when driving the said vehicle in a level and firm place with a worker on the working floor:

- Arrange a guide, and have the said person guide a vehicle for work at height,
- Set fixed signals and have the guide set forth in the preceding item give the signals, and
- Set an appropriate working speed limit for the vehicle for work at height in advance corresponding to the height of the working floor and the length of the boom, etc. of the said vehicle for work at height, and have the operator operate the vehicle by them.

(f) Have the operator shall take the following measures when leaving the operatinbg position:

(i) When a worker is not working on the working floor or is not going to work,

- Put the working floor in the lowest position
- Stop a prime mover and take measures of setting the brake securely to keep the machine in stopped condition: parking brake, etc., in order to prevent a vehicle for work at height from breaking into a run.

elevating work platforms at height.

(1) Operation Leader

Appoint an Operation Leader for the work with mobile elevating work platform.

(2) Placement and operation of mobile elevating work platform

(a) When placing mobile elevating work platform on the work site, take necessary measures such as extending fully outriggers and preventing uneven settling of the ground in order to prevent workers from dangers due to its overturning of or falling of wokers from it.

(b) In accordance with 2.3[Prohibition of Entry - Dangerous Work], specify work areas and take measures to prevent entry of workers other than workers for the work.

(c) Ensure that workers comply with the operation instructions given in the manual by the manufacturer of the mobile elevating work platform.

(d) Not deliberately release (switch off) the safety device of the mobile elevating work platform if there is a safety device.

(e) The Contractor shall take the following measures when driving mobile elevating work platform:

(i) Drive after lowering the working platform to the specified lowest descent position;

(ii) In the case of the mobile elevating work platform that is not operated on the working floor, the mobile elevating work platform shall not be driven with a worker on the working floor.

(iii) In the case of the mobile elevating work platform that is operated on the working floor, the mobile elevating work platform shall not be driven on not-level or not-firm places.

(iv) Other than the above, in the case of the mobile elevating work platform that is not operated on the working floor, the following measures shall be taken when driving the said the mobile elevating work platform on level place and firm place with worker on the working floor:

- Place Spotter to guide the mobile elevating work platform in accordance with JSSS 2.4 [Sptters, Flagmen and the Like],
- Determine signals as mentioned in JSSS 2.4.5[Signals], and
- Determine appropriate working speed limit for the mobile elevating work platform in advance according to the height of the working floor and the length of the boom, etc. of the mobile elevating work platform, and have the operator moves the

(iv) 高所作業車を、その製造者が規定した制限荷重（高所作業車の構造及び材料に応じて、作業床に人又は荷を乗せて上昇させることができる最大の荷重。）を超えて使用させてはならない。

(3) 作業床の操作

作業床以外の箇所で作業床を操作するときは、作業床上の作業員と作業床以外の箇所で作業床を操作する者との間の連絡を確実にするため、本仕様書 2.4.2［合図の統一］に従い一定の合図を定め、当該合図を行う者を指名してその者に合図を行わせること。

(4) 作業床での作業

請負者は、高所作業車の作業床で作業を行う作業員の安全のために、次の措置を講じること。

(a) 作業員には、墜落制止用器具、保護帽等の保護具を使用させること。

(b) 作業床から現場の鉄骨などへの乗り移り、手摺りに足を掛け手作業する等の危険な行動を、作業員に禁じること。

(c) 本仕様書 2.7[悪天候及び地震時の対策]に従い悪天候のときは 2m 以上の高所作業を中止させなければならない。

(5) 高所作業車の点検、修理

(a) 本仕様書 4.1.6[搬入時の確認]、4.1.7[建設機械の点検・整備]、4.1.8[日常点検]、4.1.9[定期点検]に従い、高所作業車の点検を行うこと。

(b) 高所作業車の修理、作業床の装着又は取り外しの作業は、本仕様書 4.2.2[点検・修理作業時の安全確保]及び 4.2.3[アタッチメント等作業装置の装着及び取りはずし作業]に従い行うこと。

(6) 用途以外の使用禁止

高所作業車を、荷の吊り上げ等の当該高所作業車の主たる用途以外に使用してはならない。

(ii) If a worker is working on the working floor or is about to work, make sure to apply a brake to ensure that the work vehicle at high altitude is stopped,

(iii) When using a vehicle for work at height, workers shall not be boarded on other than the passenger seat and working floor, and

(iv) A vehicle for work at height must not be used beyond the limit load: maximum load that can be lifted by a person or load on the working floor, depending on the structure and material of the veicle specified by the manufacturer.

(3) Working floor operation

When operating the working floor at a place other than the working floor, in order to ensure communication between the worker on the working floor and the person operating the working floor at a place other than the working floor, establish a certain signal and designate persons who exchange signale and have them signal in accordance with 2.4.2[Unifying Signals].

(4) Work on the working floor

The Contractor shall take the following measures to ensure the safety of workers working on the working floor of a vehicle for work at height:

(a) Have workers use protective equipment such as fall prevention equipment and protective caps,

(b) Prohibit workers from performing dangerous actions such as transferring from the working floor to a steel frame at the work site, placing a foot on the handrail, and performing manual work, and

(c) When the weather is bad, stop work at a height of 2m or more in accordance with 2.7[Coutermeasures under Bad Weather and Earthquakes].

(5) Checkup and repair of a vehicle for work at height

(a) Carry out checkup on a vehicle for work at height in accordance with 4.1.6[Check at Delivery], 4.1.7[Checkup and Maintenance of Construction Machine], 4.1.8[Daily Checkup], and 4.1.9[Periodical Checkup]

(b) Repair work of a vehicle for work at height, installation/removal of working floor shall be carried out following 4.2.2[Ensuring Safety during Checkup and Repair Work] and 4.2.3[Installation and Removal Work of Work Equipment such as Attachments].

(6) Prohibition of use for other purposes

A vehicle for work at height must not be used for purposes other than the original use of the vehicle, such as lifting a load.

mobile elevating work platform at the speed lower than the limit speed.

(f) Have the operator shall take the following measures when leaving the operatinbg position:

(i) When worker(s) is not working on the working floor or is not going to work,

- Put the working floor in the lowest position
- Stop prime engine/motor
- Take measures such as applying the parking brake securely to keep the mobile elevating work platform in stopped condition.

(ii) If a worker is working on the working floor or is about to work, make sure to apply brake to the mobile elevating work platform being stopped,

(iii) When using the mobile elevating work platform, workers shall not be boarded on other than the passenger seat and working floor, and

(iv) Mobile elevating work platform shall not be used beyond the limit load specified by the its manufacturer.

(3) Working floor operation

When operating the working floor at a place other than the working floor, to ensure communication between the worker on the working floor and the person operating the working floor at a place other than the working floor.

Establish certain signals and locate Sptter in accordance with JSSS 2.4 [Sptters, Flagmen and the Like].

(4) Work on the working floor

The Contractor shall take the following measures to ensure the safety of workers working on the working floor of the mobile elevating work platform:

(a) Have workers use PPE such as PFRS and safety helmets,

(b) Prohibit workers from take dangerous actions such as moving from the working floor to a steel frame at the work site and carry out manual work placing worker's foot on the handrail, and

(c) Stop work at a height of 2m or more in case of adverse weather in accordance with 2.7[Adverse Weather Requirements].

(5) Inspect and maintenance of mobile elevating work platform

(a) Carry out inspection of mobile elevating work platform in accordance with 4.1.5[Inspection and Maintenace] and 4.2.1 [Inspection and maintenace], *(To MD, these reference clauses Nos and titles are tentative.)*

(b) Repair work of mobile elevating work platform and installation/removal of its working floor shall be carried out

		following 4.2.5[Safety Measures during Inspection and Maintenace Work] and 4.2.6[Safety measures at Installation and Removal Work of Attachments, etc.]. (6) Prohibition of use for other purposes Mobile elevating work platforms shall not be used for purposes other than the original use of the mobile elevating work platforms, such as lifting a load.
7.5.9 脚立を用いての作業の際の留意事項 請負者は、脚立を用いての作業に際しては、次を遵守しなくてはならない。 (1) 脚立を用いての作業は、高さ 2m 以上は不可。2m 以上の高さの作業の場合は足場を組む等の他の措置をとること。 (2) 踏み面は、作業を安全に行なうため必要な面積を有すること。 (3) 開き止め金具は確実にロックすること。 (4) 脚立が安定しない場所には設置しない。 (5) 出入口やドアの前では使用しない。 (6) 天板に乗って、又は天板を跨いで作業をさせないこと。 (7) 脚立の上で作業する時は、天板を含め上から 3 段目以下の踏みさんに乗り作業をさせること。 (8) 脚立の上で作業する時は、3 点以上の支持によること。 (9) 上向き作業をしないこと。 (10) 踏みさん上に足場板をかけて作業を行う場合は、次を遵守すること。 (a) 脚立の中心線間の間隔は 1.8m 以下、足場板の幅は 40cm 以上とし、重ね長さは 20cm 以上として、3 以上の支持物にかけ渡すこと。 (b) 足場板の支点からの突出部の長さは 10cm 以上とし、かつ、作業員が当該突出部に足を掛けるおそれのない場合を除き、足場板の長さの 1/18 以下とすること。 (c) 足場板は丈夫なものを使用し、著しい損傷、変形または腐食のあるものを使用してはならない。	**7.5.9 Precautions for Steppladder Work** The Contractor shall comply with the following when working with the stepladder. (1) When working with a stepladder, a height of 2m or more is not possible. In the case of work more than 2m, take other measures such as building a scaffold. (2) The tread of the stepladder must have the necessary dimension for safe work. (3) Secure the locking clasp securely. (4) Do not install a stepladder in a place where is unstable. (5) Do not use in front of doorways or doors. (6) Do not step on or straddle the top plate to work. (7) When working on a stepladder, get on the step 3 and below from the top, including the top board. (8) When working on a stepladder, support at least three points. (9) Do not work in an upward position. (10) The following shall be complied with when performing work with a scaffolding board on the treads. (a) The distance between the center lines of the stepladders shall be 1.8m or less, the width of the scaffolding board shall be 40cm or more, and the overlap length shall be 20cm or more. (b) The length of projection of scaffolding boards from the fulcrums to be of 10 cm or more, and is one-eighteenth of the length of the said scaffolding boards or less, excluding when there is no possibility that workers will step on the said projections. (c) Use scaffolding boards with sound structure, without marked damage, deformation or corrosion.	**7.5.9 Safety measure for Steppladder Work** The Contractor shall comply with the following when working with the stepladder. (1) Work using with a stepladder at a height of 2m or more shall be prohibited. Take other measures for the work at a height of 2m or more such as constructing of scaffolds. (2) The tread of the stepladder shall have the necessary area for safe work. (3) Lock clasps securely. (4) Not put a stepladder in unstable place. (5) Not use stepladder in front of exit/entrance or doors. (6) Not step on or straddle the top plate of stepladder to work. (7) When working on stepladder, get on the third step or below from the top including the top board. (8) When working on stepladder, support the workers body at least three points. (9) Not work in upward position. (10) The following measures shall be taken when working with a scaffold boards on its steps. (*To MD, please refer to the figures at last page.)* (a) The distance between the center lines of the stepladders shall be 1.8m or less, the width of the scaffold boards shall be 40cm or more, and the overlap length shall be 20cm or more. (b) The length of projection of scaffold boards from the fulcrums (steps) to be of 10 cm or more, and is one-eighteenth of the length of the said scaffold boards or less, excluding when there is no possibility that workers will step on the said projections. (c) Scaffold boards shall be of sound ones without remarkable damage, deformation or corrosion.

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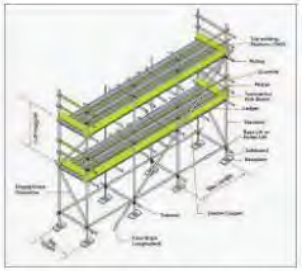
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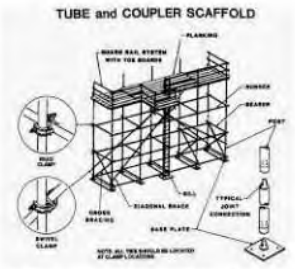

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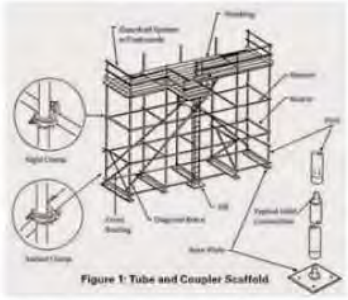

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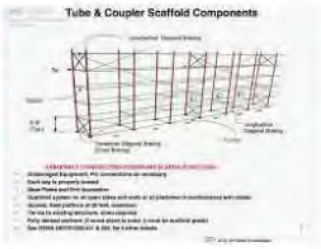

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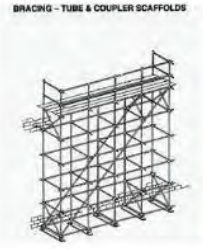

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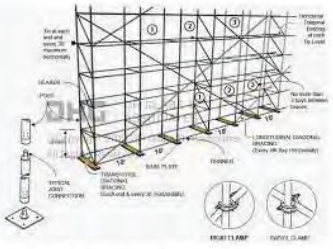
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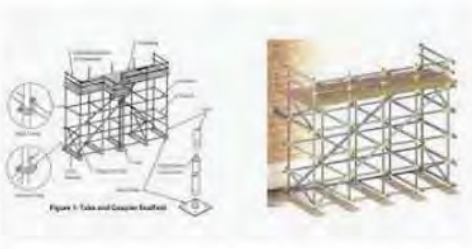
Major Types of Scaffolding in Construction - Avontus US
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Interior Hung (Suspension) Scaffold

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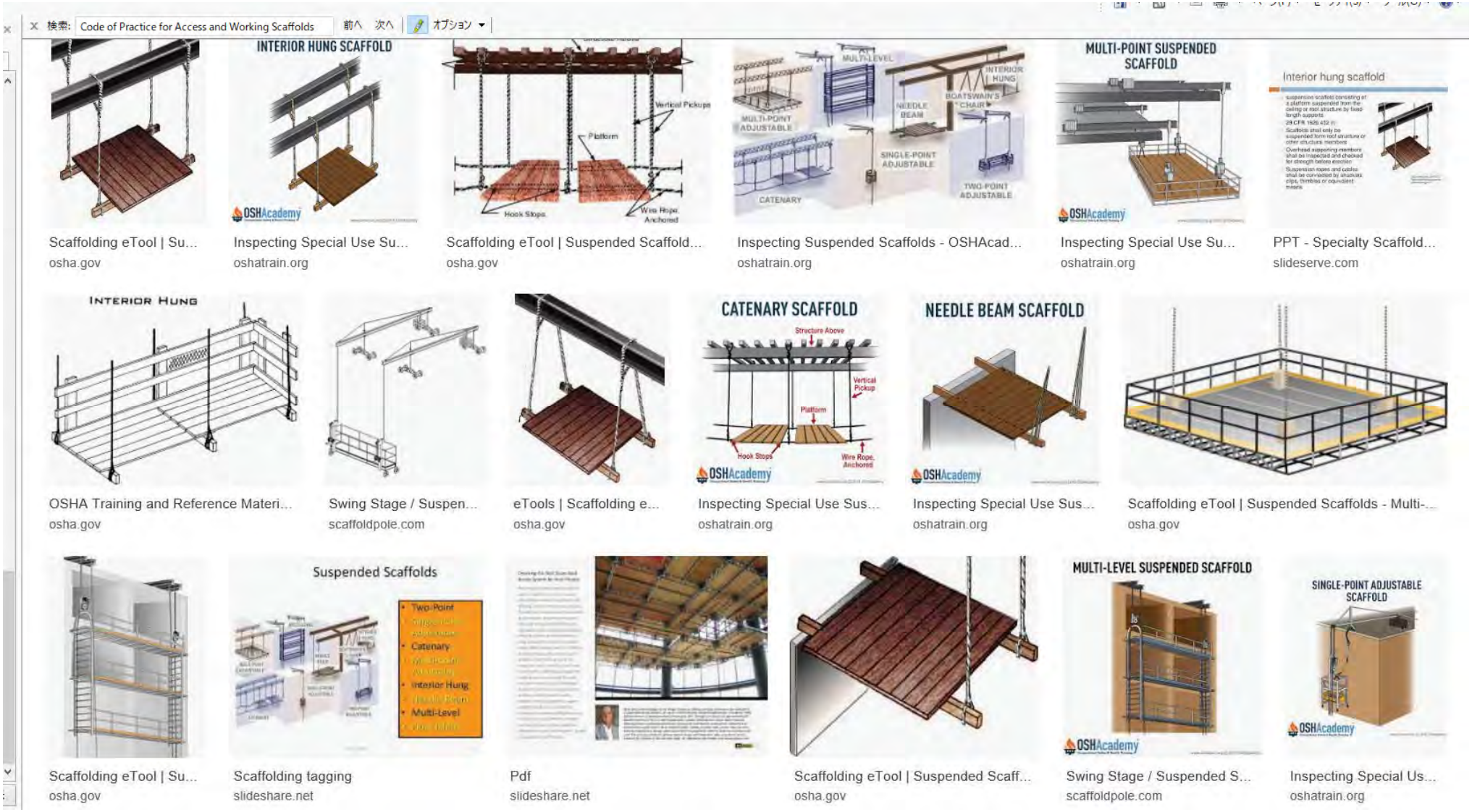


mobile scaffold

https://www.google.co.jp/search?tbm=isch&q=mobile+scaffold&spell=1&sa=X&ved=0ahUKEwi6qe_aovPlAhUMfXAKHXk1C-QQBQg3KAA&biw=1483&bih=788&dpr=1.12#spf=1574063306296

gondola suspended scaffolds

https://www.google.co.jp/search?biw=1628&bih=866&tbm=isch&sa=1&ei=mU3SXYLVB4vm-AbO1aTIBQ&q=gondola+suspended+scaffolds&oq=gondola+suspended+scaffolds&gs_l=img.12...772649.775373..779215...0.0..0.89.261.3.....0....1..gws-wiz-img.jpyWTU4jGf4&ved=0ahUKEwjChbfEo_PlAhULM94KHc4qCVkQ4dUDCAY#spf=1574064293204

Suspended Scaffold (Gondola)
kimsingscaffolding.com

Fall Protection in Suspended Platforms | XSPlatforms
fallprotectionxs.com

Gondola Suspended Scaff...
alibaba.com

SUSPENDED SCAFFOLD (Gondola) –M...
globaltraining.com.sg

ZLP630 suspended staging, scaffoldings, s...
suspended-platform.com

China Window Cleaning Su...
ruibiao118.en.made-in-china.c...

COFFRAL | Access and Shoring
coffral.ph

Electric Suspended Scaffold Platform , A...
pinterest.com

gondola lift ZLP800/Suspensi...
xhsuspendedplatform-com.sell.e...

Suspended Platform,Suspended Cra...
youtube.com

Suspended Scaffold for...
kimsingscaffolding.com

Bmu Cradle Platform Electric...
alibaba.com

Suspended Scaffolding Plat...
indiamart.com

China Zlp1000 Galvanized Ste...
ruibiao118.en.made-in-china.com

Electric Swing Suspension Sc...
alibaba.com

Fall Protection in Suspended...
fallprotectionxs.com

China Suspended Platform,go...
hjplatform.com

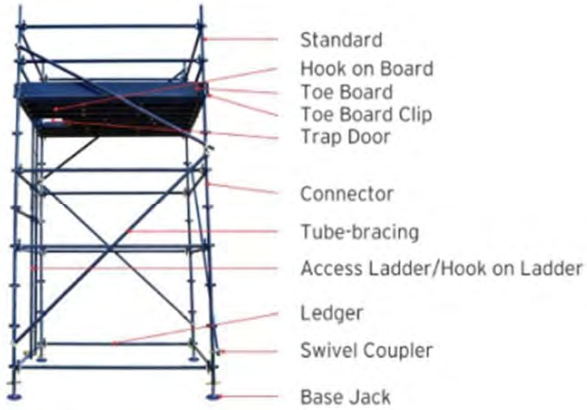
good price suspended platform/suspend...
buildinglift.com

Suspended platform Parts,Rope su...
youtube.com

Window Cleaning Machine, suspended...
buildinglift.com

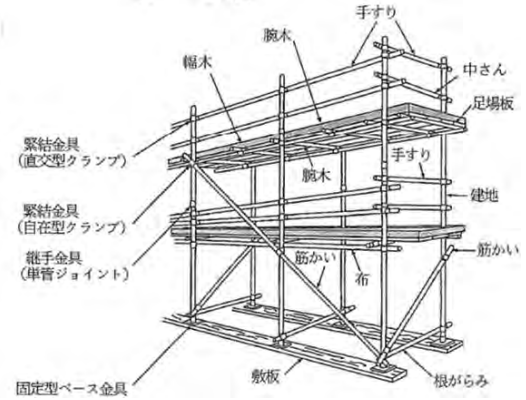
http://peoscaff.com/new-page-2/

Referrence for for 7.5.4 Mobile Scaffolds

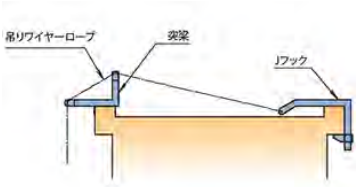


https://www.overseas-assignment.com/entry/ashiba_tigai

Referrence for 7.5.2 Steel Pipe Scaffolds



http://www.nsgon.com/gondola/hanging.html

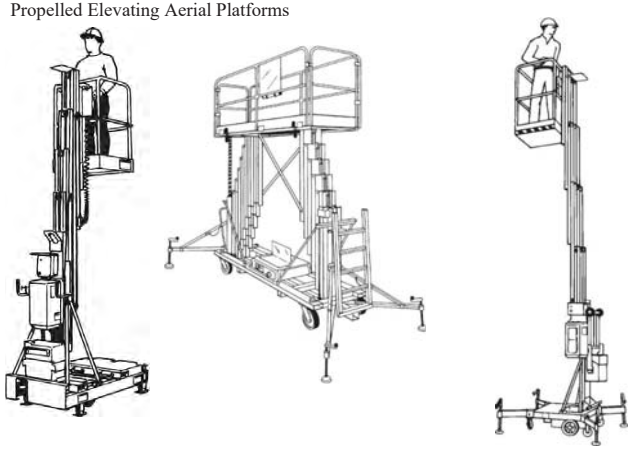


Referrence for 7.5.3 Interior Hung (Suspended) Scaffolds

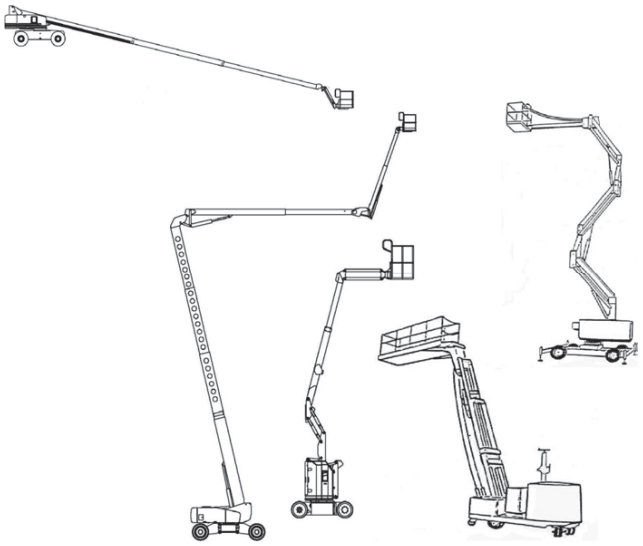
https://www.oshatrain.org/courses/mods/804m6.html

Referrence for for 7.5.8 Safety Measures for the Work with Mobile Elevating Work Platforms

ANSI/SAIA A92.3-2006 (R2014) American National Standard for Manually Propelled Elevating Aerial Platforms

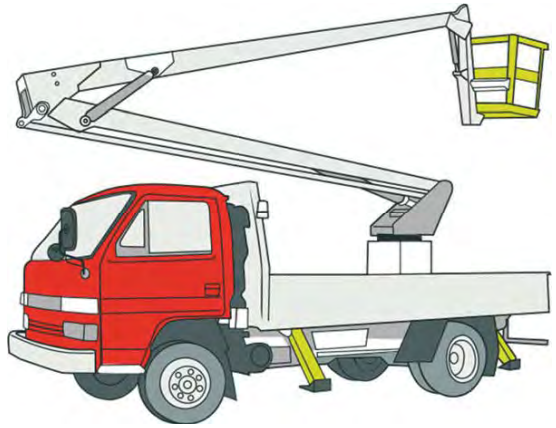


ANSI/SAIA A92.5-2006 (R2014) American National Standard Boom-Supported Elevating Work Platforms



https://worksafe.govt.nz/topic-and-industry/working-at-height/mobile-elevating-work-platforms/mobile-elevating-work-platforms/

Truck mounted (TM)



https://www.accessandforkliftservices.com/mewp/

Referrence for for 7.5.8 Safety Measures for the Work with Mobile Elevating Work Platforms

Mobile Elevating Work Platforms

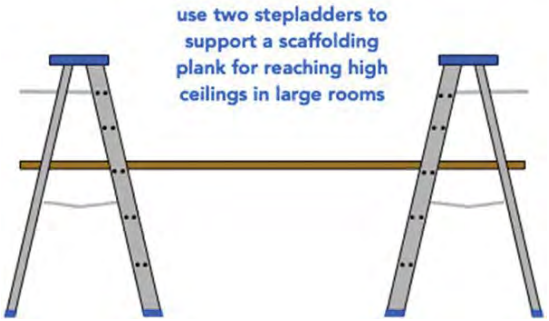
Steppladder

https://www.back2health4you.com/spring-cleaning/parts-of-step-ladder/

Referrence for for 7.5.9 Safety measure for Steppladder Work

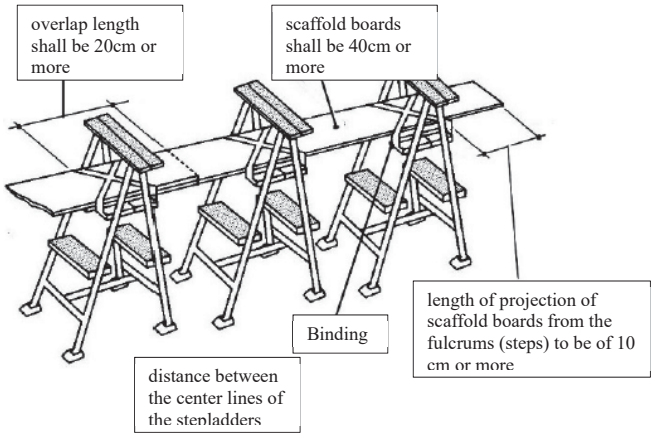
https://laddertopic.com/safe-use-of-step-ladders/

https://www.do-it-yourself-help.com/how-to-paint-high-walls-ceilings.html



https://www.bandou21.com/43setsubi_tejyunsho/G32hoon04.pdf

Explanation for 7.5.9(10)



JICA Standard Safety Specification Preparation Study
7.6 Working Platform (English Draft R1)

2019.10.23 Japanese Prov. Final
2019.11.5 Japanese Prov. FinalR1
2019.11.5 NK Draft R0
2019.11.25 NK Draft R1

JSSS in Japanese （Provisional Final Draft R1 11/5）	JSSS in English R0（11/5）	JSSS in English R1（11/25）
7.6 作業構台 **7.6.1 一般事項** (1) 作業構台の定義 作業構台とは、仮設の支柱及び作業床等により構成する設備で、下記(2)の用途で使用されるものをいう。 (2) 作業構台の用途 作業構台は、作業場所が狭い場所、水面上、急傾斜面上等に位置するため、作業に必要な場所を確保できない場合に仮設として設置するもので、工事用の建設機械や運搬機械の通行や作業、仮設プラント等の設置や運転、工事用車両の通行や駐車、資機材等の運搬や仮置き等を用途とするものである。	**7.6 Working Platform** **7.6.1 General** (1) Definition of working platform Working platform means temporary facilities composed of temporary columns and working floors, etc., and is used for the purposes shown in (2) below. (2) Intended use of working platform The working platform is installed as a temporary work space when it is narrow, or on the water surface, or on a steeply inclined surface, etc. so as not to secure the necessary space to work. It is used for traffic and work of construction or transport machines, installation and operation of temporary plants, traffic and parking of vehicles and temporary storage of materials and equipment.	**7.6 Working Platform** **7.6.1 General** (1) Definition of working platform Working platform means temporary facilities composed of temporary columns and working floors, etc., and is used for the purposes shown in (2) below. (2) Purpose of working platform The working platforms are temporarily constructed to provide work spaces at places such as on narrow place, in water, on steeply inclined place. They are used for transportation for and work places of construction equipment, installation and operation of temporary plants, traffic and parking of vehicles and temporary storing places of construction materials and equipment. *To MD: Please see the attached sketch and photos of working plantform. Please specify proper English terms.*
7.6.2 作業構台の設計・組立・解体 (1) 作業構台の設計 下記事項を考慮し、本章 7.1.3[仮設構造物の設計及び設計照査]にもとづき計画、設計すること。 (a) 使用機械、車両等の重量を勘案した上載荷重 (b) 支柱の滑動・沈下 (c) 7.6.4[作業構台の点検]のために必要な設備 作業構台の設計を変更するときは、本章 7.1.3[仮設工事の設計及び設計照査]の規定に従って設計変更を行うこと、また、作業計画書を変更すること。 (2) 作業構台の組立、解体 請負者は、作業構台の組立及び解体時には、次の措置を講じなければならない。 (a) 組立又は解体の作業の安全措置 (i) 本仕様書 2.3[立入禁止の措置]の(1)の規定に従い、当該作業者以外の者の立入りを禁止する措置 (ii) 本仕様書 2.4[監視員、誘導員の配置]に規定の監視員、誘導員の配置、合図の統一の措置 (iii) 本仕様書 2.6[飛来落下の防止措置]に規定の物体の飛来落下の防止の措置	**7.6.2 Design, Assembly and Dismantling of Working Platform** (1) Design of working platform In consideration of the following points, plan and design based on 7.1.3 [Design and Verification of Temporary Structures]. (a) Load considering the weight of machines and vehicles (b) Sliding and sinking of struts (c) Equipment required for 7.6.4[Checkup of Working Platform] When changing the design of the working platform, perform a design change in accordance with 7.1.3 [Design and Verification of Temporary Work] and carry it out. Also, change the particular method statement. (2) Assembly and dismantling of working platform The Contractor shall take the following measures when assembling and dismantling the working platform. (a) Safety measures for assembly or dismantling work (i) Measures to prohibit entry of persons other than the worker in accordance with (1) of 2.3 [Dangerous and Hazardous Area] (ii) Measures targeted at placement of spotters and flagmen, and unifying signals as specified in 2.4 [Spotters and Flagmen]	**7.6.2 Design, Assembly and Dismantling of Working Platform** (1) Design of working platform The Contractor shall plan and design working platform in accordance with JSSS 7.1.3 [Design and Verification of Temporary Structures] taking account the following points: (a) Loads of the weight of construction equipment and vehicles, (b) Safety against sliding and sinking of pillars (standards), and (c) Facility required in JSSS 7.6.4[Inspection of Working Platform]. When revising the design of the working platform, the Contractor shall carry out design revision in accordance with 7.1.3 [Design and Verification of Temporary Work] and revise the Method Statement. (2) Assembly and dismantling of working platform The Contractor shall take the following measures when assembling and dismantling the working platform. (a) Safety measures for assembly or dismantling work (i) Prohibition of entry of anybody other than the workers for the working platform in accordance with JSSS of 2.3[Prohibition of Entry - Dangerous Work], (ii) Placement of spotters and flagmen, and unifying signals as specified in 2.4 [Spotters, flagmen and the like],

(iv) 本仕様書 6[揚貨・玉掛け作業]に規定の揚貨作業時の安全措置 (b) 作業範囲、時期及び順序についての周知 組立又は解体の作業時期、範囲及び順序を当該作業に従事する作業員に周知すること。また、作業は施工計画に忠実に行わなければならないことを周知すること。 (3) 作業員の墜落防止の措置 作業員の墜落のおそれのある箇所には手摺、柵等の墜落防止用の設備を設けること。詳細は 2.5.3[足場・作業床からの墜落防止措置]、2.5.4[作業床端、開口部からの墜落防止措置]の規定に従うこと。 (4) 車両の転落防止の措置 作業構台から車両の転落の危険のおそれのある箇所には、転落防止のため、十分な強度を有する地覆・車止めを設置し、取付・固定は確実に行うこと。 (5) 悪天候時の対応 悪天候のため、組立・解体作業の実施について危険が予想されるときは、本仕様書 2.7[悪天候及び地震時の対策]の規定に従い、作業を中止すること。	(iii) Measures to prevent flying and falling of objects as specified in 2.6[Measures to Prevent Flying and Falling] (iv) Safety measures for lifting work as specified in 6 [Lifting and Slinging Work] (b) Inform work area, timing and order of workers Inform the workers of the timing of assembly or dismantling work, scope and order. In addition, have workers recognize that the work must be done faithfully to the method statement. (3) Measures to prevent workers from falling Fall prevention equipment such as handrails and fences shall be installed at locations with the risk of falling of workers. For detailed provisions, take measures as specified in 2.5.3 [Measures for Preventing Falls from Scaffoldings and Working Floors] and 2.5.4 [Measures for Preventing Falls from the End of Working Floors and Openings]. (4) Measures to prevent vehicle from rolling down In areas where there is a risk of rolling down of vehicles from working platforms, a ground cover and car stopper with sufficient strength should be installed to prevent the vehicle from rolling down, and mounting and fixing have to be secured. (5) Response in bad weather If there is a risk of assembly/disassembly work due to bad weather, the work has to be stopped in accordance with 2.7 [Countermeasures under Bad Weather and Earthquakes].	(iii) Prevention of falling of objects as specified in 2.6[Falling Objects], and (iv) Safety measures for lifting work as specified in JSSS 6 [Lifting and Slinging Work]. (b) Information of work place, timing and procedure to workers The Contractor shall inform the workers for the assembly or dismantling work of the work place, scope, timing and procedure of assembly or dismantling work. In addition, have workers recognize that the work must be done in accordance with the Method Statement. (3) Measures to prevent workers from falling The Contractor shall provide fall prevention equipment such as handrails and fences at locations where there is the risk of falling of workers. The measures shall be taken in accordance with as specified in 2.5[Fall Prevention]. (4) Measures to prevent vehicle from falling The Contractor shall provide and fix rigidly wheel guard or car stopper of sufficient strength to prevent vehicles from falling at places where there is a risk of falling of vehicles from working platform. *To MD: Please specify proper English terms for wheel guard or car stopper. I attach figures below for your reference.* (5) Measures in adverse weather When there is a risk of assembly/disassembly work due to adverse weather, the work shall be stopped in accordance with 2.7 [Adverse Weather Requirements].
7.6.3 作業構台の使用 請負者は、作業構台における安全を確保するため、次の措置を講じなければならない。 (1) 作業構台の最大上載荷重を、パネル、ボード等を利用して見やすい位置に掲示したうえで、当該荷重を超える車両、建設機械等を進入させないこと。 (2) 作業員の通行のために、本仕様 7.4.2[通路の設定]に従い、通路を設定すること。 (3) 建設機械等と作業員との接触防止のため、本仕様書 4.1.2[各作業の作業員への周知]、4.1.10[運用時の安全措置]に従い、必要な措置を講じること。 (4) 作業員の建設機械等との接触の危険防止のために、資材運搬車両の経路、資材仮置場の位置、重機の配置等を、作業員に作業前に認識させること。	**7.6.3 Use of Working Platform** The Contractor shall take the following measures to ensure safety of work on the working platform. (1) Post the maximum load of the working platform at a position where it can be easily seen using panels, boards, etc., and do not allow vehicles, construction machines, etc. exceeding the capacity to enter. (2) For passage of workers, set the passage in accordance with this JSSS 7.4.2 [Setting up Temporary Passage]. (3) In order to prevent contact accidents between construction machinery and workers, take necessary measures in accordance with 4.1.2 [Inform Workers of Each Work] and 4.1.10 [Safety Measures during Operation]. (4) To prevent contact accidents between machinery and workers, let workers know the transport route of machinery, location of material storage and operation points of heavy machinery before the commencement of the work.	**7.6.3 Use of Working Platform** The Contractor shall take the following measures to ensure safety of work on the working platform. (1) Post the maximum loading capacity of the working platform in easy-to-see places using panels, boards, etc., (2) Not allow vehicles, construction machines, etc. exceeding the maximum loading capacity of the working platform, (3) Provide the walkways in accordance with this JSSS 7.4.2, [Measures for Temporary Walkways], (4) To prevent collision accidents by construction equipment to workers, take following measures: (a) Measures in accordance with 4.1.2 [Inform Workers of Each Work] and 4.1.10 [Safety Measures during Operation], and (b) Make workers know the moving route of transportation and construction equipment, location of material storage and

		operation places of construction equipment before the commencement of the work.
7.6.4 作業構台の点検 請負者は、作業構台で作業を行うときは、次に示す点検を行い、異常を認めたときは直ちに補修しなければならない。次の(2)に規定の点検の点検結果及び補修の記録は、作業が終了するまで保管しなければならない。 (1) 作業開始前の点検 その日の作業を開始する前に、作業を行う箇所に設けた手すり、中桟及び床材等の取り外し及び脱落の有無の点検を行うこと。 (5) 本仕様書 2.7[悪天候及び地震時の対策]に規定の悪天候及び地震の発生後、作業構台の組立て、一部解体又は変更の後において、作業構台における作業を行うときは、作業開始前に、次の事項について点検を行い、異常を認めたときは直ちに補修を行うこと。 (a) 支柱の滑動及び沈下の状態 (b) 床材の損傷、取付け及び掛渡しの状態 (c) 支柱、はり、筋かい等の緊結部、接続部及び取付部の緩みの状態 (d) 緊結材及び緊結金具の損傷及び腐食の状態 (e) 水平つなぎ、筋かい等の補強材の取付状態及び取り外しの有無	**7.6.4 Checkup of Working Platform** The Contractor shall carry out the following checkup when operation in performed on the platform, and shall immediately repair when any abnormalities are identified. The results of checkup and repair records specified in the following (2) shall be kept until the work is completed. (1) Checkup before the commencement of the work Before starting the work on that day, check the existence of removal and coming off of handrails, middle rails and flooring, etc. that are installed at working space. (6) When the work is performed on the working platform after the bad weather or an occurrence of earthquake in accordance with 2.7[Coutermeasures under Bad Weather and Earthquakes], or after the assembly, partial disassembly or modification of the platform, the following points shall be checked out before the commencement of the work, and if any abnormalities are identified, correct it immediately. (a) Condition of sliding and sinking of struts. (b) Condition of damage, mounting and placing of floor materials. (c) Condition of loosening at the fastening, connecting and mounting portions of struts, beams, braces, etc., (d) Condition of damage and corrosion of clamping materials and clamps. (e) Condition of mounting and existence of removal of horizontal tethers, diagonal bracings, and other reinforcement materials.	**7.6.4 Inspection and Maintenance of Working Platform** The Contractor shall carry out the following inspection when operation is made on the platform and immediately repair when any abnormalities are identified. The results of inspection and maintenance records specified in the following (2) shall be kept until the work is completed. (1) Inspection before the commencement of the work Before commencing the work on the day, inspect abnormalities such as removal and falling of handrails, middle rails and flooring, etc. installed at working place. (2) When the work is being commenced on the working platform after the adverse weather or earthquake in accordance with 2.7[Adverse Weather Requirements], or after the assembly, partial disassembly or modification of the platform, the following items shall be inspected before the commencement of the work, and if any abnormalities are identified, correct it immediately. (a) Condition of sliding and sinking of pillars (standards), (b) Condition of damage, fixing and placing of floor materials, (c) Condition of loosening at the fastening, connecting and fixing portions of pillars, beams, braces, etc., and (d) Condition of damage and corrosion of clamping materials and clamps. (e) Condition of mounting and existence of removal of horizontal member (transom), diagonal bracings, and other reinforcement materials. *To MD: I cannot find proper names of frame/working platform in English. Please specify proper English terms. I attach figures below for your reference.*

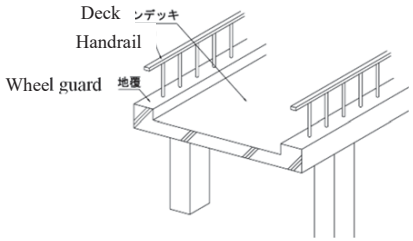
To Mike san,

We are specfifying the safety for the Work Stage / Working Platform such as shown in the photos below: Please determine proper title of this section in English.




Wheel guard

http://www.kaneso.co.jp/onepoint/10_exj/2009/P090217.htm



Car stopper

https://www.cemedine.co.jp/architecture/exterior/block/index.html

BS EN 12811-1:2003

Temporary works equipment —
Part 1: Scaffolds — Performance requirements and general design

Key

h_s Scaffold height
b_s Scaffold bay width, centre to centre of standards
l_s Scaffold bay length, centre to centre of standards
h_l Scaffold lift height

1 Bracing in vertical plane ((transverse diagonal) (3.6) 2 Bracing in horizontal plane (3.5) 3 Side protection (3.19) 4 Bracket brace (-) 5 Node (3.13) 6 Bracing in vertical plane (longitudinal diagonal) (3.6) 7 Standard (3.21) 8 Transom (3.24) 9 Ledger (3.10) 10 Coupler(3.8)	11 Tie member (3.23) 12 Platform (3.15) 13 Bracket (-) 14 Bridging ledger (-) 15 Base plate (3.3) 16 Platform unit (3.16) 17 Horizontal frame (-) 18 Anchorage (3.1) 19 Vertical frame (-) 20 Fencing structure (5.5.5)	21 Principal guardrail (5.5.2) 22 Intermediate guardrail (5.5.3) 23 Toeboard (5.5.4) 24 Post (-) 25 Base jack (3.2) NOTE 1 The Figure is for component identification purposes only and does not show any requirements. NOTE 2 (-) These terms are not found in the text, but are useful to understand the various components that can be used with a working scaffold.

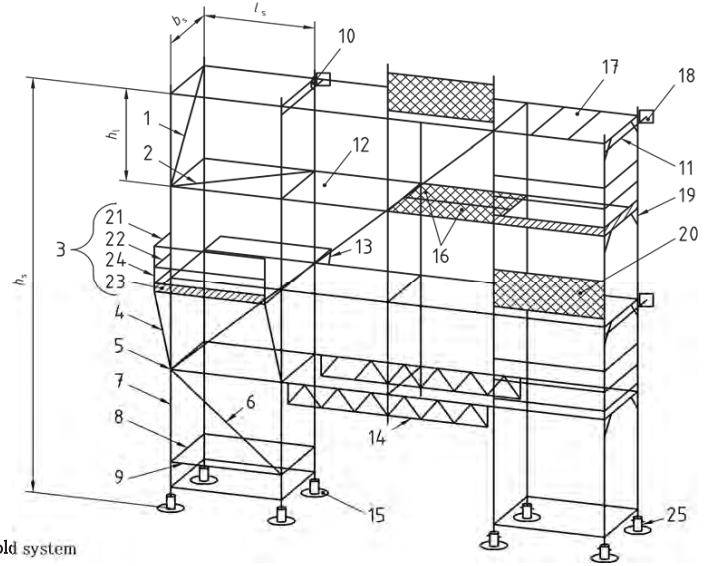


figure 1 — Examples of typical components of a façade scaffold system

2019.10.25 Japanese Prov. Final
2019.11.5 NK Draft R0
2019.11.26 NK Draft R1

Specification in Japanese（Provisional Final 10/25）	English Translation（Draft R0 11/5）	English Translation（Draft R1 11/26）
7.8 仮設電気設備 **7.8.1 一般事項** (1) 本節では、仮設電気設備の設置、移転、撤去、修理等の作業の安全について規定する。 (2) 本節では、電圧が 600V 以下又は当該国で規定の低圧の仮設電気設備に関して規定する。 (3) 本節で使用する用語の定義は次である。 (a) 仮設電気設備とは、請負者が工事のために現場内に設置する受電設備、変電設備、発電設備、配電設備等の仮設の設備をいう。 (b) 配電設備とは、受電設備又は発電設備から各作業場へ配電するための電線、ケーブル、配電盤、分電盤、開閉器等の設備をいう。 (4) 請負者は、仮設電気設備に関し、本節で規定のない事項は当該国の法律又は電力供給を受ける電力会社の規定を遵守しなければならない。	**7.8 Temporary Electric Equipment/Power facility** **7.8.1 General** (1) In this section, safety of work such as installation, relocation, removal and repair of temporary electrical equipment is defined. (2) In this section, temporary electrical equipment with a voltage of 600V or less or low voltage specified in the country concerned are defined. (3) Definitions of terms used in this section are as follows. (a) Temporary electrical equipment refers to temporary equipment such as power receiving equipment, substation equipment, power generation equipment, power distribution equipment, etc. installed on site by the Contractor. (b) Distribution facilities refer to facilities such as electric wires and cables for distributing power from receiving or generating facilities to each workplace. (4) The Contractor shall comply with the laws of the target country or the provisions of the electric power company that receives the power supply for matters not stipulated in this section regarding temporary electric equipment.	**7.8 Temporary Electric Power Facilities** **7.8.1 General** (1) This Section prescribe safety measures for the work of installation, relocation, removal and repair of temporary electric power facilities. (2) The temporary electric power facilities prescribed in this Section are those of voltage of 600V or less or those defined as low voltage facilities in the Country. (3) Definitions of terms used in this section are as follows. (a) Temporary electric facilities are those such as power receiving equipment, transformers, power generation equipment, power distribution facilities, etc. installed and operated for the Works by the Contractor on the Site. (b) Distribution facilities are those such as electric wires, cables, switchboards, distribution panels and switches for distributing power from power receiving facility or generating equipment to each work site. (4) The Contractor shall comply with the Laws or the regulations of the power company which supply power to the Contractor, regarding temporary electric power facilities not stipulated in this Section.
7.8.2 作業計画と作業員への周知 (1) 請負者は、本仕様書 1.3[安全衛生にかかわる計画書]に規定の事項に加え、次の事項を加えた作業計画書及び安全衛生詳細計画書を作成しなければならない。 (a) 当該工事で適用する当該国の電気関係の法律及び電力供給を受ける電力会社の規定 (b) 電線、ケーブルの規格と電圧 (c) 電線、ケーブルの防護工 (d) 電気系統図 (2) 請負者は、仮設電気設備の設置、移転、撤去、修理等の作業を行うときは、作業員の感電を防止するため次の事項を含めた安全上の措置について、必要に応じ作業員へ周知しなければならない。 (a) 作業場所、作業内容、作業方法 (b) 感電の危険のある作業、場所 (c) 感電防止のための措置	**7.8.2 Work Plan and Announcement to Workers** (1) The Contractor shall prepare a particular method statement and a particular health and safety plan with the following items in addition to the items specified in this JSSS 1.3 [Plan for Health and Safety]. (a) Electricity laws in the country and regulations of the power company that receives the power supply (b) Specification and voltages for electric wires and cables (c) Electric wire and cable protective work (d) Electrical diagram (2) The Contractor shall inform safety measures including the following as necessary to prevent electric shock of workers when performing installation, relocation, removal, repair, etc. of temporary electrical equipment. (a) Work location, contents of work, work method (b) Work or place where there is a risk of electric shock	**7.8.2 Work Plan and Information to Workers** (1) The Contractor shall prepare Method Statement and Safety Plan covering the following items in addition to the items specified in JSSS 1.3 [Plan for Health and Safety]. (a) Laws and regulations of the power company which supply power to the Contractor, (b) Standards and voltages of electric wires and cables, (c) Protective work for electric wires and cables, and (d) Electric diagram. (2) The Contractor shall inform workers of safety measures including the following items as necessary to prevent electric shock when performing installation, relocation, removal, repair, etc. of temporary electric facilities: (a) Work location, contents of work, work method (b) Work or place where there is a risk of electric shock

	(c) Measures to prevent electric shock	(c) Measures to prevent electric shock
7.8.3 設置と管理 (1) 請負者は、本仕様書 1.8[請負者の要員の適正配置]に従い、必要な資格を有し、電気に関する十分な知識と経験を持つ者（competent person）に、仮設電気設備の設置と管理をさせなければならない。 (2) 請負者は、仮設電気設備の管理の担当者の氏名を、当該仮設電気設備に明示するとともに、当該担当者以外の操作を禁止する旨を表示しなければならない。	**7.8.3 Installation and Management** (1) The Contractor shall have a competent person who has the necessary qualifications with sufficient knowledge and experience in electricity in accordance with this JSSS 1.8 [Proper arrangement of contractor personnel] install and manage temporary electric equipment. (2) The Contractor shall clearly indicate the name of the person in charge of managing the temporary electric equipment and indicate that operations other than the person in charge are prohibited on it.	**7.8.3 Installation and Management** (1) The Contractor shall allocate a competent person who has the necessary qualifications with sufficient knowledge and experience in electricity in accordance with this JSSS 1.8 [Proper arrangement of contractor personnel] to the wok of installation and management of temporary electric facilities. (2) The Contractor shall post the name of the person in charge of managing the temporary electric facilities and prohibition of operation by other than the person in charge.
7.8.4 点検・検査 (1) 仮設電気設備の点検・整備 請負者は、仮設電気設備の点検、整備に関して次の事項を遵守し、仮設電気設備の保守管理を行わなければならない。 (a) 日常点検 柵・囲い等の付帯施設の状況の確認も含めた仮設電気設備の日常点検表を準備し、点検・検査を行い、その結果を記録すること。 (b) 定期点検 仮設電気設備の絶縁抵抗値の測定、過電流・地絡等に対する保護装置の機能確認を含む定期点検表を準備し、点検・検査を行い、その結果を記録すること。 (c) 整備・補修 点検の結果、必要が認められた場合は、整備を実施すること。また、整備、補修が完了するまで仮設電気設備を使用しないこと。 (2) 点検の担当者及び報告 請負者は、仮設電気設備の日常点検及び定期点検は、仮設電気設備の管理の担当者に行わせ、点検結果を工事終了まで保管しなければならない。また、点検結果は、毎月作成する進捗報告書に含めなくてはならない。 (3) 悪天候及び地震時の点検 悪天候及び地震時の点検は、本仕様書 2.7[悪天候及び地震時の対策]に従い行なわなければならない。	**7.8.4 Checkup and Inspection** (1) Checkup and inspection of temporary electric equipment The Contractor shall comply with the following points regarding the checkup and maintenance of the temporary electric equipment, and perform maintenance management for it. (a) Daily checkup Prepare a daily checkup table with the purpose of checking the status of subsidiary facilities such as fences and enclosures, carry out checkup and inspections, and record the results. (b) Periodical checkup Prepare a periodic checkup table with the purpose of measuring the insulation resistance value of temporary electric equipment and checking the function of the protective device against overcurrent, ground fault, etc., carry out checkup and inspections, and record the results. (c) Maintenance and repair As a result of inspection, perform maintenance, if necessary. Do not use temporary electric equipment until maintenance and repairs are completed. (2) Person in charge of checkup and reporting The Contractor shall have the person in charge of the temporary electric equipment manage the daily and periodic checkup and keep its results until the completion of the construction. In addition, the results must be included in the progress report to be prepared each month. (3) Checkup in bad weather and earthquake Inspections in bad weather and earthquakes must be performed in accordance with 2.7 [Coutermeasures under Bad Weather and Earthquakes].	**7.8.4 Inspection and Maintenance** (1) Inspection of temporary electric facilities The Contractor shall inspect and maintain the temporary electric facilities as specified below. (a) Daily inspection Prepare daily inspection check list of the temporary electric facilities including the status of subsidiary facilities such as fences and enclosures, inspect them daily and record the inspection results. (b) Periodical inspection Prepare periodical inspection checklist including measuring the insulation resistance value of temporary electric facilities and the function of the protective device against overcurrent, ground fault, etc., inspect them periodically and record the inspection results. (c) Maintenance and repair As a result of inspection, make maintenance of temporary electric facilities, if necessary. Temporary electric facilities shall not be operated until maintenance and repairs are completed. (4) Person in charge of inspection and reporting The Contractor shall allocate the person in charge of daily and periodical inspection, maintenance and reporting of the temporary electric facilities until the completion of the Works. In addition, the results shall be included in the Monthly Progress Report. (5) Inspection after adverse weather and earthquake Inspections after adverse weather and earthquake shall be carried out in accordance with 2.7 [Adverse Weather Requirements].

7.8.5 作業時の安全措置

請負者は、仮設電気設備の設置、移転、撤去、修理等の作業に際して、次に示す安全措置を講じなければならない。

(1) 材料及び器具

仮設電気設備の設備、材料及び器具は、当該国の法律で規定、あるいは電力供給を受ける電力会社の指定する規格品を用いなければならない。

(2) 配線工事

(a) 電線と仮設の構造物、通行車両等との間隔は、適正に保つよう配線工事を行うこと。

(b) (a)において適正な間隔が保てない場合は、絶縁防護管で電線を防護すること。

(c) 作業の支障とならない箇所に配線すること。

(d) 配線ケーブルを作業床に配線する場合は露出させてはならない。

(3) 配電盤・分電盤・開閉器

(a) 配電盤・分電盤・開閉器は防水構造で金属製の施錠可能な箱を用い、アースを行うこと。

(b) 配電盤・分電盤のヒューズ及びしゃ断器は、負荷容量に適合したものであること。

(4) 受電設備、変電設備には、柵・囲い等を施すとともに、危険標示を行い、出入口は施錠すること。

(5) アース

(a) 仮設電気設備は、漏電による感電の危険防止のため、各設備に必要なアースを行うこと。

(b) アース電極は、銅又は鋼等の導電性の高いものであること。

(6) 仮設電気設備の移設、修理の作業

(a) 移設や修理の作業は、通電を停止して行い、絶縁用防具の装着の確認、検電を行った後に行うこと。

(b) 作業中又は作業を終了した場合において、仮設電気設備に通電しようとするときは、あらかじめ、当該作業に従事する作業員に感電の危険が生ずるおそれのないことを確認した後でなければ、通電してはならない。

(7) 仮設電気設備の設置、移設、修理の作業が終了したときは、検査を行ったのち設備を使用すること。

7.8.5 Safety Measures during Work

The Contractor shall take the following safety measures when installing, moving, removing, repairing temporary electric equipment.

(1) Material and instruments

Temporary electric equipment equipment, materials and equipment shall be specified by the laws of the country concerned or specified by the power company receiving the power supply.

(2) Wiring work

(a) Carry out wiring work so that the distance between the electric wires and temporary structures, passing vehicles, etc. is kept appropriate.

(b) If an appropriate interval cannot be maintained in (a), protect the wire with an insulated protective tube.

(c) Wiring in a place that does not interfere with work.

(d) Wiring cables must not be exposed when wiring to the working floor.

(3) Switchboard, distribution panel and switch

(a) Switchboard, distribution panel and switch have to be grounded using a waterproof metal box that can be locked.

(b) Use fuses and circuit breakers of switchboard and distribution panel that are suitable for the load capacity of power.

(4) The power receiving equipment and substation equipment shall be fenced, enclosed, etc., and shall be labeled with danger, and the doorway have to be locked.

(5) Grounding

(a) Temporary electric facilities shall be grounded as necessary for each facility to prevent the risk of electric shock due to electrical leakage.

(b) Material of the ground electrode shall be highly conductive such as copper or steel.

(6) Relocation and repair work of temporary electric equipment

(a) Relocation and repair work have to be performed after turning off the power, confirming that the protective equipment for insulation is installed, and performing voltage detection.

(b) When attempting to energize temporary electric equipment during or after work, it must be confirmed in advance that there is no risk of electric shock for workers engaged in the work.

(7) When the installation, relocation, and repair work for temporary electric equipment is completed, use the equipment after inspection.

7.8.5 Safety Measures during the Work

The Contractor shall take the following safety measures when installing, moving, removing, repairing temporary electric facilities.

(1) Materials and instruments

Materials, equipment and tools of the temporary electric facilities shall standard ones to meet the specifications of the Laws or specified by the power company to supply power to the Contractor.

(2) Wiring work

(a) Carry out wiring work so that the safety distance between the electric wires and temporary structures, passing vehicles, etc. shall be kept appropriately.

(b) If an appropriate distance in (a) cannot be maintained, protect the electric wires with insulated protective tubes.

(c) Make wiring in place where it does not interfere with other works.

(d) Electrical cables shall not be exposed when wiring on the working floor.

(3) Switchboard, distribution panel and switch

(a) Switchboard, distribution panel and switch shall be installed in the waterproofed and lockable metal box which is grounded.

(b) Fuses and circuit breakers of switchboard and distribution panel shall be suitable for the load capacity of power.

(4) The power receiving equipment and substation equipment shall be fenced or enclosed. Their places shall be posted with danger sign and locked.

(5) Grounding (earthing)

(a) Temporary electric facilities shall be grounded as necessary for each facility to prevent the risk of electric shock due to electrical leakage.

(b) Material of the grounding electrode shall be highly conductive such as copper or steel.

(6) Relocation and repair work of temporary electric facilities

(a) Relocation and repair work shall be performed after turning off the power, confirmation that the protective equipment for insulation is installed and no electricity measured by electricity detection.

(b) When energizing temporary electric facilities during or after the work, it shall be confirmed in advance that there is no risk of electric shock for workers engaged in the work.

		(7) When the installation, relocation, or repair work of temporary electric facilities is completed, the facilities shall be operated after inspection of the facilities.

power receiving equipment/equipment

https://www.jfe-planteng.co.jp/en/product/power_distribution/

https://electrical-engineering-portal.com/download-center/books-and-guides/power-substations/installation-mps-transformers

Wiring

https://southcoastherald.co.za/183674/man-seriously-injured-by-electric-shock/

(Bad example)

transformers

http://www.otds.co.uk/products/21/pole-mounted-substations

power generation equipment

https://www.westernstatescat.com/products/power-systems/electric-power-generation/

grounding/earthing

https://upload.wikimedia.org/wikipedia/commons/7/7d/HomeEarthRodAustralia1.jpg

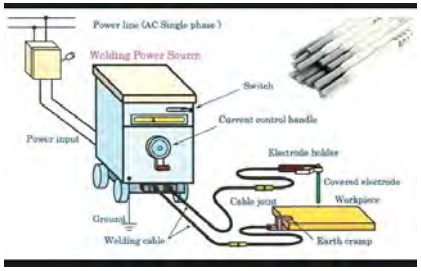
JSSS in Japanese (Provisional Final Draft 10/24)	English Translation (R1 10/31) by Mr. Ito	English Translation (R1 11/1) by NK
7.9 電気溶接・ガス切断作業 **7.9.1 一般事項** 本節では、アーク溶接作業（以下、「電気溶接」という。）及びアセチレンガス、プロパンガス等のガス切断作業（以下、「ガス切断」という。）の安全について規定する。	**7.9 Electric Welding and Gas Cutting Work** **7.9.1 General** This section stipulates safe work methods for arc welding (hereinafter referred to as “electric welding”) and gas cutting (hereinafter referred to as “gas cutting”) by acetylene gas or propane gas.	**7.9 Electric Welding and Gas Cutting Work** **7.9.1 General** This Section stipulates safety measures required for arc welding (hereinafter referred to as “electric welding”) and gas cutting with acetylene gas or propane gas (hereinafter referred to as “gas cutting”).
7.9.2 電気溶接作業 請負者は、電気溶接作業を行うに当たっては、次の措置を講じなければならない。 (1) 使用前点検について、次の項目を点検し、異常を認めた時は直ちに、補修又は取り換えること。 (a) 自動電撃防止装置が正常に作動すること (b) 溶接機のフレームにアースを取り付けたものであること (c) アース線の取付け状態 (d) 溶接機のケーブルの被覆に損傷がないこと (e) 溶接棒ホルダ、アースクランプの絶縁防護部分及びケーブルの接続部に損傷がないこと (f) 溶接機及び溶接器具の製造者の作成したマニュアルに規定の使用前点検項目 (2) 溶接作業時の措置 (a) 迷走電流の発生を防止するため、帰線側ケーブルの接続は母材（溶接物）の溶接作業箇所に近接させること (b) ケーブルを使用し、鉄筋棒等の代替品を使用しないこと (c) 作業を中断するときは、溶接棒を溶接棒ホルダから外し、溶接機の電源を切ること (d) 感電事故防止のため、雨天時には屋外での作業を中止すること、及び溶接機が濡れない措置を講じること (e) 周囲の作業員が、電気溶接の作業中に電撃を感じた場合は、その原因の特定を行い、電撃の原因の除去が完了するまでの間、溶接作業は中止すること (f) 溶接作業の作業員には、遮光シールド、保護手袋等の保護具を使用させること (g) 他の作業員には、肉眼でアークを見ないよう指導すること (3) 溶接機及び溶接器具の定期点検 (a) 溶接機及び溶接器具は、4.1.7[建設機械の点検・整備]及び4.1.9[定期点検]に準拠して定期点検を行うこと	**7.9.2 Electric Welding** The Contractor shall take the following measures when performing the electric welding work. (1) For check up before use of electric welding equipment, check the following points and immediately repair or replace when any abnormality is identified: (a) The automatic voltage reducing device operates normally, (b) The welder frame must be grounded, (c) Ground conductor is installed properly, (d) There is no damage to the cable sheath of the welder, (e) There is no damage to the welding rod holder, the insulation protection part of the earth clamp and the connection part of the cable, and (f) Pre-use inspection items specified in the manual prepared by the manufacturer of the welding machine and welding equipment. (2) Measures during welding work (a) To prevent the occurrence of stray currents, the return cable should be allocated close to the welding work location of the base material (welded product). (b) Use cables and do not use substitutes such as reinforcing bars. (c) When interrupting welding work, remove the welding rod from the welding rod holder and turn off the welding machine. (d) To prevent electric shocks, avoid working outdoors in the rain and take measures to prevent the welding machine from getting wet. (e) When workers working around feel electric shock during welding work, identify the cause and stop the welding work until removal of the cause of electric shock is completed. (f) Have workers use protective equipment such as shading shields and protective gloves. (g) Instruct workers not to see arcs emitted by other workers’ work with the naked eye.	**7.9.2 Electric Welding Work** The Contractor shall take the following measures for the electric welding work. (1) The following items of electric welding equipment shall be inspected before start of electric welding work, and immediately repair or replace shall be made when any abnormality is identified. (a) Is automatic preventer of electric shock properly functioning? (b) Is frame of welding machine grounded? (c) Is grounding conductor installed properly? (d) Is no damage to welding cables of the welding machine? (e) Is no damage to electrode holder, insulation of earth clamp or connection parts of cables? (f) Is there any abnormal in pre-use inspection items specified in the manual prepared by the manufacturer of welding machine and welding equipment? (2) Measures during welding work (a) To prevent the occurrence of stray currents, the earth cable shall be fixed with earth clamp closely to the welding place of work piece. (b) Use cables and do not use substitutes such as reinforcing bars. (c) When suspending welding work, remove electrode from electrode holder and turn off the welding machine. (d) To prevent electric shocks, stop working outdoors in the rain and take measures to prevent the welding machine from getting wet. (e) When worker(s) working around welding work place feel electric shock during welding work, identify the cause and stop the welding work until removal of the cause of electric shock. (f) Welding worker shall wear PPE such as shading shield and protective gloves. (g) Instruct workers not to directly see arcs with their naked eyes. (3) Periodical inspection of welding machines and welding equipment

(b) 電撃防止装置は、6 月以内ごとに 1 回の頻度で定期点検を行うこと	(3) Periodical check up of welding machines and welding equipment of welding machines and welding equipment. (a) Welding machine and welding equipment should be regularly inspected in accordance with 4.1.7[Check up and Maintenance of Construction Machine] and 4.1.9[Periodical Check]. (b) The voltage reducing device should be regularly inspected once every six months.	(a) Welding machine and welding equipment shall be periodically inspected in accordance with 4.1.7[Inspection and Maintenance of Construction Machine] and 4.1.9[Periodical Inspection]. (b) The automatic preventer of electric shock shall be regularly inspected within half a year.
7.9.3 ガス切断作業 請負者はガス切断作業を行うに当たっては、次の措置を講じなければならない。 (1) 使用前点検について、次の項目を点検し、異常を認めた時は直ちに、補修又は取り換えること。 (a) 逆火防止装置が付いていること (b) ガス容器、調整器、逆火防止装置(安全器)、ホースバンド、ホース、吹管、火口等に損傷がないこと (c) ガス容器の調整器、口金は随時検査を受けたものであること (4) ガス切断器具の取り扱い ガス切断器具を取扱う作業員に、次のことを周知、徹底させること。 (a) ガス等のホース及び吹管については、損傷、摩耗等によるガス等の漏えいのおそれがないものを使用すること (b) 吹管は丁寧に取扱い、点火したまま放置しないこと、吹管を床や通路上に置かないこと。 (c) 点火状態で圧力調整器を操作しないこと (d) ガス等のホースと吹管及びガス等のホース相互の接続箇所については、ホースバンド、ホースクリツプ等の締付具を用いて確実に締付けを行なうこと (e) 火口が過熱すると逆火を起こしやすくなるため、長時間作業する時は、時々作業を中断し 酸素を僅かに出しながら水中に漬けて冷却すること (f) 作業を終了または中断する時は、必ず容器バルブを完全に閉め、調整器のガスを完全に抜くこと (5) ガス容器の取り扱い ガス容器を取扱う作業員に、次のことを周知、徹底させること。 (a) ガス容器は次の場所に置かないこと (i) 通風又は換気の不十分な場所 (ii) 火気を使用する場所及びその附近 (iii) 火薬類、危険物その他の爆発性若しくは発火性の物又は多量の易燃性の物を製造し、又は取り扱う場所及びその附近 (b) 取扱いは丁寧に行い、投げる等で衝撃を与えないこと (c) 高温の作業環境下では、容器を遮光し、直射日光に晒さない等、容	**7.9.3 Gas Cutting Work** The Contractor shall take the following measures when carrying out gas cutting. (1) For check up before use of gas cutting equipment, check the following points and immediately repair or replace when any abnormality is identified: (a) A backfire prevention device is attached, (b) No damage to gas containers, regulators, backfire prevention devices (safety devices), hose bands, hoses, blow pipes, tip nozzles, etc., and (c) Gas container regulators and caps must be inspected from time to time. (2) Handling of gas cutting equipment Make sure that the workers who handle gas-cutting tools know the following: (a) Use gas hoses and blow pipes that do not have the risk of gas leakage due to damage or wear, (b) Handle the blowpipe carefully, do not leave it ignited, and do not place the blowpipe on the floor or passage, (c) Do not operate the pressure regulator in the ignition state, (d) The gas hose and the blow pipe and the gas hose connection point should be securely tightened with a fastener such as a hose band or hose clip, (e) If tip nozzle overheats, a backfire is likely to occur. When working for a long time, interrupt the work from time to time and submerge it in water while cooling it slightly, and (f) When finishing or interrupting work, be sure to completely close the container valve and vent the regulator completely. (3) Handling of gas containers Make sure that workers who handle gas containers are aware of the following: (a) Do not place gas containers in the following places, (i) Location in which it is iinsufficient ventilation (ii) Places where fire is used and nearby	**7.9.3 Gas Cutting Work** The Contractor shall take the following measures for gas cutting work. (1) The following items of gas cutting equipment shall be inspected before start of gas cutting work, and immediately repair or replace shall be made when any abnormality is identified. (a) Is backfire prevention device installed? (b) Is no damage to gas containers, regulators, backfire prevention device, hose bands, hoses, blow pipes, tip nozzles, etc.? (c) Have gas container regulators and caps been inspected periodically? (2) Handling of gas cutting equipment Workers who handle gas-cutting tools shall have the following knowledge: (a) Use gas hoses and blow pipes that do not have the risk of gas leakage due to damaged or worn, (b) Handle the blowpipe carefully, do not leave it with fire-on, and do not place the blowpipe on floor or walkway, (c) Do not operate pressure regulators in fire-on, (d) The connection between gas hoses and between blow pipe and hoses shall be securely tightened with a fastener such as hose band or hose clip, (e) When tip nozzle is overheated, backfire is likely to occur. When working for a long time, interrupt the work from time to time and submerge it in water for cooling it discharging slightly oxygen, and (f) When finishing or interrupting work, completely close the container valves and vent gas in regulators completely. (3) Handling of gas containers Training shall be made to the workers who handle gas containers to have the following knowledge: (a) Do not place gas containers in the following places, (i) Place of insufficient ventilation (ii) Place or nearby where fire is used

器が高温にならない措置を講じること (d) 転倒の恐れがないよう保持すること (e) 運搬する際は、容器にキャップを施すこと (f) 溶解アセチレンの容器は立てて置くこと (g) ガス容器は、電気装置のアース線の付近に置かないこと (h) 容器には、充空の表示を行い、使用前又は使用中と、それ以外の容器との区別を常時明らかにすること (i) 凍結のおそれがあるときは、雨濡れや湿気の多いところにガス容器を置かないこと。口金や減圧弁が凍った時は温湯を使用して融解し、直接火気を使用しないこと (6) 切断作業時の措置 (a) 屋内の作業場所等では換気を行うこと (b) ガス切断装置のガス漏れの点検を行う場合は、石けん水を使用する等の安全な方法により行い、火気は使用しないこと (c) 作業を行う場所の近くには適当な消火設備又は消火器を備えておき、必要な時に直ちに使用できるよう常に維持すること (d) 使用する際は、容器の口金に付着している油類、塵埃を除去すること (e) 点火及び消化は、酸素供給バルブを閉じて行うこと (f) 当該作業の作業員には保護眼鏡及び保護手袋を着用させること。 (7) ガス切断作業装置の定期点検 ガス切断作業装置は、4.1.7[建設機械の点検・整備]及び 4.1.9[定期点検]に準拠して定期点検を行うこと。	(iii) Locations near and where explosives, hazardous materials, other explosive or ignitable materials, or large quantities of flammable materials are manufactured or handled. (b) Handle with care and do not give a shock by throwing etc., (c) Under high temperature work environment, take measures to prevent the container from becoming hot, such as shielding the container and not exposing it to direct sunlight, (d) Hold so that there is no risk of falling, (e) Cap containers when transporting, (f) Dissolved acetylene containers should be placed upright, (g) Do not place gas containers in the vicinity of electrical equipment ground conductor, (h) The container shall be marked as full, and the distinction between other containers before and during use shall be made clear at all times, and (i) When there is a risk of freezing, do not place the gas container in a wet or humid place. When the base or pressure reducing valve freezes, melt with hot water and do not use direct fire. (4) Measures for cutting work (a) Ventilate indoor work places (b) When checking for gas leakage from the gas cutting device, use a soapy water or other safe method and do not use fire. (c) Proper fire extinguishing equipment or fire extinguishers should be provided near the place where work is performed, and always maintained so that it can be used immediately when necessary. (d) When using, remove oil and dust adhering to the container cap. (e) Ignition and digestion should be performed with the oxygen supply valve closed. (f) Ensure that protective workers wear protective glasses and gloves. (5) Periodic inspection of gas cutting equipment The gas cutting work device shall be periodically inspected in accordance with 4.1.7 [Check up and Maintenance of Construction Machine] and 4.1.9 [Periodical Check].	(iii) Locations near and where explosives, hazardous materials, ignitable materials, or large quantities of flammable materials are manufactured or handled. (b) Handle gas containers with care and do not give a shock by throwing, etc., (c) Take measures to prevent gas containers from becoming hot under high temperature environment, such as shielding the container and not exposing it to direct sunlight, (d) Hold so that there is no risk of falling, (e) Cap containers when transporting, (f) Place dissolved acetylene containers upright, (g) Not place gas containers in the vicinity of grounding conductor of electrical equipment, (h) Gas containers shall be marked full or empty, and the distinction between other containers before and during use shall be made clearly, and (i) When there is a risk of freezing, not place the gas container in a wet or humid place. When valve of cylinder or pressure reducing valve freezes, melt them with hot water and not use direct fire. (4) Safety measures for gas cutting work (a) Ventilate indoor work place (b) When checking for gas leakage from the gas cutting equipment, use a soapy water or other safe method and not use fire. (c) Proper fire extinguishing equipment or fire extinguishers shall be provided near the place where work is performed, and always maintained so that it can be used immediately when necessary. (d) Remove oil and dust adhering to the valve of container. (e) Ignition and digestion shall be made under condition that oxygen supply valve is closed. (f) Gas cutting worker shall wear PPE such as protective glasses and gloves. (5) Periodical inspection of gas cutting equipment The gas cutting work equipment shall be periodically inspected in accordance with 4.1.7 [Inspection and Maintenance of Construction Machine] and 4.1.9 [Periodical Inspection].
7.9.4 電気溶接、ガス切断作業における火災予防 請負者は、電気溶接、ガス切断作業による火災の予防のために、次の措置を講じなければならない。 (1) 可燃・引火物又は爆発性の材料を入れたことのある容器を溶接又は	**7.9.4 Fire Prevention in Electric Welding and Gas Cutting Work** The Contractor shall take the following measures to prevent fires caused by electric welding and gas cutting work: (1) When welding or cutting containers that have been filled with flammable /	**7.9.4 Fire Prevention in Electric Welding and Gas Cutting Work** The Contractor shall take the following measures to prevent fires caused by electric welding and gas cutting work: (1) When electric welding or gas cutting work is made on/in container that

切断するときは、容器を洗浄してから作業すること。 (2) 溶接・切断等の作業は、可能な場合には火災に対して安全な場所に移動して行うこと。移動できない場合は、火災の危険性のあるものを移動するか、火花等に対する適切な防護措置を講じること。 (3) 可燃・引火性塗料が使用されている場所、あるいは可燃・引火物がある場所及びほこりが堆積し火災の危険のある場所では溶接・切断等の作業をしないこと。 (4) 溶接、切断作業場所には、適切な消火器を設置し、必要な時に直ちに使用できるよう常に維持すること。 (5) 溶接・切断作業が、壁、床、天井及びその近辺で行われる場所において、溶接・切断の火花が壁、床、天井に入り、又はこれらに溶接・切断の熱が伝わることにより火災の危険性がある場合には、監視員を配置すること。	flammable materials or explosive materials, the containers must be cleaned before starting work, (2) When possible, work such as welding and cutting should be carried out to a place where there is no risk of fire. If not possible to move it, move it at risk of fire or take appropriate protective measures against sparks, (3) Do not conduct welding, cutting, etc. in places where flammable or flammable paint is used, places where flammable or flammable materials are present, and where dust accumulates and there is a risk of fire, (4) Install appropriate fire extinguishers at the welding and cutting work places and always maintain them immediately when necessary, and (5) Danger of fire due to welding / cutting sparks entering walls, floors, ceilings or where heat of welding / cutting is transmitted to them in places where welding / cutting operations are performed on or near walls, floors, ceilings If there is, place surveillance personnel.	was filled with combustible material, inflammables or explosive materials and emptied them, the container shall be cleaned before starting work, (2) Welding or cutting work shall be carried out at place where there is no risk of fire. When work at place on which there are materials/goods of risk of fire by the work, remove them from the work place, or take appropriate protective measures against sparks or heat from the work, (3) Welding or cutting work shall not be conducted at places of risk of fire, such as where combustible or inflammables paint is used, combustible materials or inflammables are present, or dust accumulates, (4) Appropriate kind and quantities of fire extinguisher are provided at welding or cutting work place and always maintained to be able to be used immediately when necessary, and (5) Watchman(s) shall be provided at welding or cutting work place such as walls, floors, ceilings or near these when there is risk of fire by the heat transmitted or sparks of welding or cutting getting into walls, floors, ceilings and so on.

Source: http://myuc.kampfkunstarena.de/diagram-welding-machine.html

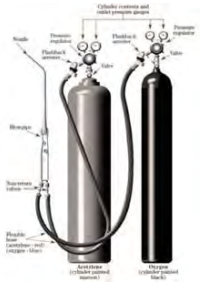


Source: Hoangijutsu 東京大学 低温センター 保安技術

https://www.alibaba.com/product-detail/Iron-cap-for-cylinder-protection_1914680116.html

Valve of gas cylinder

Source : https://www.weldability-sif.com/media/docs/Intro_Gas_Welding_And_Cutting.pdf



JICA Standard Safety Specification Preparation Study
Chapter 6. TEMPORARY WORKS

2019.10.31 Japanese Final
2019.12.4 NK Issue 1
2020.1.14 JICA Comment
2020.4.25 NK Eng. R2

JSSS in Japanese (2019/10/31)	JSSS in English Issue 1 (2019/12/4)	JICA Comments to Issue 1 (2020/1/14) JC: JICA Comments, MM: Minutes of Meeting, NK: NK actions	JSSS in English R2 for Issue 2 (2020/4/25) Words in red color are added or modified from the last version..
7 仮設工事 7.1 一般事項 7.1.1 仮設工事の留意点 7.1.2 作業計画書及び安全衛生詳細計画書の作成 7.1.3 仮設工事の設計及び設計照査 7.1.4 仮設工事の施工、使用、解体 7.2 土留め工 7.2.1 一般事項 7.2.2 計画及び設計時の留意事項 7.2.3 モニタリング計画 7.2.4 土留め工の施工時の安全管理上の措置 7.2.5 切りばり支保工の作業での安全上の措置 7.2.6 グラウンドアンカー工の作業での安全上の措置 7.2.7 悪天候及び地震時の点検 7.2.8 土砂及び器材等の置き方 7.3 仮締切工 7.3.1 一般事項 7.3.2 計画及び設計時の留意事項 7.3.3 モニタリング計画 7.3.4 仮締切工の施工時及び使用時の安全管理上の措置 7.3.5 悪天候及び地震時の点検 7.3.6 急激な水位上昇時の安全措置 7.4 通路 7.4.1 一般 7.4.2 通路の設定 7.4.3 移動はしご、脚立4 7.4.4 非常口、避難通路 7.4.5 点検 7.5 足場 7.5.1 一般事項 7.5.2 鋼管足場 7.5.3 つり足場 7.5.4 移動式足場 7.5.5 標識類の表示 7.5.6 組立、変更及び解体 7.5.7 点検 7.5.8 高所作業車を7.5.7用いての作業の際の留意点 7.5.9 脚立を用いての作業の際の留意事項 7.6 作業構台 7.6.1 一般事項 7.6.2 作業構台の設計・組立・解体 7.6.3 作業構台の使用 7.6.4 作業構台の点検 7.8 仮設電気設備 7.8.1 一般事項 7.8.2 作業計画と作業員への周知 7.8.3 設置と管理 7.8.4 点検・検査 7.8.5 作業時の安全措置 7.9 電気溶接・ガス切断作業 7.9.1 一般事項 7.9.2 電気溶接作業	**7. TEMPORARY WORKS** 7.1. GENERAL REQUIREMENTS 7.1.1. Design and Provision of TW Generally 7.1.2. Method Statements 7.1.3. Inspection and Monitoring of TW 7.1.4. Compliance Standards 7.1.5. Specialist Temporary Works 7.2. EARTHWORK SUPPORT 7.2.1. General 7.2.2. Planning and Design 7.2.3. Inspection and Monitoring 7.2.4. General Safety and Construction requirements 7.2.5. Safety Measures for Shoring 7.2.6. Safety Measures for Ground Anchor Work 7.2.7. Adjacent Goods, Excavated Spoil and the like 7.3. COFFERDAMS 7.3.1. General 7.3.2. Planning and Design 7.3.3. Inspection and Monitoring 7.3.4. General Safety and Construction Requirements 7.3.5. Adverse Changes in Water Level 7.3.6. Monitoring Water Level and Other Conditions 7.4. WALKWAYS, LADDERS AND STEPLADDERS 7.4.1. General 7.4.2. Walkways 7.4.3. Emergency Exits and Evacuation Routes 7.4.4. Portable Ladders and Stepladders 7.4.5. Inspection 7.5. SCAFFOLDING 7.5.1. General 7.5.2. Compliance Standards 7.5.3. Tubular Steel Scaffolding 7.5.4. Suspended Scaffolds 7.5.5. Tower Scaffolds (including Mobile Tower Scaffolds) 7.5.6. Trestle Scaffolds 7.5.7. Notices to be Displayed on Scaffolds 7.5.8. Scaffold Assembly, Erection, Alteration and Dismantling Generally 7.5.9. Mobile Elevating Work Platforms 7.5.10. General Inspection and Maintenance of Scaffolding 7.6. ELEVATED ACCESS STRUCTURES 7.6.1. General 7.6.2. Design and Management Generally 7.6.3. Further Safety Requirements 7.6.4. Inspection and Maintenance 7.7. TEMPORARY ELECTRICAL INSTALLATIONS 7.7.1. General 7.7.2. Compliance Standards 7.7.3. General Safety Requirements 7.7.4. Method statement for Temporary Electrical Installations 7.7.5. Responsible Personnel 7.7.6. Inspection, Maintenance and Repair 7.7.7. Safety Measures during the Work 7.8. ELECTRIC AND GAS WELDING AND CUTTING 7.8.1. General 7.8.2. Compliance Standards 7.8.3. Electric Welding and Cutting 7.8.4. Gas Welding and Cutting 7.8.5. Fire Prevention	MM: Minute of Meeting of No. 39 to 42 on 2020/1/17, 22, 24 & 27 5. Comments on the Chapters 1, 2, 3 and 7 JICA and NK discussed JICA's comments on Chapters 1, 2, 3 and 7. Details with results of discussions are shown in abbreviated form in the Attachment C. Discussion on Chapters 1 and 3 was based upon a review at the meetings of the JICA original commented documents. Discussion on Chapters 2 and 7 was based upon a list of main discussion points prepared by NK and as shown in the Attachment D and E.	**6. TEMPORARY WORKS** 6.1. GENERAL REQUIREMENTS 6.1.1. Design and Provision of TW Generally 6.1.2. Method Statements 6.1.3. Inspection and Monitoring of TW 6.1.4. Compliance Standards 6.2. EARTHWORK SUPPORT 6.2.1. General 6.2.2. Planning and Design 6.2.3. Inspection and Monitoring 6.2.4. General Requirements 6.2.5. Safety Measures for Shoring 6.2.6. Safety Measures for Ground Anchor Work 6.2.7. Adjacent Goods, Excavated Material and the like 6.3. COFFERDAMS 6.3.1. General 6.3.2. Planning and Design 6.3.3. Inspection and Monitoring 6.3.4. General Requirements 6.3.5. Adverse Sudden Rise of Water Level 6.3.6. Monitoring Water Level and Other Conditions 6.4. WALKWAYS, LADDERS AND STEPLADDERS 6.4.1. General 6.4.2. Walkways 6.4.3. Emergency Exits and Evacuation Routes 6.4.4. Portable Ladders and Stepladders 6.4.5. Inspection 6.5. SCAFFOLDING 6.5.1. General 6.5.2. Compliance Standards 6.5.3. Platform of Scaffolding 6.5.4. Supported Scaffoldings 6.5.5. Suspended Scaffoldings 6.5.6. Mobile Scaffoldings 6.5.7. Trestle Scaffolds 6.5.8. Notices to be Displayed on Scaffolds 6.5.9. Scaffold Assembly, Erection, Alteration and Dismantling Generally 6.5.10. Mobile Elevating Work Platforms (Aerial Lifts) 6.5.11. General Inspection and Maintenance of Scaffolding 6.6. ELEVATED ACCESS STRUCTURES 6.6.1. General 6.6.2. Design and Management Generally 6.6.3. Further Safety Requirements 6.6.4. Inspection and Maintenance 6.7. TEMPORARY ELECTRICAL INSTALLATIONS 6.7.1. General 6.7.2. Compliance Standards 6.7.3. General Safety Requirements 6.7.4. Method statement for Temporary Electrical Installations 6.7.5. Responsible Personnel 6.7.6. Inspection, Maintenance and Repair 6.7.7. Safety Measures during the Work 6.8. ELECTRIC AND GAS WELDING AND CUTTING 6.8.1. General 6.8.2. Compliance Standards 6.8.3. Electric Welding and Cutting 6.8.4. Gas Welding and Cutting 6.8.5. Fire Prevention

7.9.3 ガス切断作業 7.9.4 電気溶接、ガス切断作業における火災予防			
7 仮設工事 **7.1 一般事項** **7.1.1 仮設工事の留意点** (1) 全ての仮設構造物に関する設計、施工、使用及び解体を本仕様書に従って実施しなければならない。ただし、請負者がリスクアセスメントにもとづき申請し、エンジニアが認めたものは、本仕様書で規定する要求事項の一部の規定を除外することができる。 (2) 請負者は仮設構造物の設計、施工、使用および解体に関する管理体制及び手法(procedural control)を定め、作業計画書又は安全衛生詳細計画書に記述しなければならない。かかる計画書は仮設構造物の種類に応じて、関連の本設工事にかかる両計画書に含めることでもよい。	**7 TEMPORARY WORKS** **7.1 GENERAL REQUIREMENTS** This Section 7.1 applies to all TW included in JSSS Chapter 7. **7.1.1 Design and Provision of TW Generally** Unless otherwise stated in the Contract, the Contractor shall take all necessary measures for the study, design, management, provision, safe use and safe removal of all TW as necessary to safely and systematically execute the Permanent Works and in accordance with JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*], 1.35 [*Design and Management of Temporary Works*] and the specified standards. The Contractor shall comply with the Contract requirements for TW and:	**7 TEMPORARY WORKS** JC1O: もう少し、用語、内容、英語での表現を精査しないと議論の土台にならないように思います。 The terms, content, and English expressions need to be scrutinized a bit more to be discussed. JC1: Revised taking into consideration the comment above. **7.1 GENERAL REQUIREMENTS** This Section 7.1 applies to all TW included in JSSS Chapter 7. **7.1.1 Design and Provision of TW Generally** Unless otherwise stated in the Contract, the Contractor shall take all necessary measures for the study, design, management, provision, safe use and safe removal of all TW as necessary to safely and systematically execute the Permanent Works and in accordance with JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*], 1.35 [*Design and Management of Temporary Works*] and the specified standards. The Contractor shall comply with the Contract requirements for TW and: JC1D: Contract requirements の内容が明確でない、あるいは意図的に省略されたとき、すべてコントラクターに委ねることにならないか。 When the contents of the Contract requirements are not clear or intentionally omitted, I wonder if responsibilities will be left to the Contractor? NK1: Contract requirements は、JSSS 以外の契約の中の他の規定を意味しています。 請負者任せになることへの懸念に関し、次のように考えます。 “as specified in the Contract/Special Safety Specification” と規定し、JSSS に最低限の要求事項を規定しない場合、コメントとおりの意図的省略が懸念されます。 “unless otherwise stated in the Contract/Special Safety Specification”と記述し、JSSS に請負者への最低限の要求事項を規定することで、請負者任せにしないことになります。 本款では、(1)から(6)に請負者の要求事項を規定しておりますので、本文はこのままとします。 The Contract requirements mean other requirements stipulated other than JSSS. We respond to the comments that the if responsibilities will be left to the Contractor. In case JSSS stipulates “as specified in the Contract/Special Safety Specification” and does not specify minimum requirements in JSSS, there is worry that the Employer intentionally omitto specify the requirements.	**6. TEMPORARY WORKS** **6.1 GENERAL REQUIREMENTS** This Section 7.1 applies to all TW included in JSSS Chapter 7. **6.1.1 Design and Provision of TW Generally** Unless otherwise stated in the Contract, the Contractor shall take all necessary measures for the study, design, management, provision, safe use and safe removal of all TW as necessary to safely and systematically execute the Permanent Works and in accordance with JSSS ~~1.33~~1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*], ~~1.35~~1.37 [*Design and Management of Temporary Works*] and the specified standards. The Contractor shall comply with the Contract requirements for TW and:

7.1.2 作業計画書及び安全衛生詳細計画書の作成

請負者は、本仕様書 1.3[安全衛生にかかわる計画書]に従い、次に規定する仮設工事又は仮設構造物(以下、本款では「仮設工事」という。)の作業計画書及び安全衛生詳細計画書(以下、本款では「計画書」という。)を、作成しなければならない。

(1) 計画書を作成しなければならない仮設工事

(1) Provide TW which are fit for the purpose for which they are intended and fully in accordance with the JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*].
(2) Manage the design, use and removal of TW fully in accordance with JSSS 1.35 [*Design and Management of Temporary Works*].
(3) Maintain and repair all TW when in use to ensure the continued optimal and safe performance.
(4) Monitor all TW when in use and any affected PW, existing buildings, structures, ground or surfaces that may be affected by the TW through regular inspection and (where necessary and specified) with relevant instrumentation to ensure that the TW are performing safely, to the designed limits and intended purpose.
(5) The Contractor shall establish procedures whereby:
  (a) No unauthorised modification of TW is allowed.
  (b) No unauthorised use of TW is allowed.
  (c) The HSO shall inspect all TW upon completion of erection and certify and label them as "Safe for Use" before any use is allowed.

It can be avoided by the JSSS stipulate "unless otherwise stated in the Contract/Special Safety Specification" and minimum requirements to the Contractor.
With above reasons, we leaeve the phrase as it is.

(1) Provide TW which are fit for the purpose for which they are intended and fully in accordance with the JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*].
(2) Manage the design, use and removal of TW fully in accordance with JSSS 1.35 [*Design and Management of Temporary Works*].
(3) Maintain and repair all TW when in use to ensure the continued optimal and safe performance.
(4) Monitor all TW when in use and any affected PW, existing buildings, structures, ground or surfaces that may be affected by the TW through regular inspection and (where necessary and specified) with relevant instrumentation to ensure that the TW are performing safely, to the designed limits and intended purpose.
(5) The Contractor shall establish procedures whereby:
  (a) No unauthorised modification of TW is allowed.
  (b) No unauthorised use of TW is allowed.
  (c) The HSO shall inspect all TW upon completion of erection and certify and label them as "Safe for Use" before any use is allowed.

JC1O: HSO が仮設構造をチェックして certify する。TW の撤去時期を確認して certify するようになっている。
HSO の役割は safety Plan に準拠して施工されているかを確認することではないかと思料。
これでは全く HSO が現場の作業手順に忙殺され全体を見ることが出来なくならないか。
(This comment in English is recorded in MM below.)

MM: Sub-Clause 7.1.1 (5)

JICA: The current sentence states that the HSO will check the temporary structure to certify it, and confirm when the TW will be removed and certify it also. I think that the role of HSO is to mainly confirm that the construction is being performed in accordance with the safety plan. Wouldn't the present stipulation mean that the HSO would be very busy to killing his time only to check work procedure and not be able to see the whole thing?

NK: HSO should always be ultimately responsible as the leader really of the Contractor's safety team with support duties delegated as necessary.

This is described in Chapter 1.10.1 and has been discussed

Result: Discussed in relation to Chapter 1.10.1 and resolved, no

(1) Provide TW which are fit for the purpose for which they are intended and fully in accordance with the JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*].
(2) Manage the design, use and removal of TW fully in accordance with JSSS 1.35 [*Design and Management of Temporary Works*].
(3) Maintain and repair all TW when in use to ensure the continued optimal and safe performance.
(4) Monitor all TW when in use and any affected PW, existing buildings, structures, ground or surfaces that may be affected by the TW through regular inspection and (where necessary and specified) with relevant instrumentation to ensure that the TW are performing safely, to the designed limits and intended purpose.
(5) The Contractor shall establish procedures whereby:
  (a) No unauthorised modification of TW is allowed.
  (b) No unauthorised use of TW is allowed.
  (c) The HSO shall inspect all TW upon completion of erection and certify and label them as "Safe for Use" before any use is allowed.

(a) 足場（つり足場、張出し足場以外の足場にあっては、高さが 5m 以上の構造のものに限る）の組立て、使用及び解体作業
(b) 型枠支保工の組立て、使用及び解体作業
(c) 明り掘削の高さ又は深さが 2m 以上である地山の掘削作業
(d) 土留め工（掘削の深さが 1.5mを超える場合には、原則として施工）の組立て、使用及び解体作業
(e) 上部構造の高さが 5m以上又は支間が 30m 以上の橋梁の建設のための仮設工事
(f) 構造部材の高さが5m以上の構造物の建設のための仮設工事。なお、木造建築物は軒高が5m 以上。
(g) 本契約で別途定める仮設工事及びエンジニアが指定する仮設工事

(2) 計画書の一部として作成すべき書類

仮設工事のリスクアセスメントにもとづき、仮設工事のリスクの程度に応じて次表に示す書類及びエンジアが指示する書類を、計画書の一部として作成すること。

No	書類(注 1)	リスクの程度		
		低い	中程度	高い
1	リスクアセスメント	✔	✔	✔
2	設計照査の記録	✔	✔	✔
3	品質保証書(注 2)	✔	✔	✔
4	設計図(注 3)	✔	✔	✔
5	施工手順図(注 4)	–	✔	✔
6	モニタリング計画	–	–	✔

注記：

注 1：✔のある書類は、計画書の一部として作成すべき書類。

注 2:GC4.9 に規定の品質保証システムにもとづく、設計の品質を保証する書類。

注 3:仮設工事で使用する材料の仕様及び主要寸法を含む仮設工事の平面図、横断図、縦断図等の設計図面(Design drawings)。

注 4：施工の手順を示す図面（Construction procedure/sequence/method drawings）

7.1.3 仮設工事の設計及び設計照査

請負者は、本契約で別途に定めがない限り、次の規定を遵守し、仮設工事の設計及び設計照査を行わなければならない。

(1) 仮設工事の設計手順

請負者は仮設工事の設計及び安全に関する十分な知識と経験を持つ者（competent person）に設計を行わせなければならない。また、仮設工事の設計者とは異なる要員で、仮設工事にかかる設計の難易度に照らし合わせて十分な知識と経験を持つ者（competent person）に設計の照査をさせなければならない。

(d) The HSO shall regularly inspect TW and certify and label them appropriately to ensure the continuous safe use or, in the event that faults are discovered, certify them as “Not Safe for Use” and prevent access to the TW until repaired and re-inspected.
(e) The HSO inspects TW upon the completion of the required PW and before TW are dismantled, demolished and removed accompanied by the TWS and TWC as appropriate, and certifies that the PW are completed and the TW can be removed.

change required.

Chapter 1, 1.10 (Issue 6) stipulate as follows:
1.10 HSO - Scope of Duties
1.10.1 The HSO shall devote his full time and attention to maintaining health and safety upon the Works and protecting against accidents.

Chapter 1 (Issue 7)
1.12.3. Supporting Staff
(1)The Contractor shall also appoint such further supporting personnel as the HSO may from time to time deem necessary or as may be instructed by the Engineer, to permit the HSO to perform his duties.
1.13 HSO - Scope of Duties and Authority
1.13.1. ditto
1.13.2.The particular scope of duties and authority of the HSO shall cover (but shall not be limited to) the following:
(1)Health and Safety Management Work:
(c)Regular (daily) inspections of the Works at the Site to ensure the Contractor’s compliance with the Safety Plan, Instructions and other measures;

NK1: HSO は安全に全責任を負う
安全のための点検方法に次が想定される。
(1) (NK 案) HSO 及び HSO の補助員（HSO が作業主任等に権限委譲）が、安全計画に従い点検を、直接行う。
(2) (JC 案) 現場担当や作業主任等が、安全計画に従い点検する。HSO は、現場の安全点検の遂行を管理する。
これらの長短所は以下である。
(1)の場合、全ての点検の責任が HSO にあり、安全上不備がある場合、改善や修理、作業開始の中止等が即時に行える利点がある。現場の HSO の補助員は、2 つの指揮系統（工区責任者等と HSO）に属することとなることから、事前の調整が重要である。
(2)の場合、安全の責任は、現場担当や作業主任等の点検を行うもの又は工区責任者等となる。この場合、現場進捗や費用管理と安全管理は相反する。そのため、進捗や費用が優先され、安全が次となる。HSO からの指示は、PM、工区責任者、現場担当や作業主任の流れとなり、即時の安全対策ができない。
NK1: HSO に安全の責任があることを明確にし、JSSS に規定の安全管理を遂行させるために、下の(d)-(f)へのコメントへの回答の通り、原案通りを提案します。

(d) The HSO shall regularly inspect TW and certify and label them appropriately to ensure the continuous safe use or, in the event that faults are discovered, certify them as “Not Safe for Use” and prevent access to the TW until repaired and re-inspected.
(e) The HSO inspects TW upon the completion of the required PW and before TW are dismantled, demolished and removed accompanied by the TWS and TWC as appropriate, and certifies that the PW are completed and the TW can be removed.

(d) The HSO shall regularly inspect TW and certify and label them appropriately to ensure the continuous safe use or, in the event that faults are discovered, certify them as “Not Safe for Use” and prevent access to the TW until repaired and re-inspected.
(e) The HSO inspects TW upon the completion of the required PW and before TW are dismantled, demolished and removed accompanied by the ~~TWS and TWC~~ the Contractor’s Temporary Works specialist staff specified in JSSS 1.37.12 as appropriate, and certifies that

簡易な仮設工事でエンジニアから同意を得られる場合を除き、設計照査を行う者は、当該仮設工事に関する設計に関与していない者でなければならない。

(2) 仮設工事の設計

仮設工事の設計者は、仮設工事にかかる設計書、設計計算書、構造図、組立図、モニタリング計画を作成しなければならない。

仮設工事の設計者は、本款(4)に示す設計基準に基づき、必要に応じ以下の事項を考慮して設計を行わなければならない。

(h) 本設工事の設計、仕様書
(i) 地盤条件等の Site Data、アクセス、周辺環境等の現場での施工条件
(j) 本設工事の工程
(k) 仮設工事のために用いる機械及び材料、仮設工事の段取り
(l) 本設工事の荷重
(m) 仮設工事が本設工事に与える荷重

(3) 仮設工事の設計照査

設計照査を行う者は、設計の適切性、正確性、設計要求事項への遵守の観点から設計照査を行わなくてはならない。

(4) 仮設工事の設計基準

仮設工事の設計では、本契約で別途に定めがない限り、以下の基準に準拠しなければならない。なお、基準は、契約の基準日時点での最新のものでなくてはならない。但し、請負者が適用する基準を別途提案し、エンジニアがこれに同意した場合には、この限りではない。

(n) BS 5975 Code of practice for temporary works procedures and the permissible stress design of falsework
(o) BS 6031 Code of practice for earthworks
(p) BS 8002 Code of practice for earth retaining structures
(q) BS 8002 Code of practice for earth retaining structures
(r) BS 8004 Code of practice for foundations
(s) BS 8081 Code of Practice for grouted anchors
(t) BS EN 12811-1 Temporary works equipment-Part 1: Scaffolds - Performance requirements and general design
(u) BS EN 12812 Falsework. Performance requirements and general design
(v) BS EN 1993 (all parts) Eurocode 1. Basis of structural design
(w) BS EN 1992 (all parts) Eurocode 2. Design of concrete structures
(x) BS EN 1993 (all parts) Eurocode 3. Design of steel structures
(y) BS EN 1997-1 Eurocode 7. Geotechnical design. General rules

7.1.4 仮設工事の施工、使用、解体

請負者は仮設工事の施工、使用、解体にあたり、次の措置を取らなければならない。

(f) The HSO inspects after removal of the TW to ensure that removal has been completed properly and that no part of the TW remains, that any rectification of the PW is completed and all is left in safe order and condition.

(f) The HSO inspects after removal of the TW to ensure that removal has been completed properly and that no part of the TW remains, that any rectification of the PW is completed and all is left in safe order and condition.

JC1I: From (c)-(f). Should it be HSO? Attention should be paid to harmony with BS5975(in particular 11.2.3 and 11.3.3 of BS5975).

NK1:安全に関する責任は HSO にあり、HSO は全ての作業、仮設物の安全を確認する責務があります。第 1 章では次のように規定しています。1.37 Design and Management of Temporary Works の BS5975 の規定内容に従い(c)-(f)は変更します。

1.12.3. Supporting Staff

(1) The Contractor shall also appoint such further supporting personnel as the HSO may from time to time deem necessary or as may be instructed by the Engineer, to permit the HSO to perform his duties.
(2) Such further supporting personnel may include Operation Leaders and/or other senior specialist and qualified Contractor's Personnel.

(In this section, supporting staff are TWC and).

Comments of MD is copied below:

I refer to my comments against JSSS 1.3 and 1.14:

"…. The position and authority of the HSO for the health safety on the Works should not be compromised. Who he requires assistance from is really his choice and it is dependent upon many factors such as the contractor's organisation, who is available, the general experience, capability and skill level of workers. We or the Engineer should have no interest in who he delegates support to providing the HSO does his job properly."

and "For further understanding, the Contractor's Representative has similar in fact heavier responsibilities but we (nor FIDIC) consider defining which of his staff do what to support him, I do not recommend that we try to do it."

The HSO should remain responsible for maintaining safety at all times; if he delegates and who he delegates to and how they communicate, is his choice and responsibility.

Regarding the management of construction performance, quality, quantity and environmental compliance etc. etc. other persons are independently responsible.

I suggest that the Engineer has no duty to advise or direct the Contractor how to manage his internal affairs and I advise against trying to do this.

In terms of 8.2.(3) JSSS is for safety matters, so the HSO must inspect this and other works to assess that all is safe.

The construction staff must also inspect and give instructions etc for other purposes but surely it is not within the scope of JSSS to advise on that.

Sometimes also, opinions will differ because interests are different, for example the HSO may not allow piling work to start if he perceives any risk to safety.

On the other hand a construction manager or site engineer may choose to take risks for example to speed up the start if work

the PW are completed and the TW can be removed.

(f) The HSO inspects after removal of the TW to ensure that removal has been completed properly and that no part of the TW remains, that any rectification of the PW is completed and all is left in safe order and condition.

(1) 設計及び作業計画書に示される手順に忠実に施工すること。
(2) 施工終了後の検査手順を定め、検査に合格した仮設工事のみ使用に供すること。
(3) 安全な使用を確保するため、使用中に必要なモニタリング、維持管理を行うこと。
(4) あらかじめ設計でその解体や変更が認められている場合を除き、使用中に変更を加えないこと。
(5) 本設工事を支持する目的で使用に供される仮設工事の場合、本設工事が十分な強度と安定性をもって自立することを確認してから、仮設工事にかかる荷重を外すこと。
(6) 仮設工事の解体は作業計画書においてあらかじめ定められた手順に従って行うこと。

(6) Safety Plan for TW
The Contractor shall include details of all TW in the Safety Plan to be submitted in accordance with JSSS 1.6 [*Contractor's Safety Plan - Temporary Works*].

7.1.2 Method Statements

Refer to JSSS 1.7 [*Contractor's Method Statements*].

7.1.3 Inspection and Monitoring of TW

(1) The Contractor shall prepare a Monitoring Plan as a part of the Method Statement, for the purpose of demonstrating that the particular TW are performing safely, to the designed limits and for the intended purpose.
(2) Monitoring shall be accomplished through regular inspection, measurement and survey.
(3) Where TW are providing structural support to the Permanent Works or to existing buildings, structures, roads, railways, ground, substrata, surfaces, paving and the like that may be affected or potentially affected by the performance of the TW, and unless otherwise stated in the Contract, the Contractor shall

is running late.
If we state, "the Contractor shall.." this unnecessarily introduces ambiguity to JSSS and I do advise against it.
I suggest that if any change is to be made (which I do not think necessary) it should however be in Chapter 1 which prevails.
All other chapters of JSSS would be better confined to safety and therefore generally refer to HSO.

(6) Safety Plan for TW
The Contractor shall include details of all TW in the Safety Plan to be submitted in accordance with JSSS 1.6 [*Contractor's Safety Plan - Temporary Works*].

7.1.2 Method Statements

Refer to JSSS 1.7 [*Contractor's Method Statements*].

7.1.3 Inspection and Monitoring of TW

JC1D: モニタリングの要求項目と許容値は契約図書に規定されるべきもので、請負者はそれらを満足する具体的な計画を立て、エンジニアにその同意を求め施工する手順になる。ここの書きぶりは、計測項目やその許容値まで請負者に委ねる様に理解される。強い違和感がある。
Requirements on monitoring and permissible values should be specified in the contract documents, following that, the Contractor shall prepare a concrete plan to get concent by the Engineer and proceed to construction. Present description seems the measurement item and its allowable value are left to the Contractor's discretion. I feel strong sense of discomfort.
NK: 特別な要求事項は Particular Safety Specification(PSS)に規定します。JSSS では請負者が遵守すべき最低限の事項を規定することと致します。unless other wise specified in the PSSS,… という規定でコメントに対応し変更します。
Special requirements will be specified in Particular Safety Specification(PSS). JSSS specify minimum requirements to be taken by the Contractor. The comments above will be taken in to consideration by specifying "unless other wise specified in the PSSS,…" and modifying the description below.

(1) The Contractor shall prepare a Monitoring Plan as a part of the Method Statement, for the purpose of demonstrating that the particular TW are performing safely, to the designed limits and for the intended purpose.
(2) Monitoring shall be accomplished through regular inspection, measurement and survey.
(3) Where TW are providing structural support to the Permanent Works or to existing buildings, structures, roads, railways, ground, substrata, surfaces, paving and the like that may be affected or potentially affected by the performance of the TW, and unless otherwise stated in the Contract, the Contractor shall

(6) Safety Plan for TW
The Contractor shall include details of all TW in the Safety Plan to be submitted in accordance with JSSS 1.6 [*Contractor's Safety Plan - Temporary Works*].

6.1.2 Method Statements

Refer to JSSS 1.7 [*Contractor's Method Statements*].

6.1.3 Inspection and Monitoring of TW

(1) The Contractor shall prepare a Monitoring Plan as a part of the Method Statement, for the purpose of demonstrating that the particular TW are performing safely, to the designed limits and for the intended purpose.
(2) Monitoring shall be accomplished through regular inspection, measurement and survey.
(3) Where TW are providing structural support to the Permanent Works or to existing buildings, structures, roads, railways, ground, substrata, surfaces, paving and the like that may be affected or potentially affected by the performance of the TW, and unless otherwise stated in the ~~Contract~~ Particular Safety Specification, the Contractor shall provide and install an instrumentation and recording

	provide and install an instrumentation and recording system that will provide comprehensive, accurate and contemporary or live data with records, showing the performance characteristics of the TW.	provide and install an instrumentation and recording system that will provide comprehensive, accurate and contemporary or live data with records, showing the performance characteristics of the TW. JC1: For "unless otherwise stated in the Contract". ???? NK1: The phrases after "unless otherwise stated in the Contract" specifies the minimum requirements for which the Contractor shall take action. User Guide will describe the Employer shall specify his requirements regarding instrumentation and recording system.	system that will provide comprehensive, accurate and contemporary or live data with records, showing the performance characteristics of the TW.
	(4) Requirements for instrumentation systems shall be as follows:	(4) Requirements for instrumentation systems shall be as follows: ~~JC1D: 契約図書において指示されるものではないか。コントラクターの裁量に委ねているように読めないか~~ ~~(The above in English is recorded in MM below.)~~ ~~MM:~~ ~~JICA: Isn't that specified in the Contract Document series? At present, the description is left to the Contractor's discretion. Is it no problem?~~ ~~NK: We will change the documents so that Employer specifies his requirements for instrumentation and monitoring of property outside the Site and Engineer's involvement with instrumentation and monitoring of Contractor's work within the Site.~~ ~~Result: NK approach agreed, Date san will provide hard copy of example.~~	(4) Unless otherwise stated in the Particular Safety Specification regarding the instruments and measurement methods, locations and structures, and numbers of measurement points, requirements for instrumentation systems shall be as follows:
	(a) The Contractor shall select instruments and measurement methods that meet the purpose of the measurement; (b) The Contractor shall determine locations and numbers of measurement points which meet the purpose of measurement and need for safety management. The locations of measurement shall be where measurement can be continuously made throughout the period of earth retaining works are provided; (c) The instrumentation shall be regularly calibrated and protected against damage by the Contractor; (d) The HSO, TWC and other relevant Contractor's Personnel shall monitor the data and take all necessary corrective action consequent to such monitoring to ensure the continued complaint and safe performance of all TW; and	(a) The Contractor shall select instruments and measurement methods that meet the purpose of the measurement; (b) The Contractor shall determine locations and numbers of measurement points which meet the purpose of measurement and need for safety management. The locations of measurement shall be where measurement can be continuously made throughout the period of earth retaining works are provided; (c) The instrumentation shall be regularly calibrated and protected against damage by the Contractor; (d) The HSO, TWC and other relevant Contractor's Personnel shall monitor the data and take all necessary corrective action consequent to such monitoring to ensure the continued complaint and safe performance of all TW; and JC1I: 削除すべき。To delete "TWC". NK: deleted.	(a) The Contractor shall select instruments and measurement methods that meet the purpose of the measurement; (b) The Contractor shall determine locations and numbers of measurement points which meet the purpose of measurement and need for safety management. The locations of measurement shall be where measurement can be continuously made throughout the period of earth retaining works are provided; (c) The instrumentation shall be regularly calibrated and protected against damage by the Contractor; (d) The HSO~~, TWC~~ and other relevant Contractor's Personnel shall monitor the data and take all necessary corrective action consequent to such monitoring to ensure the continued complaint and safe performance of all TW; and
	(e) The Engineer shall be invited to attend	(e) The Engineer shall be invited to attend	(e) The Engineer shall be invited to attend

	the inspections and data collection to ensure the Contractor's compliance in accordance JSSS 1.8 [*Engineer's Safety Representative*], JSSS 1.9 [*Safety Compliance Instructions from the Engineer*] and JSSS 1.14 [*Joint Site Safety Inspections*]. (5) Management based on Monitoring and Inspection (a) Management by Visual Inspection If and when the Contractor finds any abnormality through visual inspection, the Contractor shall take necessary measures in accordance with the degree of abnormality, including verification of inspection results through measurement, survey or added instrumentation and the implementation of urgent countermeasures. (b) Management by Instrument Measurement	the inspections and data collection to ensure the Contractor's compliance in accordance JSSS 1.8 [*Engineer's Safety Representative*], JSSS 1.9 [*Safety Compliance Instructions from the Engineer*] and JSSS 1.14 [*Joint Site Safety Inspections*]. (5) Management based on Monitoring and Inspection JC1J: 計器計測をするものは発注者が関わるべきもの Annex1.3 で指定のものについては…といった書き方にする。(This comment is recorded below.) MM: JC: As for measurement using instruments, the Employer should be involved. Thus, change the description to "What is specified in Annex 1.3 ...". NK: NK stated the Employer will be, this will be specified. Result: See above (a) Management by Visual Inspection If and when the Contractor finds any abnormality through visual inspection, the Contractor shall take necessary measures in accordance with the degree of abnormality, including verification of inspection results through measurement, survey or added instrumentation and the implementation of urgent countermeasures. (b) Management by Instrument Measurement JCO: やはり、計器によって計測をする仮設構造物は少なく、重要仮設であることが殆どなので、エンジニアの役割を記載したい。コントラクターが計測計画を作成しエンジニアに提出し、計測ウォーニングレベルを協議の上で設定するのがいいのでは。 There are few temporary structures which monitoring shall be made with instruments, and most of them are important temporary structures, so I want to stipulate the role of the Engineer in JSSS. My suggestion is as follows; The Contractor shall prepare the monitoring plan, submit it to the Engineer, and set the warning monitoring level by consulting with the Engineer.	the inspections and data collection to ensure the Contractor's compliance in accordance JSSS 1.8 [*Engineer's Safety Representative*], JSSS 1.9 [*Safety Compliance Instructions from the Engineer*] and JSSS 1.14 [*Joint Site Safety Inspections*]. (5) Management based on Monitoring and Inspection (a) Management by Visual Inspection If and when the Contractor finds any abnormality through visual inspection, the Contractor shall take necessary measures in accordance with the degree of abnormality, including verification of inspection results through measurement, survey or added instrumentation and the implementation of urgent countermeasures. (b) Management by Instrument Measurement
	Unless otherwise stated in the Contract, the Contractor shall determine control limit values based initially upon the allowable displacement or stress in the design, then the following stepwise control values shall be established as necessary. (i) Primary control value: Increase the incidence and degree of care over inspections and commence preparing	JC1D: 契約図書に、計測すべき対象構造物・計測方法と許容計測値が規定されるべき。 The contract documents shall stipulate the structures to be monitored, the measurement method, and the allowable measurement values. MM: Sub-Clause 7.1.3 (5) (b) Management by Instrument Measurement JICA:1) Involvement of Engineer and 2) The contract documents should stipulate the target structure to be measured, the measurement method, and the allowable measurement values.	

		countermeasures which will be implemented if and when the measurement value reaches the secondary control value. (ii) Secondary control value: Suspend work and implement the countermeasures. (iii) Control limit value Stop work immediately, prohibit entry of any unauthorised persons to the affected area(s), take radical measures to prevent failure and review construction method. When the measured value reaches each of the above control values, the Contractor shall implement the measures stated.	NK: Documents will be studied and if necessary changes made to include appropriate reference. Changes must be carefully worded to avoid any effect to the Contractor's basic responsibility under the Contract otherwise JICA may have a liability JICA: The Engineer should be involved in the review process. NK: Yes, see above but it needs careful wording to avoid any effect on the contractor's liability otherwise JICA may have a liability (Same answer applies to the many references to this subject) Result: See above JICA: If the affected third-party structures and affected areas are included, shouldn't the Engineer (or the Employer in some cases) be strongly involved? NK: Yes, see above, will be added to documents (in user guide). Result: See above Unless otherwise stated in the ~~Contract~~, the Contractor shall determine control limit values based initially upon the allowable displacement or stress in the design, then the following stepwise control values shall be established as necessary. (i) Primary control value: Increase the incidence and degree of care over inspections and commence preparing countermeasures which will be implemented if and when the measurement value reaches the secondary control value. (ii) Secondary control value: Suspend work and implement the countermeasures. (iii) Control limit value Stop work immediately, prohibit entry of any unauthorised persons to the affected area(s), take radical measures to prevent failure and review construction method. JC1D: 影響を与えた第三者の構造物・affected area も含むとすると、エンジニア(場合によっては発注者)が強く関与すべきではないか。 If the affected third-parties' structures and affected areas are included, shall the Engineer (or the Employer in some cases) be strongly involved? NK1:計測値の報告を追加で規定します。 Reporting of measured is added as right. JC1D: review においてもエンジニアが関与すべき。 Engineers should be involved in the review.	Unless otherwise stated in the ~~Contract~~ Particular Safety Specification, regarding the allowable measurement, control values and control limit values, the Contractor shall determine control limit values based initially upon the allowable displacement or stress in the design, then the following stepwise control values shall be established as necessary. (i) Primary control value: Increase the incidence and degree of care over inspections and commence preparing countermeasures which will be implemented if and when the measurement value reaches the secondary control value. (ii) Secondary control value: Suspend work and implement the countermeasures. (iii) Control limit value Stop work immediately, prohibit entry of any unauthorised persons to the affected area(s) and structure(s), take radical measures to prevent failure and review construction method. The Contractor shall submit the measured values of (i) weekly or as agreed by the Engineer and those of (ii) and (iii) immediately after measured to the Engineer. When the measured value reaches each of the above control values, the

	7.1.4 Compliance Standards (1) By reference to JSSS 1.35 [*Design and Management of Temporary Works*] the Contractor shall comply with BS5975: 2019 Code of Practice for Temporary Works Procedures and the Permissible Stress Design of Falsework. (2) In relation to TW, the Contractor shall also comply with: (a) BS EN 12811-1 Temporary works equipment-Part 1: Scaffolds - Performance requirements and general design; (b) BS EN 12812 Falsework. Performance requirements and general design; and (c) Such other standards that are referred to in particular parts of JSSS. (3) Where strength and durability are essential for the performance of TW and where no other suitable standards exist in respect of TW, the Contractor shall comply with the relevant parts of the following standards: *Refer to above notes particularly the following repeated here:* *Unless the stated design standards show standards of related TW they should not be included here otherwise this will be "over-specified" and the specification will perhaps be abused for example by engineers demanding new materials when they are not necessary.* *Are these following standards necessary? I have included the above new preamble but feel that the following should be deleted, they are not TW or applicable to TW:*	NK1: added as right. When the measured value reaches each of the above control values, the Contractor shall implement the measures stated. **7.1.4 Compliance Standards** (1) By reference to JSSS 1.35 [*Design and Management of Temporary Works*] the Contractor shall comply with BS5975: 2019 Code of Practice for Temporary Works Procedures and the Permissible Stress Design of Falsework. (2) In relation to TW, the Contractor shall also comply with: (a) BS EN 12811-1 Temporary works equipment-Part 1: Scaffolds - Performance requirements and general design; (b) BS EN 12812 Falsework. Performance requirements and general design; and (c) Such other standards that are referred to in particular parts of JSSS. (3) Where strength and durability are essential for the performance of TW and where no other suitable standards exist in respect of TW, the Contractor shall comply with the relevant parts of the following standards: MM: Sub-Clause 7.1.4 Compliance standards MD note: Please refer to the earlier full draft and kindly advise of which standards are NOT to apply. Result: JICA and NK will discuss and advise MD accordingly JC1I: ここをどうする？ How does this part these (2) and (3) be dealt with? JC1D: BS 8002 において temporary retaining wall (TRW)設計を除外するとは規定されていないように読めます。 さらに、TRW は市街地の土木作業においては、隣接した第三者の構造物（建築、土木構造物）を含む土質基礎部分をサポートすることも容易に想定され、この時 BS 5975 でカバーしきれるものでしょうか？ BS 8002 が参照する BS EN 1990-2002 の Geotechnical Category の概念も重要になるのではないでしょうか。 また、場内電気配線／機器も仮設設計に属するものとすると、BS 5975 では対応していません。ご検討ください。 以上のような視点で記載された standards の必要性においても検討されたい。 BS 8002 seems tht it does not stipulate that the design of Temporary Retaining Wall (TRW) is excluded. In addition, it may be necessary to support the soil including adjacent third-parties' structure foundations (buildings, civil structures) in urban areas. In this case, is it sufficient to refer only to BS 5975? As an example, the	Contractor shall implement the measures stated and report to the Engineer. The Contractor shall submit the revised Method Statement including the reviewed construction method to the Engineer. **7.1.4 Compliance Standards** (1) By reference to JSSS 1.35 [*Design and Management of Temporary Works*] the Contractor shall comply with BS5975: 2019 Code of Practice for Temporary Works Procedures and the Permissible Stress Design of Falsework. (2) In relation to TW, the Contractor shall also comply with: (a) BS EN 12811-1 Temporary works equipment-Part 1: Scaffolds - Performance requirements and general design; (b) BS EN 12812 Falsework. Performance requirements and general design; and (c) Such other standards that are referred to in particular parts of JSSS. ~~(3) Where strength and durability are essential for the performance of TW and where no other suitable standards exist in respect of TW, the Contractor shall comply with the relevant parts of the following standards~~ When the Contractor design TW with design standards other than specified in the JSSS and the Particular Safety Specification, the Contractor shall propose internationally acceptable design standards to be applied for TW design to the Engineer for his consent.

(a) BS 6031 Code of practice for earthworks;
(b) BS 8002 Code of practice for earth retaining structures;
(c) BS 8002 Code of practice for earth retaining structures;
(d) BS 8004 Code of practice for foundations;
(e) BS 8081 Code of Practice for grouted anchors;
(f) BS EN 1993 (all parts) Eurocode 1. Basis of structural design;
(g) BS EN 1992 (all parts) Eurocode 2. Design of concrete structures;
(h) BS EN 1993 (all parts) Eurocode 3. Design of steel structures; and
(i) BS EN 1997-1 Eurocode 7. Geotechnical design. General rules.

concept of the Geotechnical Category of BS EN 1997 referred to by BS 8002 may also be important.

In addition, BS 5975 does not specify electrical wiring / equipment in the Site which are a part of TW design. Please study these. From the view points above, please reconsider the appropriateness of the standards listed.

NK: Main purpose of JSSS is to specify measures for safety. There are so many standards for the design of various kinds of TW. The Contractor shall propose internationally acceptable design standards to be applied for TW design to the Engineer for his consent. (Reference clause is JSSS 1.4.1.)

1.4.1. Specified Standards and Regulations:

(1) Any reference standard or regulation specified in JSSS may be substituted with an equivalent alternative which, unless stated otherwise, shall mean that an alternative is acceptable but only after the Contractor has submitted a formal request with supporting particulars to the Engineer and has obtained the consent of the Engineer who shall give such consent only if, in his opinion, the alternative is internationally acceptable and that it provides an equivalent or higher standard than the standard or regulation specified.

(2) Where JSSS refers to the standards and regulations of other countries, such reference is only to the technical requirements contained in such standards and regulations and not to the related laws or legal enforceability of any of those other countries.

~~(a) BS 6031 Code of practice for earthworks;~~
~~(b) BS 8002 Code of practice for earth retaining structures;~~
~~(c) BS 8002 Code of practice for earth retaining structures;~~
~~(d) BS 8004 Code of practice for foundations;~~
~~(e) BS 8081 Code of Practice for grouted anchors;~~
~~(f) BS EN 1993 (all parts) Eurocode 1. Basis of structural design;~~
~~(g) BS EN 1992 (all parts) Eurocode 2. Design of concrete structures;~~
~~(h) BS EN 1993 (all parts) Eurocode 3. Design of steel structures; and~~
~~(i) BS EN 1997-1 Eurocode 7. Geotechnical design. General rules.~~

JC1O: 殆どの Standard は本設構造の設計に関連する内容なので削除してもいい。
Most Standards above are related to the design of the main structure and may be deleted.
NK: Deleted.

7.1.5 Specialist Temporary Works

(1) Specialist TW (including systems or components thereof) such as types of Earthwork Support, Cofferdams and the like shall be executed by qualified specialist Contractors or Subcontractors that are

~~**7.1.5 Specialist Temporary Works**~~

JC1I: Is this Clause necessary?
NK1: This clause is deleted

appropriately and especially skilled and experienced with the particular type of TW, using qualified, skilled and experienced personnel with appropriate types and quantities of specialist equipment.

(2) If the Contractor for the Works is not required to be such a qualified specialist then at Design or Bidding Stage, the Implementing Agency should take measures to procure qualified specialist Subcontractors and then specify or instruct that the work be carried out by nominating such Subcontractors in accordance with GC 5. [*Nominated Subcontractors*] against a Provisional Sum to be included in the Bidding Documents for that purpose.

(3) If not and unless otherwise stated or named in the Contract, the Contractor should be required to appoint a qualified and specialist Subcontractor, qualification criteria shall be given in the Bidding Document and prior Engineer's consent shall be obtained in accordance with GC 4.4 [*Subcontractors*] for any Subcontractor that meets such criteria.

because the TW shall be designed and constructed under the responsibility of the Contractor unless otherwise specified to use specialist TW in the Contract, and we don't know the project adopted "specialist contractors" and "nominated contractor" for TW.

MM: Sub-Clause 7.1.5 Specialist Temporary Works
JICA: Necessary or not?
NK: It is intended to cover specialist ground and temporary works.
Please let me know if required or not
Result: Delete not Required

~~(1) Specialist TW (including systems or components thereof) such as types of Earthwork Support, Cofferdams and the like shall be executed by qualified specialist Contractors or Subcontractors that are appropriately and especially skilled and experienced with the particular type of TW, using qualified, skilled and experienced personnel with appropriate types and quantities of specialist equipment.~~

~~(2) If the Contractor for the Works is not required to be such a qualified specialist then at Design or Bidding Stage, the Implementing Agency should take measures to procure qualified specialist Subcontractors and then specify or instruct that the work be carried out by nominating such Subcontractors in accordance with GC 5. [*Nominated Subcontractors*] against a Provisional Sum to be included in the Bidding Documents for that purpose.~~

~~(3) If not and unless otherwise stated or named in the Contract, the Contractor should be required to appoint a qualified and specialist Subcontractor, qualification criteria shall be given in the Bidding Document and prior Engineer's consent shall be obtained in accordance with GC 4.4 [*Subcontractors*] for any Subcontractor that meets such criteria.~~

JC1D: GC 5 [Nominated Subcontractors]を採用することに違和感を覚えます。Implementing Agency はまず Contract Document 作成のコンサルタントにその設計業務を実施させ（従って必要な地質調査・室内試験等も行わせることになり、これが contract Data として開示されることになります）、その結果を入札図書に開示し、応札者にはそれらの情報に基づいて、自らの解釈で設計を行い、実施に当たってはエンジニアの介在が必要になる、と考えています。GC 5 の採用提案は、その設計下請けの設計に対する品質に問題があるとしたとき、発注者に責任が及ぶことも考えられます。
For GC 5. [Nominated Subcontractors] on (2). For using GC 5 [Nominated Subcontractors], something feels wrong with my idea. Because, the Implementing Agency firstly have the consultant who prepares the Contract Document perform the design work and disclose the results in the tender documents. The bidder designs based on this information. The proposal to adopt GC 5 may also be

liable to the Employer if there is a problem with the quality of the design subcontracting
NK: Deleted.

7.2 土留め工

7.2.1 一般事項

(1) 本節で使用する用語の定義は以下のとおりである。

(z) 土留め工とは、明り掘削を行う場合に、周辺の地山の崩壊を防ぐことを目的として設けられる仮設構造物をいい、土留め壁と土留め支保工からなる。

→E General Requirements Annex 1.1 A1.1.2.へ規定済み。→(NK の方針:(a)の J 記述は削除し E 7.2.1(2)の記述へ変更する)

(aa) 土留め壁は、親杭横矢板壁、 鋼矢板壁、鋼管矢板壁、柱列式連続地中壁、地中連続壁等をいう。

→E 7.2.1(3)に規定済み。→(NK の方針:E 7.2.1(3)(a)～(e)の方が各工法を例示的に記載しているので(b)の J 記述に代えて E 7.2.1(3)(a)～(e)の記述を採用する)

(bb) 土留め支保工は、腹起し、切りばり、火打ち、中間杭等からなる切りばり支保工、グラウンドアンカー支保工等をいう。

→E 7.2.1(3)に土留め工の構造／構成について規定済み

(2) 土質に見合った勾配を保って掘削できる場合を除き、掘削の深さが1.5mを超える場合には、原則として、土留め工を施すものとする。

→規定なし。(MD insists aall sides shall be supported, even a 1m excavation can cause destabilisation and danger と、1.5m の数字を規定することへの違和感からの削除提案 →(NK の方針:過去の現場災害事例に基づき規定検討してきた経緯があり規定を残すべき。)

7.2.2 計画及び設計時の留意事項

請負者は、土留め工の計画及び設計に当たり、次の事項に留意しなければならない。→E 7.2.1(3)に規定済み

(1) 設置する箇所の地山の地質、地層、土質、き裂、含水量、湧水、地下水及び埋設物等の状態に応じた土留め工の設置を計画すること。

→E 7.2.2(1)に規定済み(但し英語版での規定内容は、リスク、contingency、その他情報等も含め計画すること、とより網羅的に記載)→(NK の方針:E

7.2. EARTHWORK SUPPORT

7.2.1. General

(1) Refer to JSSS Annex 1.1: [*Definitions and Abbreviations*] for the definition of Earthwork Support.

(2) The Contractor must protect the structural integrity of ground, buildings, structures, roads, railways, waterways, services and adjacent surfaces that may be affected by excavation or Earthwork Support works and ensure the safety of all persons, whilst they are working in, under or adjacent to any excavation and the avoidance of any damage to property.

(3) Earthwork Support can include for example the provision of:

(a) Timberwork including sheeting, planking, strutting and support systems;
(b) Steel sheet piling including shoring, strutting and support systems;
(c) Specialist support systems such as diaphragm walling, steel pipe piling, contiguous piling, soldier piling and lagging, and the like;
(d) Sloping or battering sides of excavations; and
(e) Ground improvement, slope stabilisation, injection, ground freezing and the like.

7.2. EARTHWORK SUPPORT

JC1O: BS8002: Code of practice for earth retaining structures では、"Earth Retaining Structure"と記載している。[Temporary Earth Retaining Structure]とすればどうか。
BS 8002 stated "Earth Retaining Structure". How about calling it as [Temporary Earth Retaining Structure]?

MM: 7.2 EARTHWORK SUPPORT
JICA:How about calling it "Temporary" Earth Retaining Structure? (Same for Cofferdam),
NK: Change will be made.
Result: No need to change (see also the definition)
Definition is as follows:
A1.1.2
(7) "Earthwork Support" means the permanent or temporary structural support arrangements to prevent the collapse or weakening of the surfaces of any excavation including for example basement, pit, trench or slope excavation.

7.2.1. General

(1) Refer to JSSS Annex 1.1:[*Definitions and Abbreviations*] for the definition of Earthwork Support.

(2) The Contractor must protect the structural integrity of ground, buildings, structures, roads, railways, waterways, services and adjacent surfaces that may be affected by excavation or Earthwork Support works and ensure the safety of all persons, whilst they are working in, under or adjacent to any excavation and the avoidance of any damage to property.

(3) Earthwork Support can include for example the provision of:

JC1O: Capital Letter ではない。
It should not be capitalized term.
NK: Defined in A1.1.2, so capitalized.

(f) Timberwork including sheeting, planking, strutting and support systems;
(g) Steel sheet piling including shoring, strutting and support systems;
(h) Specialist support systems such as diaphragm walling, steel pipe piling, contiguous piling, soldier piling and lagging, and the like;
(i) Sloping or battering sides of excavations; and
(j) Ground improvement, slope stabilisation, injection, ground freezing and the like.
(k) Ground Anchor

JC1D: (f)Ground Anchor が必要かと考えます。I think (f) is

6.2 EARTHWORK SUPPORT

6.2.1 General

(1) Refer to JSSS Annex 1.1:[*Definitions and Abbreviations*] for the definition of Earthwork Support.

(2) The Contractor must protect the structural integrity of ground, buildings, structures, roads, railways, waterways, services and adjacent surfaces that may be affected by excavation or Earthwork Support works and ensure the safety of all persons, whilst they are working in, under or adjacent to any excavation and the avoidance of any damage to property.

(3) Earthwork Support can include for example the provision of:

(l) Timberwork including sheeting, planking, strutting and support systems;
(m) Steel sheet piling including shoring, strutting and support systems;
(n) Specialist support systems such as diaphragm walling, steel pipe piling, contiguous piling, soldier piling and lagging, and the like;
(o) Sloping or battering sides of excavations; and
(p) Ground improvement, slope stabilisation, injection, ground freezing and the like.
(q) Ground Anchor

7.2.2(1)の記述を残す。)

(2) 隣接する建築物への影響(地盤沈下、地下水位の変異等)については、本契約で別途定める規定を遵守し必要な対策を講じること。
→E 7.2.2(3)に規定済み→(NK の方針:E 記述の方が影響対象の例示が多く E 記述に合わせる)

(3) 土留め工周辺の土質に応じてボイリング、ヒービングに対する掘削の安全性を、設計時に確認すること。→E 7.2.2(2)に規定済み

(4) 土留め工の設計では、設計書、設計計算書、設計図、組立図、材料仕様書、モニタリング計画を作成すること。組立図には、矢板、中間杭、腹おこし、切りばり、グラウンドアンカー等の部材の配置、寸法及び材質並びに取付けの時期及び順序が示されなければならない。

(5) 土留め工の設計書には、本仕様書 7.2.3 に示すモニタリング計画を含めること。

※迫田様:上記(4)の記述内容は、第 4 案暫定セット版と「ファイル名:20191117_7.2 Earth Retaining (R1)」で異なっているようです。恐縮ですが、(5)の規定内容と併せて、最新の見解に基づき、当該箇所の NK 対応方針コメントをお願いします。

7.2.3 モニタリング計画

請負者は、施工中の土留め工の安全を確保し、周辺の地盤や建物等への影響をすみやかに察知するために、変位や挙動の目視点検及び計器計測によるモニタリング計画を、次に従い作成し、土留め工を管理しなければならない。

このモニタリング計画には、下記に示すモニタリングの実施方法について具体的に記述しなければならない。
→E 7.2.3 (1)(a)に規定済み

(1) モニタリングの実施

(cc) 目視点検

目視点検の対象及び項目は、次表及び土留め

7.2.2. Planning and Design

Unless otherwise stated in the Contract, the Contractor shall design all Earthwork Support so that it is fit for the purpose for which it is intended and take account of all factors including:

(1) All relevant site data which may have been provided by the Employer in the Bidding Documents together with all necessary further information as to risks, contingencies and other circumstances which the Contractor shall be deemed to have obtained in accordance with GC 4.10 [*Site Data*].

(2) Ground water and potential of liquefaction, boiling or piping, heave and the like and the prevention of any damaging effect upon excavations and Earthwork Support.

(3) Affect by the Earthwork Support on existing buildings, structures, roads, railways, ground, substrata, surfaces, paving and the like such as displacement, heave or groundwater fluctuation.

(4) Vibration from site operations (e.g. piling) or adjacent traffic or railways and the like.

(5) Access and working space necessary to execute the Permanent Works.

necessary.

NK: Add as commented.

MM(20200220) : 2. 英文第 8 章土工工事
(2) 深さ 1.5m 以上の掘削では、原則土留め工を設置することを規定する。
2. Chapter 8 Excavation Works
(2) In principle, excavation more than 1.5m high shall be specified to provide earth retaining.

NK: Added as (4)

7.2.2. Planning and Design

Unless otherwise stated in the Contract, the Contractor shall design all Earthwork Support so that it is fit for the purpose for which it is intended and take account of all factors including:

NK: (2)から(4)の規定に対し、JC で"発注者が指定すべき"とコメントあります。
(2)から(4)は設計上考慮すべき項目を列挙しています。これらは、GC4.18 の具体的項目です。

GC4.18 Protection of the Environment
The Contractor shall take all reasonable steps to protect the environment (both on and off the Site) and to limit damage and nuisance to people and property resulting from pollution, noise and other results of his operations.

本款の序文に、契約に規定が無い限り、土留めを設計することと規定しています。JC のコメントに対応するために、(6)に Particular Safety Specification の規定を設計に考慮することを追記します。
Added (6).

(1) All relevant site data which may have been provided by the Employer in the Bidding Documents together with all necessary further information as to risks, contingencies and other circumstances which the Contractor shall be deemed to have obtained in accordance with GC 4.10 [*Site Data*].

JC1O: 入札時点の Site Information だけしか記載されていない。"Any relevant site information that the Contractor has encountered or obtained during the execution of the Works"を追記しては。(Comment in English is in MM below.)

MM: Sub-Clause 7.2.2. Planning and Design
JICA: Only site information at the time of bidding is described. How about adding "Any relevant site information that the contractor has encountered or obtained during the execution of the Works".
NK: Other investigation is necessary after commencement and this will be added
Result: NK to add further requirements deriving from Contractor's further studies since commencement.

(2) Ground water and potential of liquefaction, boiling or piping, heave and the like and the prevention of any damaging effect upon

(4) The Contractor shall provide earth retaining for the excavation equal to or deeper than 1.5 m in principle other than the case that excavation can be made with safe slopes depending on the soil conditions.

6.2.2 Planning and Design

Unless otherwise stated in the Contract, the Contractor shall design all Earthwork Support so that it is fit for the purpose for which it is intended and take account of all factors including:

(1) All relevant site data which may have been provided by the Employer in the Bidding Documents and any relevant site information that the Contractor has encountered or obtained during the execution of the Works together with all necessary further information as to risks, contingencies and other circumstances which the Contractor shall be deemed to have obtained in accordance with GC 4.10 [*Site Data*].

(2) Ground water level and potential of liquefaction, boiling or piping, heave and the like and the prevention of any damaging effect upon excavations and Earthwork Support.

工の特性に応じたものとし、それらを含む点検表を作成し、毎日点検すること。
←E 7.2.3 (1)(b)に規定済み

点検対象	点検項目
土留め壁	壁体天端の蛇行や上下方向の変位 壁体の亀裂、たわみ、はらみ出し 壁体からの漏水、土砂流出 接手部のずれ
土留め支保工	腹起しのたわみ、ねじれ 中間杭の沈下、浮き上がり、ねじれ 切ばりの上下・水平方向の変位、ねじれ 接手、交差部のずれ、ボルトの破損やゆるみ
周辺地盤	舗装面・地表面の亀裂、陥没 敷石・縁石の目地の開き
掘削底面	底面からの湧水、噴砂、 底面のふくれ上がり、湧水の濁り
周辺構造物	構造物の亀裂、傾斜
土留め工内の	埋設物の変位、埋設物の接続部のずれ

←上表は E Table 7.2.1 に規定済み

7.2.3. Inspection and Monitoring

Refer to JSSS 0 [*Inspection and Monitoring of TW*] for general requirements, specific requirements for work in this Section are stated below.

excavations and Earthwork Support).

JC1D: 地下水位の低下が可能か否か、これは発注者が指定すべき。
Whether or not the groundwater level can be lowered shall be specified by the Employer.

NK: 本款の序文で請負者が設計で考慮すべき事項は次であるとして(1)以下を規定している。ここで地下水位を下げて良いとは規定していない。考慮すべき事項の一つが地下水である。記述は変更しない。ただし、地下水位とするために Ground water level へ変更します。
The first sentence mentioned to take account of all factors including (1) and others. There is not mentioned whether ground water level can be lowered. One of factors to be considered is ground water level. The term of ground water is replaced with ground water level.

JC1D: これも発注者が規定すべき。
These shall also be stipulated by the Employer.

NK: これらの項目は、設計上考慮すべき事項である。(6)を追記します。

(3) Affect by the Earthwork Support on existing buildings, structures, roads, railways, ground, substrata, surfaces, paving and the like such as displacement, heave or groundwater fluctuation.

JC1D: 発注者が許容値を規定すべき。
The Employer shall specify the allowable value.

NK: (2)と同上である。 Ditto as (2).

(4) Vibration from site operations (e.g. piling) or adjacent traffic or railways and the like.

JC1D: 発注者が許容値を規定すべき。
The Employer shall specify the allowable value.

NK: (2)と同上である Ditto as (2).

(5) Access and working space necessary to execute the Permanent Works.

JC1D: GC 4.13 Rights of Way and Facilities の初めの文節において、発注者が準備するべき。また、”Site”は working areas も含めて、発注者が準備するべき。
In the first clause of GC 4.13 Rights of Way and Facilities, it shall be prepared by the Employer. Also, “Site” shall be prepared by the Employer, including working areas.

NK1: (5)は設計で考慮すべき項目である。契約で提供された現場内でどのように土留めを行うかのために、アクセスと作業スペースを考慮することと規定しており、変更する必要は無いと考えます。
(5) specifies two factors to be taken account in the design. Those shall be designed in the Site provided by the Employer. We consider not necessary to modify (5).

7.2.3. Inspection and Monitoring

Refer to JSSS ()[*Inspection and Monitoring of TW*] for general requirements, specific requirements for work in this Section are stated below.

NK: JSSS 1.3.11 [Inspection and Monitoring of TW] stipulate as

(3) Affect by the Earthwork Support on existing buildings, structures, roads, railways, ground, substrata, surfaces, paving and the like such as displacement, heave or groundwater fluctuation.

(4) Vibration from site operations (e.g. piling) or adjacent traffic or railways and the like.

(5) Access and working space necessary to execute the Permanent Works.

(6) Values of ground water level fluctuation , vibration, displacement and other damage and nuisance to people, property and existing structures, etc. not to exceed specified in the Particular Safety Specification.

6.2.3 Inspection and Monitoring

Refer to JSSS 1.3.11 [*Inspection and Monitoring of TW*] for general requirements, specific requirements for work in this Section are stated below.
The Contractor shall prepare Inspection and

(dd) 計器計測

(i) 別途契約書で定めがある場合はそれに従い、定めがない場合については、次表を参照のうえ、計器計測の計画を作成すること。←E 7.2.3 (2)(a)及び(b)に規定済み

計測対象	計測項目
土留め壁	土留め壁の変位、土留め壁の応力、土留め壁に作用する土圧、水圧
土留め支保工	切ばりの軸力又は土留めアンカーの軸力
掘削底面	掘削底面の変位、水圧、湧水量

(1) Visual Inspection and Monitoring

(a) The Contractor shall prepare a Visual Inspection checklist depending on the characteristics of the Site and the required Earthwork Support and carry out regular inspections based upon the content of the checklist; and

(b) Examples of Inspection Objects and Inspection Types are given in the following Table.

follows:

1.37.11 For further information on monitoring the performance of Temporary Works, refer to JSSS 6.1.3. [Inspection and Monitoring of Temporary Works].

NK: Referring to the JC comment to (2) below, the preparation of Inspection and Monitoring Plan and include in Safety Plan are added to the above sentence.

(1) Visual Inspection and Monitoring

JC1O: visual monitoring でよいのでは。
The title of "Visual Monitoring" seems better.

MM: Sub-Clause 7.2.3 Inspection and Monitoring

JICA: I hope "Visual Monitoring" is fine.

NK (MD): Please let me know if it is not, I am editing the specification only and I assume that it represented your agreed requirements. Please check as necessary.

Result: Leave as it is

NK1: The following is comparison of terms "inspection" and "monitoring"

1) GC 4.20 Employer's Equipment and Free-Issue Materials
The Contractor shall then visually inspect them, and shall promptly give notice to the Engineer
GC 20.1 Contractor's Claims
the Engineer may, after receiving any notice under this Sub-Clause, monitor the record-keeping and/or instruct the Contractor to
from internet, their difference is as follows:
2) https://wikidiff.com/monitoring/inspection
inspection is act of examining something, often closely while monitoring is the act of listening, carrying out surveillance on, and/or recording the emissions of one's own or allied forces for the purpose of maintaining and improving procedural standards and security, or for reference, as applicable.
3) https://dictionary.cambridge.org/dictionary/english/inspection
Inspection: the act of looking at something carefully, or an official visit to a building or organization to check that everything is correct and legal:
Monitoring: to watch and check a situation carefully for a period of time in order to discover something about it:
Visual Inspection は目視、Monitoring は監視と考え、(1) は Visual Inspection に変更します。

(a) The Contractor shall prepare a Visual Inspection checklist depending on the characteristics of the Site and the required Earthwork Support and carry out regular inspections based upon the content of the checklist; and

JC1O: Visual monitoring では？Is it Visual monitoring?

NK1: Same as (1) above.

(b) Examples of Inspection Objects and Inspection Types are given in the following Table.

JC1O: (b) is modified to "Sample Items of visual monitoring are given in the following table."

NK1: The difference between terms of examples and sample is as follows:
http://www.differencebetween.net/language/words-language/difference-between-example-and-sample/
Both "example" and "sample" imply a part and also act like representatives of a whole. An example, by definition, is a noun that shows and mirrors other things. ... On the other hand, a sample is a small part of something much bigger. Unlike an

Monitoring Plan of visual inspection and instrument monitoring in accordance with this 6.2.3 and include the Inspection and Monitoring Plan in the Safety Plan for the Earth Support.
In addition to the above, the Inspection and Monitoring Plan shall be prepared for the Earth Support, other structures and locations are specified to be specially monitored in the Particular Safety Plan,

(1) Visual Inspection ~~and Monitoring~~

(a) The Contractor shall prepare a Visual Inspection ~~checklist~~ Plan depending on the characteristics of the Site and the required Earthwork Support and carry out regular inspections based upon the content of the ~~checklist~~ Plan ; and

(b) Examples of Inspection Objects and Inspection ~~Types~~ Items are given in the following Table.

周辺地盤	周辺地盤の変位、地下水位
周辺構造物	構造物の変位
地下埋設物	地下埋設物の変位

←上表は E Table 7.2.2 に規定済み

(ii) 計器及び計測方法は計測の目的に合ったものを選定すること。

←E 7.1.3 (4)(a)に規定済み

(iii) 計測位置は、その計測目的に合致し、安全管理上必要と思われる箇所で、土留め工設置期間を通じて連続的に観測が可能な箇所とし、必要な数とすること。

←E 7.1.3 (4)(b)に規定済み

(2) ~~モニタリングに基づく管理~~

(ee) 目視点検による管理

~~目視点検で異常が見つかったときは、以下(b)の計器計測結果との照合、計測方法の見直し、あるいは緊急的な対策の実施等、異常の程度に応じ、必要な対策を実施すること。~~

→規定なし。(下記参照)

(ff) ~~計器計測による管理~~

~~本契約で別途に計器計測項目の管理値の定めがあるときはそれを基に、定めがない場合は設計上で許容された変位・応力等を基に管理限界値をまず設定し、必要に応じ、以下に示すような段階的な管理値を定めること。計測値が各管理値に達した場合は、その管理値に応じた対策を実施すること。~~

←下記(i)～(iii)は E 7.1.3 (5)(b)に規定済み

(iv) 一次管理値(観測の強化と二次管理値以上の値に達した場合の対策方法の検討・準備を開始する基準値)

(v) 二次管理値(作業をいったん中断し、対策を開始する基準値)

(vi) 管理限界値(直ちに作業を中止し、作業員の立ち入りを禁止し、施工方法の見直しを含めた抜本的な対策を行う基準値)

→7.2.3 (1)(b)(ii)～(2)(b)(iii)まで規定がない理由:英語版 7.1.3 (1)～(4)へ転記済(by MD 氏)との見解より。

→NK の方針: 7.2 節「土留め工」、7.3 節「仮締切工」については、日本語版セット版で「点検、モニタリング計画」を規定しているが、MD 氏は、英語版で同手続きに係る共通事項は E 7.1.3 で纏めて規定する提案をしている。この提案に基づき規定することを提案する。

7.2.4 土留め工の施工時の安全管理上の措置

→(1)～(7)含めて規定なし。(下記参照)

請負者は、土留め工の作業時には、下記の安全管理上の措置を講じなければならない。

(1) 土留め工の設計条件、設計内容等を十分理解した作業主任に作業を直接指揮させること。

Table 7.2.1: Visual Inspection Checklist

	Inspection Object	Inspection Type
1	Earthwork Support: Faces	Meander/horizontal displacement and vertical displacement along top. Crack, deflection and swelling. Water leakage, mud inflow. Opening of joints or gaps in Earthwork Support.
2	Earthwork Support: Piles and strutting	Deflection, twist of struts and waling and other members. Settlement, floatation and twist of piles Vertical or horizontal displacement, of struts and waling and other members. Opening of joints or breakage of cross members, or breakage and loosening of bolts.
3	Base of Excavation	Water spring and ground water flow. Sand boiling. Heaving of the base. Liquefaction.
4	Neighbouring or adjacent Ground, paving and roads	Cracks, collapse, subsidence of pavement or ground surfaces, Opening of joints in paving and kerbs
5	Neighbouring or adjacent Buildings or Structures	Cracks, weakening, subsidence, deformation and tilting of structures
6	Underground Utilities	Displacement, damage or leakage to underground utilities

example, a sample is random and not specific.

The term of "Examples" is left and the "Type" is replaced with "Items".

Table 7.2.1: Visual Inspection Checklist

	Inspection Object JC::Locations? NK: No Change	Inspection Type JC: Monitoring Items? NK: Replaced.
1	Earthwork Support: Faces JC: Retaining Walls/Piles? NK: As explained in 7.2.1 (3), the term of Earthwork Support is used.	Meander/horizontal displacement and vertical displacement along top. Crack, deflection and swelling. Water leakage, mud inflow. Opening of joints or gaps in Earthwork Support.
2	Earthwork Support: Piles and strutting JC: Walings and Struts? NK: added walings.	Deflection, twist of struts and waling and other members. Settlement, floatation and twist of piles Vertical or horizontal displacement, of struts and waling and other members. Opening of joints or breakage of cross members, or breakage and loosening of bolts.
3	Base of Excavation JC: Excavated Floor? NK: leave it as it is.	Water spring and ground water flow. Sand boiling. Heaving of the base. Liquefaction.
4	Neighbouring or adjacent Ground, paving and roads JC: Surrounding Ground and Surface? NK: leave it as it is..	Cracks, collapse, subsidence of pavement or ground surfaces, Opening of joints in paving and kerbs →Collapse?? Sinking?(by JC) NK: delete "collapse" because feel something wrong.
5	Neighbouring or adjacent Buildings or Structures	Cracks, weakening, subsidence, deformation and tilting of structures
6	Underground Utilities	Displacement, damage or leakage to underground utilities

Table 6.2.1: Visual Inspection ~~Checklist~~ Items

	Inspection Object	Inspection ~~Type~~ Items
1	Earthwork Support: Faces, sheeting and piling	Meander/horizontal displacement and vertical displacement along top. Crack, deflection and swelling. Water leakage, mud inflow. Opening of joints or gaps in Earthwork Support.
2	Earthwork Support: Piles, walings and strutting	Deflection, twist of struts and waling and other members. Settlement, floatation and twist of piles Vertical or horizontal displacement, of struts and waling and other members. Opening of joints or breakage of cross members, or breakage and loosening of bolts.
3	Base of Excavation	Water spring and ground water flow. Sand boiling. Heaving of the base. Liquefaction.
4	Neighbouring or adjacent ground, paving and roads	Cracks, collapse, subsidence of pavement or ground surfaces, Opening of joints in paving and kerbs
5	Neighbouring or adjacent Buildings or Structures	Cracks, weakening, subsidence, deformation and tilting of structures
6	Underground Utilities	Displacement or leakage of or damage to underground utilities

(2) 上記 7.2.2(4)の材料仕様書に請負者が計画した品質の材料を使用するものとし、ひび割れ、変形又は腐食等のある不適切な材料を使用してはならない。

(3) 土留め工の組立ては、組立図に示された順序に基づいて行うこと。組立図と異なる施工を行う場合は、安全性の確認を行ったうえで、作業計画書を変更すること。

(4) 建設機械を用いて土留め壁または土留め支保工を施工する場合は本仕様書 4.14.1[建設機械作業の一般的留意事項]に規定の措置を講じること。

(5) 新たな掘削等の施工段階に進む前には、先の掘削における所定の部材が定められた位置に取り付けられていること及び土留め工が安定していることを確認すること。

(6) 土留め板は、掘削後すみやかに掘削面との間に隙間のないようにはめ込み、隙間が出来た時は、裏込め、くさび等で隙間の無いように固定すること。

(7) 土留め板の背面より漏水がある場合は、土砂の流出を防ぐ措置を講ずること。

→(1)～(7)含めて規定がない理由：I do not think that the following is necessary. However, some items can be used and I have created a new item below for this.
とのコメントにて英文 7.2.4(1)(2)のみの規定を提案している。

→NK の方針：施工時の安全事項に係る規定（作業場での注意事項）を残すこととし、英文 7.2.4(1)(2)に加え、上記（和文）のうち (2)、(5)、 (6)、(7)の規定を残すことを提案する。

7.2.5 切りばり支保工の作業での安全上の措置

請負者は、切りばり支保工の作業にあたっては、次の安全上の措置を講じなければならない。

(1) 切りばり及び腹おこしは、脱落を防止するため、矢板、杭等に確実に取り付けること。
→E 7.2.5 (2)に規定済み

(2) 圧縮材（火打ちを除く）の継手は突合せ継手とし、部材全体が一つの直線となるようにすること。木材を圧縮材として用いる場合は、2 個以上の添え物を用いて真すぐに継ぐこと。
→E 7.2.5 (3)に規定済み

(2) Instrument Monitoring

(a) Unless otherwise stated in the Contract, the Contractor shall prepare an Instrument Monitoring checklist depending on the characteristics of the Site, the ground conditions and the required Earthwork Support and carry out ongoing monitoring based upon the content of the checklist.

(b) Examples of Inspection Objects and Inspection Types are given in the following Table.

(2) Instrument Monitoring

(a) Unless otherwise stated in the Contract, the Contractor shall prepare an Instrument Monitoring checklist depending on the characteristics of the Site, the ground conditions and the required Earthwork Support and carry out ongoing monitoring based upon the content of the checklist.

JC1O: 契約の記載がなければ、コントラクターは計器計測の準備をすることから記載が始まっている。
その前に、重要な仮設に関しては、契約に記載がなくても、Visual and Instrument Monitoring の計画を作成し、エンジニアに提出しなければならない。次のように

(a) the Contractor shall prepare an Instrument Monitoring checklist ....."

It is stipulated "Unless otherwise stated in the Contract, the Contractor are to prepare for instrument measurement."

Prior to this sentence, it is necessary to stipulate that for important temporary constructions, a plan for Visual and Instrument Monitoring shall be prepared and submitted to the Engineer, even if not stated in the contract as (a) the Contractor shall prepare an Instrument Monitoring checklist .....".

JC1: 英語の表現がおかしい。
English expression seems inappropriate.

NK: Unless otherwise stated in the Contract…の規定を、次のように解釈します。契約に規定が無い限り、請負者は、現場の特定、地盤条件、必要な土留めの樹生興に応じた計測によるモニタリングの計画を作成し、モニタリングを実施しなくてはならない。(ongoing の意味は不明のため MD 氏へ問いあわせます。)
提案の"even if not stated in the contract"と同じ意味と考えます。
JC で提案の特別に重要な仮設構造物の選定は、現規定では請負者の判断次第となりますので、Particular Safety Plan で規定することが必要と考えます。
We consider that the sentence of "Unless otherwise stated in the Contract" and JC's proposed sentence "even if not stated in the contract…" are almost same meaning.
The proposed "important temporary constructions" need to be specified in the Particular Safety Plan.

NK: JC のコメントを考慮し、本款の出だしに Inspection and Monitoring Plan の作成と、エンジニアに提出される Safety Plan に含めることを追加して規定します。及び特別にモニタリングすべき構造物は、PSS に規定することを規定します。
Considering the JC comment, at the beginning of this Clause, it is added that Inspection and Monitoring Plan shall be prepared and included in the Safety Plan.
The important TW to be monitored is specified in the PSS.

(b) Examples of Inspection Objects and Inspection Types are given in the following Table.

(2) Instrument Monitoring

(a) ~~Unless otherwise stated in the Contract,~~ the Contractor shall prepare an Instrument Monitoring ~~checklist~~ Plan depending on the characteristics of the Site, the ground conditions and the required Earthwork Support and carry out ~~ongoing~~ monitoring based upon the content of the ~~checklist~~ Plan.

MD: May we know what the "ongoing" means.

(b) Examples of ~~I~~ inspection ~~O~~ objects and ~~I~~ inspection ~~Types~~ ~~I~~ items are given in

(3) 切りばり又は火打ちの接続部及び切りばりと切りばりとの交さ部は、当て板をあててボルトにより緊結し、溶接により接合する等の方法により堅固なものとすること。
→E 7.2.5 (4)に規定済み

(4) 中間杭を備えた土留め支保工にあっては、切りばりを当該中間杭に確実に取り付けること。
→E 7.2.5 (5)に規定済み

(5) 切りばりを土留め工の部材以外の建築物の柱等で支持する場合にあっては、当該支持物は、これにかかる荷重に耐えうるものとすること。
→E 7.2.5 (6)に規定済み

(6) 土留め壁と腹おこしの隙間は充填を行うこと。また、腹おこしと切りばりの接合部はスチフナー等で補強を行うこと。→E 7.2.5 (7)(隙間充填)及び(8)(接合部補強)へ分けて規定済み

7.2.6 グラウンドアンカー工の作業での安全上の措置

請負者は、グラウンドアンカー工の作業にあたっては、次の安全上の措置を講じなければならない。

(1) ボーリングマシンの組立て、解体、変更又は移動の作業、ボーリングマシンによる削孔作業、アンカー(テンドン)鋼材の緊張作業、グラウト材の注入等の作業を行うときは、作業の方法、手順、安全上の措置を定め、これらを作業者に周知し、かつ、作業主任の直接の指揮の下に作業を行うこと

(2) ボーリングマシンの操作は、指定の者以外の者にさせないこと。→E 7.2.6 (1)に規定済み

(3) アンカー(テンドン)鋼材の緊張作業中、鋼材の破断等による作業員の危険を防止するため、緊張ジャッキの後方を立ち入り禁止とする等の安全措置を講じること。→E 7.2.6 (2)に規定済み

Table 7.2.2: Instrument Monitoring Checklist

	Object	Inspection Type
1	Earthwork Support: Faces	Displacement, stress of Earthwork Support Earth pressure and water pressure acting on Earthwork Support
2	Earthwork Support: Piles and strutting	Axial force of strut, other supports and ground anchors.
3	Base of Excavation	Displacement of base of excavation Water pressure of spring of water, water inflow
4	Neighbouring or adjacent Ground, paving and roads	Displacement of neighbouring or adjacent ground, ground water level
5	Neighbouring or adjacent Buildings or Structures	Displacement: cracks, weakening, subsidence, deformation and tilting of structures
6	Underground Utilities	Displacement, damage or leakage to underground utilities

JC1O: (b) may be modified to "Sample Items of Instrument monitoring are given in the following table."
NK: As explained in 7.2.3 (b), NK suggest example is used.

Table 7.2.2: Instrument Monitoring Checklist

	~~Inspection~~ Monitoring Object JC::Locations? NK: No Change	~~Inspection~~ Monitoring Items ~~Type~~ JC: Monitoring Items? NK: Replaced.
1	Earthwork Support: Faces JC: Walings/Struts ? NK: Added sheeting and piling	Displacement, stress of Earthwork Support Earth pressure and water pressure acting on Earthwork Support
2	Earthwork Support: Piles and strutting JC: Retaining Walls/Piles? NK: Replaced.	Axial force of strut, other supports and ground anchors.
3	Base of Excavation JC: Excavated Bottom/Floor ? NK: leave it as it is.	Displacement of base of excavation Water pressure of spring of water, water inflow
4	Neighbouring or adjacent Ground, paving and roads JC: Surrounding Ground and Surface? NK: leave it as it is..	Displacement of neighbouring or adjacent ground, ground water level
5	Neighbouring or adjacent Buildings or Structures JC: Surrounding Ground and Surface? NK: leave it as it is.	Displacement,~~: cracks, weakening,~~ subsidence, deformation and tilting of structures
6	Underground Utilities	Displacement, damage or leakage to underground utilities

the following Table.

Table 6.2.2: Instrument Monitoring ~~Checklist~~ Items

	Object	Inspection ~~Type~~ Items
1	Earthwork Support: Faces, sheeting and piling	Displacement, stress of Earthwork Support Earth pressure and water pressure acting on Earthwork Support
2	Earthwork Support: Piles, walings and strutting	Axial force of walings, struts, other supports and ground anchors.
3	Base of Excavation	Displacement of base of excavation, Water pressure of spring of water, water inflow
4	Neighbouring or adjacent ground, paving and roads	Displacement of neighbouring or adjacent ground, Ground water level
5	Neighbouring or adjacent buildings or structures	Displacement; ~~cracks, weakening,~~ subsidence, deformation and tilting of structures
6	Underground Utilities	Displacement of~~, damage or leakage to~~ underground utilities

(4) グラウト材の注入作業の前に、圧送ホース及び継ぎ手の破損の有無を点検すること。 →E 7.2.6 (3)に規定済み (5) 作業に必要な安全帽、保護メガネ、手袋、安全靴等の保護具を、作業員に着用させること。 →規定なし。(It is not necessary unless it is special PPE as it is a general requirement which otherwise will need to be included everywhere.) →(NK の方針:過去の MD 氏指摘どおりと判断するため削除する。)		**7.2.4. General ~~Safety and Construction~~ requirements** JC1O: 削除. To be deleted. NK: deleted. (1) Excavations shall be protected from and kept free of ground water and surface water at all times. (2) Earthwork Support works shall proceed progressively so that no excavated faces are left without support or at risk of weakening or collapse at any time. JC1O: excavated wall?? NK: the term of face is left as it is as it is used in HSE as follows: https://www.hse.gov.uk/quarries/hardtarget/tips.htm *Tips and excavation* *The faces of excavations have to be kept stable.*	**6.2.4 General ~~Safety and Construction~~ Requirements** (1) Excavations shall be protected from and kept free of ground water and surface water at all times. (2) Earthwork Support works shall proceed progressively so that no excavated faces are left without support or at risk of weakening or collapse at any time.
7.2.7 悪天候及び地震時の点検 →(1)、(2)を含め英文に規定なし。(2.7 Adverse Weather Requirements 2.7.2 Preventive Measures)で纏めて規定すべきとの MD 氏提案と思料。→(NK の方針:先提案どおりとし J 7.2.7 は削除することを提案する。) 請負者は、本仕様書 2.7[悪天候及び地震時の対策]に規定の悪天候又は地震後には、土留め工の作業に関して次の措置を講じなければならない。 (1) 土留め工又は土留め工内の作業を開始する前には、7.2.3 (2) (a)[目視点検によるモニタリング]に規定の目視による点検及び同(b)[計器計測によるモニタリング]による計測値のチェックを行うこと。 (2) 土留め工に異常を認めたときは、直ちに補強し、又は補修すること。	**7.2.4. General Safety and Construction requirements** (1) Excavations shall be protected from and kept free of ground water and surface water at all times. (2) Earthwork Support works shall proceed progressively so that no excavated faces are left without support or at risk of weakening or collapse at any time.	**7.2.5. Safety Measures for Shoring** JC1O: ここで言っているのは腹起しとストラットなので、Walings and Struts という表現でいい。 MM: Sub-Clause 7.2.5.Safety Measures for Shoring JICA:(1) Change shoring to include "Walings and Struts" throughout. NK: Will be changed; suggest this clause already covers it, (should be "waling and strutting"). Result: Leave as it is. NK: (1) defines shoring include walings, strutting and others, so the title is left as it is. Unless otherwise stated in the Contract: (1) "Shoring" shall include waling, shoring, strutting and like support.	**6.2.5 Safety Measures for Shoring** Unless otherwise stated in the Contract: (1) "Shoring" shall include waling, shoring, strutting and like support.
7.2.8 土砂及び器材等の置き方 (1) 土留め支保工の肩の部分に掘り出した土砂又は器材等を置く場合には，落下しない措置を講じること。→E 7.2.7 (1)に規定済み	Unless otherwise stated in the Contract: (1) "Shoring" shall include waling, shoring, strutting and like support.	JC1O: 表題を変更すれば削除 If the title is changed, delete it. NK: Title is not changed, so (1) is left. (2) Shoring shall be securely installed and fixed to Earthwork Support to prevent detachment and any movement or failure.	(2) Shoring all be securely installed and fixed to Earthwork Support to prevent detachment and any movement or failure.
	(2) Shoring shall be securely installed and fixed to Earthwork Support to prevent detachment and any movement or failure.	JC1O: Walings and Struts ? NK: Title is not changed, so (2) is left.	
	(3) All members acting in compression (excluding diagonal struts) shall be butt-jointed, and timber shoring shall be jointed with two or more doubling plates.	(3) All members acting in compression (excluding diagonal struts) shall be butt-jointed, and timber shoring shall be jointed with two or more doubling plates. JC1O: 木製は日本では使用せず。削除しても MM: Sub-Clause 7.2.5 (4) JICA: Since wooden is not used in Japan, can it be deleted? NK: This is not for use in Japan and timber is widely used Result: Leave as it is	(3) All members acting in compression (excluding diagonal struts) shall be butt-jointed, and timber shoring shall be jointed with two or more doubling plates.
	(4) Connecting parts of shoring or diagonal shoring or intersections, shall be reinforced with backing plates and bolts (timber) and welding with reinforcing plates (steel).	(4) Connecting parts of shoring or diagonal shoring or intersections, shall be reinforced with backing plates and bolts (timber) and welding with reinforcing plates (steel). (5) Intermediate piles shall be securely and rigidly supported with shoring.	(4) Connecting parts of shoring or diagonal shoring or intersections, shall be reinforced with backing plates and bolts (timber) and welding with reinforcing plates (steel).
(2) 設計で考慮された荷重以上の器材等を土留め工			

の付近に置かないこと。→E 7.2.7 (2)に規定済み	(5) Intermediate piles shall be securely and rigidly supported with shoring.	JC1O: It is stated that the intermediate piles will be secured, but "Shouldn't it be a statement that Struts should be securely installed?" NK: Modified.	(5) ~~Intermediate piles~~ Struts shall be securely and rigidly supported by ~~shoring~~ intermediate piles, when the intermediate piles are provided.
	(6) When shoring is fixed to or relies on an existing structure or building, the Contractor shall ascertain that the structure or building is able to withstand the applied load.	(6) When shoring is fixed to or relies on an existing structure or building, the Contractor shall ascertain that the structure or building is able to withstand the applied load.	(6) When shoring is fixed to or relies on an existing structure or building, the Contractor shall ascertain that the structure or building is able to withstand the applied load.
	(7) Gaps between Earthwork Support and shoring shall be securely packed with suitable wedges.	(7) Gaps between Earthwork Support and shoring shall be securely packed with suitable wedges. NK1O: Retaining Walls/Piles and Walings shall be contacted with suitable materials としては I propose to modify as "Retaining Walls/Piles and Walings shall be contacted with suitable materials"? NK: Modified.	(7) Gaps between Earthwork Support and shoring shall be securely packed with suitable ~~wedges~~. materials.
	(8) Connections of shoring shall be reinforced with bolted (timber) or welded (steel) stiffeners.	(8) Connections of shoring shall be reinforced with bolted (timber) or welded (steel) stiffeners. JC1O: Since wooden material is not used in Japan, can it be deleted? NK: leaved it as it is.	(8) Connections of shoring shall be reinforced with bolted (timber) or welded (steel) stiffeners.
	7.2.6. Safety Measures for Ground Anchor Work Unless otherwise stated in the Contract: (1) Prevent anyone other than designated personnel from operating the boring machine. (2) Prevent anyone from accessing the rear of the tension jack to prevent workers from injury through breaking of the anchor tendon during tensioning.	**7.2.6. Safety Measures for Ground Anchor Work** Unless otherwise stated in the Contract: (1) Prevent anyone other than designated personnel from operating the boring machine. JC1O: replace designated with permitted? NK: leave as it is as designate means assign a job or role to (someone) and almost same as permit. JC1O: replace machine with equipment? NK: BS 8081 Code of practice for grouted anchors use the terms as follows: Machine: drilling machine, Equipment: mixers, pumps. Boring machine is left as it is.	**6.2.6 Safety Measures for Ground Anchor Work** Unless otherwise stated in the Contract: (1) Prevent anyone other than designated personnel from operating the boring machine.
	(3) Check for any damage in the grout pressure hoses and joints before commencing any grout injection.	(2) Prevent anyone from accessing the rear of the tension jack to prevent workers from injury through breaking of the anchor tendon during tensioning. JC1O: 意味が多分通じない。 I think (2) cannot be understood. NK: (2) is the stipulation in the Japanese set-version. OSHA stipulation is as follows: *OSHA Subpart Q—Concrete and Masonry Construction* *§1926.701 General requirements.* *(c) Post-tensioning operations. (1) No employee (except those essential to the post-tensioning operations) shall be permitted to be behind the jack during tensioning operations.* NK ask MD to review this stipulation. (3) Check for any damage in the grout ~~pressure~~ hoses and joints before commencing any grout injection. JCO: deleted.	*(2) Prevent anyone from accessing the rear of the tension jack to prevent workers from injury through breaking of the anchor tendon during tensioning.* Alternative: Prevent anyone (except those essential to the post-tensioning operations) from accessing behind the jack during tensioning operations of the anchor tendon. (3) Check for any damage in the grout ~~pressure~~ hoses and joints before commencing any

	7.2.7. Adjacent Goods, Excavated Spoil and the like (1) The Contractor shall, when placing any Goods, excavated spoil and the like on the ground surface at the top and adjacent to any excavation, take measures to prevent it from falling. (2) The Contractor shall not place any Goods, excavated spoil, backfill material and the like where the weight exceeds the load considered in the design of the Earthwork Support.	**7.2.7. Adjacent Goods, Excavated Spoil and the like** (1) The Contractor shall, when placing any Goods, excavated spoil and the like on the ground surface at the top and adjacent to any excavation, take measures to prevent it from falling. JC1O: 捨て土ではないので。 I guess that the term to be used is not "spoil" but "excavated materials". NK1: BS defines as follows: *BS 6100-3: Building and civil engineering – Vocabulary – Part 3: Civil engineering – General* *03 23023 spoil: excavated material that is unsuitable or surplus to requirements* Replace with material as spoil is part of excavated material. JC1O: 全体に and the like を多用しているが、要注意です。 and the like は同様の次項を並列した際に使用。この場合は単に etc.では？ Although "and the like" is often used throughout JSSS, but be careful. "and the like" is used when similar next terms are arranged in parallel. In this case simply in etc.? MM: Sub-Clause 7.2.7. Adjacent Goods, Excavated Spoil and the like JICA: Although "and the like" is often used throughout, but be careful. "and the like" is used when similar next terms are arranged in parallel. In this case simply in etc.? NK: This is a common phrase in contract and specification wording and has common interpretation that there are further similar things that are to be included. Et cetera (etc.) does not necessarily have the same meaning, it depends what precedes it and should not be generally used is Specifications. Result: explained and understood by JICA, no change required JC1O: Is English expression of (1) appropriate? NK: Change the description to emphasize the points for placing goods and excavated soil as the place on the shoulder of the excavated walls during earth retaining work, not "on the ground surface". (2) The Contractor shall not place any Goods, excavated spoil, backfill material and the like where the weight exceeds the load considered in the design of the Earthwork Support. JC1O: Same comments as (1) above. NK: modified.	grout injection. **6.2.7 Adjacent Goods, Excavated ~~spoil~~ material and the like** (1) The Contractor shall, when placing any Goods, excavated ~~spoil~~ material and the like on the ground surface at the top and adjacent to any excavation, take measures to prevent it from falling. (2) The Contractor shall not place any Goods, excavated ~~spoil~~material, backfill material and the like where the weight exceeds the load considered in the design of the Earthwork Support.
7.3 仮締切工 **7.3.1 一般事項** 仮締切工とは、現場内へ外部から入り込む水を遮断するために設置する仮設構造物をいい、本節では、土	**7.3. COFFERDAMS** **7.3.1. General** (1) Refer to JSSS Annex 1.1: [*Definitions and Abbreviations*] for the definition of	**7.3. TEMPORARY COFFERDAMS** JC1O: Temporary Cofferdam としては？ I propose to modify to "Temporary Cofferdam". NK: Referring to the definition of the term of "cofferdam" in BS and US Army Corps of Engineers, the cofferdams are	**6.3 COFFERDAMS**

堤、ケーソン、一重鋼矢板、二重鋼矢板、切梁式鋼矢板等を扱う。
→上記下線部（設置する目的）は General Requirements Annex 1.1 A1.1.2.にて規定済み（下記参照）。対象とする締切工の種類は E 7.3.1(2)に規定済み。
"Cofferdam" shall mean a temporary enclosing wall constructed in water, to permit the enclosed area to be pumped out and used as safe and accessible working space.
→（NK の方針：英語版(1)(2)のスタイルで記述する。）

7.3.2 計画及び設計時の留意事項

請負者は、仮締切工の計画及び設計に当たり、本仕様書「7.2 土留め工」の 7.2.2[計画及び設計時の留意事項]に準拠するとともに、次の事項に留意しなければならない。

→E 7.3.2 に規定済み。（但し英語版での記述：Unless otherwise stated in the Contract, the Contractor shall design Cofferdams so that they are fit for the purpose for which they are intended and take account of all factors including:）→（NK の方針：英語版では、各所の款の冒頭で左記記述を多用している。請負者は、JSSS の全ての内容を遵守することを求めているので参照先の節／款番号を示す規定法でなく、（上記）英語記述内容にて規定する方針とする。）

(1) Site Data に示される気象、海象、地震等のデータを十分考慮すること。
→E 7.3.2 (1)に規定済み。（但し英語版での規定内容は、リスク、contingency、その他情報等も含め計画すること、とより網羅的に記載）
→（NK の方針：より網羅的に記述している E 7.3.2(1)の記述を残す。）

Cofferdam.
(2) Cofferdams are generally constructed as earth dykes, caissons, steel sheet piling, double steel sheet piles, steel beam piles and the like.

7.3.2. Planning and Design

Unless otherwise stated in the Contract, the Contractor shall design Cofferdams so that they are fit for the purpose for which they are intended and take account of all factors including:

(1) All relevant site data which may have been provided by the Employer in the Bidding Documents together with all necessary further information as to risks, contingencies and other circumstances which the Contractor shall be deemed to have obtained in accordance with GC 4.10 [*Site Data*].

(2) The effect of any vibration from site operations (e.g. driven piling).

(3) Access and working space necessary to execute the Permanent Works.

temporary structure:
BS ISO 6707-1 3.1.2.24 cofferdam
structure (3.1.1.4), usually temporary, that is built to support the surrounding ground (3.4.2.1) or to exclude water or soil (3.4.2.2) sufficiently to permit work within it to proceed safely without excessive pumping.
US Army Corps of Engineers EM 385-1-1 Manual
APPENDIX Q Definitions
Cofferdam: a temporary structure used to keep water (and earth) out of an excavation during construction of the permanent structure.
The title is left as it is.

7.3.1. General

(1) Refer to JSSS Annex 1.1:[*Definitions and Abbreviations*] for the definition of Cofferdam.
(2) Cofferdams are generally constructed as earth dykes, caissons, steel sheet piling, double steel sheet piles, steel beam piles and the like.

7.3.2. Planning and Design

Unless otherwise stated in the Contract, the Contractor shall design Cofferdams so that they are fit for the purpose for which they are intended and take account of all factors including:

JC1: temporary cofferdam では？Capital letter でしょうか？
Are "Cofferdams" "temporary cofferdam"?
Is "Cofferdams" capitalized term?
NK: "Cofferdams" is defined in Annex A1.1.2 as follows, so capitalized term is used as it is.:
(3) "Cofferdam" means a temporary enclosing wall constructed in water, to permit the enclosed area to be pumped out and used as safe and accessible working space.
Not modified.

JC1O: relevant factors として下さい。
Please replace "factors" with "relevant factors"
NK1: Modified.

JC1O: 下記事項を including としてすべて名詞止にするのは難しいのでは。内容が複雑すぎます。
It seems difficult to include the following factors which are described in form of noun-type stop (ending a sentence with a noun or noun phrase). This paragraph is too complex to understand.
NK1: We considers they can be understood, but we will ask MD to review this comment.

(1) All relevant site data which may have been provided by the Employer in the Bidding Documents together with all necessary further information as to risks, contingencies and other circumstances which the Contractor shall be deemed to have obtained in accordance with GC 4.10 [*Site Data*].

JC1O: 入札時点の Site Information だけしか記載されていな

6.3.1 General

(1) Refer to JSSS Annex 1.1:[*Definitions and Abbreviations*] for the definition of Cofferdam.
(2) Cofferdams are generally constructed as earth dykes, caissons, steel sheet piling, double steel sheet piles, steel beam piles and the like.

6.3.2 Planning and Design

Unless otherwise stated in the Contract/Particular Safety Specification, the Contractor shall design Cofferdams so that they are fit for the purpose for which they are intended and take account of all relevant factors including:

(1) All relevant site data which may have been provided by the Employer in the Bidding Documents and any relevant site information that the Contractor has encountered or obtained during the execution of the Works together with all necessary further information as to risks, contingencies and other circumstances which the Contractor shall be deemed to have obtained in

		い。”Any relevant site information that the Contractor has encountered or obtained during the execution of the Works”を追記しては。 Only Site Information at the time of bidding is described. How about adding, ”Any relevant site information that the Contractor has encountered or obtained during the execution of the Works” NK: Added.	accordance with GC 4.10 [*Site Data*].
(2) 河川流量、水位、潮位、波高、余裕高、地震荷重、想定される外力等の設計条件について契約書の別の定めに従うこと。 **→E 7.3.2 (4)に規定済み。(但し、英語版に「地震荷重、想定される外力等」の記述がない)** **→(NK の方針:「地震荷重、想定される外力等」を追記する。)**	(4) River or tidal flow rates, highest and lowest water levels and tidal levels, wave height, required freeboard and any other relevant river, lake or marine conditions.	(2) The effect of any vibration from site operations (e.g. driven piling). JCD: Allowable value should be specified in the contract documents. For Blasting, there are regulatory values such as Restriction on Peak Particle Velocity and Vibration Amplitude, and for Noise, there are level on “max”, “sound pressure level (85 dBA)” and “peak sound level (110 dB)”. NK1: The requirement shall be specified in the Particular Safety Specification (PSS). The User Guide will advise the Employer to specify their requirement in the PSS. A phrase regarding the PSS is added at the first sentence and a stipulation is added at the end of 6.3.2 regarding the specified values in the PSS.	(2) The effect of any vibration from site operations (e.g. driven piling)
(3) 既設堤防の開削を行い設置する仮締切の天端の高さは、施工期間中に想定される最大水量に耐えうるものにする。 **→規定なし。→理由:E 7.3.2 (4)で highest and lowest water levels を考慮、と規定していたから、とも解釈されるが本項目は規定すべきと考える。** **→(NK の方針:本項目を英文に加える。)**	(5) Marine traffic.	(3) Access and working space necessary to execute the Permanent Works. JC1O: 削除 Permanent だけではないので Delete it. Because not only permanent. NK1: deleted. JC1D: This is an issue to be considered by the Employer. Planning access roads to meet the Contractor's own requirements is not just a provision of cofferdam. NK1: Replied in (2) of 7.3.2.	(3) Access and working space necessary to execute the ~~Permanent~~ Works.
	(6) Avoidance of any damage by piling operations and the protection and improvement of the structural integrity of existing river or canals, banks, dykes and the like.	(4) River or tidal flow rates, highest and lowest water levels and tidal levels, wave height, required freeboard and any other relevant river, lake or marine conditions. JC1: 要言葉の整理 Terms shall be reviewed and organized. NK1: modified. JC1D: 発注者が考慮すべき事 This is an issue to be considered by the Employer. NK1: NK1: Replied in (2) of 7.3.2.	(4) ~~River or tidal flow rates, highest and lowest water levels and tidal levels, wave height, required freeboard~~ River discharge, water levels, tide levels, wave height, free board, seismic load, external force and any other relevant river, lake or marine conditions.
(4) 既設堤防に接続して仮締切工を設定する場合で河積の減少が予想される場合においては、既設堤防の接続部の法面保護、接続部からの漏水、吸出し防止工を検討する。対策工については、別途契約書で定めがある場合はそれに従い、定めがない場合はエンジニアの指示に従うこと。 **→E 7.3.2 (7)に規定済み**	(7) Reduction of river cross sectional area, resultant increased flow rates and suction effects with a consequent requirement for protection and improvement of the structural integrity of existing river or canals, banks, dykes and the like.	(5) Marine traffic. JC1D: Working Site establishment on the surface of water to deal with other vessels’ traffic, shall be given in the contract documents prepared by the Employer. NK1: NK1: Replied in (2) of 7.3.2.	(5) Marine traffic.
		(6) Avoidance of any damage by piling operations and the protection and improvement of the structural integrity of existing river or canals, banks, dykes and the like. JC1D: 影響を苦慮する対象物(構造物等)とその許容値は契	(6) Avoidance of any damage by piling operations and the protection and improvement of the structural integrity of existing river or canals, banks, dykes and the

		約図書に明記されるべき Objects (structures, etc.) to be considered for impact and their allowable values should be clearly specified in contract documents. NK1: Replied in (2) of 7.3.2.	like.
		(7) Reduction of river cross sectional area, resultant increased flow rates and suction effects with a consequent requirement for protection and improvement of the structural integrity of existing river or canals, banks, dykes and the like. JC1O: 種々の次項を一緒に記載しているので分からない。 Since various items are described together, they cannot be understood. NK: Modified. JC1D:河川工事に伴う有効流量断面積の減少は請負者の責任ではなく、その工事計画段階で対処されなければならない。従って、対処方法を契約図書で明示しなければならない。 Reduction of the effective flow area due to river works is not the responsibility of the Contractor, but must be dealt with at the construction planning stage. Therefore, the countermeasures must be clearly stated in the contract documents. NK1: NK think all above JC comments have been already defined in (1) underlined. So, NK leave it as it is.	(7) ~~Reduction of river cross sectional area, resultant increased flow rates and suction effects with a consequent requirement for protection and improvement of the structural integrity of existing river or canals, banks, dykes and the like.~~ Reduction of river cross sectional area, increased flow rates and protection and improvement of the structural integrity of existing river or canals, banks, dykes and the like.
(5) 切ばりで支保する仮締切工では、洪水、波浪等により切ばり、腹起し等の取付部がゆるまないよう堅固な構造とすること。 **→E 7.3.2 (8)に規定済み**	(8) Effects of tides, wave action, flooding and the like, the consequent need for additional shoring and avoidance of loosening of shoring and joints.	(8) Effects of tides, wave action, flooding and the like, the consequent need for additional shoring and avoidance of loosening of shoring and joints. JC1O: 理解不能 cannot understand. NK: Modified.	(8) ~~Effects of tides, wave action, flooding and the like, the consequent need for additional shoring and avoidance of loosening of shoring and joints.~~ Rigid structural design of Cofferdams in case of structures consisting of sheet piling, walings, struts by jointing between struts, walings and others not to be loosened by floods, waves, etc.
(6) 浸水等の緊急時に備え、仮締切工からの避難のためにはしご、階段等の 2 つ以上の避難路を設置すること、及び救命浮器、救命胴衣、救命浮輪、ロープ等の救命用具の設置場所を計画すること。 **→E 7.3.2 (9)に規定済み**	(9) Provision of at least two safe escape routes from the working areas by means of ladders, stairs, etc. to evacuate in the case of water penetration.	JC1: Cofferdam 設計時の与条件であり、前項(4)の条件に伴う動荷重も含めての指摘と考える。freeboard は発生する気象条件から発生する波高を推算し、前項(4)の highest water level にそれを加算し、かつ freeboard を考慮する等の規定がスペックで規定されるべきである。 This is a condition given during the design of the Cofferdam, and is considered to be an indication including the dynamic load associated with the condition in (4) above. Freeboard should estimate the wave height generated from the meteorological conditions, add it to the highest water level in the previous section (4), and incorporate provisions such as consideration of the freeboard into the specifications. NK1: Replied in (2) of 7.3.2.	
	(10) Provision of life-saving equipment including buoyancy jackets, lifebuoy, ropes and (where necessary) standby boats. (11) Measures for safe dismantling and removal.	(9) Provision of at least two safe escape routes from the working areas by means of ladders, stairs, etc. to evacuate in the case of water penetration. JC1O: 言葉の整理が必要 Need to organize terms. NK1: modified. JC1O: Replacement of terms:	(9) Provision of at least two ~~safe escape routes~~ emergency evacuation routes from the working ~~areas~~ place by means of ladders, stairs, etc. to evacuate in the case of danger of collapsing of or inundation in the Cofferdam.

7.3.3 モニタリング計画

請負者は、施工中の仮締切工の安全を確保し、周辺の地盤、既設構造物等への影響をすみやかに察知するために、変位や挙動の目視点検及び計器計測によるモニタリング計画を作成し、仮締切工を管理しなければならない。**→E 7.3.3 (1)(a)に規定済み**

モニタリング計画で計画すべきモニタリングの実施及びモニタリングにもとづく管理については、本仕様書「7.2 土留め工」の 7.2.3[モニタリング計画]に準拠して計画しなければならない。
→E 7.1.3[Inspection and Monitoring of TW]へ TM のモニタリングとして規定済み。

→（NK の方針：Refer to JSSS 0 [*Inspection and Monitoring of TW*] for general requirements, specific requirements for work in this Section are stated below.

モニタリング計画の点検項目及び計測項目は、7.2.3(1)及び(2)に規定の項目に準拠するとともに、仮締切工及び掘削底面の遮水に関する項目を含まなくてはならない。**→E 7.3.3 (1)(b)に規定済み**

→(7.3.3 の規定に関する NK の方針：Inspection and Monitoring **に関する E 7.2.3 の構成と合わせ、E 7.3.3 の構成は英語版の構成と規定内容を残すことを提案する。）**

7.3.3. Inspection and Monitoring

Refer to JSSS 0 [*Inspection and Monitoring of TW*] for general requirements, specific requirements for work in this Section are stated below.

(1) Visual Inspection and Monitoring
(a) The Contractor shall prepare a Visual Inspection checklist depending on the characteristics of the Cofferdam and carry out regular inspections based upon the content of the checklist.

(b) Examples of Inspection Objects and

For “safe escape routes”. →emergency evacuation routes.
For “working areas”. →working place.
NK1: modified.

JC1O: 水がちょろちょろの浸潤で避難する訳がない。danger of collapse of cofferdam では？
For “water penetration”. There is no reason to evacuate because of the penetration of water. ”danger of collapse of cofferdam” is better.
NK1: modified.

(10) Provision of life-saving equipment including buoyancy jackets, lifebuoy, ropes and (where necessary) standby boats.
(11) Measures for safe dismantling and removal.
(12) Water pollution prevention measure

JC1D: 契約図書規定されるべき。
(12) shall be specified in contract documents.
NK1: Water pollution shall be stipulated in specification for environment but not in JSSS, so not added.

NK1: as mentioned for (2), addition of (12) is made. (NK1: The requirement shall be specified in the Particular Safety Specification (PSS). The User Guide will advise the Employer to specify their requirement in the PSS.
A phrase regarding the PSS is added at the first sentence and a stipulation is added at the end of 6.3.2 regarding the specified values in the PSS.)

7.3.3. Inspection and Monitoring

Refer to JSSS 0 [*Inspection and Monitoring of TW*] for general requirements, specific requirements for work in this Section are stated below.

(1) Visual Inspection and Monitoring
(a) The Contractor shall prepare a Visual Inspection checklist depending on the characteristics of the Cofferdam and carry out regular inspections based upon the content of the checklist.

JC1O: この表現はおかしい。reflected では？
This expression of “depending on” seems to be incorrect, I think. “reflected” is correct?
NK1: depending on は、～に応じの意味があります。
It has meaning of “to be decided by or to change according to the stated thing:” so leaved it as it is.

JC1O: inspections →monitoring?
NK1: NK leave it as it is.

~~water penetration~~.

(10) Provision of life-saving equipment including buoyancy jackets, lifebuoy, ropes and (where necessary) standby boats.
(11) Measures for safe dismantling and removal.
(12) Values of vibration, displacement and other damage and nuisance to people, property and existing structures, etc. not to exceed specified in the Particular Safety Specification

6.3.3 Inspection and Monitoring

Refer to JSSS 1.3.11 [*Inspection and Monitoring of TW*] for general requirements, specific requirements for work in this Section are stated below.
The Contractor shall prepare Inspection and Monitoring Plan of visual inspection and instrument monitoring in accordance with this 6.3.3 and include the Inspection and Monitoring Plan in the Safety Plan for the Cofferdams.
In addition to the above, the Inspection and Monitoring Plan shall be prepared for the Cofferdams, other structures and locations are specified to be specially monitored in the Particular Safety Plan,
(1) Visual Inspection ~~and Monitoring~~
(a) The Contractor shall prepare a Visual Inspection ~~checklist~~ Plan t depending on the characteristics of the Cofferdam and carry out regular inspections based upon the content of the c~~checklist~~ Plan .

Inspection Types are given in the following Table.

Table 7.3.1: Visual Inspection Checklist

	Inspection Object	Inspection Type
1	Cofferdam Generally	Water seepage. Ability and capacity of pumping arrangements to maintain safe working conditions. Meander/horizontal displacement and vertical displacement along top. Crack, deflection and swelling. Opening of joints.
2	Shoring and strutting	Deflection, twist of struts and waling and other members. Opening of joints or breakage of cross members, or breakage and loosening of bolts.
3	Base of Excavation	Water spring and ground water flow. Sand boiling. Heaving of the base. Liquefaction.
5	Neighbouring or adjacent Structures	Cracks, weakening, subsidence, deformation and tilting of structures
6	Underground Utilities	Displacement, damage or leakage to underground utilities

(2) Instrument Monitoring

(a) Unless otherwise stated in the Contract, the Contractor shall prepare an Instrument Monitoring checklist depending on the characteristics of the Site, the ground conditions and the required Earthwork Support and carry out ongoing monitoring based upon the

NK1: Inspection check list is replaced with Inspection check plan.

(b) Examples of Inspection Objects and Inspection Types are given in the following Table.

JC1O: Propose to replace (b) with Sample Items of Visual monitoring are given in the following table.
NK1: as replied in 7.2.3 (1) (b), modified.

Table 7.3.1: Visual Inspection Checklist

	Inspection Object JC::Locations? NK: No Change	Inspection Type JC: Monitoring Items? NK: Replaced.
1	Cofferdam Generally	Water seepage. Ability and capacity of pumping arrangements to maintain safe working conditions. Meander/horizontal displacement and vertical displacement along top. Crack, deflection and swelling. Opening of joints.
2	Shoring and strutting JC: Different from Cofferdam item	Deflection, twist of struts and waling and other members. Opening of joints or breakage of cross members, or breakage and loosening of bolts. NK: For Cofferdam constructed woth sheet piles, struts, etc.
3	Base of Excavation JC: Different from Cofferdam item	Water spring and ground water flow. Sand boiling. Heaving of the base. Liquefaction. NK: Excavation in ground surrounded by Cofferdams
5	Neighbouring or adjacent Structures JC: Different from Cofferdam item	Cracks, weakening, subsidence, deformation and tilting of structures NK: Cofferdams are constructed in water and on land along water for construction works. The neighbouring or adjacent structures are existing in the water or on the land.
6	Underground Utilities JC: Different from Cofferdam item	Displacement, damage or leakage to underground utilities NK: Existence of underground utilities in Cofferdams may be rare, so deleted..

(2) Instrument Monitoring

(a) Unless otherwise stated in the Contract, the Contractor shall prepare an Instrument Monitoring checklist depending on the characteristics of the

(b) Examples of Inspection Objects and Inspection ~~Types~~ Items are given in the following Table.

Table 6.3.1: Visual Inspection ~~Checklist~~ Items

	Inspection Object	Inspection ~~Type~~ Items
1	Cofferdam Generally	Water seepage. Ability and capacity of pumping arrangements to maintain safe working conditions. Meander/horizontal displacement and vertical displacement along top. Crack, deflection and swelling. Opening of joints.
2	Piles, shoring and strutting	Deflection, twist of piles, struts and waling and other members. Opening of joints or breakage of piles, cross members, or breakage and loosening of bolts.
3	Base of Excavation	Water spring and ground water flow. Sand boiling. Heaving of the base. ~~Liquefaction.~~
5	Neighbouring or adjacent Structures	Cracks, weakening, subsidence, deformation and tilting of structures
~~6~~	~~Underground Utilities~~	~~Displacement, damage or leakage to underground utilities~~

(2) Instrument Monitoring

(a) ~~Unless otherwise stated in the Contract,~~

7.3.4 仮締切工の施工時及び使用時の安全管理上の措置

請負者は、仮締切工の施工及び仮締切工の中での作業を安全に行うために、本仕様書 7.2.4[土留め工の施工時の安全管理上の措置]に準拠した安全管理の措置及び下記の措置を講じなければならない。

(1) 仮締切工の切ばり支保工の作業にあたっては、本仕様書 7.2.5[切りばり支保工の作業での安全上の措置]に準拠した安全上の措置を講じること。→E 7.3.4 上段の(1)～(5)に支保工施工時の留意点として具体項目を規定済み→(NK の方針:J 7.3.2 で参照先の款番号等の記載は行わない提案とした点を踏襲し、英語版 E 7.3.4 上段の(1)～(5)の規定を残す。

(2) 異常事態時の連絡方法、避難方法、避難路、避難場所等の注事事項を、仮締切工の入口、仮締切工の中の作業場所等の請負者の要員が容易に認知できる見やすい場所に掲示すること。
→E 7.3.4 下段の(2)に規定済み(英語版での「救命具の設置場所、脱出艇」など、掲示する内容は少々異なっている)

(3) 一般の船舶等が航行する場所では、契約書の別の定めに従い、一般船舶等との衝突や接触を防止するための措置を講じること。また、夜間や濃霧時の船舶等の仮締切工への衝突を防止するために、警告灯等を配置するなどの措置を講じること。→E 7.3.4 (3)に規定済み(内容は少々異なっている)→(NK の方針:E 7.3.4 (3)より当該規定(3)の記述が具体的であり、日本語版の規定内容を残す。)

(4) 仮締切工からの異常な漏水又は仮締切工の内側の地盤からの異常な湧水がある場合は、作業員を避難させ、安全を確認したうえで、補強等の安全対策を講じた後でなければ、仮締切工内の作業を行わないこと。→E 7.3.4 (4)及び(5)に規定済み

7.3.5 悪天候及び地震時の点検

→規定なし。(2.7 Adverse Weather Requirements 2.7.2 Preventive Measures)で纏めて規定すべきとの MD 氏提案と思料。→(NK の方針:削除する。)

~~請負者は、悪天候及び地震時には、本仕様書 7.2.7[悪天候及び地震時の点検]に準拠した安全上の措置を講~~

content of the checklist.

(b) Examples of Inspection Objects and Inspection Types are given in the following Table.

Table 7.3.2: Instrument Monitoring Checklist

	Object	Inspection Type
1	Cofferdam Generally	Displacement, stress of Earthwork Support Earth pressure and water pressure acting on Earthwork Support
2	Shoring and strutting	Axial force of strut, other supports and ground anchors.
3	Base of Excavation	Displacement of base of excavation Water pressure of spring of water, water inflow
5	Neighbouring or adjacent structures	Displacement: cracks, weakening, subsidence, deformation and tilting of structures
6	Underground Utilities	Displacement, damage or leakage to underground utilities

7.3.4. General Safety and Construction Requirements

Unless otherwise stated in the Contract:

(1) Shoring shall be securely installed and fixed to Cofferdam to prevent detachment and any movement or failure.

(2) All members acting in compression (excluding diagonal struts) shall be butt-jointed, and timber shoring shall be jointed with two or more doubling plates.

(3) Connecting parts of shoring or diagonal shoring or intersections, shall be reinforced with backing plates and bolts (timber) and welding with reinforcing plates (steel).

(4) Gaps between Cofferdam and shoring shall be securely packed with suitable wedges.

(5) Connections of shoring shall be reinforced

Site, the ground conditions and the required Earthwork Support and carry out ongoing monitoring based upon the content of the checklist.

JC1O: As commented above.
NK1: as replied to (1) above.

(b) Examples of Inspection Objects and Inspection Types are given in the following Table.

JC1O: As commented above.
NK1: as replied to (1) above.

Table 7.3.2: Instrument Monitoring Checklist

JC1O: 前述の表を参照
As commented in 7.2.2.
NK1: modified.

	Object	Inspection Type
1	Cofferdam Generally	Displacement, stress of Earthwork Support Earth pressure and water pressure acting on Earthwork Support
2	Shoring and strutting	Axial force of strut, other supports and ground anchors.
3	Base of Excavation	Displacement of base of excavation Water pressure of spring of water, water inflow
5	Neighbouring or adjacent structures	Displacement: cracks, weakening, subsidence, deformation and tilting of structures
6	Underground Utilities	Displacement, damage or leakage to underground utilities

7.3.4. General Safety and Construction Requirements

Unless otherwise stated in the Contract:

(1) Shoring shall be securely installed and fixed to Cofferdam to prevent detachment and any movement or failure.

(2) All members acting in compression (excluding diagonal struts) shall be butt-jointed, and timber shoring shall be jointed with two or more doubling plates.

(3) Connecting parts of shoring or diagonal shoring or intersections, shall be reinforced with backing plates and bolts (timber) and welding with reinforcing plates (steel).

(4) Gaps between Cofferdam and shoring shall be securely packed with suitable wedges.

(5) Connections of shoring shall be reinforced with welded stiffeners.

JC1O: 土留めの項目で仮締切とは異なる。

the Contractor shall prepare an Instrument Monitoring ~~checklist~~ Plan depending on the characteristics of the Site, the ground conditions and the required Earthwork Support and carry out ongoing monitoring based upon the content of the ~~checklist~~ Plan.

(b) Examples of ~~I~~ inspection ~~O~~ objects and ~~I~~ inspection ~~Types~~ ~~I~~ items are given in the following Table.

Table 6.3.2: Instrument Monitoring ~~Checklist~~ Items

	Monitoring Object	~~Inspection~~ Monitoring ~~Type~~ Items
1	Cofferdam Generally	Displacement, stress of ~~Earthwork Support~~ Cofferdams Earth pressure and water pressure acting on ~~Earthwork Support~~ Cofferdams
2	Shoring and strutting	Axial force of strut and other supports ~~and ground anchors~~.
3	Base of Excavation	Displacement of base of excavation Water pressure of spring of water, water inflow
5	Neighbouring or adjacent structures	Displacement,~~: cracks, weakening,~~ subsidence, deformation and tilting of structures
~~6~~	~~Underground Utilities~~	~~Displacement, damage or leakage to underground utilities~~

6.3.4 General ~~Safety and Construction~~ Requirements

Unless otherwise stated in the Contract/Particular Safety Specification, the Contractor shall comply with the following requirements:

(1) Construct the Cofferdams with shoring by the same method stipulated in JSSS 6.2.5 [Safety Measures for Shoring] for Earthwork Support.

~~じなければならない。~~	with welded stiffeners.	These are requirements for retaining and not related to the Cofferdam. NK1: Cofferdams also require strutting and shoring. Modified to refer to the construction method of the Earthwork Support. JC1D: 施工品質・設計に属する規定で、安全規定とは異なる、と考えます。 The above requirements are belonging to construction quality and design, and differs from the safety requirement. NK1: Some other sections also specify same to ensure construction safety, so it is suggested that above description is left after modification.	
	In addition, the Contractor shall: (1) Train all Contractor's Personnel as necessary so that they are aware of all risks and countermeasures including water leakage, adverse weather, severe waves or adverse river or marine conditions, so that they can work safely and when necessary, evacuate the working areas efficiently and safely.	In addition, the Contractor shall: (1) Train all Contractor's Personnel as necessary so that they are aware of all risks and countermeasures including water leakage, adverse weather, severe waves or adverse river or marine conditions, so that they can work safely and when necessary, evacuate the working areas efficiently and safely. JCD1: Cofferdam 内での一般土木作業員に対するトレーニングとは何か？ 作業員は安全が確保されていることを前提に作業に入るのであり、作業員個々に Cofferdam の健全性に留意するような要求は違和感がある。請負者が作業中止基準を定め退避指示を発令することが通常である。 What is training for general civil workers in Cofferdam? Workers start works on the premise that safety is ensured, and I feel strange for each worker to pay attention to the soundness of Cofferdam stipulate in this (1). It is common for the Contractor to set work stop criteria and issue evacuation order. NK1:作業員に対して、通常より、Cofferdam 内で発生し得る危険事項について説明、注意喚起を促す目的の規定です。現状の記述を残すことを提案します。 This stipulate that the Contractor shall explain the risks in the Cofferdams and make workers pay attentions to the risk. NK propose to leave it as it is.	(2) Train all Contractor's Personnel to work in the Cofferdams ~~as necessary~~ so that they are aware of all risks and countermeasures including water leakage, adverse weather, severe waves or adverse river or marine conditions, so that they can work safely and when necessary, evacuate the working areas efficiently and safely.
7.3.6 急激な水位上昇時の安全措置 →英文に規定なし。→理由：Most of the following is not necessary as it is already covered above in 7.3.4 and other sections. Marine records can be kept. →（NK 方針：MD 氏は E 7.3.4 で規定済未との理由で J 7.3.6 項は削除する提案としている。冒頭文、下記(1)及び(2)は英語版に対応する規定がある点を確認したので、英語版構成を残す。） 請負者は、洪水、高潮、津波等による急激な水位上昇による仮締切工の破壊、仮締切工からの漏水や越流水による仮締切工内の浸水等の危険に備え、次の措置を講じなければならない。 →E 7.3.5 (1)に規定済み（英語版では、急激な水位上昇によるリスク評価、アセス結果を Safety Plan へ盛り込む等の記述としており、内容は少々異なっている）→（NK の方針：Safety Plan へリスク評価、アセス結果を記述する英語版の記述を残す。） (1) 緊急事態対応計画の作成と訓練 本仕様書 1.10[緊急事態対応計画及び緊急通報体制]	(2) Display visible and clear warning notices of all hazards and advisory notices giving directions and information, including emergency contacts, emergency escape routes, directions to and locations of life-saving equipment, assembly areas, escape boats and the like. (3) Implement measures to prevent collisions with marine or river traffic, including warning signs and lights during the night or in heavy rain mist or fog.	(2) Display visible and clear warning notices of all hazards and advisory notices giving directions and information, including emergency contacts, emergency escape routes, directions to and locations of life-saving equipment, assembly areas, escape boats and the like. (3) Implement measures to prevent collisions with marine or river traffic, including warning signs and lights during the night or in heavy rain mist or fog. JC1D: 水域内での作業水域確保の規定は、発注者からの出されるべきである。 The Employer shall issue requirements to secure working areas in the water. NK1: これは一般的な規定であり、特別な規定は PSS に規定することとする。 This is general safety requirement. The PSS will specify particular requirement when necessary.	(3) Display visible and clear warning notices of all hazards and advisory notices giving directions and information, including emergency contacts, emergency escape routes, directions to and locations of life-saving equipment, assembly areas, escape boats and the like. (4) Implement measures to prevent collisions with marine or river traffic, including warning signs and lights during the night or in heavy rain mist or fog.

の策定に当たっては、急激な水位上昇を対象にした緊急事態対応計画を作成すること。また、本仕様書 1.10 (3)に規定する訓練を行うこと。 **→日本語版のように 1.10 節参照等の参照先の節番号指定等はしていないが、E 7.3.5 (2)及び(3)に相当する規定済み** **→(NK の方針:参照先の款番号の記載は行わない提案とするので、英語版規定 E 7.3.5 (1)～(3)の規定を残す。)** (2) 情報の収集と対応 (a) 本仕様書 2.7.2[悪天候及び地震に備えた準備と点検]にもとづき、日ごろから急激な水位上昇等の緊急時に備えた準備と点検を行うこと。**→「急激な水位上昇を想定した場合」のみならず、仮締切工施工に際して E 7.3.4 後半(1)に規定済み** 緊急時の準備には、情報の伝達手段・退避場所・避難ルートについて予め定め、請負者の要員に周知することを含めること。**→E 7.3.4 後半(2)に規定済み** (b) 本仕様書 2.7.3[気象及び地震情報の収集と対応]に準じて、気象、洪水、海象、津波、仮締切工箇所及び周辺の水位等の情報の収集と対応を行うこと。情報の収集に当たっては、発注者からの協力を得て普段から情報をもつ関係者から直接情報を得られるようにすること。 **→E 7.3.6 に規定済み→(NK の方針:E 7.3.6 の規定を残す。)** (3) 作業の中止**→規定なし。(下記参照)** 請負者は、急激な水位上昇のおそれがある場合には、次の措置を講じること。 (a) 急激な水位上昇が予想される場合は、緊急事態対応計画に従い、作業中止、安全な場所への退避、緊急通報体制の確認を含めた対応の準備を行うこと。 **→規定なし。(NK 方針は下記) E 7.3.4 (4)に作業エリア内で水漏れが確認された場合の退避規定はあるが、E 7.3.4 (4)には水位上昇が予想される場合の退避規定等はない。** **→(NK の方針:下記参照)** (b) 仮締切工の設計洪水水位に近づいたとき、危険のおそれのある急激な水位の上昇と判断する時、又は水位の上昇による仮締切工の異常が発見されたときは、ただちに作業を中止し、作業員を安全な場所へ退避させること。 **→規定なし。(NK 方針は下記) E 7.3.1 (1)で、河川、海洋の悪条件を含むリスクと対策について請負者の要員に認識させ作業に従事させる旨の記述はあるが、「水位上昇が予想される時」等、具体の記述はない。** **→(NK の方針:下記参照)**	(4) Evacuate Contractor's Personnel whenever there is any danger due to water leakage through cofferdams or from the ground within the working area. (5) Implement repair and improvement measures to ensure the safety of Contractor's Personnel and prevent any personnel from re-entering the Cofferdam until it has been inspected by the HSO and certified by him to be "Safe for Use". **7.3.5. Adverse Changes in Water Level.** (1) The Contractor shall be aware of and assess any risk due to adverse and sudden rise in water level above the design basis for the highest water level and prepare for this as applicable in the Safety Plan. (2) This shall include procedures for monitoring water levels as described below. (3) Measures for this shall include: (a) Monitoring conditions (b) Training of all Contractor's Personnel; (c) Communications; (d) Instructions to Contractor's Personnel for evacuation; (e) Stop work in accordance with JSSS 1.10 [*HSO – Scope of Duties*] ; and (f) Resume work when water level has subsided and after inspection and certification by the HSO that it is safe to do so.	(4) Evacuate Contractor's Personnel whenever there is any danger due to water leakage through cofferdams or from the ground within the working area. JC1D: 請負者が締め切り内全体の安全の確認をする体制確立を規定すべきではないか。誰が退避支持を出すのか、規定すべき。 The Contractor should establish a system to confirm the safety of the Cofferdams. The parson in charge to issue the evacuation order should be specified. NK1: Modified. (5) Implement repair and improvement measures to ensure the safety of Contractor's Personnel and prevent any personnel from re-entering the Cofferdam until it has been inspected by the HSO and certified by him to be "Safe for Use". **7.3.5. Adverse Changes in Water Level.** JC1O: adverse change の場合は避難しかないので、ここは文脈から Sudden Increase of Water Level では In the case of adverse change, evacuation is the only solution, isn't it? Is it proper to replace the title with Sudden Increase of Water Level? NK1: 水位が仮締切の天端より相当低い時は水位の急上昇は危険ではない。仮締切を越流するような急上昇を対象とした場合、現タイトルでよいのでは。 The sudden rise of water level is not dangerous when water level is much lower the top of Cofferdam. The measures for the sudden rise of water level which will overtop the Cofferdam are specified below. So, the title is not changed. JC1D: 前項 7.3.2 (4)及び(8)の状況を超える状況とは、台風やそれに伴う洪水、津波などを想定される。 The situation that exceeds the situation of 7.3.2 (4) and (8) in the preceding paragraph is assumed to be a typhoon, flood, tsunami, etc. NK1: Yes. JC1I: 全体として文章のつながりが不明瞭。(2) の described below はどこを指しているのか。(3) の Monitoring conditions は measure なのか、等。 Overall , the connection of sentences is unclear. For example, which does the "described below" in (2) point? Are the "Monitoring conditions" in (3) measures? NK: For "described below", change it to "shown in 7.3.6". For "Monitoring Condition", NK specifically describes shown on the right cell. (1) The Contractor shall be aware of and assess any risk due to adverse and sudden rise in water level above the design basis for the highest water level and prepare for this as applicable in the Safety Plan. (2) This shall include procedures for monitoring water levels as described below.	(5) Establish a system and appoint a person to issue order to evacuate Contractor's Personnel whenever there is any danger due to water leakage through or overtopping on Cofferdams or from the ground within the working area. (6) Implement repair and improvement measures to ensure the safety of Contractor's Personnel and prevent any personnel from re-entering the Cofferdam until it has been inspected by the HSO and certified by him to be "Safe for Use". **6.3.5 Adverse ~~Changes in~~ Sudden Rise of Water Level** (1) The Contractor shall be aware of and assess any risk due to adverse and sudden rise in water level above the design basis for the highest water level and prepare for this as applicable in the Safety Plan. To MD: Can you stipulate in another way as I cannot understand

(c) 作業を再開する前には、仮締切工の異常の有無を、エンジニアとともに確認すること。異常が認められたときは直ちに補修すること。
→規定なし。(下記参照)

→J 7.3.6 (3)の規定がない理由:MD 氏は、Relevant parts of the following are included above, the remainder is not necessary としている。
→(NK の方針:"remainder"の対象である E 7.3.4 後半の(1)では、異常時に、必要に応じて請負者の要員を避難させる旨の記述に留まっており、作業中止の判断が必要な具体的なケースの記載まで至ってないと考えるので、上記(3)は英語版へ残すことを提案する。)

7.3.6. Monitoring Water Level and Other Conditions

(3) Measures for this shall include:
(a) Monitoring conditions

JC1D: Monitoring conditions とは何か。ここでは水位計、潮位標(tidal gauge)、さらには自記風向風速計、自記気圧計などが想定される。high standard を要求するのであれば、発注者が規定すべき。
What are monitoring conditions? A water gauge, a tidal gauge, a self-recording anemometer, a self-recording barometer, and the like are assumed. If high standards are required, the Employer should specify it.
NK1: Modified. This is general safety requirement. The PSS will specify particular requirement when necessary.

(b) Training of all Contractor's Personnel;

JC1D: procedures for monitoring water levels から乖離している
deviates from procedures for monitoring water levels
NK1: Training is specified in 6.3.4 (2), so (b) is deleted.

(c) Communications;

JC1D: 水域管理者との Communication でしょうか?
Communication with water area managers?
NK1: No. The communication is between persons in charge of monitoring of the water level, responsible for the safety in the Cofferdams, issuing evacuation order and workers in the Cofferdam.

(d) Instructions to Contractor's Personnel for evacuation;
(e) Stop work in accordance with JSSS 1.10 [*HSO – Scope of Duties*] ; and
(f) Resume work when water level has subsided and after inspection and certification by the HSO that it is safe to do so.

JC1D: procedures for monitoring water levels から乖離している。
The stipulation of (b)-(f) deviates from procedures for monitoring water levels.
NK1: (3) specifies measures for adverse sudden rise of water level. It is not only monitoring water level but also other measures given as (b) to (f). Modified.

7.3.6. Monitoring Water Level and Other Conditions

JC1D: 前項 7.3.5 (a)でコメント済み。high standard を要求するのであれば、契約図書で具体的に明記すべき。
Commented in the previous section 7.3.5 (a). If a high standard is required, it should be clearly stated in the contract documents.
NK1: This is general safety requirement. The PSS will specify particular requirement when necessary.

In addition to the requirements of JSSS 2.1.6. [*Monitoring and Records*] and unless otherwise stated in the Contract, the Contractor shall monitor

"above the design basis" and "as applicable in the Safety Plan"

(2) This shall include procedures for monitoring water levels as described ~~below.~~in JSSS 7.3.6.

To MD: "This" means the safety Plan? I want to stipulate what "This" means.

(3) Measures for ~~this~~ the adverse sudden rise of water level shall include:
(a) Monitoring ~~conditions~~ of water levels with equipment at the Site and obtaining forecasting information of water levels;

(b) ~~Training of all Contractor's Personnel;~~

(c) Communications among persons in charge of monitoring of water levels, responsible for the works in the Cofferdams, the HSO and workers in the Cofferdam;

(d) Instructions to Contractor's Personnel for evacuation;
(e) Stop work in accordance with JSSS 1.10 [*HSO – Scope of Duties*] ; and
(f) Resume work when water level has subsided and after inspection and certification by the HSO that it is safe to do so.

6.3.6 Monitoring Water Level and Other Conditions

In addition to the requirements of JSSS ~~2.1.6.~~ 2.1.7 [*Monitoring and Records*] and unless otherwise

	In addition to the requirements of JSSS 2.1.6. [*Monitoring and Records*] and unless otherwise stated in the Contract, the Contractor shall monitor and keep records of all climatic, river and/or marine conditions in the direct vicinity of any Cofferdam including for example, the water level at various times throughout the day, tidal data, speed and direction of waterflow, wave height, wind speed and direction. The Contractor shall provide all instruments and facilities to obtain the data and submit reports to the Engineer on a daily basis and compile on weekly basis.	and keep records of all climatic, river and/or marine conditions in the direct vicinity of any Cofferdam including for example, the water level at various times throughout the day, tidal data, speed and direction of waterflow, wave height, wind speed and direction. The Contractor shall provide all instruments and facilities to obtain the data and submit reports to the Engineer on a daily basis and compile on weekly basis. JC1D: 自記記録方式の波高計、潮位計、水位計、流速計、濁度計は求められるのは、異常気象・海象等の force majeure あるいは unforeseeable physical condition 判定のための資料として必要であれば、発注者でその規格を規定すべきである。請負者の自己判断によることはばらつきが生じ好ましくない。 If the Employer needs data for decision of force majeure or unforeseeable physical conditions such as abnormal weather and sea conditions, the employer shall specify the specification of self-recording wave height meter, tide gauge, water gauge, current meter, and turbidity meter. The self-determination by the Contractor is not preferable because the specification may vary. NK1: This is general safety requirement. The PSS will specify particular requirement when necessary.	stated in the Contract/Particular Safety Specification, the Contractor shall monitor and keep records of all climatic, river and/or marine conditions in the direct vicinity of any Cofferdam including for example, the water level at various times throughout the day, tidal data, speed and direction of waterflow, wave height, wind speed and direction. The Contractor shall provide all instruments and facilities to obtain the data and submit reports to the Engineer on a daily basis and compile on weekly basis.
7.4 通路	**7.4. WALKWAYS, LADDERS AND STEPLADDERS**	**7.4. WALKWAYS, LADDERS AND STEPLADDERS** JC1O: Pedestrial Walkway とした方が分かりやすいのでは。Singapore やカナダの事例ではそうなっています。 Is it easy to understand to use “Pedestrian Walkway”? This term is used in Singapore and Canada. NK1: Considering the following information, NK leaves as they are as walkways are used only for pedestrian. NK1: JSSS Chap 2 (Issue 3) 2.5.7 (1) defines them as follows: *JSSS 2.5.7 Temporary Access Around the Site* *(1) Walkways and Passageways* *“Walkways” mean pedestrian footpaths at ground level / working places(NK added) or ramped for the use of Contractor’s Personnel.* *“Passageways” are the same as walkways but are covered by a roof and maybe also have sides in order to protect all personnel from falling objects or adjacent activities.* OSHA defines and stipulates as follows: *Subpart L—Scaffolds §1926.450 Scope, application and definitions applicable to this subpart.* *Walkway means a portion of a scaffold platform used only for access and not as a work level.* *§1926.851 Stairs, passageways, and ladders.* *(a) Only those stairways, passageways, and ladders, designated as means of access to the structure of a building, shall be used. Other access ways shall be entirely closed at all times.* HSE use the terms as follows: *HSE L24 (Second edition) 2013 Approved Code of Practice and guidance: Workplace (Health, Safety and Welfare) Regulations 1992 123 To prevent slips and trips:* *・ keep walkways and work areas clear of obstructions;* *Regulation 25 Facilities for rest and to eat meals Disabled persons 25A Where necessary, those parts of the workplace*	**6.4 WALKWAYS, LADDERS AND STEPLADDERS**

7.4.1 一般 (1) この節では、作業場に通ずる場所及び作業場内に設置する作業者が移動のために使用する通路、架設通路、移動はしご、脚立、非常口、避難通路について規定する。→E 7.4.1 (1)に規定済み	**7.4.1. General** (1) This Section comprises safety measures relating to the movement or persons to and around the Site and includes temporary pedestrian walkways, bridges, portable ladders and stepladders.	*(including in particular doors, passageways, stairs, showers, washbasins, lavatories and workstations) used* **7.4.1. General** (1) This Section comprises safety measures relating to the movement or persons to and around the Site and includes temporary pedestrian walkways, bridges, portable ladders and stepladders. JC1D: "the movement"とは何の movement でしょうか？ What does the "the movement" mean? What is doing movement? NK1: movement of the persons. Modified. NK: (2) is added as general requirement moved from 6.4.2 (9).	**6.4.1 General** (1) This Section comprises safety measures relating to the movement ~~or~~ of persons to and around the Site and includes temporary ~~pedestrian~~ walkways, pedestrian bridges, portable ladders and stepladders.
(2) 請負者は、作業場に通ずる場所及び作業場内に、通路を設ける場合は、本仕様書 1.3.4「安全衛生詳細計画書」(1)の安全衛生詳細計画書に記載すべき事項に、次の事項を追加して、安全衛生詳細計画書を作成しなければならない。 →E 7.4.1 (4)に規定済み。(但し Safety Plan の規定箇所が変更となっている) →(NK の方針:英語版の記述を残す。) (a) 通路の設置場所、設置期間 (b) 架設通路の構造・材質及び主要寸法(高さ及び長さがそれぞれ 10m 以上のものに限る) (c) 通路と建設機械の作業場所との分離 (d) 通路と車両の運行経路の分離 →(a)～(d)は E 7.4.1 (4)に規定済み	(2) For temporary steps and staircase structures the requirements of JSSS 7.5 [*Scaffolding*] shall apply. (3) For Fall prevention from walkways, ladders and stepladders the requirements of JSSS 2.5 [*Fall Prevention*] shall apply. (4) Details of the following shall be included in the Safety Plan required by JSSS 1.6 [*Contractor's Safety Plan - Temporary Works*] and JSSS (6) [*Safety Plan for TW*]: (a) Locations and available periods of walkways to be provided; (b) Drawings of walkway structures, indicating structure type, materials and main dimensions for bridge type walkways where the height and length is 10m or more; (c) Types of temporary walls, barriers or other separation between walkways and working areas, roads or footpaths on or around the Site; and (d) Locations of emergency exits and evacuation routes.	(2) For temporary steps and staircase structures the requirements of JSSS 7.5 [*Scaffolding*] shall apply. (3) For Fall prevention from walkways, ladders and stepladders the requirements of JSSS 2.5 [*Fall Prevention*] shall apply. (4) Details of the following shall be included in the Safety Plan required by JSSS 1.6 [*Contractor's Safety Plan - Temporary Works*] and JSSS (6) [*Safety Plan for TW*]: (a) Locations and available periods of walkways to be provided; (b) Drawings of walkway structures, indicating structure type, materials and main dimensions for bridge type walkways where the height and length is 10m or more; JC1D: bridge type? pedestrian walkway on a platform? NK1: 架設通路の意味です。Leave it as it is. (c) Types of temporary walls, barriers or other separation between walkways and working areas, roads or footpaths on or around the Site; and JC1O: 英語が分からない。 Cannot understand what this sentence means. NK1: Modified and restricted walkways on the Site. (d) Locations of emergency exits and evacuation routes. JC1O: emergency evacuation routes でいいのでは。 Is "emergency evacuation routes" better? NK1: Leaved it as it is.	(2) The Contractor shall provide Contractor's Personnel the facilities of walkways, pedestrian bridges, ramps, portable ladders and stepladders, stairs and ladders, and the like to enable them to get to their work location in a safe and convenient manner. (3) For temporary steps and staircase structures the requirements of JSSS ~~7.5~~ 6.5 [*Scaffolding*] shall apply. (4) For Fall prevention from walkways, ladders and stepladders the requirements of JSSS 2.5 [*Fall Prevention*] shall apply. (5) Details of the following shall be included in the Safety Plan required by JSSS ~~1.6~~ 1.7 [*Contractor's Safety Plan ~~- Temporary Works~~*] and JSSS (6) [*Safety Plan for TW*]: To MD: I want to ask you to modify this referring to Issue 7 for (6). (a) Locations and available periods of walkways to be provided; (b) Drawings of walkway structures, indicating structure type, materials and main dimensions for bridge type walkways where the height and length is 10m or more; (c) Types of temporary walls, barriers or other separation between walkways and working areas or roads ~~or footpaths~~ on ~~or around~~ the Site; and (d) Locations of emergency exits and evacuation routes.
7.4.2 通路の設定 請負者は、通路の設置について、次に示す措置を講じなければならない。	**7.4.2. Walkways** The Contractor shall:	**7.4.2. Walkways** The Contractor shall: (1) Provide designated walkways to, in and around the various workplaces at the Site to	**6.4.2 Walkways** The Contractor shall: (1) Designate or Provide designated walkways ~~to,~~ in and around the various workplaces at

(1) 作業場に通ずる場所及び作業場内には、作業者が使用するための次の措置を講じた安全な通路を設け、かつ、これを常時有効に保持すること。 →E 7.4.2 (1)に規定済み	(1) Provide designated walkways to, in and around the various workplaces at the Site to ensure the safe and secure movement of all persons at all times.	ensure the safe and secure movement of all persons at all times. JC1O: To modify it to "designate pedestrian walkways. NK1: Both seems OK. NK asks MD to consider the comment.	the Site to ensure the safe and secure movement of all persons at all times. To MD, please review which is proper.
(2) 前項(1)の通路で主要なものには、これを保持するため、通路であることを示す表示を行うこと。 →E 7.4.2 (2)に規定済み	(2) Provide and maintain clear signage with adequate lighting so that all users are aware of the locations and routes and can safely use same and so that all Contractor's Personnel engaged in adjacent working operations are aware of and avoid entering such locations and routes.	(2) Provide and maintain clear signage with adequate lighting so that all users are aware of the locations and routes and can safely use same and so that all Contractor's Personnel engaged in adjacent working operations are aware of and avoid entering such locations and routes. JC1O: 英語不明。 Cannot understand this sentence means. NK: Modified.	(2) Provide and maintain clear signage ~~with adequate lighting~~ so that all users are aware of the locations and routes of the walkways and can safely use them. ~~same and so that all Contractor's Personnel engaged in adjacent working operations are aware of and avoid entering such locations and routes.~~
(3) 通路には、正常の通行を妨げない程度に、採光又は照明の方法を講じること。ただし、常時通行の用に供しない地下室等で通行する作業者に、適当な照明具を所持させるときは、この限りでない。 →E 7.4.2 (2)に規定済み。(地下室等を通行する作業者に関する例外規定はしていない。)→ (3)として追記する。	(3) Provide potable lighting such as head torches, lanterns, hand-held torches or the like for workers where considered necessary by the HSO,	(3) Provide potable lighting such as head torches, lanterns, hand-held torches or the like for workers where considered necessary by the HSO. JC1O: 日本語のスペックと内容が違う。 (3) is different from the Japanese JSSS version. NK1: Adjust back to Japanese-set Ver. shown as on the right cell. JC1D: 安衛則 541 条では、坑道・常時通行の用に供しない場所で労働者に適当な照明具を所持させるときは、照明設備は除外としている。ここではそれを HSO の判断にゆだねているが、適切か？又、坑道などでは停電時対応の非常灯が設備されていても、cap lamp(防爆型)の携行を求める鉱山法もあり得るが。 Article 541 of the Jap. Regulation precludes the use of lighting equipment when workers are required to have appropriate lighting equipment in tunnels or places not used for regular pass. However, (3) is left to the discretion of the HSO, is it appropriate? In addition, even if an emergency light is installed in a mine tunnel or the like in case of a power outage, there is a mine law that requires carrying a cap lamp (explosion-proof type). NK1: Modified (2) and (3) to simply specify.	(3) Provide and maintain adequate lighting on the walkways except when potable lighting such as head torches, lanterns, hand-held torches or the like is provided for workers where considered necessary by the HSO.
(4) 通路は、用途に応じた幅とすること。 →E 7.4.2 (4)に規定済み。(但し英語版では使途に応じた耐荷重も満たすこと、と併せて規定している。)→(NK の方針:英語版の規定とする)	(4) Ensure that walkways have sufficient dimensions and load capability for the intended purpose.	(4) Ensure that walkways have sufficient dimensions and load capability for the intended purpose. JC1O: Propose replace with dimensions with width NK leave it as it is.	(4) Ensure that walkways have sufficient dimensions and load capability for the intended purpose.
(5) 通路には、通行する者の視界を妨げる障害物を置いてはならない。→E 7.4.2 (5)に規定済み	(5) Ensure that there are no obstacles in walkways and that surfaces are level and safe, maintain all in a clean and orderly condition to avoid any falls, slips and injury.	(5) Ensure that there are no obstacles in walkways and that surfaces are level and safe, maintain all in a clean and orderly condition to avoid any falls, slips and injury.	(5) Ensure that there are no obstacles in walkways and that surfaces are level and safe, maintain all in a clean and orderly condition to avoid any falls, slips and injury.
(6) 通路面は、つまずき、すべり、踏抜等の危険のない状態に保持すること。→E 7.4.2 (5)に規定済み	(6) Ensure that temporary bridge type walkways shall have sufficient dimensions and load capability for the intended purpose.	(6) Ensure that temporary bridge type walkways shall have sufficient dimensions and load capability for the intended purpose. JC1O: Propose replace with dimensions with width NK leave it as it is.	(6) Ensure that temporary bridge type walkways shall have sufficient dimensions and load capability for the intended purpose.
(7) 架設通路は次に定めるものとすること。 →E 7.4.2 (7)に相当する規定がある。 (a) 丈夫な構造とすること。 →E 7.4.2 (6)に規定済み。 (b) 勾配は 30°以下とすること。ただし、階段を設けたもの又は高さが 2m 未満で丈夫な手すりを設けたものはこの限りでない。 (c) 勾配が 15°を超えるものには、踏桟その他のすべり止めを設けること。 (d) 墜落の危険のある箇所には、本仕様書 2.5.2 [通路からの墜落防止措置]の(2)[架設通路]	(7) Ensure that ramps do not exceed a gradient of 30 degrees and that they are provided with handrails. Steeper gradients shall be provided with steps or staircases or ladders where appropriate.	(7) Ensure that ramps do not exceed a gradient of 30 degrees and that they are provided with handrails. Steeper gradients shall be provided with steps or staircases or ladders where appropriate. (8) Ensure that ramps, steps and staircases have	(7) Ensure that ramps do not exceed a gradient of 30 degrees and that they are provided with handrails. Steeper gradients walkways shall be provided with steps or staircases or ladders where appropriate. To MD: Is this addition correct? (8) Ensure that ramps, steps and staircases have

に規定した措置を講じること。 (8) 請負者は、高さ又は深さが 50cm を超える段差がある場所に通路を設ける場合には、作業員が安全に通行するための階段又ははしごを設置すること。 →規定無し。→50 ㎝以上ではすべて階段はしごとなる。6.4.1(2)に安全な通路の設置を追記した。 (9) 請負者は、高さ又は深さが 1.5m を超える箇所で作業を行うときは、作業員が安全に昇降するための設備を設けること。ただし、安全に昇降するための設備が設けられない場合は、施工法の変更等により、対応措置を講じること。 →E 7.4.2 (9)に規定済み	(8) Ensure that ramps, steps and staircases have slip resistant surfaces and that they are provided with handrails and toe boards in accordance with JSSS 2.5.5 [*Handrails*] and JSSS 2.5.6 [*Toeboards*]. (9) Ensure that Contractor's Personnel working at heights or depths in excess 1.5m, are provided with facilities to enable them to get to their work location in a safe and convenient manner.	slip resistant surfaces and that they are provided with handrails and toe boards in accordance with JSSS 2.5.5 [*Handrails*] and JSSS 2.5.6 [*Toeboards*]. JC1O: 英語不明。 Cannot understand this sentence means. JC1: No modification is made. (9) Ensure that Contractor's Personnel working at heights or depths in excess 1.5m, are provided with facilities to enable them to get to their work location in a safe and convenient manner. JC1O English expression is correct? NK: Expression is correct. (9) shall be modified and moved to 6.4.1 General (2) because this general requirement and the 1.5 m height limitation shall be removed..	slip resistant surfaces and that they are provided with handrails and toe boards in accordance with JSSS 2.5.5 [*Handrails*] and JSSS 2.5.6 [*Toeboards*]. ~~(9) Ensure that Contractor's Personnel working at heights or depths in excess 1.5m, are provided with facilities to enable them to get to their work location in a safe and convenient manner.~~
7.4.4 非常口、避難通路 請負者は、常時使用しない避難用の出入口、通路及び避難用器具については、避難用である旨の表示をし、かつ、容易に利用できるように保持しておかなければならない。**→E 7.4.3 に規定済み**	**7.4.3. Emergency Exits and Evacuation Routes** The Contractor shall provide clear and illuminated signage so that all persons are made aware of the locations of emergency exits and of the locations and routes of emergency walkways for evacuation and maintain all such locations and routes in a clean, safe and readily available condition.	**7.4.3. Emergency Exits and Evacuation Routes** The Contractor shall provide clear and illuminated signage so that all persons are made aware of the locations of emergency exits and of the locations and routes of emergency walkways for evacuation and maintain all such locations and routes in a clean, safe and readily available condition. JC1D: 前項 7.4.2 において安全な walkway の規定がされているので、その内のいずれか(複数？)を emergency exits and/or evacuation routes として兼ねる設備のような規定でよいのではないか。 また、ここでは ladder/stepladder も考慮されるべきかと。 Some of walkways specified in 7.4.2 may be specified as can be specified as emergency exits and/or evacuation routes. Ladder/stepladder should be considered as emergency exits and/or evacuation routes here. NK: Modified.	**6.4.3 Emergency Exits and Evacuation Routes** The Contractor shall provide clear and illuminated signage so that all persons are made aware of the locations of emergency exits and of the locations and emergency routes of emergency walkways, ladders and the like for evacuation and maintain all such locations and routes in a clean, safe and readily available condition.
7.4.3 移動はしご、脚立	**7.4.4. Portable Ladders and Stepladders**	**7.4.4. Portable Ladders and Stepladders** JC1O: どっかのスペックを持ってきた内容となっている。著作権の問題がなければ可。 It seems that the provisions here are copy of other specifications. If there is no copyright issue, they can be used as they are. NK1: These are same as draft in Japanese. NK leave it as it is. JC1D: 7.4.4 (1)-(4)において HSG150 (3rd edition, published 2006), Ladders and stepladders page 41 of 141 を参照されることを希望します。 I hope to refer to HSG150 (3rd edition, published 2006), Ladders and stepladders page 41 of 141for 7.4.4 (1) to (4). NK: We referred to the relevant parts of HSG150 and modified. The Contractor shall comply with the following	**6.4.4 Portable Ladders and Stepladders** The Contractor shall comply with the following

(1) 移動はしご

請負者は、作業員が移動はしごを使用して移動する必要のある場合は、次の措置を講じなければならない。
→E 7.4.4 冒頭部に規定済み
(a) 次に定めるところに適合した移動はしごを使用させること。
(i) 丈夫な構造とすること。
(ii) 材料は、著しい損傷、腐食等がないものであること。
(iii) 幅は、30cm 以上であること。
(iv) 踏み桟は、25 cm から 35cm の間隔で、且つ、等間隔であること。
→上記(i)～(iv)は E 7.4.4 (1)(a)～(d)に規定済み
(b) すべり止め装置の取付け及び転位を防止するために次のいずれかの措置等を講じること。
(i) はしごの上方を建築物に取付ける。
→E 7.4.4 (3)(h)に規定済み
(ii) 他の作業員がはしごの下方を支える。
→E 7.4.4 (3)(i)(iii)に規定済み
(c) はしごの使用時には次の措置等を講じること。
(i) 据え付け角度は L(水平長):H(高さ)は 1:4(75.5 度)とする。
→E 7.4.4 (3)(e)に規定済み
(ii) はしごの上部の床からの突き出しは 100cm 以上とする。
→E 7.4.4 (3)(f)に規定済み
(d) 移動はしごを継ないで使用することを禁止する。→E 7.4.4 (3)(g)に規定済み)

(2) 脚立

請負者は、脚立を使って作業員に移動させるときは、次に定めるところに適合した脚立を使用させなければならない。
(a) 丈夫な構造とすること。
(b) 材料は、著しい損傷、腐食等がないものであること。
(c) 脚と水平面との角度を 75° 以下とし、かつ、折りたたみ式のものにあっては、脚と水平面との角度を確実に保つための金具等を備えるものであること。
→上記(a)～(c)は E 7.4.4 (2)(a)～(c)に規定済み

The Contractor shall comply with the following requirements regarding the use portable ladders and stepladders:
(1) Structure and specification of ladders
(a) Shall be of sound structure, clean and not contaminated by any slippery material;
(b) Without visible signs of defect, damage, corrosion, and shall otherwise in safe condition;
(c) Be at least 30 cm wide;
(d) Have steps with an interval of 25cm to 35cm and evenly spaced; and
(e) Have slip-proof steps or have other measures to prevent slipping.
(2) Structure and specification of stepladders
(a) Shall be of sound structure, clean and not contaminated by any slippery material;
(b) Without visible signs of defect, damage, corrosion, and shall otherwise in safe condition;
(c) The angle between the front rail and the floor shall not exceed 75 degrees and for folding stepladders they shall be equipped with a lock (such as a spreader with lock) to secure the angle made by the front rail and the floor;
(d) Steps shall be non-slip and of sufficient size to ensure safe operation; and.
(e) Rails shall have non-slip feet or shoes.
(3) Use of ladders and stepladders

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requirements regarding the use portable ladders and stepladders:
(1) Structure and specification of ladders
(a) Shall be of sound structure, clean and not contaminated by any slippery material;

JC1O: こんな書き方があるのか。タイトルを Portable Ladders として Potable ladder shall; (a).....
Is there such way of writing? I propose to replace the title with, for example, “Portable Ladders”, and “Potable ladder shall; (a) ..”
NK1: modified as commented.

(b) Without visible signs of defect, damage, corrosion, and shall otherwise in safe condition;
(c) Be at least 30 cm wide;
(d) Have steps with an interval of 25cm to 35cm and evenly spaced; and
(e) Have slip-proof steps or have other measures to prevent slipping.

(2) Structure and specification of stepladders
(a) Shall be of sound structure, clean and not contaminated by any slippery material;

JC1O: Same as above.
NK1: Modified.

JC1D: 前項(1) (a)と重複
Same as the previous section (1) (a) Duplicates.
NK: Requirement same for (1) and (2).

(b) Without visible signs of defect, damage, corrosion, and shall otherwise in safe condition;

JC1D: 前項(1) (b)と重複
Same as the previous section (1) (b). Duplicates.
NK: Same as the previous comment.

(c) The angle between the front rail and the floor shall not exceed 75 degrees and for folding stepladders they shall be equipped with a lock (such as a spreader with lock) to secure the angle made by the front rail and the floor;

JC1D: HSG 150 では”stiles”としているようです。
In HSG 150, the “front rail” seems to be used as "stiles".
NK: “front rail” is used in US The Code of Federal Regulations of the United States of America.
(https://books.google.co.jp/books?id=woU6AAAAIAAJ&pg=PA72&lpg=PA72&dq=front+rail+step+ladder&source=bl&ots=S38ct5egJ7&sig=ACfU3U0uHTs_ADUHGctBGXwmY5rGwsu5IA&hl=ja&sa=X&ved=2ahUKEwj7-baBn-zoAhUKBKYKHci4A-cQ6AEwE3oECAsQMg#v=onepage&q=front%20rail%20step%20ladder&f=false)
Left as it is.

(d) Steps shall be non-slip and of sufficient size to ensure safe operation; and.
(e) Rails shall have non-slip feet or shoes.
(3) Use of ladders and stepladders

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requirements regarding the use portable ladders and stepladders:
(1) ~~Structure and specification of~~ Portable ladders shall
(a) ~~Shall~~ Be of sound structure, clean and not contaminated by any slippery material;
(b) Be without visible signs of defect, damage, corrosion, and shall otherwise in safe condition;
(c) Be at least 30 cm wide;
(d) Have steps with an interval of 25cm to 35cm and evenly spaced; and
(e) Have slip-proof steps or have other measures to prevent slipping.
(2) ~~Structure and specification of~~ Stepladders shall:
(a) Be of sound structure, clean and not contaminated by any slippery material;
(b) Without visible signs of defect, damage, corrosion, and shall otherwise in safe condition;
(c) The angle between the front rail and the floor shall not exceed 75 degrees and for folding stepladders they shall be equipped with a lock (such as a spreader with lock) to secure the angle made by the front rail and the floor;
(d) Steps shall be non-slip and of sufficient size to ensure safe operation; and.
(e) Rails shall have non-slip feet or shoes.

	(Unless otherwise stated, the following requirements apply to both ladders and stepladders) (a) Users must read and follow all labels/markings on ladders, be aware of and never exceed the maximum load rating of a ladder and of the weight it is supporting, including the weight of any tools or equipment; (b) Users must avoid electrical hazards, always look for overhead power lines before handling ladders. Avoid using metal ladders near power lines or exposed energised electrical equipment; (c) Ladders must be inspected prior to use. If a ladder is damaged, it must be removed from service and suitably tagged until repaired or discarded; (d) Ladders shall only be placed on a stable, firm and sufficiently strong base giving level and safe support and so that the rungs or steps remain horizontal, as well as any loading placed on it; (e) Ladders shall maintain an angle between foot and floor of L (horizontal length): H (height) = 1: 4 (75.5 degrees); (f) Ladders shall have the top projecting at least 1 m over the landing floor; (g) Ladders shall not be placed on boxes, or other unstable bases to obtain additional height and connected ladders to give greater height or reach shall not be allowed; (h) Suspended ladders shall be anchored in a secure manner so that they cannot be displaced or swing; (i) Ladders shall be secured before any use and prevented from slipping during use by: (i) Securing the side rails at or near the top and the bottom; (ii) Providing an effective anti-slip shoe or foot; and (iii) Having another worker support the lower part of the ladder. (j) No extendable ladder shall be used where its sections cannot be locked and which could therefore move while in use; (k) Where a ladder or a series of ladders rise for a vertical height of 9 m or more above the base level, safe landing areas or rest platforms shall be provided at suitable intervals wherever possible;	(Unless otherwise stated, the following requirements apply to both ladders and stepladders) (a) Users must read and follow all labels/markings on ladders, be aware of and never exceed the maximum load rating of a ladder and of the weight it is supporting, including the weight of any tools or equipment; (b) Users must avoid electrical hazards, always look for overhead power lines before handling ladders. Avoid using metal ladders near power lines or exposed energised electrical equipment; (c) Ladders must be inspected prior to use. If a ladder is damaged, it must be removed from service and suitably tagged until repaired or discarded; (d) Ladders shall only be placed on a stable, firm and sufficiently strong base giving level and safe support and so that the rungs or steps remain horizontal, as well as any loading placed on it; (e) Ladders shall maintain an angle between foot and floor of L (horizontal length): H (height) = 1: 4 (75.5 degrees); (f) Ladders shall have the top projecting at least 1 m over the landing floor; (g) Ladders shall not be placed on boxes, or other unstable bases to obtain additional height and connected ladders to give greater height or reach shall not be allowed; (h) Suspended ladders shall be anchored in a secure manner so that they cannot be displaced or swing; (i) Ladders shall be secured before any use and prevented from slipping during use by: (i) Securing the side rails at or near the top and the bottom; (ii) Providing an effective anti-slip shoe or foot; and (iii) Having another worker support the lower part of the ladder. (j) No extendable ladder shall be used where its sections cannot be locked and which could therefore move while in use; (k) Where a ladder or a series of ladders rise for a vertical height of 9 m or more above the base level, safe landing areas or rest platforms shall be provided at suitable intervals wherever possible;	(3) Use of ladders and stepladders (Unless otherwise stated, the following requirements apply to both ladders and stepladders) (a) Users must read and follow all labels/markings on ladders, be aware of and never exceed the maximum load rating of a ladder and of the weight it is supporting, including the weight of any tools or equipment; (b) Users must avoid electrical hazards, always look for overhead power lines before handling ladders. Avoid using metal ladders near power lines or exposed energised electrical equipment; (c) Ladders must be inspected prior to use. If a ladder is damaged, it must be removed from service and suitably tagged until repaired or discarded; (d) Ladders shall only be placed on a stable, firm and sufficiently strong base giving level and safe support and so that the rungs or steps remain horizontal, as well as any loading placed on it; (e) Ladders shall maintain an angle between foot and floor of L (horizontal length): H (height) = 1: 4 (75.5 degrees); (f) Ladders shall have the top projecting at least 1 m over the landing floor; (g) Ladders shall not be placed on boxes, or other unstable bases to obtain additional height and connected ladders to give greater height or reach shall not be allowed; (h) Suspended ladders shall be anchored in a secure manner so that they cannot be displaced or swing; (i) Ladders shall be secured before any use and prevented from slipping during use by: (i) Securing the side rails at or near the top and the bottom; (ii) Providing an effective anti-slip shoe or foot; and (iii) Having another worker support the lower part of the ladder. (j) No extendable ladder shall be used where its sections cannot be locked and which could therefore move while in use; (k) Where a ladder or a series of ladders rise for a vertical height of 9 m or more above the base level, safe landing areas or rest platforms shall be provided at

7.4.5 点検 請負者は、作業場に通ずる場所及び作業場内に設定した通路及び仮設通路が安全な状態に維持されているか否か、また資材の劣化等により通路としての機能に不具合が生じていないか、定期的に点検しなければならない。 →E 7.4.5 に規定済み	(l) Every ladder shall be used in such a way that: (i) A secure handhold and secure support are always available to the user; and (ii) The user can maintain a safe handhold when carrying a load unless, in the case of a step ladder, the maintenance of a handhold is not practicable when a load is carried, and a risk assessment has demonstrated that the use of a stepladder is justified because of the low risk and the short duration of use. (4) Additional Requirements for Use of Stepladders (a) Stepladders shall not be used for work at heights of 2m or more. The Contractor shall adopt other measures for work in excess of 2m such as or providing scaffolding in accordance with JSSS 7.5 [*Scaffolding*]; (b) Step ladders shall not be used as a single ladder or in a partially closed position; (c) Treads of stepladders shall have the correct sized area and slip resistant finish for safe working. (d) Restraint Clasps shall be securely locked before any use. (e) Stepladders shall not be placed on unstable or uneven surfaces. (f) Stepladders shall not be positioned in front of doors. (g) The top rung of a ladder or step of a step ladder shall not be used as a rung/step unless designed for that purpose. (h) For use of Stepladders as a support for trestle scaffolding refer to JSSS 7.5 [*Scaffolding*]. **7.4.5. Inspection** In accordance with JSSS 1.11 [*HSO - Scope of Duties*] the HSO shall regularly inspect all walkways, ladders and step ladders, ensure that same are safe and fit for the intended purpose and visibly certify each as “Safe for Use” or otherwise.	(l) Every ladder shall be used in such a way that: (i) A secure handhold and secure support are always available to the user; and (ii) The user can maintain a safe handhold when carrying a load unless, in the case of a step ladder, the maintenance of a handhold is not practicable when a load is carried, and a risk assessment has demonstrated that the use of a stepladder is justified because of the low risk and the short duration of use. (4) Additional Requirements for Use of Stepladders (a) Stepladders shall not be used for work at heights of 2m or more. The Contractor shall adopt other measures for work in excess of 2m such as or providing scaffolding in accordance with JSSS 7.5 [*Scaffolding*]; (b) Step ladders shall not be used as a single ladder or in a partially closed position; (c) Treads of stepladders shall have the correct sized area and slip resistant finish for safe working. (d) Restraint Clasps shall be securely locked before any use. (e) Stepladders shall not be placed on unstable or uneven surfaces. (f) Stepladders shall not be positioned in front of doors. (g) The top rung of a ladder or step of a step ladder shall not be used as a rung/step unless designed for that purpose. (h) For use of Stepladders as a support for trestle scaffolding refer to JSSS 7.5 [*Scaffolding*]. **7.4.5. Inspection** In accordance with JSSS 1.11 [*HSO - Scope of Duties*] the HSO shall regularly inspect all walkways, ladders and step ladders, ensure that same are safe and fit for the intended purpose and visibly certify each as “Safe for Use” or otherwise.	suitable intervals wherever possible; (l) Every ladder shall be used in such a way that: (i) A secure handhold and secure support are always available to the user; and (ii) The user can maintain a safe handhold when carrying a load unless, in the case of a step ladder, the maintenance of a handhold is not practicable when a load is carried, and a risk assessment has demonstrated that the use of a stepladder is justified because of the low risk and the short duration of use. (4) Additional Requirements for Use of Stepladders (a) Stepladders shall not be used for work at heights of 2m or more. The Contractor shall adopt other measures for work in excess of 2m such as or providing scaffolding in accordance with JSSS 7.5 [*Scaffolding*]; (b) Step ladders shall not be used as a single ladder or in a partially closed position; (c) Treads of stepladders shall have the correct sized area and slip resistant finish for safe working. (d) Restraint Clasps shall be securely locked before any use. (e) Stepladders shall not be placed on unstable or uneven surfaces. (f) Stepladders shall not be positioned in front of doors. (g) The top rung of a ladder or step of a step ladder shall not be used as a rung/step unless designed for that purpose. (h) For use of Stepladders as a support for trestle scaffolding refer to JSSS 7.5 [*Scaffolding*]. **6.4.5 Inspection** In accordance with JSSS ~~1.11~~ 1.13 [*HSO - Scope of Duties and Authority*] the HSO shall regularly inspect all walkways, ladders and step ladders, ensure that same are safe and fit for the intended purpose and visibly certify each as “Safe for Use” or otherwise.
7.5 足場	**7.5. SCAFFOLDING**	**7.5. SCAFFOLDING** JC1D: HSG 150 3rd edition 2006 General access scaffolds (page 28/141)を参照されて全面的な改訂が望まれます。	**6.5 SCAFFOLDING**

7.5.1 一般事項	**7.5.1. General**	I hope revision is fully made with reference to HSG 150 3rd edition 2006 General access scaffolds (page 28/141). JC1: 指針をベースに作成した和文にもとに、必要な事項及び規定を追加する形で英文を作成しています。和文での必要事項を網羅していますが、HSG は具体的な数値規定がないため参照とはせず、OSHA をベースとした規定に 7.5 全体を改訂します。 This English JSSS was prepared based on the Japanese version which was prepared based on the safety guidelines of Ministry of Construction, Japan. 7.5 has covered requirements in Japanese version. However, 7.5 is modified based on OSHA because HSG does not specify concrete values required for JSSS. **7.5.1. General** JC1O: 日本語 ver.とは異なる内容となっている。 MM: JICA:The content is different from the Japanese ver. Check it again, please. MD: The comment is correct, it is very different basically because MD considered it necessary to modify as mentioned in the draft version which also included some guidance notes, comments and queries. NK : We will discuss the draft with JICA and necessary changes. NK1: We will revise this Section referring to MD's comment in Issue 1 and HSG. NK1: "Scaffolding" is defined in Chapter 1 A1.1.2 as follows: *(22) "Scaffold" or "Scaffolding" means a temporary structure or structures that provide access on or from which persons work or to support Goods.*	**6.5.1 General**
(1) 足場とは作業のために設ける作業床及びそれを支持するものからなる仮設物のうち、作業構台を除くものをいう。 →規定無し。→Chapter 1 A1.1.2 (22)で Scaffolding は定義済みのため。	(1) This Section contains requirements for various types of scaffolding including tubular steel scaffolding and modular or system scaffolding, in various configurations.	(1) This Section contains requirements for various types of scaffolding including tubular steel scaffolding and modular or system scaffolding, in various configurations.	(1) This Section contains requirements for various types of Scaffolding defined in JSSS Chapter 1, A1.1.2 including ~~tubular steel~~ supported scaffoldings for example tube and coupler, ~~and modular or system~~ fabricated frame, mobile scaffoldings, suspended scaffolding for example interior hung scaffolding, trestle scaffoldings in various configurations and mobile elevating work platforms.
(2) 本節では鋼管足場、つり足場、移動式足場について、以下に規定する。 →E 7.5.1 (1)に規定済み	(2) Not all types are separately described in this Section and the requirements of this Section are therefore of general application. Requirements for any one type of Scaffolding shall also apply generally to all types and configurations unless otherwise stated or apparent from the wording and context.	(2) Not all types are separately described in this Section and the requirements of this Section are therefore of general application. Requirements for any one type of Scaffolding shall also apply generally to all types and configurations unless otherwise stated or apparent from the wording and context.	(2) Not all types are separately described in this Section and the requirements of this Section are therefore of general application. Requirements for any one type of Scaffolding shall also apply generally to all types and configurations unless otherwise stated or apparent from the wording and context.
(3) 請負者は、足場からの墜落防止に対しては、本仕様書 2.5[墜落防止]、足場・作業床での作業に際して物体の飛来又は落下により工事関係者に危険を及ぼすおそれのある場合は、2.6[飛来落下の防止措置]に拠る規定に、各々従わねばならない。 →E 7.5.1(7)に規定済み	(3) All tubular steel scaffolding shall be designed, erected, tested, inspected, used, dismantled and removed by Contractor's Personnel that have been trained and certified for such operations.	(3) All tubular steel scaffolding shall be designed, erected, tested, inspected, used, dismantled and removed by Contractor's Personnel that have been trained and certified for such operations. JC1D: Contractor's Personnel なのは当然のこと It is obvious who do those is Contractor's Personnel. NK1: Important thing is to specify that Personnel trained and certified for such operations shall be assigned. The actions required are for design, erection, test, inspect, use, dismantle and removal, therefore this sentence does not specify personnel positions like HSO, worker, Operation Leader. Therefore, not modified.	(3) All ~~tubular steel~~ scaffoldings shall be designed, erected, tested, inspected, used, dismantled and removed by Contractor's Personnel who ~~that~~ have been trained and certified for such operations in accordance with JSSS~~1.16~~ 1.18 [*Proper Placement of Contractor's Personnel*].
(4) 請負者は、足場の安全事項についての当該国の法律及び本仕様書のいずれにも規定が無い事項は、次に示すいずれかの基準における規定を遵守しなければならない。 →E 7.5.2 [Compliance Standards](1)及び(a)～(c)として下記(a)及び(b)を規定済み (a) 米国 OSHA PART 1926-Safety and Health Regulations for Construction, Subpart L-Scaffolds 及び ANSI/ASSP A10.8 – 2019 Scaffolding Safety Requirements equipment - Part 1: Scaffolds - Performance requirements and general design	(4) All modular or system scaffolding (consisting	(4) All modular or system scaffolding (consisting	~~(4) All modular or system scaffolding (consisting of~~

(b) 英国 BS EN12811-1:2003 Temporary works equipment - Part 1: Scaffolds - Performance requirements and general design (5) 足場の計画、設計は、その上で行う作業に従事する作業員、作業員が使用する道具等の重量を勘案した上載荷重を考慮し、本章 7.1.3[仮設構造物の設計及び設計照査]に基づき計画、設計すること。 →E 7.5.2 (2)に相当	of prefabricated individual components, braces and accessories) shall be designed, assembled, erected, tested, inspected, used, dismantled and removed by Contractor's Personnel that have been trained and certified for such operations in accordance with JSSS 1.16 [*Proper Placement of Contractor's Personnel*]. (5) All scaffolding work shall be carried out strictly in accordance with the manufacturer's written instructions. (6) The design, management, provision, safe use and safe removal of Scaffolding shall comply with the requirements of JSSS 0 [*Design and Provision of TW Generally*]. (7) Please refer to all other related JSSS requirements including but not restricted to: (a) JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*]; (b) JSSS 1.35 [*Design and Management of Temporary Works*] (c) JSSS 2.5 [*Fall Prevention*] (d) JSSS 2.6 [*Falling Objects*]; (e) JSSS 0 [*Portable Ladders and Stepladders*]; (8) Scaffolds and scaffold components must not be loaded in excess of their maximum intended loads or rated capacities, whichever is less. (9) Scaffolding shall not be used for any purpose other than the intended original purpose and for example shall never be used for hoisting loads. The Contractor shall provide other	of prefabricated individual components, braces and accessories) shall be designed, assembled, erected, tested, inspected, used, dismantled and removed by Contractor's Personnel that have been trained and certified for such operations in accordance with JSSS 1.16 [*Proper Placement of Contractor's Personnel*]. JC1D: 前コメントに同じ。書きます？ Same as previous comment. Is it necessary to stipulate? NK1: (3) and (4) are merged in (3) (5) All scaffolding work shall be carried out strictly in accordance with the manufacturer's written instructions. (6) The design, management, provision, safe use and safe removal of Scaffolding shall comply with the requirements of JSSS 0 [*Design and Provision of TW Generally*]. (7) Please refer to all other related JSSS requirements including but not restricted to: JC1D: この表現は好ましくない。必要であれば、関連クローズをすべて書き出すことが望まれる。スペック作成者の信頼度が下がる。 The expression of "but not restricted to "is not desirable. If necessary, it is desirable to write out all relevant closes. The reliability of the spec write is reduced. NK1: (7) above will be deleted based on the JC's comment and the point that Compliance Standards is defined in 7.5.2. JC1O:英語不明。 Cannot understand this sentence means. NK: Deleted (a) to (e) and added common requirement in (7) from 6.5.3. (a) JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*]; (b) JSSS 1.35 [*Design and Management of Temporary Works*] (c) JSSS 2.5 [*Fall Prevention*] (d) JSSS 2.6 [*Falling Objects*]; (e) JSSS 0 [*Portable Ladders and Stepladders*]; (8) Scaffolds and scaffold components must not be loaded in excess of their maximum intended loads or rated capacities, whichever is less. JC1D: HSG 150 3rd edition 2006 General access scaffolds 145項では明記されている。 It is clarified in the General access scaffolds, section 145, HSG 150 3rd edition 2006. NK1: No modification. (9) Scaffolding shall not be used for any purpose other than the intended original purpose and for example shall never be used for hoisting loads. The Contractor shall provide other specific types of Contractor's Equipment	~~prefabricated individual components, braces and accessories) shall be designed, assembled, erected, tested, inspected, used, dismantled and removed by Contractor's Personnel that have been trained and certified for such operations in accordance with JSSS 1.16 [*Proper Placement of Contractor's Personnel*].~~ (4) All scaffolding work when the manufacturer's written instructions exist for example for fabricated frames, mobile elevating work platforms shall be carried out strictly in accordance with the instructions. (5) The design, management, provision, safe use and safe removal of Scaffolding shall comply with the requirements of JSSS ~~0 [*Design and Provision of TW Generally*]~~. 1.37 [Design and Management of Temporary Works] (6) ~~Please refer to all other related JSSS requirements including but not restricted to:~~ Handrails, toeboards and ladders in Scaffolding shall be provided in accordance with JSSS 2.5.5 [Handrails], 2.5.6 [Toeboards] and 7.4 [Walkways, Ladders and Stepladders], respectively. ~~(a) JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*];~~ ~~(b) JSSS 1.35 [*Design and Management of Temporary Works*]~~ ~~(c) JSSS 2.5 [*Fall Prevention*]~~ ~~(d) JSSS 2.6 [*Falling Objects*];~~ (e) ~~JSSS 0 [*Portable Ladders and Stepladders*];~~ (7) Unless specified for each scaffolding, each scaffold and scaffold component shall be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load applied or transmitted to it. (8) Scaffolds and scaffold components must not be loaded in excess of their maximum intended loads or rated capacities, whichever is less. (9) Scaffolding shall not be used for any purpose other than the intended original purpose and for example shall never be used for hoisting

	specific types of Contractor's Equipment (such as material hoists) for that purpose.	(such as material hoists) for that purpose. JC1D: HSG 150 3rd edition 2006 General access scaffolds 145 項では明記されている。 It is clarified in the General access scaffolds, section 145, HSG 150 3rd edition 2006. NK1: No modification.	loads. ~~The Contractor shall provide other specific types of Contractor's Equipment (such as material hoists) for that purpose.~~
	(10) Scaffolding shall be removed immediately upon completion of the work for which it is provided.	(10) Scaffolding shall be removed immediately upon completion of the work for which it is provided. JC1D: General で記述することでしょうか？ Shall it be written in General? NK: It shall be specified in General because general requirement for all Scaffolding.	(10) Scaffolding shall be removed immediately upon completion of the work for which it is provided.
	(11) All Temporary Electrical Installations shall be designed, installed, inspected, tested, altered and removed by Contractor's Personnel that qualified, trained and certified for such operations in accordance with JSSS 1.16 [Proper Placement of Contractor's Personnel].	(11) All Temporary Electrical Installations shall be designed, installed, inspected, tested, altered and removed by Contractor's Personnel that qualified, trained and certified for such operations in accordance with JSSS 1.16 [Proper Placement of Contractor's Personnel]. JC1: 不要、ここは scaffolding の規定。 Not required as this is the requirement for scaffolding. JC1O: temporary electrical installation とは？ What is temporary electrical installation? NK: Deleted.	(11) ~~All Temporary Electrical Installations shall be designed, installed, inspected, tested, altered and removed by Contractor's Personnel that qualified, trained and certified for such operations in accordance with JSSS 1.16 [Proper Placement of Contractor's Personnel].~~
	7.5.2. Compliance Standards (1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], any items in this Section or relevant to the subject of this Section and which are not fully covered by JSSS, the Contractor shall comply with the technical requirements of any one of the following standards: (a) OSHA PART 1926-Safety and Health Regulations for Construction, Subpart L-Scaffolds; (b) ANSI/ASSP A10.8 – 2019 Scaffolding Safety Requirements equipment - Part 1: Scaffolds - Performance requirements and general design, USA; and	**7.5.2. Compliance Standards** (1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], any items in this Section or relevant to the subject of this Section and which are not fully covered by JSSS, the Contractor shall comply with the technical requirements of any one of the following standards: (a) OSHA PART 1926-Safety and Health Regulations for Construction, Subpart L-Scaffolds; (b) ANSI/ASSP A10.8 – 2019 Scaffolding Safety Requirements equipment - Part 1: Scaffolds - Performance requirements and general design, USA; and JC1: 新　内容未確認 Is it new information? JICA hasn't confirmed it yet. NK1: ANSI is included in Japanese draft. Left it as it is. (c) BS EN12811-1:2003 Temporary works equipment - Part 1: Scaffolds - Performance requirements and general design, UK. (2) Unless otherwise stated in the Contract or in any of the standards for compliance, each scaffold and scaffold component must support without failure its own weight and at least four times the maximum intended load	**6.5.2 Compliance Standards** (1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], any items in this Section or relevant to the subject of this Section and which are not fully covered by JSSS, the Contractor shall comply with the technical requirements of any one of the following standards: (a) OSHA PART 1926-Safety and Health Regulations for Construction, Subpart L-Scaffolds; (b) ANSI/ASSP A10.8 – 2019 Scaffolding Safety Requirements equipment - Part 1: Scaffolds - Performance requirements and general design, USA; and (c) BS EN12811-1:2003 Temporary works equipment - Part 1: Scaffolds - Performance requirements and general design, UK. (2) ~~Unless otherwise stated in the Contract or in any of the standards for compliance, each scaffold and scaffold component must support without failure its own weight and at least~~

	(c) BS EN12811-1:2003 Temporary works equipment - Part 1: Scaffolds - Performance requirements and general design, UK. (2) Unless otherwise stated in the Contract or in any of the standards for compliance, each scaffold and scaffold component must support without failure its own weight and at least four times the maximum intended load applied or transmitted to it.	applied or transmitted to it. JC1D: 参考までに関連する standard を示してください Please indicate relevant standard. JC1O: 安全係数 4 の根拠？ Are there any specified grounds for safety factor 4? NK: It is from OSHA §1926.451 General requirements below. a) Capacity. (1) Except as provided in paragraphs, each scaffold and scaffold component shall be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load applied or transmitted to it. (2) is moved to 6.5.1 (7). NK1: 各節で規定していますので、まとめて新款 6.5.3 足場床を、OSHA を遵守することを追加します。 As each Section specifies Platform, new section 6.5.3 is added below.	~~four times the maximum intended load applied or transmitted to it.~~ **6.5.3 Platform of Scaffolding** The platform of Scaffolding shall comply to the following: (1) Each platform on all working levels of scaffoldings shall be fully planked or decked between the front uprights and the ~~guardrail~~ handrails supports as follows: (a) Platforms shall be of adequate size and strength and with true dimension and no twist or bending, no splits, holes or damage. (b) Each platform unit shall be installed so that the space between adjacent units and the space between the platform and the uprights is no more than 2.5 cm wide, except where the Contractor can demonstrate that a wider space is necessary. (c) Where the Contractor makes the demonstration provided for in paragraph (a) above, the platform shall be planked or decked as fully as possible and the remaining open space between the platform and the uprights shall not 24 cm. (d) The requirement to provide full planking or decking does not apply to platforms used solely as walkways or solely by the workers performing scaffold erection or dismantling. In these situations, only the planking that the Contractor establishes is necessary to provide safe working conditions is required. (2) Except as provided separately for each Scaffolding, platform and walkway shall be at least ~~46~~ 45 cm wide. Where scaffolds must be used in areas that the Contractor can demonstrate are so narrow that platforms and walkways cannot be at least ~~46~~ 45 cm wide, such platforms and walkways shall be as wide as feasible, and the workers on those platforms and walkways shall be protected from fall hazards by the use of handrails and/or personal fall arrest systems.

			(3) Except as provided separately for each Scaffolding, the front edge of all platforms shall not be more than 36 cm from the face of the work, unless handrails are erected along the front edge and/or personal fall arrest systems are used to protect the workers from falling. (4) Other requirements than specified in the above, the platform of Scaffolding shall comply the provisions in OSHA Subpart L-Scaffolds, 1926.451 General requirements, (b) Scaffold platform construction.
		NK1: 足場の種類・名称を OSHA の規定に合わせて変更し鋼管足場に加えて、ビテイ足場を追記します。 The names and types of scaffoldings are modified following OSHA. Fabricated frame Scaffolding as a part of supported scaffoldings.	**6.5.4 Supported Scaffoldings** (1) General (a) The Scaffolds with a height to base width (including outrigger supports, if used) ratio of more than four to one (4:1) shall be restrained from tipping by guying, tying, bracing, or equivalent means (b) Poles, legs, posts, frames, and uprights shall bear on base plates and mud sills or other adequate firm foundation. (c) Footings shall be level, sound, rigid, and capable of supporting the loaded Scaffolding without settling or displacement. (d) Poles, legs, posts, frames, and uprights shall be plumb and braced to prevent swaying and displacement. (e) Scaffolds over 38.0 m in height above their base plates shall be designed in accordance with JSSS 1.37 [*Design and Management of Temporary Works*], and shall be constructed and loaded in accordance with such design. (f) When moving platforms to the next level, the existing platform shall be left undisturbed until the new bearers or end frames have been set in place and braced prior to receiving the new platforms. (g) Other general requirements than specified in the above, the supported Scaffolding shall comply the provisions in OSHA Subpart L-Scaffolds, 1926.451 General requirements, (c) Criteria for supported scaffolds. (2) Tube and Coupler Scaffolding (a) Transverse bracing forming an “X” across the width of the scaffold shall be installed at the scaffold ends and at least at every third set of posts horizontally (measured from only one end) and every fourth runner
7.5.2 鋼管足場 請負者は、次を遵守して計画、設計を行わなければな	**7.5.3. Tubular Steel Scaffolding.** (1) Tubular steel scaffolding comprises steel	**7.5.3. <u>Tubular Steel Scaffolding</u>** JC1O: 内容は新 Are the contents new? NK1: 鋼管足場の和文に追加しています。	

らない。

→各款の序文と同じとし、

(1) 鋼管で構成される足場（以下、「鋼管足場」という。）については、次に示す措置を講じること。

(a) 足場（脚輪を取り付けた移動式足場を除く。）の脚部には、足場の滑動又は沈下を防止するため、ベース金具を用い、かつ、敷板、敷角等を用い、根がらみを設けること。
→E 7.5.3 (5)(b)に規定済み

(b) 鋼管の接続部又は交差部は、これに適合した金具を用いて、確実に接続し、又は緊結させること。
→E 7.5.3 (5)(c)に規定済み

(c) 筋かいで補強すること。
→E 7.5.3 (5)(e)に規定済み

(d) 鋼管足場の種類に応じ、風荷重等も考慮したうえで、足場の安定性を維持するために必要な壁つなぎ又は控えを設けること。
→E 7.5.3 (5)(d)及び(e)に規定済み
→MD 氏追記済み。

tubes and connector clips, with boarded working platforms, handrails, toe boards and access ladders, steps or stairs.

(2) Ladders shall be provided in accordance with JSSS 7.4 [*Walkways, Ladders and Stepladders*].

(3) Handrails shall be provided in accordance with JSSS 2.5.5 [*Handrails*].

(4) Toeboards shall be provided in accordance with JSSS 2.5.6 [*Toeboards*].

(5) The following safety measures shall apply:

(a) Ensure that all scaffolding is erected plumb, level and squared;

(b) Prevent any scaffold from moving, sliding, rocking or settling by ensuring that posts are securely founded and provided with mudsills or other base plate types and measures to distribute the load, screw-jacks or other levelling devices;

(c) Ensure that all joints between scaffolding tubes are formed with the correct type of coupling and that all are securely fixed and tightened;

(d) Ensure that all scaffolds are securely anchored or tied to supporting structures;

(e) Ensure that all scaffolding is securely braced with stays, raking and cross bracing to render the scaffold stable and secure for the purpose and in all likely climatic and other relevant conditions;

(f) Provide working platforms of sufficient dimension and structural capability to perform the required function;

(g) Ensure that working platforms are close boarded with no open joints in excess of 3cm and that toeboards are provided;

(h) Ensure that all scaffold boards are adequately secured to the scaffold structure to prevent any movement, detachment or displacement; and

(i) Ensure that all holes left by putlogs and supports after dismantling shall be repaired in a safe working manner.

JC1D: (1)以下(5)まで、特に Tubular steel scaffolding に限定した規定でないように思います。BS EN 12811-1 を参照すれば、特に Annex B や C において設計上の安全対策（カップラーやベースジャッキの強度）が規定されています。
(1) to (5) below, I think it is not requirements limited to tubular steel scaffolding. With reference to BS EN 12811-1, design safety measures (strength of couplers and base jacks) are specified in Annex B and C in particular.

JC1: BS EN 12811-1 の順守を 6.5.2(1)(c)に規定しています。管足場に特有な事項を規定することとし、ここに残します。
The compliance to BS EN 12811-1 is stipulated in 6.5.2(1)(c). To specify particular requirements for the tubular steel scaffolding, the clauses are left and modified.

(1) Tubular steel scaffolding comprises steel tubes and connector clips, with boarded working platforms, handrails, toe boards and access ladders, steps or stairs.

(2) Ladders shall be provided in accordance with JSSS 7.4 [*Walkways, Ladders and Stepladders*].

(3) Handrails shall be provided in accordance with JSSS 2.5.5 [*Handrails*].

(4) Toeboards shall be provided in accordance with JSSS 2.5.6 [*Toeboards*].

(5) The following safety measures shall apply:

(a) Ensure that all scaffolding is erected plumb, level and squared;

(b) Prevent any scaffold from moving, sliding, rocking or settling by ensuring that posts are securely founded and provided with mudsills or other base plate types and measures to distribute the load, screw-jacks or other levelling devices;

(c) Ensure that all joints between scaffolding tubes are formed with the correct type of coupling and that all are securely fixed and tightened;

(d) Ensure that all scaffolds are securely anchored or tied to supporting structures;

(e) Ensure that all scaffolding is securely braced with stays, raking and cross bracing to render the scaffold stable and secure for the purpose and in all likely climatic and other relevant conditions;

(f) Provide working platforms of sufficient dimension and structural capability to perform the required function;

(g) Ensure that working platforms are close boarded with no open joints in excess of 3cm and that toeboards are provided;

vertically.

(b) On straight run scaffolds, longitudinal bracing across the inner and outer rows of posts shall be installed diagonally in both directions, and shall extend from the base of the end posts upward to the top of the scaffold at approximately a 45 degree angle.

(c) Where conditions preclude the attachment of bracing to posts, bracing shall be attached to the runners as close to the post as possible.

(d) Bearers shall be installed transversely between posts, and when coupled to the posts, shall have the inboard coupler bear directly on the runner coupler. When the bearers are coupled to the runners, the couplers shall be as close to the posts as possible.

(e) Runners shall be installed along the length of the Scaffolding, located on both the inside and outside posts at level.

(f) Couplers shall be of a structural metal, such as drop-forged steel, malleable iron, or structural grade aluminum. The use of gray cast iron is prohibited.

(g) Other requirements than specified in the above, the tube and coupler Scaffolding shall comply the provisions in OSHA Subpart L-Scaffolds, 1926.452 Additional requirements applicable to specific types of scaffolds, (b) Tube and coupler scaffolds.

(3) Fabricated frame Scaffolding

(a) Frames and panels shall be braced by cross, horizontal, or diagonal braces, or combination thereof, which secure vertical members together laterally. The cross braces shall be of such length as will automatically square and align vertical members so that the erected scaffold is always plumb, level, and square. All brace connections shall be secured.

(b) Frames and panels shall be joined together vertically by coupling or stacking pins or equivalent means.

(c) Where uplift can occur which would displace scaffold end frames or panels, the frames or panels shall be locked together vertically by pins or equivalent means.

(d) Brackets used to support cantilevered loads shall:

7.5.3　つり足場

請負者は、つり足場(ゴンドラのつり足場を除く。以下本節において同じ。)については、次の措置を講じなければならない。→OSHA 及び JSSS の該当条項を規定するように、英文を改訂します。

(1) 作業床の最大積載荷重は、つりワイヤロープ及びつり鋼線の安全係数が 10 以上、つり鎖及びつりフックの安全係数が 5 以上並びにつり鋼帯並びにつり足場の下部及び上部の支点の安全係数が鋼材にあっては 2.5 以上、木材にあっては 5 以上となるように定めること。
→E 7.5.4 (2)(a)に規定済み

(2) 次のいずれかに該当する材料を使用しないこと。
(a) つりワイヤロープ
(i) ワイヤロープ一よりの間において素線(フィラ線を除く。以下同じ。)の数の 10%以上の素線が切断しているもの
(ii) 直径の減少が公称径の 7%を超えるもの
(iii) キンクしたもの
(iv) 著しい形崩れ又は腐食があるもの
→上記(i)～(iv)は E 7.5.4 (2)(f)(i)～(iii)に規定済み
(b) つり鎖
(i) 伸びが、つり鎖が製造されたときの長さの 5%を超えるもの
(ii) リンクの断面の直径の減少が、当該つり鎖が製造されたときの当該リンクの断面の直径の 10%を超えるもの
(iii) 亀裂があるもの
→上記(i)～(iii)は E 7.5.4 (2)(g)(i)～(iii)に規定済み
(c) つり鋼線及びつり鋼帯
著しい損傷、変形又は腐食のあるもの
→ E 7.5.4 (2)(h)に規定済み

(3) つり足場の設置時の措置
(a) 作業床は、幅を 40cm 以上とし、かつ、隙間がないようにすること。

7.5.4. Suspended Scaffolds

(1) Suspended scaffolds comprise working platforms suspended from upper levels for example with ropes, cables or chains and with all necessary support framing.

(2) The following safety measures shall apply (except gondola suspended scaffolds):
(a) The maximum loading capacity of the working platform shall be determined to ensure a safety factor of 10 or more for hanging wire ropes and hanging steel wires, 5 or more for hanging chains and hanging hooks, 2.5 or more for hanging steel bands and fulcrums at the bottom and top of the hanging scaffolds and 5 or more for timber.
(b) Timber boarded working platforms shall be provided to provide a safe and uninterrupted working surface.
Alternatively, proprietary type Light Weight Staging (LWS), shall be provided to provide a safe and uninterrupted working platform. LWS shall be 0.45m wide aluminium frame with slip-resistant coated plywood decking or similar, al shall be designed, tested and approved to the appropriate class of BS 2037 Class 1 and suitable for the required use.
(c) Handrails shall be provided in accordance with JSSS 2.5.5 [*Handrails*].
(d) Toeboards shall be provided in accordance with JSSS 2.5.6 [*Toeboards*].
(e) Suspension ropes and cables must be connected to overhead supports by
(h) Ensure that all scaffold boards are adequately secured to the scaffold structure to prevent any movement, detachment or displacement; and
(i) Ensure that all holes left by putlogs and supports after dismantling shall be repaired in a safe working manner.

NK1: (2) to (4) are moved to 6.5.1 (7).

7.5.4. Suspended Scaffolds

JC1O:内容は新
Is it new specification?
NK: 和文に追加しています。

JC1D: OSHA の HP(以下に添付)をすれば以下(2)(b)&(c)が適合しない scaffold もありそうです。ここ(7.5.4) 全体の規定を参照した規格を再確認してください。
https://www.osha.gov/SLTC/etools/scaffolding/suspended/index.html なお、tubular steel scaffolding が上部の構造物から支持されている場合は、7.5.4 には適合しない、7.5.3 に含まれると理解してよいですか？
In OSHA's HP (attached below), it seems that (2) (b) & (c) cannot apply to some scaffolds. Please check the standards to cover whole requirements of 7.5.4.
https://www.osha.gov/SLTC/etools/scaffolding/suspended/index.html
Can we understand that the tubular steel scaffolding which is supported by the upper structure is not appropriate to be specified in 7.5.4 and it shall be included in 7.5.3?

NK1: 和文は、OSHA の Catenary 形式のつり足場を規定しています。そのため、その他の形式の吊り足場は OSHA に準じることと規定します。
The Japanese JSSS specifies for interior hung type in OSHA. JSSS will specify for other types of suspended Scaffold to comply to OSHA.
Interior hung type: Platform suspended from the ceiling or roof structure by fixed-length supports.)

(1) Suspended scaffolds comprise working platforms suspended from upper levels for example with ropes, cables or chains and with all necessary support framing.

(2) The following safety measures shall apply (except gondola suspended scaffolds):
(a) The maximum loading capacity of the working platform shall be determined to ensure a safety factor of 10 or more for hanging wire ropes and hanging steel wires, 5 or more for hanging chains and hanging hooks, 2.5 or more for hanging steel bands and fulcrums at
(i) Be seated with side-brackets parallel to the frames and end-brackets at 90 degrees to the frames;
(ii) Not be bent or twisted from these positions; and
(iii) Be used only to support personnel, unless the scaffold has been designed for other loads.
(e) Other requirements than specified in the above, the fabricated frame Scaffolding shall comply the provisions in OSHA Subpart L-Scaffolds, 1926.452 Additional requirements applicable to specific types of scaffolds, (c) Fabricated frame scaffolds.

6.5.5 Suspended Scaffoldings

(1) General
(a) Suspended Scaffoldings comprise working platforms suspended from upper levels for example with ropes, cables or chains and all necessary support framing, and with or without hoisting equipment.
(b) The Contractor shall comply to the requirements stipulated for the suspended scaffolds in OSHA, Subpart L-Scaffolds, 1926.451 [General requirements] and 1926.452 [Additional requirements applicable to specific types of scaffolds].

(2) The following safety measures shall apply to the interior hung scaffolds which are suspended only from the roof structure or other structural member such as ceiling beams and non-adjustable:
(a) Capacity of interior hung Scaffoldings;
(i) Each scaffold and scaffold component except as provided (ii) below shall be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load applied or transmitted to it.
(ii) Each suspension rope, including connecting hardware, used on suspension scaffolds shall be capable of supporting, without failure, at least 6 times the maximum intended load applied or transmitted to that rope.
(b) Construction of interior hung Scaffoldings;
(i) Overhead supporting members (roof structure, ceiling beams, or other

(b) 床材は、転位し、又は脱落しないように、足場桁等に取り付けること。
(c) 足場桁、作業床等に控えを設ける等動揺又は転位を防止すること。
→上記(a)～(c)はE 7.5.4 (3)(a)～(c)に規定済み。
→OSHAに準じた規定に変更します。

(4) 作業上の禁止事項
つり足場の上で、脚立、はしご等を用いて作業員に作業させないこと。→E 7.5.4 (4)に規定済み

shackles, clips, thimbles, or equivalent means.
(f) Do not use hanging wire ropes where:
(i) 10% or more of the element wires (excluding filler wires) are not in one continuous tensile strand.
(ii) There is a reduction in the diameter exceeding 7% of the original nominal diameter.
(iii) There are any kinks or any deformation or corrosion.
(g) Do not use hanging chains where:
(i) Elongation exceeds 5% of the original length at the date of manufacture.
(ii) There is a reduction in the diameter of links exceeding 10% of the original diameter at the date of manufacture.
(iii) There are any breaks, splits, cracks, or any deformation or corrosion
(h) Do not use any hanging steel wires or hanging steel belts where there is any deformation, damage or corrosion.

(3) Measures when constructing suspended scaffolds
(a) Working platforms shall be minimum 45 cm wide and close boarded with no open joints;
(b) All scaffold boards shall be adequately secured to the scaffold structure to prevent any movement, detachment or displacement; and
(c) Stays shall be provided to prevent movement or displacement of the working platform.

(4) Prohibited activity
The use of any ladders or stepladders on suspended scaffolding is prohibited.

the bottom and top of the hanging scaffolds and 5 or more for timber.

JC1D: maximum loading を足場の部分の強度から決定すると読める。手順が逆ではないか。又、OSHA、1926.451(a)(3) には、Each suspension rope, including connecting hardware, used on non-adjustable suspension scaffolds shall be capable of supporting, without failure, at least 6 times the maximum intended load applied or transmitted to that rope.とあり、他にも安全係数が規定されている。以下の安全に関する係数についても参照・確認されたい。
It can be read that the maximum loading is determined from the strength of the scaffold part. Is the decision order reversed? In OSHA, 1926.451 (a) (3), Each suspension rope, including connecting hardware, used on non-adjustable suspension scaffolds shall be capable of supporting, without failure, at least 6 times the maximum intended load applied or transmitted to that rope.
There are other safety factors. Please refer to and confirm the following safety factors.
NK1: English version was prepared based on Japanese version. Each safety factor in E 7.5.4 (2) (a) above is the English translation of the Japanese Set Ver. J 7.5.3 (1), and those safety factor has been already determined in the past meeting.
Modified to refer to directly OSHA.

(b) Timber boarded working platforms shall be provided to provide a safe and uninterrupted working surface.
Alternatively, proprietary type Light Weight Staging (LWS), shall be provided to provide a safe and uninterrupted working platform. LWS shall be 0.45m wide aluminium frame with slip-resistant coated plywood decking or similar, al shall be designed, tested and approved to the appropriate class of BS 2037 Class 1 and suitable for the required use.
(c) Handrails shall be provided in accordance with JSSS 2.5.5 [*Handrails*].
(d) Toeboards shall be provided in accordance with JSSS 2.5.6 [*Toeboards*].

JC1D: Already commented.
NK1: Modified.

(e) Suspension ropes and cables must be connected to overhead supports by shackles, clips, thimbles, or equivalent means.
(f) Do not use hanging wire ropes where:
(i) 10% or more of the element wires (excluding filler wires) are not in one continuous tensile strand.
(ii) There is a reduction in the diameter exceeding 7% of the original nominal diameter.
(iii) There are any kinks or any deformation or corrosion.
(g) Do not use hanging chains where:

structural members) shall be inspected and checked for strength before the scaffold is erected;
(ii) Suspension ropes and cables shall be connected to the overhead supporting members by shackles, clips, thimbles, or other means that meet equivalent criteria (e.g., strength, durability).

(c) Inspection
(i) The Scaffolding shall be inspected before every work shift and If any abnormality is found, the work shall be stopped.
(ii) Wire ropes, chains, hooks and chains used in the Scaffolding shall be inspected before every work shift in accordance with JSSS 5.4.1 [Hoisting and Rigging Equipment] (4)(a) [Wire ropes], (b) [Chains] and (c)[Hooks, shackles]. If any abnormality is found, they shall be replaced.

(d) Prohibited activity

The use of any ladders or stepladders on suspended Scaffoldings shall be prohibited.

7.5.4 移動式足場 →E 7.5.5 に規定済み。 請負者は、移動式足場については、次の措置を講じなければならない。 (1) 移動式足場の選定→(1)は規定無し。→理由：下記参照。 (a) 対象とする作業に適した、高さ、幅、長さの移動式足場を用いること。 (b) 移動式足場は、英国基準 BS EN1004 Mobile access and working towers made of Prefabricated elements に適合するもの、又はエンジニアが同等以上と認めたものを使用すること。 (2) 組立てに際しての留意事項 (a) 購入した移動式足場の場合、製造業者が作成する筋交いの必要性や安全に組立てできる高さ等を含む組立て手順を説明するマニュアルに従い、組立てに関し十分な知識と経験を持つ者（competent person）に組立てを行わせること。	**7.5.5. Tower Scaffolds (including Mobile Tower Scaffolds)**	(i) Elongation exceeds 5% of the original length at the date of manufacture. (ii) There is a reduction in the diameter of links exceeding 10% of the original diameter at the date of manufacture. (iii) There are any breaks, splits, cracks, or any deformation or corrosion (h) Do not use any hanging steel wires or hanging steel belts where there is any deformation, damage or corrosion. (3) Measures when constructing suspended scaffolds (a) Working platforms shall be minimum 45 cm wide and close boarded with no open joints; (b) All scaffold boards shall be adequately secured to the scaffold structure to prevent any movement, detachment or displacement; and (c) Stays shall be provided to prevent movement or displacement of the working platform. (4) Prohibited activity The use of any ladders or stepladders on suspended scaffolding is prohibited. NK1: Modified. **7.5.5. Tower Scaffolds (including Mobile Tower Scaffolds)** JC1O: 移動式足場 内容は全て新 Is it new specification? NK1: No. T.5.5 is prepared based on Japanese 7.5.4 Movable Scaffold. JC1D: HSE document “Health and safety in construction”, 160 If a tower scaffold is used;を参照されるこをお勧めします。同様に、Mobile Tower Scaffolding についても、同じ HSE document の 173 When using MEWPs を参照されること、お勧めします。 We recommend that the HSE document “Health and safety in construction”, 160 If a tower scaffold is used is referred. Similarly, for Mobile Tower Scaffolding, refer to 173 When using MEWPs in the same HSE document. NK1: Japanese version was prepared based on HSE. (1) Tower scaffolds comprise one or more working platforms in a tower structure arrangement, with integral access steps, stairs or ladders and which are usually constructed with prefabricated or specialist system scaffolding and components. (2) The following safety measures shall apply: (a) Provide measures to prevent tower	**6.5.6 Mobile Scaffoldings** (1) Scaffoldings shall be braced by cross, horizontal, or diagonal braces, or combination thereof, to prevent racking or collapse of the scaffold and to secure vertical members together laterally so as to automatically square and align the vertical members. Scaffoldings shall be plumb, level, and squared. All brace connections shall be secured. (2) Scaffolding casters and wheels shall be locked with positive wheel and/or wheel and swivel locks, or equivalent means, to prevent movement of the Scaffolding while the Scaffolding is used in a stationary manner. (3) Manual force used to move the Scaffolding shall be applied as close to the base as practicable, but not more than 1.5 m above the supporting surface. (4) Power systems used to propel mobile Scaffoldings shall be designed for such use. Forklifts, trucks, similar motor vehicles or add-on motors shall not be used to propel scaffolds

(b) 組立てに際しては、建わく等の接続部は、使用中容易に離脱しないように確実に結合すること。

→(1)及び(2)の規定がない:
→I suggest that the following（→上記(1)及び(2)）is not correct or necessary, OSHA is a prevailing requirement of E 7.5.2 above and it may conflict with this standard. Above 7.5.2 above does require clarification（MD 氏）という評価。E 7.5.2 で Compliance standards とした下記との conflict を懸念して上記(1)(2)は削除すべきとの提案。→（NK の方針：英語版を基に規定することを提案する。）

(3) 移動式足場の移動に関して次を遵守すること。
→E 7.5.5 (4)冒頭部に規定済み
(a) 移動させるときは、路面の凹凸障害物等による転倒を防止するためあらかじめ、路面の状態を確認すること。
→E 7.5.5 (4)(a)に規定済み
(b) 移動は、すべての脚輪のブレーキを解除した後に行うこと。
→E 7.5.5 (4)(b)に規定済み
(c) 作業員や物を移動式足場に乗せた状態で移動させないこと。
→E 7.5.5 (4)(c)に規定済み
(d) 送電線や上空に障害物がないことを確認すること。
→E 7.5.5 (4)(d)に規定済み
(e) 移動中の動線およびその付近に、移動作業に従事する作業員以外の者を立ち入らせないこと。
→E 7.5.5 (4)(e)に規定済み

(4) 移動式足場の定置（作業箇所において使用できる状態にすることをいう。）に関して次を遵守すること
→E 7.5.5 (5)冒頭部に規定済み
(a) 作業員が無理のない姿勢で作業を行うため、移動式足場は、作業箇所に近接したところに定置させること。→E 7.5.5 (5)(a)に規定済み
(b) 脚輪のブレーキは、移動中を除き、常に作動させておくこと。ブレーキを作動させるときは、その効き具合を確認すること。又は、歯止め等で脚輪を確実に固定することとし、足場の一部を堅固な建設物に固定させること。
→E 7.5.5 (5)(b)～(d)に規定済み
(c) 凹凸又は傾斜が著しい場所では移動式足場を使用してはならない。
→E 7.5.5 (5)(e)に規定済み
(d) アウトリガーを有する移動式足場を定着したときは、アウトリガーの取付け状態、接地状態等について異常のないことを確認すること。
→E 7.5.5 (5)(f)に規定済み

(5) 用途外の使用禁止
→(a)～(d)含めて E 7.5.5 (5)に規定済み

次の移動式足場の用途外の使用を禁止すること。
(a) 材料の吊り上げや物体の投下用のシュートの

(1) Tower scaffolds comprise one or more working platforms in a tower structure arrangement, with integral access steps, stairs or ladders and which are usually constructed with prefabricated or specialist system scaffolding and components.

(2) The following safety measures shall apply:
(a) Provide measures to prevent tower scaffolds from moving, sliding, rocking or settling by ensuring that the base is level and vertical posts are securely founded and equipped with mudsills or other base plate types and measures to distribute the load, screw-jacks or other levelling devices and castors;
(b) Ensure that all joints are formed with the correct type of fittings or components and that all parts are secure and tightened;
(c) Ensure that all tower scaffolds are securely anchored or tied to supporting surfaces;
(d) Ensure that all scaffolds are securely braced with appropriate beams, trusses, raking and cross bracing to render the scaffold stable and secure for the purpose and in all conditions;
(e) Provide working platforms of sufficient dimension and structural capability to perform the required function;
(f) Working platforms shall be close boarded with no open joints;
(g) All scaffold boards shall be adequately secured to the scaffold structure to prevent any movement, detachment or displacement; and

(3) Additional Measures for Mobile Scaffolds
(a) Ensure that castors and brakes are of sufficient capability and maintained in full working order; and
(b) Ensure that adequate restraints are provided to give additional stability when in use.

(4) Safety Measures to apply before relocating Mobile Scaffolds:
(a) Check the floor surface in advance to prevent mobile scaffolds from overturning due to any irregularities or obstructions;
(b) Ensure that all joints are formed with the correct type of fittings or components and that all parts are secure and tightened;
(c) Ensure that all tower scaffolds are securely anchored or tied to supporting surfaces;

JC1O: all tower scaffolds が anchoring/tying される必要がありますか？
Do all tower scaffolds need to be anchoring / tying?
NK1: NK propose to add a condition that anchoring should be performed when used.

(d) Ensure that all scaffolds are securely braced with appropriate beams, trusses, raking and cross bracing to render the scaffold stable and secure for the purpose and in all conditions;
(e) Provide working platforms of sufficient dimension and structural capability to perform the required function;
(f) Working platforms shall be close boarded with no open joints;
(g) All scaffold boards shall be adequately secured to the scaffold structure to prevent any movement, detachment or displacement; and

(3) Additional Measures for Mobile Scaffolds
(a) Ensure that castors and brakes are of sufficient capability and maintained in full working order; and
(b) Ensure that adequate restraints are provided to give additional stability when in use.

(4) Safety Measures to apply before relocating Mobile Scaffolds:
(a) Check the floor surface in advance to prevent mobile scaffolds from overturning due to any irregularities or obstructions;
(b) Move mobile scaffolds only after releasing brakes on all castors;
(c) Do not move mobile scaffolds when any workers or Goods are on the scaffold,
(d) Ensure that there are no obstructions in the route including any overhead obstructions; and

unless the Scaffolding is designed for such propulsion systems.

(5) Scaffolds shall be stabilized to prevent tipping during movement.

(6) Platforms shall not extend outward beyond the base supports of the Scaffolding unless outrigger frames or equivalent devices are used to ensure stability.

(7) Where leveling of the Scaffolding is necessary, screw jacks or equivalent means shall be used.

(8) Caster stems and wheel stems shall be pinned or otherwise secured in Scaffolding legs or adjustment screws.

(9) Safety measures shall be applied before relocating the Scaffoldings:
(a) Check the floor surface in advance to prevent the Scaffoldings from overturning due to any irregularities or obstructions;
(b) Move the Scaffoldings only after releasing brakes on all castors;
(c) Do not move the Scaffoldings when any workers or Goods are on the scaffold,
(d) Ensure that there are no obstructions in the route including any overhead obstructions; and
(e) Do not allow any persons other than workers engaged in the relocation to enter the moving areas of the Scaffoldings and the vicinity.

(10) Prohibited activity
Use of the Scaffoldings shall be prohibited for the following:
(a) Use as a support for lifting dropping Goods, debris or waste materials or for dropping same;
(b) Use for the purpose of providing a barrier by covering with sheet material with the risk of collapse due to exposure to wind;
(c) Use for work of grit blasting or water jetting, where the reaction force can destabilise the Scaffoldings or workers on the scaffold; and
(d) Use as floor to support mobile ladders, stepladders, trestles.

(11) Other requirements than specified in the above, the fabricated frame Scaffolding shall comply the provisions in OSHA Subpart L-Scaffolds, 1926.452 Additional requirements applicable to specific types of scaffolds, (w) Mobile scaffolds.

支えとして使用すること。
(b) シート（布）で覆うこと（sheeting）や強風にさらす目的に使用すること。
(c) グリットブラスト（防食研磨）又はウォータージェット用に使用すること。
(d) 作業床を、移動はしご、脚立、架台（trestles）等の支持台(support)として使用すること。

7.5.9 脚立を用いての作業の際の留意事項

→ E 7.5.6 は、いずれも脚立（架台：trestle）の単独使用による作業時の安全事項と、複数の脚立に足場板を架け渡した上での作業時の安全事項について整理している。英語版では E 7.5.6 (1)及び(2)にて、上の分類を

(b) Move mobile scaffolds only after releasing brakes on all castors;
(c) Do not move mobile scaffolds when any workers or Goods are on the scaffold,
(d) Ensure that there are no obstructions in the route including any overhead obstructions; and
(e) Do not allow any persons other than workers engaged in the relocation to enter the moving areas of the moving scaffolds and the vicinity.

(5) Ensure that the following measures for example have been taken before any Tower or Mobile Scaffold is put into use:
(a) Scaffold is positioned in at the nearest location to the work location so that workers can perform their work safely and without risk of injury or fall;
(b) Brakes are activated at all times except during movement.
(c) Effectiveness of brakes has been checked before operating.
(d) Alternatively, fix ratchet and pawl system to the castors and secure the scaffold to a firm structure,
(e) Mobile scaffolds are not used where there are irregularities or slopes, and
(f) When outriggers are provided, ensure that there are no abnormalities in the outrigger mounting and ensure that they are extended properly and securely founded.

(6) Prohibited activity
Use of Tower scaffolds shall be prohibited for the following:
(a) Use as a support for lifting dropping Goods, debris or waste materials or for dropping same;
(b) Use for the purpose of providing a barrier by covering with sheet material with the risk of collapse due to exposure to wind;
(c) Use for work of grit blasting or water jetting, where the reaction force can destabilise the Scaffolds or workers on the scaffold; and
(d) Use as floor to support mobile ladders, stepladders, trestles.

7.5.6. Trestle Scaffolds

(e) Do not allow any persons other than workers engaged in the relocation to enter the moving areas of the moving scaffolds and the vicinity.

(5) Ensure that the following measures for example have been taken before any Tower or Mobile Scaffold is put into use:
(a) Scaffold is positioned in at the nearest location to the work location so that workers can perform their work safely and without risk of injury or fall;
(b) Brakes are activated at all times except during movement.
(c) Effectiveness of brakes has been checked before operating.
(d) Alternatively, fix ratchet and pawl system to the castors and secure the scaffold to a firm structure,
(e) Mobile scaffolds are not used where there are irregularities or slopes, and
(f) When outriggers are provided, ensure that there are no abnormalities in the outrigger mounting and ensure that they are extended properly and securely founded.

(6) Prohibited activity
Use of Tower scaffolds shall be prohibited for the following:
(a) Use as a support for lifting dropping Goods, debris or waste materials or for dropping same;
(b) Use for the purpose of providing a barrier by covering with sheet material with the risk of collapse due to exposure to wind;
(c) Use for work of grit blasting or water jetting, where the reaction force can destabilise the Scaffolds or workers on the scaffold; and
(d) Use as floor to support mobile ladders, stepladders, trestles.

7.5.6. Trestle Scaffolds

JC1O: 脚立足場　内容は新 Is it new specification?
NK1: 7.5.9 脚立を用いての作業の際の留意事項脚立足場の英訳です。This is not new. This is Japanese 7.5.9.

JC1D: 漠然と想像は出来ますが、OSHA1926.451-General requirements を参照しても見つかりません。参考にした資料の開示をお願いします。I can vaguely imagine it, but I can't find it by looking at OSHA1926.451-General

6.5.7 Trestle Scaffoldings

(1) Trestle Scaffoldings can comprise:
(a) Special proprietary type free-standing trestle platforms; or
(b) scaffold boards or supported on stepladders or other tripod type portable ladders.
(2) For requirements on Stepladders refer to JSSS

示しているが、和文版では明示的に分類していない。また、脚立の単独使用による作業時の安全事項に係る規定について、英語版では E 7.4.4 (3)で規定している。
→OSHA を参照に規定する。

請負者は、脚立を用いての作業に際しては、次を遵守しなくてはならない。

(1) 脚立を用いての作業は、高さ 2m 以上は不可。2m 以上の高さの作業の場合は足場を組む等の他の措置をとること。
→E 6.4.4 (3)(e)へ

(2) 踏み面は、作業を安全に行なうため必要な面積を有すること。
→E 6.4.4 (3)(b)へ

(3) 開き止め金具は確実にロックすること。
→E 6.4.4 (3)(h)へ

(4) 脚立が安定しない場所には設置しない。
→E 6.4.4 (3)(f)に規定済み

(5) 出入口やドアの前では使用しない。
→E 6.4.4 (3)(m)へ

(6) 天板に乗って、又は天板を跨いで作業をさせないこと。
→E 6.4.4 (3)(n)へ

(7) 脚立の上で作業する時は、天板を含め上から 3 段目以下の踏みさんに乗り作業をさせること。
→E 6.4.4 (3)(o)へ

(8) 脚立の上で作業する時は、3 点以上の支持によること。
→E 6.4.4 (3)(p)へ

(9) 上向き作業をしないこと。
→E 6.4.4 (3)(q)へ

(10) 踏みさん上に足場板をかけて作業を行う場合は、次を遵守すること。
→E 7.5.6 (3)(a)～(c)に対応する規定済み。

(a) 脚立の中心線間の間隔は 1.8m以下、足場板の幅は 40cm 以上とし、重ね長さは 20cm以上として、3 以上の支持物にかけ渡すこと。

(b) 足場板の支点からの突出部の長さは 10cm 以上とし、かつ、作業員が当該突出部に足を掛けるおそれのない場合を除き、足場板の長さの 1/18 以下とすること。

(c) 足場板は丈夫なものを使用し、著しい損傷、変形または腐食のあるものを使用してはならない。

7.5.5 標識類の表示

請負者は、作業床の最大積載荷重及び足場の点検・維持管理の責任者名を、足場の見やすい箇所に表示しなければならない。
→E 7.5.7 に規定済み。(但し、英語版では HSO による検査後の使用について規定している。)→(NK の方針: 英語版に基づき規定する。)

(1) Trestle scaffolds can comprise:
(a) Special proprietary type free-standing trestle platforms; or
(b) LWS as specified in JSSS (i) [*Suspended Scaffold*] or scaffold boards or supported on stepladders or other tripod type portable ladders.

(2) For requirements on Stepladders refer to JSSS 0 [*Portable Ladders and Stepladders*].

(3) The following safety measures shall apply:
(a) The distance between the centre lines of the supporting stepladders shall not exceed 1.8m, width of the LWS or scaffold boards shall be at least 0.45m.
(b) If timber scaffold boards are used, the overlap between boards shall be at least 20cm.
(c) The length of projection of the platform from the end support shall be at least 10cm and not more than one-eighteenth of the length of the boards (unless otherwise approved by the HSO)

7.5.7. Notices to be Displayed on Scaffolds

In addition to any notices for use following inspections by HSO, the Contractor shall display a notice indicating the maximum load capacity of each scaffold, together with the name of the person responsible for inspection and maintenance of the scaffold.
All notices shall be clearly visible and in easy-to-see locations.

requirements. Please disclose the reference materials.

NK1: It is specified in OSHA.
https://www.osha.gov/SLTC/etools/scaffolding/supported/specialty.html#Step_Platform_and_Trestle_Ladder_Scaffolds

Step, Platform, and Trestle Ladder Scaffold

(1) Trestle scaffolds can comprise:
(a) Special proprietary type free-standing trestle platforms; or
(b) LWS as specified in JSSS (i) [*Suspended Scaffold*] or scaffold boards or supported on stepladders or other tripod type portable ladders.

(2) For requirements on Stepladders refer to JSSS 0 [*Portable Ladders and Stepladders*].

(3) The following safety measures shall apply:
(a) The distance between the centre lines of the supporting stepladders shall not exceed 1.8m, width of the LWS or scaffold boards shall be at least 0.45m.
(b) If timber scaffold boards are used, the overlap between boards shall be at least 20cm.
(c) The length of projection of the platform from the end support shall be at least 10cm and not more than one-eighteenth of the length of the boards (unless otherwise approved by the HSO).

7.5.7. Notices to be Displayed on Scaffolds

In addition to any notices for use following inspections by HSO, the Contractor shall display a notice indicating the maximum load capacity of each scaffold, together with the name of the person responsible for inspection and maintenance of the scaffold.
All notices shall be clearly visible and in easy-to-see locations.

JC1O: HSO の役割について再度討議することが必要ではないか。HSO は作業を中断するなど安全に関してはプロマネよりも強い権限を持つ。ここでは Scaffolds を検査して証明するような施工に密着したロールを持たせている。自分

0 [*Portable Ladders and Stepladders*].

(3) The following safety measures shall apply:
(a) The distance between the centre lines of the supporting stepladders shall not exceed 1.8m, width of the scaffold boards shall be at least 45 cm.
(b) Scaffoldings' platforms shall not be placed any higher than the second highest rung or step of the ladder supporting the platform.
(c) If timber scaffold boards are used, the overlap between boards shall be at least 20cm.
(d) The length of projection of the platform from the end support shall be at least 10cm and not more than one-eighteenth of the length of the boards.

6.5.8 Notices to be Displayed on Scaffoldings

In addition to any notices for use following inspections by HSO, the Contractor shall display a notice indicating the maximum load capacity of each scaffold, together with the name of the person responsible for inspection and maintenance of the scaffold.
All notices shall be clearly visible and in easy-to-see locations.

7.5.6 組立、変更及び解体

請負者は、足場の組立、変更又は解体の作業を行うときは、次の措置を講じなければならない。

→E 7.5.8 冒頭部に規定済み

(1) 足場の組立て、解体又は変更の作業を行うときは、特定の作業の作業主任を任命し、作業を直接指揮させること。
→E 7.5.8 (1)に規定済み。

(2) 作業の時期、範囲及び順序を、作業員に作業前に周知すること。
→規定無し。→MD: Not necessary to mention, covered as a general requirement in Chapter 1.

(3) 作業に際しては、作業員以外の者へ危害が及ばないよう、本仕様書 2.3[立入禁止の措置]に従い、柵・囲い等の設置により作業区域を明示したうえで、作業員以外の者の立入りを禁止すること。さらに、必要に応じて監視員を配置し、上記の立入禁止を徹底すること。→E 7.5.8 (2)に規定済み

(4) 高さが 2m 以上の構造の足場の場合、足場材の緊結、取りはずし、受渡し等の作業には幅 40cm 以上の足場板を設けること。
→E 7.5.8 (3)に、高さ 2m 以上の場所での足場組立時には資材仮置きのための boarded area を設ける、との規定はあるが上記の幅 40cm 以上の足場板設置には言及していない。
→(NK の方針：英語版に無い幅 40cm 以上の記述を E 6.5.8 (4)として挿入する。)

(5) 上記(4)の作業には、墜落制止用器具を安全に取り付けるための設備等を設け、かつ、作業員に墜落制止用器具を使用させること。
→E 7.5.8 (4)に規定済み

7.5.8. Scaffold Assembly, Erection, Alteration and Dismantling Generally

The Contractor shall take the following measures when assembling or erecting, assembling, altering or dismantling operation on all types of scaffolding:

(1) Scaffolding shall be assembled or erected, altered and dismantled only by competent personnel and the work should always be carried out under the direction of a competent Superintendent.

(2) Working areas where scaffolding is being assembled or erected, altered and dismantled shall be designated as Dangerous Areas, and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any non - authorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(3) During erection of scaffolding 2m high and above, boarded areas shall be provided for safe temporary storage of scaffolding tubes, couplings, fittings or components and other materials and equipment.

(4) All workers engaged assembly or erection, alteration and dismantling of any scaffolding shall be provide with PFAS and ensure that such workers use this.

(5) Scaffold boards shall be of adequate size and strength and with true dimension and no twist or bending, no splits, holes or damage.

(6) Working platforms shall be at least 45cm wide.

が証明したものに対して自分で使用停止するようなロールでは機能しないと考えるが、いかが。
I think it is necessary to discuss the role of HSO again. HSOs have greater authority than professional managers regarding safety issue such as suspending work.
Here, the HSO has a role that is deeply involved in construction procedure such as inspecting and proving Scaffolds. However, the role the present stipulation indicates that stops the use of what the HSO have proven himself will not work as a mechanism. How about this?
JC1: The duty of HSO is discussed in Chapter 1, so no modify is made.

7.5.8. Scaffold Assembly, Erection, Alteration and Dismantling Generally

The Contractor shall take the following measures when assembling or erecting, assembling, altering or dismantling operation on all types of scaffolding:

(1) Scaffolding shall be assembled or erected, altered and dismantled only by competent personnel and the work should always be carried out under the direction of a competent Superintendent.

(2) Working areas where scaffolding is being assembled or erected, altered and dismantled shall be designated as Dangerous Areas, and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any non - authorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(3) During erection of scaffolding 2m high and above, boarded areas shall be provided for safe temporary storage of scaffolding tubes, couplings, fittings or components and other materials and equipment.

JC1O: MM: 意味が理解できない。
Cannot understand what it means.
JC1: 足場材の仮置き場の設置を規定しています。No modification is made.

(4) All workers engaged assembly or erection, alteration and dismantling of any scaffolding shall be provide with PFAS and ensure that such workers use this.

(5) Scaffold boards shall be of adequate size and strength and with true dimension and no twist or bending, no splits, holes or damage.

(6) Working platforms shall be at least 45cm wide.

JC1O: 40cm では？ Is it 40cm?
NK1: The platforms width is 40 cm in Japan, 60cm in UK and 18 inch (45.7 cm) in OSHA.
The provisions for Scaffoldings in JSSS are mostly referred to OSHA, therefore rounded width of 45 cm from 45.7 cm is used.

6.5.9 Scaffold Assembly, Erection, Alteration and Dismantling Generally

The Contractor shall take the following measures when assembling or erecting, assembling, altering or dismantling operation on all types of scaffolding:

(1) Scaffolding shall be assembled or erected, altered and dismantled only by competent personnel and the work should always be carried out under the direction of a competent Superintendent.

(2) Working areas where scaffolding is being assembled or erected, altered and dismantled shall be designated as Dangerous Areas, and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any non - authorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(3) During erection of scaffolding 2m high and above, boarded areas shall be provided for safe temporary storage of scaffolding tubes, couplings, fittings or components and other materials and equipment.

(4) All workers engaged assembly or erection, alteration and dismantling of any scaffolding shall be provide with PFAS and ensure that such workers use this.

(5) ~~Scaffold boards shall be of adequate size and strength and with true dimension and no twist or bending, no splits, holes or damage.~~

(6) ~~Working platforms shall be at least 45 40cm wide.~~

(6) 高さ 2m 以上の箇所での作業及びスレート等の屋根の上での作業においては、次の作業床を設置すること。

(a) 床材は十分な強度を有するものを使用すること。また、幅は 40cm 以上とし、床材間のすき間は 3cm 以下とし、床材と建地との隙間は、12cm 未満とすること。床材は、転位又は脱落しないよう支持物に 2 箇所以上取り付けること。

→E 7.5.8 (7)及び(8)に規定済み

(b) 床材を作業に応じて移動させる場合は、3 箇所以上の支持物にかけ、支点からの突出部の長さは 10cm 以上とし、かつ足場板長の 18 分の 1 以下とすること。また、足場板を長手方法に重ねるときは支点上で重ね、その重ねた部分の長さは 20cm 以上とすること。

→E 7.5.8 (9)及び(10)に規定済み

(7) 足場の材料については、著しい損傷、変形又は腐食のないものを使用すること。木材については、強度上の著しい欠点となる割れ、虫食い、節等がなく、かつ、木皮を取り除いたものを使用すること。

→E 7.5.8 (5)に規定済み。(但し、少々記述が異なる。)

(8) 落下による危険が生じるおそれがある場合、材料、器具、工具等の上げ下ろし時には、作業員につり網、つり袋を使用させること。

→規定無し。→理由:Already stated.(MD 氏) →(NK の方針:J 2.6.5 (2)、E 2.6.6 (2)でそれぞれ規定済であり不要。削除する。

(9) 作業のため物体が落下することにより、作業員に危険を及ぼすおそれのあるときは、本仕様書 2.6 [飛来落下の防止措置]の措置を講じること。

→規定無し。→理由:下記参照。

(10) 架空線等に近接して作業を行う場合には、本仕様書 3.2[架空線等上空施設一般] の措置を講じること。

→規定無し。→理由:下記参照。

(11) 悪天候のため、作業の実施について危険が予想されるときは、本仕様書 2.7[悪天候及び地震時の対策]の規定に従い、作業を中止すること。

→規定無し。→理由:下記参照。

→(9)～(11)の規定無しの理由,MD: Not really necessary to repeat the following unless a special requirement is added.(MD 氏) →削除する。

(7) The clearance between planks shall not exceed 3 cm and the clearance between floors and standards shall not exceed 12cm.

(8) Scaffold boards shall each be securely fixed at a sufficient number of points to provide constant support to with no movement, dislocation and no gaps that mat create a dropping hazard.

(9) When moving scaffold boards, ensure that they are securely supported in at least three (3) locations, the length of any projection from supports shall be at least 10cm and not exceeding one-eighteenth of the length of the scaffolding boards.

(10) When stacking the timber sole plate or runners ensure that they are stacked in the longitudinal direction, over supports and with 20 cm overlaps.

7.5.9. Mobile Elevating Work Platforms

NK1: The quality and width is specified in 6.5.3 Platform of Scaffolding (1) (a) and (2), respectively, so (5) and (6) are deleted.

(7) The clearance between planks shall not exceed 3 cm and the clearance between floors and standards shall not exceed 12cm.

JC1O:??

NK1: The spaces of 2.5 cm and 24 cm are specified in 6.5.3 Platform of Scaffolding (1) (b) and (c), so (7) is deleted.

(8) Scaffold boards shall each be securely fixed at a sufficient number of points to provide constant support to with no movement, dislocation and no gaps that mat create a dropping hazard.

(9) When moving scaffold boards, ensure that they are securely supported in at least three (3) locations, the length of any projection from supports shall be at least 10cm and not exceeding one-eighteenth of the length of the scaffolding boards.

(10) When stacking the timber sole plate or runners ensure that they are stacked in the longitudinal direction, over supports and with 20 cm overlaps.

7.5.9. Mobile Elevating Work Platforms

JC1D: 前項 7.5.5 で including Mobile Tower Scaffolds として扱っていますが、本項との区別が付きにくいです。確認願い

~~(7) The clearance between planks shall be of 3cm or less, not exceed 3 cm and the clearance between floors and standard posts shall not exceed be of less than 12cm.~~

(8) Scaffold boards shall each be securely fixed at a sufficient number of points to provide constant support to with no movement, dislocation and no gaps that mat create a dropping hazard.

(9) When moving scaffold boards, ensure that they are securely supported in at least three (3) locations, the length of any projection from supports shall be at least 10cm and not exceeding one-eighteenth of the length of the scaffolding boards.

(10) When stacking the timber sole plate or runners ensure that they are stacked in the longitudinal direction, over supports and with 20 cm overlaps.

6.5.10 Mobile Elevating Work Platforms (Aerial Lifts)

This section specifies for the mobile elevating work platforms (aerial lifts) including extensible boom

7.5.8 高所作業車を用いての作業の際の留意点

請負者は、高所作業車を用いて作業を行うときは、次の措置を講じなければならない。

→E 7.5.9 冒頭部に規定済み

(1) 作業主任

特定の作業の作業主任を任命し、作業を直接指揮させること。

→対応する規定は E 7.5.9 (1)にあるが、下記理由にて MD 氏の更新提案あり。

→MD: Think Operation Leader not necessary to state, trained staff yes.

→英語版とする。

(2) 高所作業車の設置、運転

(a) 高所作業車を作業場所に設置するときは、高所作業車の転倒又は転落による労働者の危険を防止するため、アウトリガーを完全に張出させること。また地盤の沈下防止対策をとること。

→E 7.5.9 (3)に規定済み

(b) 本仕様書 2.3[立入禁止の措置]に従い、作業区画を設置し、立入禁止措置を講じること。

→E 7.5.9 (4)に規定済み

(c) 高所作業車の製造者が定める運転に関する注意事項を作業員に遵守させること。

(d) 安全装置がある場合は、故意に機械の安全装置を解除させないこと。

→E 7.5.9 (5)に規定済み

(e) 請負者は、高所作業車を走行させるときは、次の措置を講じること。

(i) 作業床を所定の最低降下位置まで下げてから走行する。

→E 7.5.9 (6)に規定済み

(ii) 作業床において走行操作をしない車両の場合は、作業床に作業員を載せたまま走行してはならない。

→E 7.5.9 (7)に規定済み。(但し英和が一致していない)

(iii) 作業床において走行操作をする車両の場合は、平たん・堅固でない場所を走行してはならない。

→E 7.5.9 (8)に規定済み。(但し英和が一致していない)

(iv) 上記以外で、作業床において走行操作をしない車両の場合で、平坦で堅固な場所において作業床に作業員を載せたまま高所作業車を走行させるときは、次の措置を講じなければならない。

→下記 3 項目含めて E 7.5.9 (9)(a)～(c)に規定済み(但し英和が一致していない)

誘導者を配置し、その者に高所作業車を誘導させること。

- 一定の合図を定め、誘導者に当該合図を行わせること。

The following safety measures shall apply for placing and operating mobile elevating work platforms:

(1) Only trained Contractor's Personnel, certified as such by the HSO shall be permitted to operate and all operation shall carried out in accordance with the manufacturer's written instruction.

(2) Mobile elevating work platforms shall never be used beyond the load limit specified by the manufacturer, which shall also be clearly displayed on the equipment.

(3) Take necessary measures avoid overturning including fully extending outriggers and preventing uneven settling of the ground.

(4) Designate operation as "Dangerous Work" and in accordance with JSSS 2.3 [*Prohibition of Entry – Dangerous Work*], demarcate work areas and take measures to prevent entry to unauthorised personnel.

(5) Do not switch off or isolate any safety devices.

(6) Drive only after lowering the working platform to the specified lowest descent position.

(7) In the case of any mobile elevating work platform that is not operated remotely from the working platform, the equipment shall never be driven with a worker on the working platform.

(8) In the case of any mobile elevating work platform that is operated remotely from the working platform, the equipment shall never be driven on unlevel surfaces, soft or weak ground.

(9) In the case of any mobile elevating work platform that is not operated remotely from the working platform, the following measures shall be taken when driving the equipment:

(a) Place Spotter to guide the mobile elevating work platform in accordance with JSSS 2.4 [*Spotters, Flagmen and the like*],

(b) Determine signals in accordance with JSSS 2.4.5 [*Signals*], and

(c) Determine in advance the appropriate working speed limit for the mobile elevating work platform according to the height of the working platform and the length of the boom, etc. and ensure that the operator never drives the equipment in excess of this limit.

(10) When leaving the operating position and when work is not continuing or stopped the operator shall:

(a) Put the working platform in the lowest position

ます。

Although it is treated as Mobile Tower Scaffolds in the previous section 7.5.5, it is difficult to distinguish from this section. Please check.

NK1: 7.5.5. Tower Scaffolds (including Mobile Tower Scaffolds) is revised to 6.5.5 Mobile Scaffoldings. The term of mobile elevating work platforms is used in UK and that is aerial lifts in OSHA.

NK1: The both terms are stipulated.

NK1: Revised overall including OSHA provisions in 1926.453 Aerial lifts.

The following safety measures shall apply for placing and operating mobile elevating work platforms:

(1) Only trained Contractor's Personnel, certified as such by the HSO shall be permitted to operate and all operation shall carried out in accordance with the manufacturer's written instruction.

JC1O: HSO が certify する？HSO は Safety System が機能しているかを確認する立場では？

Does HSO certifies? I think the role of HSO is to check whether the Safety System is working.

NK1: Duty of HSO is discussed in Chapter 1, so it is left.

(2) Mobile elevating work platforms shall never be used beyond the load limit specified by the manufacturer, which shall also be clearly displayed on the equipment.

(3) Take necessary measures avoid overturning including fully extending outriggers and preventing uneven settling of the ground.

(4) Designate operation as "Dangerous Work" and in accordance with JSSS 2.3 [*Prohibition of Entry – Dangerous Work*], demarcate work areas and take measures to prevent entry to unauthorised personnel.

(5) Do not switch off or isolate any safety devices.

(6) Drive only after lowering the working platform to the specified lowest descent position.

(7) In the case of any mobile elevating work platform that is not operated remotely from the working platform, the equipment shall never be driven with a worker on the working platform.

(8) In the case of any mobile elevating work platform that is operated remotely from the working platform, the equipment shall never be driven on unlevel surfaces, soft or weak ground.

(9) In the case of any mobile elevating work platform that is not operated remotely from the working platform, the following measures shall be taken when driving the equipment:

JC1O: (7)～(9)よく意味が分かりません。

MM: Cannot understand (7) to (9).

platforms, articulating boom platforms, vertical towers and a combination of any such devices.

The following safety measures shall apply for placing and operating mobile elevating work platform:

(1) General

(a) Only trained Contractor's Personnel, certified as such by the HSO shall be permitted to operate the mobile elevating work platforms in accordance with JSSS 1.18 [Proper Placement of Contractor's Personnel.

(b) All operation shall be carried out in accordance with the manufacturer's written instruction.

(c) Mobile elevating work platforms shall never be used beyond the load limit specified by the manufacturer, which shall also be clearly displayed on the equipment.

(d) Any safety devices shall not be switched off or isolated.

(2) Measures before operation of mobile elevating work platform:

(a) Designate operation as "Dangerous Work" and in accordance with JSSS 2.3 [Prohibition of Entry - Dangerous Work], demarcate work areas and take measures to prevent entry to unauthorised personnel.

(b) Place Spotter to guide the mobile elevating work platform in accordance with JSSS 2.4 [Spotters, Flagmen and the like],

(c) Determine signals in accordance with JSSS 2.4.5 [Signals], and

(d) Determine in advance the appropriate working speed limit for the mobile elevating work platform according to the height of the working platform and the length of the boom, etc. and ensure that the operator never drives the equipment in excess of this limit.

(3) Measures at locating mobile elevating work platform:

(a) The parking brakes of vehicle shall be set.

(b) Wheel chocks shall be installed before using the mobile elevating work platforms on an incline, provided they can be safely installed.

(c) When outriggers are used, they shall be positioned on pads or a solid surface.

(d) Lift controls shall be tested each day prior

- あらかじめ、作業時における当該高所作業車の作業床の高さ及びブームの長さ等に応じた高所作業車の適正な制限速度を定め、それにより運転者に運転させること。

(f) 運転者が走行のため運転位置から離れる場合は、当該運転者に次の措置を講じさせること。

(i) 作業床に作業員が乗って作業を行っていない及び作業を行おうとしていない場合

→下記２項目含めてE 7.5.9 (10)(a)～(c)に規定済み

- 作業床を最低降下位置に置かせること。
- 原動機を止め、かつ、停止の状態を保持するためのブレーキ(駐車ブレーキ)を確実にかける等の高所作業車の逸走を防止する措置をとらせること。

(ii) 作業床に作業員が乗って作業を行い、又は行おうとしている場合、当該高所作業車の停止の状態を保持するためのブレーキを確実にかける等の措置を講じさせること。

→E 7.5.9 (11)に規定済み

(iii) 高所作業車を用いて作業を行うときは、乗車席及び作業床以外の箇所に作業員を乗せてはならない。

→E 7.5.9 (12)に規定済み

(iv) 高所作業車を、その製造者が規定した制限荷重(高所作業車の構造及び材料に応じて、作業床に人又は荷を乗せて上昇させることができる最大の荷重。)を超えて使用させてはならない。

(3) 作業床の操作

作業床以外の箇所で作業床を操作するときは、作業床上の作業員と作業床以外の箇所で作業床を操作する者との間の連絡を確実にするため、本仕様書 2.4.2 [合図の統一]に従い一定の合図を定め、当該合図を行う者を指名してその者に合図を行わせること。

→E 7.5.9 (13)に規定済み。(但し内容が少々異なる。)

作業床での作業

請負者は、高所作業車の作業床で作業を行う作業員の安全のために、次の措置を講じること。

(a) 作業員には、墜落制止用器具、保護帽等の保護具を使用させること。

→E 7.5.9 (14)(a)に規定済み

(b) 作業床から現場の鉄骨などへの乗り移り、手摺りに足を掛け手作業する等の危険な行動を、作業員に禁じること。

→E 7.5.9 (14)(b)に規定済み

(c) 本仕様書2.7[悪天候及び地震時の対策]に従い悪天候のときは 2m 以上の高所作業を中止させなければならない。

→E 7.5.9 (14)(c)に規定済み

(b) Stop the prime engine/motor

(c) Apply the parking brake securely and ensure the equipment is securely parked.

(11) If a worker is working on the working platform or is about to work, ensure that the parking brake is securely applied.

(12) When using the mobile elevating work platform, workers shall be positioned only on the passenger seat or on the working platform.

(13) Working Platform Operation

When operating the working platform at a place other than the structure or building floor, ensure communication is possible between the worker on the working platform and the person operating the working platform.

Establish the necessary signals and locate a Spotter in accordance with JSSS 2.4 [*Spotters, Flagmen and the Like*].

(14) Working on the Working Platform

(a) Have workers use PPE including PFRS;

(b) Prohibit workers from take dangerous actions such as moving from the working platform to a steel structure, standing on and working from handrail, and

(c) Stop work at a height of 2m or more in case of adverse weather in accordance with JSSS 2.7 [Adverse Weather Requirements].

(15) Inspection and maintenance of mobile elevating work platform

Following to be coordinated later with Section 4

(a) Carry out inspection of mobile elevating work platform in accordance with JSSS 4.1.5 [*Inspection and Maintenance*] and JSSS 4.2.1 [*Inspection and Maintenance*],

(b) Repair work of mobile elevating work platform and installation/removal of its working platform shall be carried out following JSSS 4.2.5 [*Safety Measures during Inspection and Maintenance Work*] and JSSS 4.2.6 [*Safety measures at Installation and Removal Work of Attachments, etc.*].

(16) Prohibition of use for other purposes

Mobile elevating work platforms shall not be used for any purpose other than the intended original purpose and for example shall never be used for hoisting loads.

JC1: Modified and deleted.

(a) Place Spotter to guide the mobile elevating work platform in accordance with JSSS 2.4 [*Spotters, Flagmen and the like*],

(b) Determine signals in accordance with JSSS 2.4.5 [*Signals*], and

(c) Determine in advance the appropriate working speed limit for the mobile elevating work platform according to the height of the working platform and the length of the boom, etc. and ensure that the operator never drives the equipment in excess of this limit.

(10) When leaving the operating position and when work is not continuing or stopped the operator shall:

(a) Put the working platform in the lowest position

(b) Stop the prime engine/motor

(c) Apply the parking brake securely and ensure the equipment is securely parked.

(11) If a worker is working on the working platform or is about to work, ensure that the parking brake is securely applied.

(12) When using the mobile elevating work platform, workers shall be positioned only on the passenger seat or on the working platform.

JC1O: passenger seat は余分
I think it is not necessary for passenger seat?
NK: Agree. Deleted (12).

(13) Working Platform Operation

When operating the working platform at a place other than the structure or building floor, ensure communication is possible between the worker on the working platform and the person operating the working platform.

Establish the necessary signals and locate a Spotter in accordance with JSSS 2.4 [*Spotters, Flagmen and the Like*].

(14) Working on the Working Platform

(a) Have workers use PPE including PFRS;

(b) Prohibit workers from take dangerous actions such as moving from the working platform to a steel structure, standing on and working from handrail, and

(c) Stop work at a height of 2m or more in case of adverse weather in accordance with JSSS 2.7 [Adverse Weather Requirements].

(15) Inspection and maintenance of mobile elevating work platform

to use to determine that such controls are in safe working condition.

(4) Measures at operation on mobile elevating work platform:

(a) Workers shall always stand firmly on the floor of the basket/working platform, and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position;

(b) Have workers use PPE including PFRS;

(c) Prohibit workers from take dangerous actions such as moving from the working platform/basket to neighbouring structure, standing on and working from handrail,

(d) When the mobile elevating work platform has both platform (upper) and lower controls. Upper controls shall be in or beside the platform within easy reach of the operator. Lower controls shall provide for overriding the upper controls. Controls shall be plainly marked as to their function. Lower level controls shall not be operated unless permission has been obtained from the worker in the lift, except in case of emergency,

(e) When leaving the operating position and when work is not continuing or stopped the operator of the mobile elevating work platform shall:

(i) Put the working platform in the lowest position;

(ii) Stop the prime engine/motor;

(iii) Apply the parking brake securely and ensure the equipment is securely parked; and

(f) Stop work at a height of 2 m or more in case of adverse weather in accordance with JSSS 2.7 [Adverse Weather Requirements].

(5) Measures of moving mobile elevating work platform

(a) Mobile elevating work platform shall not be moved when the boom is elevated in a working position with workers in the basket, except for equipment which is specifically designed for this type of operation.

(b) Before moving the mobile elevating work platform for travel, the boom(s) shall be inspected to see that it is properly cradled and outriggers are in stowed position.

(4) 高所作業車の点検、修理

(a) 本仕様書 4.1.6[建設機械の点検計画]、4.1.7[搬入時の確認]、4.1.8[日常点検]、4.1.9[定期点検]に従い、高所作業車の点検を行うこと。
→E 7.5.9 (15)(a)に相当する規定あり。

(b) 高所作業車の修理、作業床の装着又は取り外しの作業は、本仕様書 4.2.2[点検・修理作業時の安全確保]及び 4.2.3[アタッチメント等作業装置の装着及び取りはずし作業]に従い行うこと。
→E 7.5.9 (15)(b)に相当する規定あり。

(5) 用途以外の使用禁止

高所作業車を、荷の吊り上げ等の当該高所作業車の主たる用途以外に使用してはならない。
→E 7.5.9 (16)に規定済み

7.5.7 点検
→対応する E 7.5.10 見出しは[General Inspection and maintenance of Scaffolding]

請負者は、足場の組立、変更又は解体作業時、組立完成時、足場を使用する作業開始前、荒天及び中震後の作業開始前における点検について、次の措置を講じなければならない。

→E 7.5.10 の冒頭に対応する規定がある。

(1) 足場の組立完成時には、足場の組立等作業主任に、設計図通りの組立てであることを点検させ、設計図通りでない場合は手直しすること。
→E 7.5.10(1)に規定あり。

(2) 足場における作業を行うときは、その日の作業の開始前に、作業を行う箇所に設けた交差筋交い、さん、幅木、手摺及び中さん等の足場用墜落防止設備の取り外し及び脱落の有無について点検を行ない、異常を認めたときは直ちに補修を行うこと。
→E 7.5.10(2)に規定あり。

(3) 本仕様書 2.7[悪天候及び地震時の対策]に規定の悪天候若しくは地震又は足場の組立て、一部解体若しくは変更の後において、足場における作業を行うときは、作業開始前に、次の事項について点検を行ない、異常を認めたときは直ちに補修を行うこと。

7.5.10. General Inspection and Maintenance of Scaffolding

Further to the requirements of JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the Contractor shall comply with the following:

(1) Every scaffold from which a person could fall 2m or more must be thoroughly examined by the HSO (or his delegated assistant):
  (a) Before it is brought into use;
  (b) After any substantial alteration or extension;
  (c) At least once in every 7 days; and
  (d) Whenever it has been exposed to adverse climatic conditions, earthquake or other factors which may have affected its safety.

(2) A written record of the thorough examination and the regular inspections and details of any repair measures must be prepared by the HSO.

The thorough examination and regular inspections shall include:

(1) Check if the Scaffold is provided and used in accordance with its design.

(2) Check the structural condition of the Scaffold and of any deterioration, defect or damage

Following to be coordinated later with Section 4

  (a) Carry out inspection of mobile elevating work platform in accordance with JSSS 4.1.5 [*Inspection and Maintenance*] and JSSS 4.2.1 [*Inspection and Maintenance*],
  (b) Repair work of mobile elevating work platform and installation/removal of its working platform shall be carried out following JSSS 4.2.5 [*Safety Measures during Inspection and Maintenance Work*] and JSSS 4.2.6 [*Safety measures at Installation and Removal Work of Attachments, etc.*].

NK: after finalization of Chap. 4, reference no. shall be adjusted.

(16) Prohibition of use for other purposes
Mobile elevating work platforms shall not be used for any purpose other than the intended original purpose and for example shall never be used for hoisting loads.

7.5.10. General Inspection and Maintenance of Scaffolding

JC1O: この節では HSO がアクティブな役割を負担している。staff とした方がいいのでは
In this section the HSO has an active role. Wording as "staff" is better?

NK1: Duty of HSO is discussed in Chapter 1, so it is left.

Further to the requirements of JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the Contractor shall comply with the following:

(1) Every scaffold from which a person could fall 2m or more must be thoroughly examined by the HSO (or his delegated assistant):
  (a) Before it is brought into use;
  (b) After any substantial alteration or extension;
  (c) At least once in every 7 days; and
  (d) Whenever it has been exposed to adverse climatic conditions, earthquake or other factors which may have affected its safety.

(2) A written record of the thorough examination and the regular inspections and details of any repair measures must be prepared by the HSO.

The thorough examination and regular inspections shall include:

JC1O: 下記の事項が良く理解できない

MM: The following items cannot be understood well.

JC1:(MD) There are a number of items listed most of which are excluded from the NK draft which I suggest are necessary. Please review and advise what is required.

(6) Inspection and maintenance of mobile elevating work platform

  (a) Carry out inspection of mobile elevating work platform in accordance with JSSS 4.1.5 [Inspection and Maintenance] and JSSS 4.2.1 [Inspection and Maintenance],

  (b) Repair work of mobile elevating work platform and installation/removal of its working platform shall be carried out following JSSS 4.2.5 [Safety Measures during Inspection and Maintenance Work] and JSSS 4.2.6 [Safety measures at Installation and Removal Work of Attachments, etc.].

(7) Prohibition of use for other purposes

Mobile elevating work platforms shall not be used for any purpose other than the intended original purpose and for example shall never be used for hoisting loads.

6.5.11 General Inspection and Maintenance of Scaffolding

Further to the requirements of JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the Contractor shall comply with the following:

(1) Every scaffold from which a person could fall 2m or more must be thoroughly examined by the HSO (or his delegated assistant):
  (a) Before it is brought into use;
  (b) After any substantial alteration or extension;
  (c) At least once in every 7 days; and
  (d) Whenever it has been exposed to adverse climatic conditions, earthquake or other factors which may have affected its safety.

(2) A written record of the thorough examination and the regular inspections and details of any repair measures must be prepared and kept by the HSO.

(3) The thorough examination and regular inspections shall include:

  (a) Check if the Scaffold is provided and used in accordance with the Method Statement, Safety Plan and its design;

(a) 床材の損傷、取付け及び掛渡しの状態 →E 7.5.10 (4)(a)に規定済み (b) 建地、布、腕木等の緊結部、接続部及び取付部の緩みの状態→E 7.5.10 (4)(b)に規定あり (c) 緊結材及び緊結金具の損傷及び腐食の状態 →E 7.5.10 (4)(c)に規定済み (d) 足場用墜落防止設備の取り外し及び脱落の有無→E 7.5.10 (4)(d)に規定済み (e) 幅木等の取付状態及び取り外しの有無 →E 7.5.10 (4)(e)に規定済み (f) 脚部の沈下及び滑動の状態（つり足場を除く）→E 7.5.10 (4)(f)に規定済み (g) 筋かい、控え、壁つなぎ等の補強材の取付状態及び取り外しの有無 →E 7.5.10 (4)(g)に規定済み (h) 建地、布及び腕木の損傷の有無 →E 7.5.10 (4)(h)に規定済み (i) ~~突りょうとつり索との取付部の状態及びつり装置の歯止めの機能~~ →ゴンドラ作業に係る規定であり、(i)の削除を提案します。 (4) 負者は、上の(4)の規定に従い点検を行ったときは、次の事項を記録し、足場を使用する作業を行う仕事が終了するまでの間、これを保存すること。 (a) 点検の結果 (b) 点検の結果に基づいて行った補修等の措置を講じた場合は、措置の内容 →E 7.5.10 (5)に規定済み。	(3) Check if the bracing, crossing ties, toe boards, handrails and mid-rails are not missing. (4) Check: (a) Condition of working platforms and of any damage to fixings; (b) Condition and any loosening at the fastening, connecting and mounting, portions of standards, ledgers, brackets, and the like; (c) Condition and any damage and corrosion of couplings, fittings, clamps and accessories; (d) Fall prevention facilities are intact and secure; (e) Condition of mountings and presence of toe boards; (f) Condition of bases, screw jacks, castors, brakes, sole plates and the like and ensure there is no movement or settlement; (g) Condition of mountings and presence of diagonal bracings, stays, anchors, ties and other bracing, support or reinforcement materials; (h) Condition of mountings and presence of posts, standards, ledgers and transoms. (5) The Contractor shall carry out all necessary remedial and repair work necessary to rectify any deterioration, defect or damage and shall if necessary stop the use of the Scaffolding until such work has been properly completed, re-inspected and re-certified as “Safe for Use” by the HSO.	NK1: Modified them and discuss with JICA. (1) Check if the Scaffold is provided and used in accordance with its design. (2) Check the structural condition of the Scaffold and of any deterioration, defect or damage (3) Check if the bracing, crossing ties, toe boards, handrails and mid-rails are not missing. JC1D: 前項 7.5.4 でコメント済み。Commented already in 7.5.4 NK1: Cannot understand the comment. (4) Check: (a) Condition of working platforms and of any damage to fixings; (b) Condition and any loosening at the fastening, connecting and mounting, portions of standards, ledgers, brackets, and the like; (c) Condition and any damage and corrosion of couplings, fittings, clamps and accessories; (d) Fall prevention facilities are intact and secure; (e) Condition of mountings and presence of toe boards; (f) Condition of bases, screw jacks, castors, brakes, sole plates and the like and ensure there is no movement or settlement; (g) Condition of mountings and presence of diagonal bracings, stays, anchors, ties and other bracing, support or reinforcement materials; (h) Condition of mountings and presence of posts, standards, ledgers and transoms. (5) The Contractor shall carry out all necessary remedial and repair work necessary to rectify any deterioration, defect or damage and shall if necessary stop the use of the Scaffolding until such work has been properly completed, re-inspected and re-certified as “Safe for Use” by the HSO.	~~Check the structural condition of the Scaffold and of any deterioration, defect or damage;~~ (b) Check if the bracing, crossing ties, toe boards, handrails and mid-rails which are provided are not missing. (c) Check items include: (i) Condition of working platforms and of any damage to fixings; (ii) Condition and any loosening at the fastening, connecting and mounting, portions of standards, ledgers, brackets, and the like; (iii) Condition and any damage and corrosion of couplings, fittings, clamps and accessories; (iv) Fall prevention facilities are intact and secure; (v) Condition of mountings and presence of toe boards; (vi) Condition of bases, screw jacks, castors, brakes, sole plates and the like and ensure there is no movement or settlement; (vii) Condition of mountings and presence of diagonal bracings, stays, anchors, ties and other bracing, support or reinforcement materials; (viii) Condition of mountings and presence of posts, standards, ledgers and transoms. (4) The Contractor shall carry out all necessary remedial and repair work necessary to rectify any deterioration, defect or damage and shall if necessary stop the use of the Scaffolding until such work has been properly completed, re-inspected and re-certified as “Safe for Use” by the HSO.
7.6 作業構台	**7.6. ELEVATED ACCESS STRUCTURES**	**7.6. ELEVATED ACCESS STRUCTURES** JC1O: この英語訳でいいですか？？ MM: Is this expression of elevated access structures appropriate? NK1: MD think so yes, there is no international standard wording and MD developed it. It has functional meaning in three words. MD considers it is necessary to define this and has included in Annex 1.1 (issue 7) as follows: *(7) “Elevated Access Structures” means substantial, elevated, temporary working areas, usually comprised of structural steel columns, beams, framing and floor decking*	**6.6 ELEVATED ACCESS STRUCTURES**

7.6.1 一般事項

(1) 作業構台の定義

作業構台とは、仮設の支柱及び作業床等により構成する設備で、下記(2)の用途で使用されるものをいう。
→E 1. Annex 1.1 (7)に定義済み

(2) 作業構台の用途

作業構台は、作業場所が狭い場所、水面上、急傾斜面上等に位置するため、作業に必要な場所を確保できない場合に仮設として設置するもので、工事用の建設機械や運搬機械の通行や作業、仮設プラント等の設置や運転、工事用車両の通行や駐車、資機材等の運搬や仮置き等を用途とするものである。
→E 7.6.1 冒頭部に規定済み

7.6.1 General

Elevated Access Structures (as defined in JSSS Annex 1.1) act as a temporary working and storage area and to accommodate Contractor's Equipment, Goods and temporary facilities to permit the construction operations to be performed from the Elevated Access Structures on an immediately underlying or adjacent Site.

and used for performing work at sites with difficult access or with restricted room for construction operations or steeply sloping or offshore sites.
Result: Leave as it is.

7.6.1 General

Elevated Access Structures (as defined in JSSS Annex 1.1) act as a temporary working and storage area and to accommodate Contractor's Equipment, Goods and temporary facilities to permit the construction operations to be performed from the Elevated Access Structures on an immediately underlying or adjacent Site.

JC1O: もう少し的確に表現しないと意味が伝わりません。
Unless otherwise described a little more properly, the meaning will not be understood. Proposed as below.

"act as a temporary working platform for heavy-usage such as a working platform for heavy machineries, a concrete mixing plant or a considerable large storage area. It is in some case, a part access bridge to the working area."
NK1: NK considers the sentence is understandable by adding some words.

The working platforms are used in UK for work at height for example scaffold as shown below. To avoid the same term used for work at height, the proposed term of Elevated Access Structures is better to be used.

The Work at Height Regulations 2005、OSHA, UK defines as "working platform"—
(a) means any platform used as a place of work or as a means of access to or egress from a place of work;
(b) includes any scaffold, suspended scaffold, cradle, mobile platform, trestle, gangway, gantry and stairway which is so used.

MD will review the above comment and modify id necessary.

JC1D: 作業構台のことと思いますが、Annex 1.1 には見当たりません。英訳の難しいところも考えられますが、MD さんがこれを理解している、と考えてよいのでしょうか？
I think it is a work gantry, but I can't find it in Annex 1.1. It may be difficult to translate into English, but can you think that MD understands this?
NK1: "Elevated Access Structures" is defined in JSSS Annex 1.1 (7). MD understood its meaning as NK showed photos for it.

JC1D: adjacent "Site"は妙です。発注者が規定した Site の中に構築されるものです。"working area"は"Site"の中に設定されるべきものです(GC 1.1.6.7 "Site"参照ください)。水域上の working area も、Site の中に設営されます。以下この錯誤による規定の矛盾が散見されるようです。改善ください。
Adjacent "Site" is strange. It is built in the Site specified by the Employer. "Working area" should be set in "the Site" (refer to GC 1.1.6.7 "Site"). The working area over the water area is also set up in the Site. It seems that

6.6.1 General

Elevated Access Structures (as defined in JSSS Annex 1.1) act as an access, parking, temporary working and storage area and to accommodate Contractor's Equipment, Goods and temporary facilities to permit the construction operations to be performed from the Elevated Access Structures ~~on an immediately underlying or adjacent~~ in the Site.

7.6.2 作業構台の設計・組立・解体

→E 7.6.2 見出しは[Design and Management Generally]

(1) 作業構台の設計

下記事項を考慮し、本章 7.1.3[仮設構造物の設計及び設計照査]にもとづき計画、設計すること。

→E 7.6.2 (1)に規定済み。(但し、JSSS 7.1.1 参照と記載)

→下記(a)～(c)及び設計変更の際の参照規定に係る記述はない。→MD: I suggest no need to state the following as there would be much more to state however the Contractor is in any event responsible for .

→(E 6.1.1、JSSS 1.33 に TW の設計と建設について一般事項を規定していることから、本款では規定しない)

(a) 使用機械、車両等の重量を勘案した上載荷重
(b) 支柱の滑動・沈下
(c) 7.6.4[作業構台の点検]のために必要な設備

作業構台の設計を変更するときは、本章 7.1.3[仮設工事の設計及び設計照査]の規定に従って設計変更を行うこと、また、作業計画書を変更すること。

(2) 作業構台の組立、解体

請負者は、作業構台の組立及び解体時には、次の措置を講じなければならない。

(a) 組立又は解体の作業の安全措置

→E 7.6.2 (2)(a)～(d)に規定済み。

(i) 本仕様書 2.3[立入禁止の措置]の(1)の規定に従い、当該作業者以外の者の立入りを禁止する措置
(ii) 本仕様書 2.4[監視員、誘導員の配置]に規定の監視員、誘導員の配置、合図の統一の措置
(iii) 本仕様書 2.6[飛来落下の防止措置]に規定の物体の飛来落下の防止の措置
(iv) 本仕様書 6[揚貨・玉掛け作業]に規定の揚貨作業時の安全措置

(b) 作業範囲、時期及び順序についての周知

組立又は解体の作業時期、範囲及び順序を当該作業に従事する作業員に周知すること。また、作業は施工計画に忠実に行わなければならないことを周知すること。

→規定なし。→理由 MD:The above is not necessary it is already a requirement of JSSS 1.13 [Contractor's Safety Management Activities] →重複のため、規定しない。

(3) 作業員の墜落防止の措置

作業員の墜落のおそれのある箇所には手摺、柵等の墜落防止用の設備を設けること。詳細は 2.5.3[足場・作業床からの墜落防止措置]、2.5.4[作業床端、開口部からの墜落防止措置]に規定に従うこと。

→規定なし。→MD:Already covered.

7.6.2 Design and Management Generally

(1) The design, management, provision, safe use and safe removal of Elevated Access Structures shall comply with the requirements of JSSS 0 [*Design and Provision of TW Generally*].

(2) For related JSSS requirements, refer to the following and other related parts of JSSS including:
(a) JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*];
(b) JSSS 1.35 [*Design and Management of Temporary Works*]
(c) JSSS 2.5 [*Fall Prevention*]
(d) JSSS 2.6 [*Falling Objects*];

(3) Erection and Removal of Elevated Access Structures
The Contractor shall:
(a) Designate any working areas where an Elevated Access Structures is being erected, altered or removed as Dangerous Areas, and the Contractor shall enclose the working area where possible with temporary fences or barriers, prevent entry of any non - authorised personnel or prevent vessels from entering in the case of offshore or marine works and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

inconsistencies in the rules due to this misunderstanding are seen below. Please improve them.

NK1: Modified.

7.6.2 Design and Management Generally

(1) The design, management, provision, safe use and safe removal of Elevated Access Structures shall comply with the requirements of JSSS 7.1.1 [*Design and Provision of TW Generally*].

(2) For related JSSS requirements, refer to the following and other related parts of JSSS including:
(a) JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*];
(b) JSSS 1.35 [*Design and Management of Temporary Works*]
(c) JSSS 2.5 [*Fall Prevention*]
(d) JSSS 2.6 [*Falling Objects*];

JC1: (a) and (b) are left and others are deleted because they are general requirements.

(3) Erection and Removal of Elevated Access Structures
The Contractor shall:
(a) Designate any working areas where an Elevated Access Structures is being erected, altered or removed as Dangerous Areas, and the Contractor shall enclose the working area where possible with temporary fences or barriers, prevent entry of any non - authorised personnel or prevent vessels from entering in the case of offshore or marine works and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

JC1D: Comment 7.6.1 に同じです。Site の確保方法は発注者が仕様書・図面などで設置場所・使用を規定しておくべきことです。水域上の Site についても同様です。
Same as comment for adjacent Site. The method of securing the site should be such that the Employer should specify the installation location and use in the specifications and drawings. The same goes for Sites on water area.

NK1: 架設構台の建設現場は、2.3 に規定の危険な作業地域に指定して安全対策を取ることを規定しています。建設現場は、7.6.1 で in the Site と規定していますので、(a)の変更は不要です。
This clause specifies to designate the site as Dangerous Areas and take safety measures following JSSS 2.3 [Prohibition of Entry - Dangerous Work]. The construction

6.6.2 Design and Management Generally

(1) The design, management, provision, safe use and safe removal of Elevated Access Structures shall comply with the requirements of JSSS 6.1.1 [*Design and Provision of TW Generally*].

(2) For related JSSS requirements, refer to the following and other related parts of JSSS including:
(a) JSSS 1.~~33~~35[*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*];
(b) JSSS 1.~~35~~ 37 [*Design and Management of Temporary Works*];
~~(c) JSSS 2.3 [*Prohibition of Entry - Dangerous Work*];~~
~~(d) JSSS 2.4 [*Spotters, Flagmen and the Like*];~~
~~(e) JSSS 2.5 [*Fall Prevention*];~~
~~(f) JSSS 2.6 [*Falling Objects*];~~
~~(g) JSSS 6 [*Hoisting and Rigging*];~~

(3) Erection and Removal of Elevated Access Structures
The Contractor shall:
(a) Designate any working areas where an Elevated Access Structures is being erected, altered or removed as Dangerous Areas, and the Contractor shall enclose the working area where possible with temporary fences or barriers, prevent entry of any non - authorised personnel or prevent vessels from entering in the case of offshore or marine works and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

→(NK の方針:削除する。)

(4) 車両の転落防止の措置

作業床から車両の転落の危険のおそれのある箇所には、転落防止のため、十分な強度を有する地覆・車止めを設置し、取付・固定は確実に行うこと。
→E 7.6.2 (3)(c)に規定済み。

(5) 悪天候時の対応

悪天候のため、組立・解体作業の実施について危険が予想されるときは、本仕様書 2.7[悪天候及び地震時の対策]の規定に従い、作業を中止すること。
→規定なし。→MD:2.7 Adverse Weather Requirements 2.7.2 Preventive Measures)で纏めて規定する。

7.6.3 作業構台の使用

→E 7.6.3 見出しは[Further Safety Requirements]

請負者は、作業構台における安全を確保するため、次の措置を講じなければならない。
→E 7.6.3 冒頭部に規定済み。

(1) 作業構台の最大上載荷重を、パネル、ボード等を利用して見やすい位置に掲示したうえで、当該荷重を超える車両、建設機械等を進入させないこと。
→E 7.6.3 (1)及び(2)に規定済み

(2) 作業員の通行のために、本仕様 7.4.2[通路の設定]に従い、通路を設定すること。
→E 7.6.3 (5)に規定済み

(3) 建設機械等と作業員との接触防止のため、本仕様書 4.1.2[各作業の作業員への周知]、4.1.10[運用時の安全措置]に従い、必要な措置を講じること。
→E 7.6.3 (9)に規定済み。

(b) Implement safety measures for lifting and slinging work in accordance with JSSS 6 [*Lifting and Slinging Work*].

To be coordinated with JSSS 6 later. Rigging?

The following is not necessary it is already a requirement of JSSS 1.13 [Contractor's Safety Management Activities]

(c) Use of Measures to prevent Vehicles from falling
The Contractor shall provide and fix continuous "W" Section, heavy duty commercial type galvanised steel crash barriers of suitable strength and height (minimum 1.5m) with posts, fixings and fittings, to the entire perimeter of all Elevated Access Structures where they are used by vehicles or Contractor's Equipment, to prevent such vehicles or Contractor's Equipment from falling where there is any risk.
The Contractor shall also provide steel angle or channel kerbs welded to the surface of the decking in locations where vehicles or Contractor's Equipment are working or parking to prevent the vehicles or Contractor's Equipment accidentally moving and colliding with the crash barrier.
All crash barriers and kerbs shall be painted in black and yellow bands to show them as a hazard.

(d) Use of Measures to prevent collision with Marine Vessels
For offshore work, the Contractor shall provide all necessary warning signs, audible alarms, beacons and lighting and serve all notices to the marine or other relevant authorities as necessary to ensure that all shipping, boats and other vessels are aware of changes to navigation due to the presence of any Elevated Access Structures and that all risk of collision is avoided.

7.6.3 **Further Safety Requirements**

The Contractor shall take all necessary measures to ensure the safe provision, use and removal of Elevated Access Structures, including but not

of Elevated Access Structures is made in the Site as specified in 7.6.1. Therefore, no modification is made.

(b) Implement safety measures for lifting and slinging work in accordance with JSSS 6 [*Lifting and Slinging Work*].

To be coordinated with JSSS 6 later. Rigging?

The following is not necessary it is already a requirement of JSSS 1.13 [Contractor's Safety Management Activities]

NK1: This is a general requirement, so it may be deleted.

(c) Use of Measures to prevent Vehicles from falling
The Contractor shall provide and fix continuous "W" Section, heavy duty commercial type galvanised steel crash barriers of suitable strength and height (minimum 1.5m) with posts, fixings and fittings, to the entire perimeter of all Elevated Access Structures where they are used by vehicles or Contractor's Equipment, to prevent such vehicles or Contractor's Equipment from falling where there is any risk.
The Contractor shall also provide steel angle or channel kerbs welded to the surface of the decking in locations where vehicles or Contractor's Equipment are working or parking to prevent the vehicles or Contractor's Equipment accidentally moving and colliding with the crash barrier.
All crash barriers and kerbs shall be painted in black and yellow bands to show them as a hazard.

JC1O: 路面をギザギザにすることでしょうか？
MM: Does this expression mean the road surface to be jagged?
JC1: It means steel crash barriers.
Result: Leave it as it is.

(d) Use of Measures to prevent collision with Marine Vessels
For offshore work, the Contractor shall provide all necessary warning signs, audible alarms, beacons and lighting and serve all notices to the marine or other relevant authorities as necessary to ensure that all shipping, boats and other vessels are aware of changes to navigation due to the presence of any Elevated Access Structures and that all risk of collision is avoided.

7.6.3 **Further Safety Requirements**

The Contractor shall take all necessary measures to ensure the safe provision, use and removal of

(b) ~~Implement safety measures for lifting and slinging work in accordance with JSSS 6 [*Lifting and Slinging Work*].~~

To be coordinated with JSSS 6 later. Rigging?

The following is not necessary it is already a requirement of JSSS 1.13 [Contractor's Safety Management Activities]

(c) Use of Measures to prevent Vehicles from falling
The Contractor shall provide and fix continuous "W" Section, heavy duty commercial type galvanised steel crash barriers of suitable strength and height (minimum 1.5m) with posts, fixings and fittings, to the entire perimeter of all Elevated Access Structures where they are used by vehicles or Contractor's Equipment, to prevent such vehicles or Contractor's Equipment from falling where there is any risk.
The Contractor shall also provide steel angle or channel kerbs welded to the surface of the decking in locations where vehicles or Contractor's Equipment are working or parking to prevent the vehicles or Contractor's Equipment accidentally moving and colliding with the crash barrier.
All crash barriers and kerbs shall be painted in black and yellow bands to show them as a hazard.

(d) Use of Measures to prevent collision with Marine Vessels
For offshore work, the Contractor shall provide all necessary warning signs, audible alarms, beacons and lighting and serve all notices to the marine or other relevant authorities as necessary to ensure that all shipping, boats and other vessels are aware of changes to navigation due to the presence of any Elevated Access Structures and that all risk of collision is avoided.

6.6.3 **Further Safety Requirements**

The Contractor shall take all necessary measures to ensure the safe provision, use and removal of

(4) 作業員の建設機械等との接触の危険防止のために、資材運搬車両の経路、資材仮置場の位置、重機の配置等を、作業員に作業前に認識させること。→E 7.6.3 (3)に規定済み。(但し内容は少々異なる)	restricted to the following: (1) Provide warning notices clearly showing the maximum safe working load in clearly visible locations. (2) Ensure that the Contractor, together with any other parties considered collectively, NEVER exceed the maximum safe working load. (3) Provide any further signs containing user information or other mandatory usage requirements such as speed limits and markings all as necessary to demarcate roadways and walkways, working, storage, parking and other areas. (4) Designate any Elevated Access Structures during use as Dangerous Areas and take all further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*]. (5) Provide walkways in accordance with JSSS 0 [*Walkways*], (6) Provide adequate lighting to ensure the safety of Contractor's Equipment, equipment of other parties, vehicles and persons in transit or whilst working. (7) (for offshore work) Provide rescue and lifesaving equipment to be used in the event that any persons fall into the sea, including a rescue tender and life belts or the like. (8) Provide PFAS or PFRS to workers where appropriate. (9) Prevent any accident or collision by ensuring that all Contractor's Personnel that may be working on Elevated Access Structures and any Employer's personnel and other persons that may be present on such structures are fully informed about the work that may be in progress from time to time, including transportation and delivery of Goods and of the measures and any precautions that must be complied with.	Elevated Access Structures, including but not restricted to the following: (1) Provide warning notices clearly showing the maximum safe working load in clearly visible locations. (2) Ensure that the Contractor, together with any other parties considered collectively, NEVER exceed the maximum safe working load. (3) Provide any further signs containing user information or other mandatory usage requirements such as speed limits and markings all as necessary to demarcate roadways and walkways, working, storage, parking and other areas. (4) Designate any Elevated Access Structures during use as Dangerous Areas and take all further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*]. (5) Provide walkways in accordance with JSSS 0 [*Walkways*], JC1O: pedestrian walkway としてください。 Change it to "Pedestrian walkway", please. NK1: The walkways are specified in 6.4.1 as follows. *6.4.1 General* *(1) This Section comprises safety measures relating to the movement of persons to and around the Site and includes temporary walkways, pedestrian bridges, portable ladders and stepladders.* To make term consistent, "walkway" is used. Leaved as it is. (6) Provide adequate lighting to ensure the safety of Contractor's Equipment, equipment of other parties, vehicles and persons in transit or whilst working. (7) (for offshore work) Provide rescue and lifesaving equipment to be used in the event that any persons fall into the sea, including a rescue tender and life belts or the like. (8) Provide PFAS or PFRS to workers where appropriate. JC1O: 高所作業の時なので、基本的には組立・撤去時か？まとめて Abbreviations を記載することが必要 Since they are the systems for working at heights, basically should it be specified that it be supplied at the time of assembly and removal? Abbreviations must be described together. NK1: Definitions of two terms are specified in Chapter 1, A1.1.2 (17) and (18). (9) Prevent any accident or collision by ensuring that all Contractor's Personnel that may be working on Elevated Access Structures and any Employer's personnel and other persons that may be present on such structures are fully informed about the work that may be in progress from time to time, including transportation and delivery of Goods and of	Elevated Access Structures, including but not restricted to the following: (1) Provide warning notices clearly showing the maximum safe working load in clearly visible locations. (2) Ensure that the Contractor, together with any other parties considered collectively, NEVER exceed the maximum safe working load. (3) Provide any further signs containing user information or other mandatory usage requirements such as speed limits and markings all as necessary to demarcate roadways and walkways, working, storage, parking and other areas. (4) Designate any Elevated Access Structures during use as Dangerous Areas and take all further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*]. (5) Provide walkways in accordance with JSSS ~~0~~ 6.4.2 [W*alkways*], (6) Provide adequate lighting to ensure the safety of Contractor's Equipment, equipment of other parties, vehicles and persons in transit or whilst working. (7) (for offshore work) Provide rescue and lifesaving equipment to be used in the event that any persons fall into the sea, including a rescue tender and life belts or the like. (8) Provide PFAS or PFRS to workers at construction and removal of Elevated Access Structures, and where appropriate. (9) Prevent any accident or collision by ensuring that all Contractor's Personnel that may be working on Elevated Access Structures and any Employer's personnel and other persons that may be present on such structures are fully informed about the work that may be in progress from time to time, including transportation and delivery of Goods and of the measures and any precautions that must be

7.6.4 作業構台の点検

請負者は、作業構台で作業を行うときは、次に示す点検を行い、異常を認めたときは直ちに補修しなければならない。次の(2)に規定の点検の点検結果及び補修の記録は、作業が終了するまで保管しなければならない。→E 7.6.4 (3)に規定済み

(1) 作業開始前の点検

その日の作業を開始する前に、作業を行う箇所に設けた手すり、中桟及び床材等の取り外し及び脱落の有無の点検をおこなうこと。→7.6.4 (1)(c)に週例点検を規定

(2) 本仕様書 2.7[悪天候及び地震時の対策]に規定の悪天候及び地震の発生後、作業構台の組立て、一部解体又は変更の後において、作業構台における作業を行うときは、作業開始前に、次の事項について点検を行い、異常を認めたときは直ちに補修を行うこと。→7.6.4 (2)に規定済み。

(a) 支柱の滑動及び沈下の状態
(b) 床材の損傷、取付け及び掛渡しの状態
(c) 支柱、はり、筋かい等の緊結部、接続部及び取付部の緩みの状態
(d) 緊結材及び緊結金具の損傷及び腐食の状態
(e) 水平つなぎ、筋かい等の補強材の取付状態及び取り外しの有無

→7.6.4 (2)(a)に一般的に規定済み。

7.6.4 Inspection and Maintenance

Further to the requirements of JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the Contractor shall comply with the following:

(1) Every Elevated Access Structure must be thoroughly examined by the HSO (or his delegated assistant):

(a) Before it is brought into use;
(b) After any substantial alteration or extension;
(c) At least once in every 7 days; and
(d) Whenever it has been exposed to adverse climatic conditions, heavy seas, earthquake or other factors which may have affected its safety.

(2) A written record of the thorough examination and the regular inspections and details of any repair measures must be prepared by the HSO.

The thorough examination and regular inspections shall include:

(1) Check if the Elevated Access Structure is provided and used in accordance with its design.
(2) Check:
(a) The structural condition of the Elevated Access Structure and of any deterioration, defect, damage or settlement;
(b) Fall prevention and all other safety requirements and facilities are intact and fully operational; and
(c) the measures and any precautions that must be complied with.

7.6.4 Inspection and Maintenance

Further to the requirements of JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the Contractor shall comply with the following:

(1) Every Elevated Access Structure must be thoroughly examined by the HSO (or his delegated assistant):

JC1O: the Contractor でいいのでは？
Better to "the Contractor"?
JC1: The duty of HSO is discussed in Chapter 1, so no modify is made.

(a) Before it is brought into use;
(b) After any substantial alteration or extension;
(c) At least once in every 7 days; and

JC1O: 必ずしも毎週仮設構台を確認する必要はないと考えます。デック、手すり、輪留めくらい？
MM: It is not necessary to check the Elevated Access Structure EAS) every week. Check might be made on the decks, handrails, car stops?
JC1: If that is your instruction I will change, however, please note that the extent of weekly inspection is variable. Considering the requirements of (4) below, I would recommend that a check at least on a weekly basis (particularly settlement) is very necessary.
If it is not a weekly check, what is the suggested frequency?
Results: Leave it as it is.

(d) Whenever it has been exposed to adverse climatic conditions, heavy seas, earthquake or other factors which may have affected its safety.

(2) A written record of the thorough examination and the regular inspections and details of any repair measures must be prepared by the HSO.

JC1O:HSO ???
SS1: The duty of HSO is discussed in Chapter 1, so no modify is made.

The thorough examination and regular inspections shall include:

(1) Check if the Elevated Access Structure is provided and used in accordance with its design.
(2) Check:
(a) The structural condition of the Elevated Access Structure and of any deterioration, defect, damage or settlement;
(b) Fall prevention and all other safety requirements and facilities are intact and fully operational; and
complied with.

6.6.4 Inspection and Maintenance

Further to the requirements of JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the Contractor shall comply with the following:

(1) Every Elevated Access Structure must be thoroughly examined by the ~~HSO (or his delegated assistant)~~:

(a) Before it is brought into use;
(b) After any substantial alteration or extension;
(c) At least once in every 7 days; and
(d) Whenever it has been exposed to adverse climatic conditions, heavy seas, earthquake or other factors which may have affected its safety.

(2) A written record of the thorough examination and the regular inspections and details of any repair measures must be prepared by the HSO.

(3) The thorough examination and regular inspections shall include:

(a) Check if the Elevated Access Structure is provided and used in accordance with the Method Statement, Safety Plan and its design.
(b) Check items include:
(i) The structural condition of the Elevated Access Structure and of any deterioration, defect, damage or settlement;

	(c) All other requirements of this Section are still being complied with. (3) The Contractor shall carry out all necessary remedial and repair work necessary to rectify any deterioration, defect or damage and shall if necessary stop the use of the Elevated Access Structure until such work has been properly completed, re-inspected and re-certified as "Safe for Use" by the HSO.	(c) All other requirements of this Section are still being complied with. (3) The Contractor shall carry out all necessary remedial and repair work necessary to rectify any deterioration, defect or damage and shall if necessary stop the use of the Elevated Access Structure until such work has been properly completed, re-inspected and re-certified as "Safe for Use" by the HSO.	(ii) Fall prevention and all other safety requirements and facilities are intact and fully operational; and (iii) All other requirements of this Section are still being complied with. (4) The Contractor shall carry out all necessary remedial and repair work necessary to rectify any deterioration, defect or damage and shall if necessary stop the use of the Elevated Access Structure until such work has been properly completed, re-inspected and re-certified as "Safe for Use" by the HSO.
7.7 仮設電気設備 7.7 は MD 氏から下記コメントとともに、和文セット版の J 7.7.1～J 7.7.3 の規定内容で、以下の変更の提案あり。 J 7.7.1 一般事項 ⇒ E 7.7.1 General へ書換え ⇒ E 7.7.2 Compliance Standards 新規挿入 ⇒ E 7.7.3 General Safety Requirements 新規挿入 J 7.7.2(1) ⇒ 削除 J 7.7.2(2) ⇒ E 7.7.4 Method Statement for Temporary Electrical Installations へ変更 ⇒ E 7.7.5 Responsible Personnel 新規挿入 J 7.7.3 ⇒ 対応する規定(E 7.7.1 (3)、E 7.7.5(1)及び(2))等にて変更 7.7 和文への MD コメント: I think your draft is too brief for what is actually an important section on temporary works safety and it needs further development. You have described this section as "temporary power facilities" but it must cover much more, including lighting and temporary wiring installations generally not just power equipment. I have added parts to your draft as follows, please review and confirm that this is in accordance with your requirements, I will consider moving to other sections later. Temporary Electrical Installation (仮設電気設備設置) 関係の Chap.1 での規定: E 1.21.9 : Safety Plan 中に位置付けるべき Accident Response Plan(感電事故発生時の応急処置、手順等対象とした作業員訓練など)の追記 E 1.28.1 : 複数の請負業者間の Interact により、配電システム他に関連する共通のリスクに晒される場合、リスク予防と管理に係る一般原則の全請負業者への適用追記。 E 1.33.1 : 工事で使用する電気設備は、目的に合致する機器、設備等の使用を規定。 Annex 1.1.2 (18) :感電等防止のための PPE の使用を追記。 **7.7.1 一般事項** (1) 本節では、仮設電気設備の設置、移転、撤去、修理等の作業の安全について規定する。 →E 7.7.1 (1)に規定済み。	**7.7. TEMPORARY ELECTRICAL INSTALLATIONS** **7.7.1. General** (1) This Section contains safety requirements for the provision, use and removal of temporary electrical power and lighting installations at	**7.7. TEMPORARY ELECTRICAL INSTALLATIONS** To MD: I found the following document you might referred to for this Section in HSE. May I know titles of other document for my reference in future. 1) HSE Safety Topics: Electricity - Systems in buildings https://www.hse.gov.uk/construction/safetytopics/systems.htm 2) HSE HSG85 (Third edition) Published 2013 Electricity at work: Safe working practices https://www.hse.gov.uk/pubns/books/hsg85.htm 3) HSE: Guidance: The Electricity at Work, Regulations 1989 https://www.hse.gov.uk/pubns/priced/hsr25.pdf To MD: Comments are marked as follows: JICA : sentences in yellow highlighted NK: sentences in blue highlighted **7.7.1. General** (1) This Section contains safety requirements for the provision, use and removal of temporary	**6.7 TEMPORARY ELECTRICAL INSTALLATIONS** **6.7.1 General** (1) This Section contains safety requirements for the provision, use, relocation, repair and

(2) 本節では、電圧が 600V 以下又は当該国で規定の低圧の仮設電気設備に関して規定する。 →規定なし。→下記 MD コメント参照。→規定しない。 (3) 本節で使用する用語の定義は次である。 (a) 仮設電気設備とは、請負者が工事のために現場内に設置する受電設備、変電設備、発電設備、配電設備等の仮設の設備をいう。 →規定なし。→下記 MD コメント参照。→規定しない。 (4) 配電設備とは、受電設備又は発電設備から各作業場へ配電するための電線、ケーブル等の設備をいう。 →規定なし。→下記 MD コメント参照。→規定しない。 →MD: 上記(2)及び(3)の規定がない。 MD : No real relevance to safety or this part of JSSS.	the Site. (2) As this Section relates to temporary installations to be used during construction, temporary wiring methods can be of a class less than would be required for a permanent installation. Mains switchgear, equipment and outlets however shall comply with the same standards as for a permanent installation. (3) Although this work is temporary, it shall be particularly noted that temporary electrical installations must be designed, installed, inspected, tested, altered and removed by Contractor's Personnel that are qualified electricians, trained and certified for such operations in accordance with JSSS 1.16 [*Proper Placement of Contractor's Personnel*] and that follow strict procedures prepared by the Contractor and specified in the Method Statement and Safety Plan. (4) The Contractor must take precautions against the risk of death or injury from electricity during construction work. Refurbishment work in existing buildings presents the greatest risk and all must be planned, managed and monitored to ensure that workers are not exposed to risk from electricity. (5) The temporary electrical installations and all equipment used must be safe, regularly inspected and properly maintained. (6) Temporary electrical installations shall be removed immediately upon completion of the work for which they are used.	electrical power and lighting installations at the Site. NK1: Added relocation, repair mentioned in Japanese version. (2) As this Section relates to temporary installations to be used during construction, temporary wiring methods can be of a class less than would be required for a permanent installation. NK1: Is this necessary mention "less than permanent"? Mains switchgear, equipment and outlets however shall comply with the same standards as for a permanent installation. (3) Although this work is temporary, it shall be particularly noted that temporary electrical installations must be designed, installed, inspected, tested, altered and removed by Contractor's Personnel that are qualified electricians, trained and certified for such operations in accordance with JSSS 1.16 [*Proper Placement of Contractor's Personnel*] and that follow strict procedures prepared by the Contractor and specified in the Method Statement and Safety Plan. (4) The Contractor must take precautions against the risk of death or injury from electricity during construction work. Refurbishment work in existing buildings presents the greatest risk and all must be planned, managed and monitored to ensure that workers are not exposed to risk from electricity. (5) The temporary electrical installations and all equipment used must be safe, regularly inspected and properly maintained. (6) Temporary electrical installations shall be removed immediately upon completion of the work for which they are used. NK1: "must" and "shall" are used above, can we use all only "shall"?	removal of temporary electrical power and lighting installations at the Site. (2) As this Section relates to temporary installations to be used during construction, temporary wiring methods can be of a class less than would be required for a permanent installation. Mains switchgear, equipment and outlets however shall comply with the same standards as for a permanent installation. (3) Although this work is temporary, it shall be particularly noted that temporary electrical installations must be designed, installed, inspected, tested, altered and removed by Contractor's Personnel that are qualified electricians, trained and certified for such operations in accordance with JSSS 1.~~16~~18 [*Proper Placement of Contractor's Personnel*] and that follow strict procedures prepared by the Contractor and specified in the Method Statement and Safety Plan. (4) The Contractor must take precautions against the risk of death or injury from electricity during construction work. Refurbishment work in existing buildings presents the greatest risk and all must be planned, managed and monitored to ensure that workers are not exposed to risk from electricity. (5) The temporary electrical installations and all equipment used must be safe, regularly inspected and properly maintained. (6) Temporary electrical installations shall be removed immediately upon completion of the work for which they are used.
(5) 請負者は、仮設電気設備に関し、本節で規定のない事項は当該国の法律又は電力供給を受ける電力会社の規定を遵守しなければならない。 .→E 7.7.2 に規定済み。→MD : Already covered in Chapter 1. Also not sure about reference to local company as if inferior to JSSS or OSHA, the Engineer should apply a higher standard	**7.7.2. Compliance Standards** (1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], for any items in this Section or relevant to the subject of this Section and which are not fully covered by JSSS, the Contractor shall comply with the technical requirements of OSHA PART 1926-Safety and Health Regulations for Construction, Subpart K-Electrical; Wiring Methods, Components and Equipment for General Use.	**7.7.2. Compliance Standards** (1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], for any items in this Section or relevant to the subject of this Section and which are not fully covered by JSSS, the Contractor shall comply with the technical requirements of OSHA PART 1926-Safety and Health Regulations for Construction, Subpart K-Electrical; 1926.405 Wiring Methods, Components and Equipment for General Use. NK1: Is it necessary to stipulate section no. 1926.405??	**6.7.2 Compliance Standards** (1) By reference to JSSS 1.4 [*JSSS ~~Laws and Reference Standards~~ Compliance with JSSS and Other Regulations*], for any items in this Section or relevant to the subject of this Section and which are not fully covered by JSSS, the Contractor shall comply with the technical requirements of OSHA PART 1926-Safety and Health Regulations for Construction, Subpart K-Electrical; 1926.405 Wiring Methods, Components and Equipment for General Use.
	7.7.3. General Safety Requirements The Contractor shall avoid accidents to workers engaged on electrical works and also those workers who are who are not electricians but who are	**7.7.3. General Safety Requirements** The Contractor shall avoid accidents to workers engaged on electrical works and also those workers ~~who are~~ who are not electricians but who are	**6.7.3 General Safety Requirements** The Contractor shall avoid accidents to workers engaged on electrical works and also those workers ~~who are~~ who are not electricians but who are

	carrying out other works, such as plumbers and joiners by taking appropriate measures including the following: (1) Understanding the system (a) Ensure that those responsible for planning, managing or performing any part of the Works fully understand the electrical system on Site or inside any existing building where any work is to be carried out, to ensure that the integrity of the electrical system is not compromised and all workers remain safe. (b) Ensure that relevant parts of existing electrical systems are isolated if there is any risk or the execution of any part of the Works by any tradesmen is liable to disturb or damage the existing electrical system and expose persons to electrical danger. (2) Portable electrical equipment (a) Ensure that tools, plugs and cables designed for domestic use are not used for construction works. The Contractor shall use cordless tools, suitable for external use under Site conditions. (b) Where cordless tools are not used and where so justified by available voltage, ensure that tools operate from a 110V centre tapped to earth (CTE) supply system so that the maximum voltage to earth does not exceed 55V.	carrying out other works~~, such as plumbers and joiners~~ by taking appropriate measures including the following: (1) Understanding the system (a) Ensure that ~~those~~ Contractor's Personnel responsible for planning, managing or performing any part of the Works fully understand the electrical system on Site or inside any existing building where any work is to be carried out, to ensure that the integrity of the electrical system is not compromised and all workers remain safe. (b) Ensure that relevant parts of existing electrical systems are isolated if there is any risk or the execution of any part of the Works by any tradesmen is liable to disturb or damage the existing electrical system and expose ~~persons~~ workers to electrical danger. NK1: The sentence (b) is long and difficult to understand. Can you simplify this sentence and also review terms? JC1O: electrician? Who? NK1: tradesman は熟練工員、職人の意味であり、electrician(電気技師，電気工)を含みます。下記の英英辞典とOSHAの用語を参照願います。 A. in https://dictionary.cambridge.org/ 1) "tradesmen" means someone who works in a trade that needs skill at using your hands, usually in the building industry. 2) "trade" means a job, especially one that needs special skill, that involves working with your hands: (·She went to college to learn a trade.) the people who work in a particular business or industry or in the same one: 3) "electrician" means a person who puts in, checks, and repairs electrical wires and electrical equipment B. OSHA: Subpart K-Electrical Qualified person: One familiar with the construction and operation of the equipment and the hazards involved. (2) Portable electrical equipment (a) Ensure that tools, plugs and cables designed for domestic use are not used for construction works. The Contractor shall use cordless tools, suitable for external use under Site conditions. JC1O: proposed to modify to "cordless tools or other suitable tools for external" NK1: Modify it as indicated. (b) Where cordless tools are not used and where so justified by available voltage, ensure that tools operate from a 110V centre tapped to earth (CTE) supply system so that the maximum voltage to earth does not exceed 55V.	carrying out other works, ~~such as plumbers and joiners~~ by taking appropriate measures including the following: (1) Understanding the system (a) Ensure that ~~those~~ Contractor's Personnel responsible for planning, managing or performing any part of the Works fully understand the electrical system on Site or inside any existing building where any work is to be carried out, to ensure that the integrity of the electrical system is not compromised and all workers remain safe. (b) Ensure that relevant parts of existing electrical systems are isolated if there is any risk or the execution of any part of the Works by any tradesmen is liable to disturb or damage the existing electrical system and expose ~~persons~~ workers to electrical danger. (2) Portable electrical equipment (a) Ensure that tools, plugs and cables designed for domestic use are not used for construction works. The Contractor shall use cordless tools or other suitable for external use under Site conditions. (b) Where cordless tools are not used and where so justified by available voltage, ensure that tools operate from a 110V centre tapped to earth (CTE) supply system so that the maximum voltage to earth does not exceed 55V.

(c) Regularly inspect power tools and take them out of service if they are damaged. Tools should be serviced by qualified electricians; makeshift repairs are prohibited.

(3) Residual current (trip) devices
(a) Where mains supply is used, the risk of injury is high if equipment, tools, leads, wires or cables are damaged or if there is a fault.
(b) Use residual current (trip) devices (RCD) to detect some faults in the electrical system and rapidly switch off the supply.
(c) RCDs shall be properly installed and enclosed; checked daily; treated with care; kept free of moisture and dirt; and protected against vibration and mechanical damage.
(d) Electrical equipment and tools shall be checked for damage before every shift, have a visual inspection every week and have a combined inspection and test before first use on a site and then every month, records of these checks shall be kept.

(4) Lighting systems
Protect cabling and bulbs against breakage. If a bulb breaks, the exposed filament may present a hazard. Have a system for checking bulbs regularly to maintain electrical safety and to keep the site well-lit.
(5) Temporary electrical systems must not be used in excess of intended loads or rated capacity whichever is less.
(6) Temporary electrical systems shall not be used for any purpose other than the intended original purpose.

JC1O: 分からないので確認してください。
Please check the CTE because I cannot understand its meaning.
NK1: （1） CTE は、変圧器の設置方式の一つで、移動式電動器具の安全な配電方式として一般的に使用されていると次に説明があります。
The CTE is one of earth systems in transforms and very common in electrical distribution systems and site safety operations explained in the following web:
https://www.gstransformers.com/technical/110v-centre-tap-earth-55v-0v-55v.html
移動式電動器具のための CTE 方式では、安全のために漏電遮断器が併用されていると記述が上の記事にあります。
CTE system for portable tools are usually installed with residual-current device (RCD) for safety reasons.
(2) BS での低電圧への変電に関する規定
BS 7671:2018 Requirements for Electrical Installations. IET Wiring Regulations(入手済)
411.8 Reduced low voltage systems 411.8.1 General
411.8.1.2 The nominal voltage of the reduced low voltage circuts shall not exceed 110 V AC rms between lines (three phase 63.5 V to earthed neutral, single phase55 V to earthed midpoint).
（3）HSE Safety Topics
https://www.hse.gov.uk/construction/safetytopics/systems.htm
Electricity - Systems in buildings, Portable electrical equipment
Tools, plugs and cables designed for DIY (do-it-yourself) and domestic use are not suitable for site conditions.
You should use cordless tools or those that operate from a 110V centre tapped to earth (CTE) supply system so that the maximum voltage to earth does not exceed 55V.
感電事故防止のために、低圧電圧を 3 相と単相で規定しています。内容は妥当です。
The Regulation specifies low voltage for 3 and single phase. I cannot understand perfectly, however the stipulation (b) is correct.

~~(c) Regularly inspect power tools and take them out of service if they are damaged. Tools should be serviced by qualified electricians; makeshift repairs are prohibited.~~

NK1: (c) is common requirement, so (c) can be moved to (7). Can you confirm this moving?

(3) Residual current (trip) devices
(a) Where mains supply is used, the risk of injury is high if equipment, tools, leads, wires or cables are damaged or if there is a fault.
(b) Use residual current (trip) devices (RCD) to detect some faults in the electrical system and rapidly switch off the supply.
(c) RCDs shall be properly installed and enclosed; checked daily; treated with care; kept free of moisture and dirt; and protected against vibration and mechanical damage.
~~(d) Electrical equipment and tools shall be checked for damage before every shift, have a visual inspection every week and have a combined inspection and test before first use on a site and then~~

(3) Residual current (trip) devices
(a) Where mains supply is used, the risk of injury is high if equipment, tools, leads, wires or cables are damaged or if there is a fault.
(b) Use residual current (trip) devices (RCD) to detect some faults in the electrical system and rapidly switch off the supply.
(c) RCDs shall be properly installed and enclosed; checked daily; treated with care; kept free of moisture and dirt; and protected against vibration and mechanical damage.

7.7.2 作業計画と作業員への周知

(1) 請負者は、本仕様書 1.3[安全衛生にかかわる計画書]に規定の事項に加え、次の事項を加えた作業計画書及び安全衛生詳細計画書を作成しなければならない。

→E 7.7.4 に規定済み。

(a) 当該工事で適用する当該国の電気関係の法律及び電力供給を受ける電力会社の規定

→E 7.7.4 に当該国の規則の写しの添付を規定している。

(b) 電線、ケーブルの規格と電圧

→E 7.7.4(1)に規定済み

(c) 電線、ケーブルの防護工

→E 7.7.4(2)に規定済み

(d) 電気系統図

→E 7.7.4(3)に規定済み

(2) 請負者は、仮設電気設備の設置、移転、撤去、修理等の作業を行うときは、作業員の感電を防止するため次の事項を含めた安全上の措置について、必要に応じ作業員へ周知しなければならない。

→下記(a)～(c)含めて規定なし。→理由：第 1 章で規定すみ。

(a) 作業場所、作業内容、作業方法

7.7.4. Method statement for Temporary Electrical Installations

The Method Statement for temporary electrical installations (required by the Contract and JSSS 1.7 [*Contractor's Method Statements*] shall include a copy of the Laws and regulations of the Country and the power authority which supplies power to the Contractor in relation with relevant temporary electrical installations and shall show:

(1) Required Standards and voltages of electric wires and cables.
(2) Protective work for electric wires and cables.
(3) Electric diagram.

7.7.5. Responsible Personnel

(1) The Contractor shall post the name and contact information for the person in charge of managing and operating the temporary electrical installation.
(2) All other persons shall be prohibited from operating repairing or interfering with the

~~every month, records of these checks shall be kept.~~

NK1: (d) is common requirement, so (d) can be moved to (7). Can you confirm this moving?

NK1: Reference for RCD:参考：漏電遮断器
https://ja.wikipedia.org/wiki/%E6%BC%8F%E9%9B%BB%E9%81%AE%E6%96%AD%E5%99%A8
漏電遮断器または漏電ブレーカー（Earth Leakage Circuit Breaker : ELCB・ELB・ECB、Ground-Fault Circuit Interrupter : GFCI、Residual Current Circuit Breaker : RCCB、Residual Current Device : RCD）とは、漏電による漏れ電流を検出して回路を自動的に遮断する機能をもつ遮断器である。 通常の配線用遮断器が過負荷や短絡による過電流から回路を保護しているのに対し、漏電遮断器は地絡による感電を防止する目的で回路に設けられる。ただし、殆どの製品では過電流遮断機能が付いている。

(4) Lighting systems
Protect cabling and bulbs against breakage. If a bulb breaks, the exposed filament may present a hazard. Have a system for checking bulbs regularly to maintain electrical safety and to keep the site well-lit.
(5) Temporary electrical systems must not be used in excess of intended loads or rated capacity whichever is less.
(6) Temporary electrical systems shall not be used for any purpose other than the intended original purpose.
(7) Electrical equipment and tools shall be checked for damage before every shift, have a visual inspection every week and have a combined inspection and test before first use on a site and then every month, records of these checks shall be kept.

NK1: (c) and (d) above are moved to (7).

7.7.4. Method statement for Temporary Electrical Installations

The Method Statement for temporary electrical installations (required by the Contract and JSSS 1.7 [*Contractor's Method Statements*] shall include a copy of the Laws and regulations of the Country and the power authority which supplies power to the Contractor in relation with relevant temporary electrical installations and shall show:

(1) Required Standards and voltages of electric wires and cables.
(2) Protective work for electric wires and cables.
(3) Electric diagram.

7.7.5. Responsible Personnel

(1) The Contractor shall post the name and contact information for the person in charge of managing and operating the temporary electrical installation.
(2) All other persons shall be prohibited from

(4) Lighting systems
Protect cabling and bulbs against breakage. If a bulb breaks, the exposed filament may present a hazard. Have a system for checking bulbs regularly to maintain electrical safety and to keep the site well-lit.
(5) Temporary electrical systems must not be used in excess of intended loads or rated capacity whichever is less.
(6) Temporary electrical systems shall not be used for any purpose other than the intended original purpose.
(7) Electrical equipment and tools shall be checked for damage before every shift, have a visual inspection every week and have a combined inspection and test before first use on a site and then every month, records of these checks shall be kept.

6.7.4 Method statement for Temporary Electrical Installations

The Method Statement for temporary electrical installations (required by the Contract and JSSS 1.7 [*Contractor's Method Statements*] shall include a copy of the Laws and regulations of the Country and the power authority which supplies power to the Contractor in relation with relevant temporary electrical installations and shall show:

(1) Required Standards and voltages of electric wires and cables.
(2) Protective work for electric wires and cables.
(3) Electric diagram.

6.7.5 Responsible Personnel

(1) The Contractor shall post the name and contact information for the person in charge of managing and operating the temporary

(b) 感電の危険のある作業、場所
(c) 感電防止のための措置

7.7.3 設置と管理

(1) 請負者は、本仕様書 1.8[請負者の要員の適正配置]に従い、必要な資格を有し、電気に関する十分な知識と経験を持つ者（competent person）に、仮設電気設備の設置と管理をさせなければならない。→E 7.7.1(3)に対応する規定済み。

(2) 請負者は、仮設電気設備の管理の担当者の氏名を、当該仮設電気設備に明示するとともに、当該担当者以外の操作を禁止する旨を表示しなければならない。
→E 7.7.5 (1)及び(2)に対応する規定済み。

7.7.4 点検・検査

→ E 7.7.6 に規定済み。

(1) 仮設電気設備の点検・整備

請負者は、仮設電気設備の点検、整備に関して次の事項を遵守し、仮設電気設備の保守管理を行わなければならない。→E 7.7.6 の冒頭部に規定済み

(a) 日常点検
→E 7.7.6 (1)(a)～(c)に対応する規定済み

柵・囲い等の付帯施設の状況の確認も含めた仮設電気設備の日常点検表を準備し、点検・検査を行い、その結果を記録すること。

(b) 定期点検
→E 7.7.6 (2)(a)～(c)に対応する規定済み

仮設電気設備の絶縁抵抗値の測定、過電流・地絡等に対する保護装置の機能確認を含む定期点検表を準備し、点検・検査を行い、その結果を記録すること。

(c) 整備・補修
→E 7.7.6 (3)(a)～(c)に対応する規定済み。（但し、本項目について、英語版では電気設備や部品の HSO による再検査、安全宣言後の動作再開すること、と規定している。）

点検の結果、必要が認められた場合は、整備を実施すること。また、整備、補修が完了するまで仮設電気設備を使用しないこと。

(2) 点検の担当者及び報告
→ E 7.7.5 に規定済み。

請負者は、仮設電気設備の日常点検及び定期点検は、仮設電気設備の管理の担当者に行わせ、点検結果を工事終了まで保管しなければならない。また、点検結果は、毎月作成する進捗報告書に含めなくてはならない。

(3) 悪天候及び地震時の点検
→規定なし。→ Already covered in JSSS 2.7 no need to repeat in every case:

temporary electrical installation unless otherwise instructed or approved by the HSO or person in change.

(3) Unless otherwise agreed, the HSO or the same person in charge shall be responsible for daily and periodical inspection and maintenance and for reporting the result of such inspections to the HSO and Engineer in the Monthly Safety Report.

7.7.6. Inspection, Maintenance and Repair

The Contractor shall inspect the temporary electric facilities and perform all requisite maintenance, replacement and repair to ensure the continued and safe operation including the following:

(1) Daily inspection
(a) Prepare a daily inspection checklist of the temporary electric installations including the condition of associated buildings, enclosures, fences and the like;
(b) Inspect daily; and
(c) Record the inspection results.

(2) Periodical inspection
(a) Prepare periodical (weekly and monthly) inspection checklist including measurement of insulation resistance values of temporary electric installations and the operating status of protective devices against overcurrent, grounding fault, etc.;
(b) Inspect periodically; and
(c) Record the inspection results.

(3) Maintenance and repair
(a) As a result of inspection, carry any maintenance, repair or replacement if and as necessary;
(b) Stop operation of the temporary electric installations or affected parts thereof and prevent any further operation until maintenance, repair or replacement is completed; and
(c) Reinspect, the temporary electric installations or parts thereof, and after the HSO has declared same as “Safe for Use”, operation can then re-commence.

7.7.7. Safety Measures during the Work

The Contractor shall take the following safety

operating repairing or interfering with the temporary electrical installation unless otherwise instructed or approved by the HSO or person in change.

(3) ~~Unless otherwise agreed,~~ the HSO ~~or the same person in charge~~ shall be responsible for daily and periodical inspection and maintenance and for reporting the result of such inspections to ~~the HSO and~~ Engineer in the Monthly Safety Report.

NK1: The stipulation of the HSO’s duty regarding inspection should be consistence with other Sections.
To MD; please review and modify them.

NK1: May I know what is assumed by “Unless otherwise agreed”.

7.7.6. Inspection, Maintenance and Repair

The Contractor shall inspect the temporary electric facilities and perform all requisite maintenance, replacement and repair to ensure the continued and safe operation including the following:

(1) Daily inspection
(a) Prepare a daily inspection checklist of the temporary electric installations including the condition of associated buildings, enclosures, fences and the like;
(b) Inspect daily; and
(c) Record the inspection results.

(2) Periodical inspection
(a) Prepare periodical (weekly and monthly) inspection checklist including measurement of insulation resistance values of temporary electric installations and the operating status of protective devices against overcurrent, grounding fault, etc.;
(b) Inspect periodically; and
(c) Record the inspection results.

(3) Maintenance and repair
(a) As a result of inspection, carry any maintenance, repair or replacement if and as necessary;
(b) Stop operation of the temporary electric installations or affected parts thereof and prevent any further operation until maintenance, repair or replacement is completed; and
(c) Reinspect, the temporary electric installations or parts thereof, and after the HSO has declared same as “Safe for Use”, operation can then re-commence.

electrical installation.

(2) All other persons shall be prohibited from operating repairing or interfering with the temporary electrical installation unless otherwise instructed or approved by the HSO or person in change.

(3) ~~Unless otherwise agreed,~~ the HSO ~~or the same person in charge~~ shall be responsible for daily and periodical inspection and maintenance and for reporting the result of such inspections to ~~the HSO and~~ Engineer in the Monthly Safety Report.

6.7.6 Inspection, Maintenance and Repair

The Contractor shall inspect the temporary electric facilities and perform all requisite maintenance, replacement and repair to ensure the continued and safe operation including the following:

(1) Daily inspection
(a) Prepare a daily inspection checklist of the temporary electric installations including the condition of associated buildings, enclosures, fences and the like;
(b) Inspect daily; and
(c) Record the inspection results.

(2) Periodical inspection
(a) Prepare periodical (weekly and monthly) inspection checklist including measurement of insulation resistance values of temporary electric installations and the operating status of protective devices against overcurrent, grounding fault, etc.;
(b) Inspect periodically; and
(c) Record the inspection results.

(3) Maintenance and repair
(a) As a result of inspection, carry any maintenance, repair or replacement if and as necessary;
(b) Stop operation of the temporary electric installations or affected parts thereof and prevent any further operation until maintenance, repair or replacement is completed; and
(c) Reinspect, the temporary electric installations or parts thereof, and after the HSO has declared same as “Safe for Use”, operation can then re-commence.

悪天候及び地震時の点検は、本仕様書 2.7[悪天候及び地震時の対策]に従い行なわなければならない。

7.7.5 作業時の安全措置

請負者は、仮設電気設備の設置、移転、撤去、修理等の作業に際して、次に示す安全措置を講じなければならない。→E 7.7.7 の冒頭部に規定済み

(1) 材料及び器具

仮設電気設備の設備、材料及び器具は、当該国の法律で規定、あるいは電力供給を受ける電力会社の指定する規格品を用いなければならない。
→規定なし。→MD：Suggest no need, covered by JSSS 1.33 and also higher standards may be requested if local company not good enough.

(2) 配線工事→(a)～(d)含めてE 7.7.7 (1)に規定済み
- (a) 電線と仮設の構造物、通行車両等との間隔は、適正に保つよう配線工事を行うこと。
- (b) (a)において適正な間隔が保てない場合は、絶縁防護管で電線を防護すること。
- (c) 作業の支障とならない箇所に配線すること。
- (d) 配線ケーブルを作業床に配線する場合は露出させてはならない。

(3) 配電盤・分電盤・開閉器
→(a)及び(b)含めてE 7.7.7 (2)に規定済み
- (a) 配電盤・分電盤・開閉器は防水構造で金属製の施錠可能な箱を用い、アースを行うこと。
- (b) 配電盤・分電盤のヒューズ及びしゃ断器は、負荷容量に適合したものであること。

(4) 受電設備、変電設備には、柵・囲い等を施すとともに、危険標示を行い、出入口は施錠すること。
→ E 7.7.7 (3)(a)～(c)に対応する規定あり。(英語版の方が詳細に規定している。)

(5) アース
→(a)及び(b)含めてE 7.7.7 (4)に規定済み
- (a) 仮設電気設備は、漏電による感電の危険防止のため、各設備に必要なアースを行うこと。
- (b) アース電極は、銅又は鋼等の導電性の高いものであること。

(6) 仮設電気設備の移設、修理の作業
- (a) 移設や修理の作業は、通電を停止して行い、絶縁用防具の装着の確認、検電を行った後に行うこと。
  →E 7.7.7 (5)(a)に規定済み
- (b) 作業中又は作業を終了した場合において、仮設電気設備に通電しようとするときは、あらかじめ、当該作業に従事する作業員に感電の危険が生ずるおそれのないことを確認した後でなければ、通電してはならない。
  →E 7.7.7 (5)(b)に規定済み

(7) 仮設電気設備の設置、移設、修理の作業が終了したときは、検査を行ったのち設備を使用すること。
→E 7.7.7 (5)(c)に規定済み。(但し、施設の設置、

measures when installing, moving, removing, repairing temporary electric facilities.

(1) Cabling/Wiring
- (a) Carry out cabling/wiring work so that safety distances between cabling/wiring and any other cabling/wiring, posts, gantries, other structures, buildings, enclosures Contractor's Equipment, vehicles and persons are maintained;
- (b) If appropriate separation distances cannot be maintained, enclose cabling/wiring in insulated ducts, conduit or trunking;
- (c) Locate cabling/wiring where it does not obstruct other works; and
- (d) Always enclose cabling/wiring in insulated ducts, conduit or trunking in working areas or Operational Areas to avoid any risk of contact, damage or injury.

(2) Switchgear, Panels and Switches
- (a) Enclose Switchgear, Panels and Switches in waterproof and lockable metal enclosures to suit the environmental conditions and of which shall be grounded; and
- (b) Fuses and circuit breakers shall be suitable for their use and load capacity.

(3) Power Receiving Equipment and Transformers
- (a) Power Receiving Equipment, Transformers and the like, shall be located in securely fenced or enclosed and locked compounds, enclosures or buildings from which entry by unauthorised persons shall be prohibited;
- (b) Any work in such areas shall be designated as Dangerous Work and the provisions of JSSS 2.1.4 [*Further Requirements for Dangerous Work*] shall be applied; and
- (c) All such places shall be clearly indicated as dangerous no entry areas with clear and obvious signage.

(4) Grounding (earthing)
- (a) All temporary electric installations shall be grounded for each part to prevent the risk of electric shock due to electrical leakage; and
- (b) Grounding electrodes shall be highly conductive such as copper or steel.

(5) Relocation and Repair Work

7.7.7. Safety Measures during the Work

The Contractor shall take the following safety measures when installing, moving, removing, repairing temporary electric facilities.

(1) Cabling/Wiring
- (a) Carry out cabling/wiring work so that safety distances between cabling/wiring and any other cabling/wiring, posts, gantries, other structures, buildings, enclosures Contractor's Equipment, vehicles and persons are maintained;
- (b) If appropriate separation distances cannot be maintained, enclose cabling/wiring in insulated ducts, conduit or trunking;
- (c) Locate cabling/wiring where it does not obstruct other works; and
- (d) Always enclose cabling/wiring in insulated ducts, conduit or trunking in working areas or Operational Areas to avoid any risk of contact, damage or injury.

(2) Switchgear, Panels and Switches
- (a) Enclose Switchgear, Panels and Switches in waterproof and lockable metal enclosures to suit the environmental conditions and of which shall be grounded; and
- (b) Fuses and circuit breakers shall be suitable for their use and load capacity.

(3) Power Receiving Equipment and Transformers
- (a) Power Receiving Equipment, Transformers and the like, shall be located in securely fenced or enclosed and locked compounds, enclosures or buildings from which entry by unauthorised persons shall be prohibited;

NK1: The terms above (2) and (3) are not defined in Chap.1 A1.1.2. Might they not be capitalized?
- (b) Any work in such areas shall be designated as Dangerous Work and the provisions of JSSS 2.1.4 [*Further Requirements for Dangerous Work*] shall be applied; and
- (c) All such places shall be clearly indicated as dangerous no entry areas with clear and obvious signage.

(4) Grounding (earthing)
- (a) All temporary electric installations shall be grounded for each part to prevent the risk of electric shock due to electrical leakage; and
- (b) Grounding electrodes shall be highly conductive such as copper or steel.

6.7.7 Safety Measures during the Work

The Contractor shall take the following safety measures when installing, moving, removing, repairing temporary electric facilities.

(1) Cabling/Wiring
- (a) Carry out cabling/wiring work so that safety distances between cabling/wiring and any other cabling/wiring, posts, gantries, other structures, buildings, enclosures Contractor's Equipment, vehicles and persons are maintained;
- (b) If appropriate separation distances cannot be maintained, enclose cabling/wiring in insulated ducts, conduit or trunking;
- (c) Locate cabling/wiring where it does not obstruct other works; and
- (d) Always enclose cabling/wiring in insulated ducts, conduit or trunking in working areas or Operational Areas to avoid any risk of contact, damage or injury.

(2) Switchgear, Panels and Switches
- (a) Enclose ~~S~~ switchgear, ~~P~~ panels and ~~S~~ switches in waterproof and lockable metal enclosures to suit the environmental conditions and of which shall be grounded; and
- (b) Fuses and circuit breakers shall be suitable for their use and load capacity.

(3) Power Receiving Equipment and Transformers
- (a) Power ~~R~~ receiving ~~E~~ equipment, ~~T~~ transformers and the like, shall be located in securely fenced or enclosed and locked compounds, enclosures or buildings from which entry by unauthorised persons shall be prohibited;
- (b) Any work in such areas shall be designated as Dangerous Work and the provisions of JSSS 2.1.4 [*Further Requirements for Dangerous Work*] shall be applied; and
- (c) All such places shall be clearly indicated as dangerous no entry areas with clear and obvious signage.

(4) Grounding (earthing)
- (a) All temporary electric installations shall be grounded for each part to prevent the risk of electric shock due to electrical leakage; and
- (b) Grounding electrodes shall be highly conductive such as copper or steel.

(5) Relocation and Repair Work

移転、修理作業後は HSO による検査と安全宣言の後で作業再開、と規定している点が異なる。)	(a) Relocation and repair work to or in the vicinity of temporary electrical installations shall only be performed after the power supply has been turned off, isolation has been confirmed, confirmation that protective equipment for insulation is installed and no electricity is measured by electricity detection; (b) When re-energising temporary electric installations during or after any relocation or repair work, the Contractor shall ascertain in advance that there is no risk of electric shock to any persons engaged on or in the vicinity of the relocation or repair work; and (c) When installation, relocation or repair work of temporary electric installations is completed, the facilities shall be operated only after testing and inspection of the installation by the HSO and after the HSO has declared same as "Safe for Use".	(5) Relocation and Repair Work JC1O: コントラクターの temporary electrical installation を言っているか、現場を通過している公共電線のことをいっているか、明確ではないので、仮設電線であることを明確にする. It is not clear whether it refers to the temporary electrical installation of the Contractor or the public electric wire passing through the site, so here, it should be clear that (5) indicates for a temporary electric wire. NK1: 7.7.7 の序文に"removing, repairing temporary electric facilities"と記述していますので、(5)は仮設電気設備となります。 The first sentence of 7.7.7 describes "removing, repairing temporary electric facilities", so (5) specifies for temporary electric facilities including temporary wiring. (a) Relocation and repair work to or in the vicinity of temporary electrical installations shall only be performed after the power supply has been turned off, isolation has been confirmed, confirmation that protective equipment for insulation is installed and no electricity is measured by electricity detection; *Not sure of above meaning, do you mean PPE?* NK1: The protective equipment is not PPE but protective tube of electric wire as shown in the photo.  (b) When re-energising temporary electric installations during or after any relocation or repair work, the Contractor shall ascertain in advance that there is no risk of electric shock to any persons engaged on or in the vicinity of the relocation or repair work; and (c) When installation, relocation or repair work of temporary electric installations is completed, the facilities shall be operated only after testing and inspection of the installation by the HSO and after the HSO has declared same as "Safe for Use".	(a) Relocation and repair work to or in the vicinity of temporary electrical installations shall only be performed after the power supply has been turned off, isolation has been confirmed, confirmation that ~~protective equipment~~ protective tube of electric wire for insulation is installed and no electricity is measured by electricity detection; (b) When re-energising temporary electric installations during or after any relocation or repair work, the Contractor shall ascertain in advance that there is no risk of electric shock to any persons engaged on or in the vicinity of the relocation or repair work; and (c) When installation, relocation or repair work of temporary electric installations is completed, the facilities shall be operated only after testing and inspection of the installation by the HSO and after the HSO has declared same as "Safe for Use".
7.8 電気溶接・ガス切断作業 **7.8.1 一般事項** 本節では、アーク溶接作業(以下、「電気溶接」という。)及びアセチレンガス、プロパンガス等のガス切断作業(以下、「ガス切断」という。)の安全について規定する。 →E 7.8.1 (1)に規定済み。(但し、アセチレン、プロパン	**7.8. ELECTRIC AND GAS WELDING AND CUTTING** **7.8.1 General** (1) This Section contains safety requirements for electric and gas, welding and cutting. (2) Electric and Gas welding and cutting work	**7.8. ELECTRIC AND GAS WELDING AND CUTTING** **7.8.1 General** (1) This Section contains safety requirements for electric and gas, welding and cutting. (2) Electric and Gas welding and cutting work	**6.8 ELECTRIC AND GAS WELDING AND CUTTING** **6.8.1 General** (1) This Section contains safety requirements for electric and gas, welding and cutting. (2) Electric and Gas welding and cutting work

等とガス一般として規定している。

7.8.2 電気溶接作業

請負者は、電気溶接作業を行うに当たっては、次の措置を講じなければならない。

(1) 使用前点検について、次の項目を点検し、異常を認めた時は直ちに、補修又は取り換えること。

(a) 自動電撃防止装置が正常に作動すること
→E 7.8.3 (1)(a)に規定済み

(b) 溶接機のフレームにアースを取り付けたものであること
→E 7.8.3 (1)(b)に規定済み

(c) アース線の取付け状態
→E 7.8.3 (1)(c)に規定済み

(d) 溶接機のケーブルの被覆に損傷がないこと
→E 7.8.3 (1)(d)に規定済み

(e) 溶接棒ホルダー、アースクランプの絶縁防護部分及びケーブルの接続部に損傷がないこと
→E 7.8.3 (1)(e)に規定済み

(f) 溶接機及び溶接器具の製造者の作成したマニュアルに規定の使用前点検項目
→E 7.8.3 (1)(f)に規定済み

shall be designated as Dangerous Work and the provisions of JSSS 2.1.4 [*Further Requirements for Dangerous Work*] shall be applied.

(3) Electric and Gas welding and cutting work shall only be performed, inspected and tested by Contractor's Personnel that are qualified welders, trained and certified for such operations in accordance with JSSS 1.16 [*Proper Placement of Contractor's Personnel*] and that follow strict procedures prepared by the Contractor and specified in the Method Statement and Safety Plan.

7.8.2 Compliance Standards

By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], for any items in this Section or relevant to the subject of this Section and which are not fully covered by JSSS, the Contractor shall comply with the following technical requirements:

(1) OSHA PART 1926-Safety and Health Regulations for Construction, Subpart J - Welding and Cutting, Arc welding and cutting.

(2) OSHA PART 1926-Safety and Health Regulations for Construction, Subpart J-Welding and Cutting, Gas welding and cutting.

7.8.3 Electric Welding and Cutting

The Contractor shall take the following measures for the electric welding and cutting.

(1) Check measures before:

(a) Automatic preventer of electric shock is fitted and is functioning properly?

(b) Frame of welding machine is grounded?

(c) Grounding conductor is installed properly and working?

(d) There is no damage to welding cables?

(e) There is no damage to electrode holder, insulation of earth clamp or cable connections?

(f) Carry out all such further checks that are required by the manufacturer's official maintenance and repair manual.

If any items are found to be missing or

shall be designated as Dangerous Work and the provisions of JSSS 2.1.4 [*Further Requirements for Dangerous Work*] shall be applied.

(3) Electric and Gas welding and cutting work shall only be performed, inspected and tested by Contractor's Personnel that are qualified welders, trained and certified for such operations in accordance with JSSS 1.16 [*Proper Placement of Contractor's Personnel*] and that follow strict procedures prepared by the Contractor and specified in the Method Statement and Safety Plan.

7.8.2 Compliance Standards

By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], for any items in this Section or relevant to the subject of this Section and which are not fully covered by JSSS, the Contractor shall comply with the following technical requirements:

(1) OSHA PART 1926-Safety and Health Regulations for Construction, Subpart J - Welding and Cutting, 1926.351 Arc welding and cutting.

(2) OSHA PART 1926-Safety and Health Regulations for Construction, Subpart J-Welding and Cutting, 1926.351 Gas welding and cutting.

NK1: I think it is better to specify Section No. of OSHA to specify particular clauses in OSHA.

7.8.3 Electric Welding and Cutting

The Contractor shall take the following measures for the electric welding and cutting.

(1) Check measures before:

(a) Automatic preventer of electric shock is fitted and is functioning properly?

MD: Do you mean ELCB (Earth Leakage Circuit Breaker) ?

NK1: Not ELCB. The term is replaced with voltage reduction device (VRD) recommended in OSHA 1910.254(b)(3)(iv) *For a.c. welding under wet conditions or warm surroundings where perspiration is a factor, the use of reliable automatic controls for reducing no load voltage is recommended to reduce the shock hazard.*

(b) Frame of welding machine is grounded?

(c) Grounding conductor is installed properly and working?

(d) There is no damage to welding cables?

(e) There is no damage to electrode holder, insulation of earth clamp or cable connections?

(f) Carry out all such further checks that are required by the manufacturer's official maintenance and repair manual.

If any items are found to be missing or defective, the Contractor shall prohibit use

shall be designated as Dangerous Work and the provisions of JSSS 2.1.4 [*Further Requirements for Dangerous Work*] shall be applied.

(3) Electric and Gas welding and cutting work shall only be performed, inspected and tested by Contractor's Personnel that are qualified welders, trained and certified for such operations in accordance with JSSS 1.16 [*Proper Placement of Contractor's Personnel*] and that follow strict procedures prepared by the Contractor and specified in the Method Statement and Safety Plan.

6.8.2 Compliance Standards

By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], for any items in this Section or relevant to the subject of this Section and which are not fully covered by JSSS, the Contractor shall comply with the following technical requirements:

(1) OSHA PART 1926-Safety and Health Regulations for Construction, Subpart J - Welding and Cutting, 1926.351 Arc welding and cutting.

(2) OSHA PART 1926-Safety and Health Regulations for Construction, Subpart J-Welding and Cutting, 1926.351 Gas welding and cutting.

6.8.3 Electric Welding and Cutting

The Contractor shall take the following measures for the electric welding and cutting.

(1) Check measures before:

(a) Automatic voltage reduction device for reducing no load voltage to prevent ~~preventer of~~ electric shock is fitted and is functioning properly?

(b) Frame of welding machine is grounded?

(c) Grounding conductor is installed properly and working?

(d) There is no damage to welding cables?

(e) There is no damage to electrode holder, insulation of earth clamp or cable connections?

(f) Carry out all such further checks that are required by the manufacturer's official maintenance and repair manual.

If any items are found to be missing or

(2) 溶接作業時の措置 (a) 迷走電流の発生を防止するため、帰線側ケーブルの接続は母材（溶接物）の溶接作業箇所に近接させること →E 7.8.3 (2)(a)に規定済み (b) ケーブルを使用し、鉄筋棒等の代替品を使用しないこと →E 7.8.3 (2)(b)に規定済み (c) 作業を中断するときは、溶接棒を溶接棒ホルダーから外し、溶接機の電源を切ること →E 7.8.3 (2)(c)に規定済み (d) 感電事故防止のため、雨天時には屋外での作業を中止すること、及び溶接機が濡れない措置を講じること →E 7.8.3 (2)(d)に規定済み (e) 周囲の作業員が、電気溶接の作業中に電撃を感じた場合は、その原因の特定を行い、電撃の原因の除去が完了するまでの間、溶接作業は中止すること →E 7.8.3 (2)(e)に規定済み。	defective, the Contractor shall prohibit use until it has been repaired or replaced and the equipment has been inspected, tested and certified as "Safe for Use" by HSO, before it can be used. (2) Measures to be adopted during operation: (a) Prevent the occurrence of stray currents by securely fixing the earth cable with an earth clamp to a suitable earth, close to the work location; (b) Use the correct type and size of cables and never use alternatives such as tools or reinforcing bars; (c) When not working, remove electrode from holder and turn off the welding machine; and (d) Weld only in suitable environment and climatic conditions. Stop working outdoors during rainfall and take measures to prevent the welding machine, cables and accessories from getting wet. (e) If operator(s) receive an electric shock, the Contractor shall stop the work immediately, identify the cause, prohibit use of the equipment until it has been repaired or replaced and the equipment has been inspected, tested and certified as "Safe for Use" by HSO, before it can be used.	until it has been repaired or replaced and the equipment has been inspected, tested and certified as "Safe for Use" by HSO, before it can be used. (2) Measures to be adopted during operation: (a) Prevent the occurrence of stray currents by securely fixing the earth cable with an earth clamp to a suitable earth, close to the work location; (b) Use the correct type and size of cables and never use alternatives such as tools or reinforcing bars; (c) When not working, remove electrode from holder and turn off the welding machine; and (d) Weld only in suitable environment and climatic conditions. Stop working outdoors during rainfall and take measures to prevent the welding machine, cables and accessories from getting wet. (e) If operator(s) receive an electric shock, the Contractor shall stop the work immediately, identify the cause, prohibit use of the equipment until it has been repaired or replaced and the equipment has been inspected, tested and certified as "Safe for Use" by HSO, before it can be used. JC1O: 付近の worker だったのでは。Is it workers working nearby? NK1: Replaced with workers working nearby.	defective, the Contractor shall prohibit use until it has been repaired or replaced and the equipment has been inspected, tested and certified as "Safe for Use" by HSO, before it can be used. (2) Measures to be adopted during operation: (a) Prevent the occurrence of stray currents by securely fixing the earth cable with an earth clamp to a suitable earth, close to the work location; (b) Use the correct type and size of cables and never use alternatives such as tools or reinforcing bars; (c) When not working, remove electrode from holder and turn off the welding machine; and (d) Weld only in suitable environment and climatic conditions. Stop working outdoors during rainfall and take measures to prevent the welding machine, cables and accessories from getting wet. (e) If ~~operator(s)~~ workers working nearby receive an electric shock, the Contractor shall stop the work immediately, identify the cause, prohibit use of the equipment until it has been repaired or replaced and the equipment has been inspected, tested and certified as "Safe for Use" by HSO, before it can be used.
(f) 溶接作業の作業員には、遮光シールド、保護手袋等の保護具を使用させること →E 7.8.3 (2)(f)に規定済み	(f) Ensure that workers wear appropriate PPE including personal face protectors for welding and protective gloves as specified in JSSS 2.9 [*Personal Protective Equipment (PPE)*].	(f) Ensure that workers wear appropriate PPE including personal face protectors for welding and protective gloves as specified in JSSS 2.9 [*Personal Protective Equipment (PPE)*].	(f) Ensure that workers wear appropriate PPE including personal face protectors for welding and protective gloves as specified in JSSS 2.9 [*Personal Protective Equipment (PPE)*].
(g) 他の作業員には、肉眼でアークを見ないよう指導すること →E 7.8.3 (2)(g)に規定済み	(g) Instruct all workers not to look directly at the electric arc with their naked eyes.	(g) Instruct all workers not to look directly at the electric arc with their naked eyes.	(g) Instruct all workers not to look directly at the electric arc with their naked eyes.
(3) 溶接機及び溶接器具の定期点検 (a) 溶接機及び溶接器具は、4.1.7[建設機械の点検・整備]及び 4.1.9[定期点検]に準拠して定期点検を行うこと →E 7.8.3 (3)(a)に対応する規定あり。	(3) Periodical inspection of welding machines and welding equipment. (a) Electric welding and cutting equipment shall be inspected and tested periodically in accordance with JSSS 4.1.7 [*Inspection and Maintenance of Construction Machine*] and JSSS 4.1.9[*Periodical Inspection*]. DCI will coordinate with JSSS 4.1 after that Section is reviewed:	(3) Periodical inspection of welding machines and welding equipment. (a) Electric welding and cutting equipment shall be inspected and tested periodically in accordance with JSSS 4.1.7 [*Inspection and Maintenance of Construction Machine*] and JSSS 4.1.9[*Periodical Inspection*]. MD: DCI will coordinate with JSSS 4.1 after that Section is *reviewed:*	(3) Periodical inspection of welding machines and welding equipment. (a) Electric welding and cutting equipment shall be inspected and tested periodically in accordance with JSSS 4.1.7 [*Inspection and Maintenance of Construction Machine*] and JSSS 4.1.9[*Periodical Inspection*].
(b) 電撃防止装置は、6 月以内ごとに 1 回の頻度で定期点検を行うこと →E 7.8.3 (3)(b)に規定済み	(b) The automatic preventer of electric shock shall be regularly inspected and tested at least once every six months. MD: Do you mean ELCB?:	(b) The automatic preventer of electric shock shall be regularly inspected and tested at least once every six months. MD: Do you mean ELCB? NK1: Not ELCB. The term is replaced with voltage reduction device (VRD) as explained in (1)(a).	(b) The ~~automatic preventer of electric shock~~ voltage reduction device ~~preventer of~~ shall be regularly inspected and tested at least once every six months.

7.8.3 ガス切断作業

請負者はガス切断作業を行うに当たっては、次の措置を講じなければならない。

(1) 使用前点検について、次の項目を点検し、異常を認めた時は直ちに、補修又は取り換えること。

(a) 逆火防止装置が付いていること
→E 7.8.4 (1)(a)に規定済み

(b) ガス容器、調整器、逆火防止装置(安全器)、ホースバンド、ホース、吹管、火口等に損傷がないこと
→E 7.8.4 (1)(b)に規定済み

(c) ガス容器の調整器、口金は随時検査を受けたものであること
→E 7.8.4 (1)(c)に規定済み。(但し、内容は少々異なる。)

(2) ガス切断器具の取り扱い

ガス切断器具を取扱う作業員に、次のことを周知、徹底させること。

(a) ガス等のホース及び吹管については、損傷、摩耗等によるガス等の漏えいのおそれがないものを使用すること
→E 7.8.4 (2)(a)に規定済み

(b) 吹管は丁寧に取扱い、点火したまま放置しないこと、吹管を床や通路上に置かないこと。
→E 7.8.4 (2)(b)に規定済み。

(c) 点火状態で圧力調整器を操作しないこと
→E 7.8.4 (2)(c)に規定済み

(d) ガス等のホースと吹管及びガス等のホース相互の接続箇所については、ホースバンド、ホースクリップ等の締付具を用いて確実に締付けを行なうこと
→E 7.8.4 (2)(d)に規定済み

(e) 火口が過熱すると逆火を起こしやすくなるため、長時間作業する時は、時々作業を中断し

7.8.4 Gas Welding and Cutting

The Contractor shall take the following measures for gas welding and cutting.

(1) Check measures before:

(a) Backfire prevention device is installed?

(b) There is no damage to gas cylinders, regulators, backfire prevention device, hose bands, hoses, blow pipes, tip nozzles, and other accessories and equipment?

(c) Gas cylinders, regulators and caps and other relevant accessories and equipment have been inspected periodically and certified by HSO as "Safe for Use".

(d) Carry out all such further checks that are required by the manufacturer's official maintenance and repair manual.

If any items are found to be missing or defective, the Contractor shall prohibit use until it has been repaired or replaced and the equipment has been inspected, tested and certified as "Safe for Use" by HSO, before it can be used.

(2) Handling of gas welding and cutting equipment

Workers engaged in gas cutting and welding shall be aware of the following requirements:

(a) Gas hoses and gas weld sets, shall not be damaged or worn and have no risk of gas leakage;

(b) Gas weld sets shall be turned off when not in use and shall not be left lying around;

(c) Gas pressure regulators shall not be operated during cutting or welding operation;

(d) Connections between cylinders, gas hoses and gas weld sets shall be securely tightened with appropriate connectors;

(e) When tip nozzle overheats, backfire is likely to occur, therefore interrupt

7.8.4 Gas Welding and Cutting

The Contractor shall take the following measures for gas welding and cutting.

(1) Check measures before:

(a) Backfire prevention device is installed?

NK1: Backfire prevention device is term used in Japan. The following flashback arrestor mentioned in Wikipedia and ISO is used in JSSS.
flashback arrestor or flash arrestor is a gas safety device most commonly used in oxy-fuel welding and cutting to stop the flame or reverse flow of gas back up into the equipment or supply line. It protects the user and equipment from damage or explosions.
ISO 5175-1:2017 Gas welding equipment — Safety devices — Part 1: Devices incorporating a flame (flashback) arrestor.

(b) There is no damage to gas cylinders, regulators, backfire prevention device, hose bands, hoses, blow pipes, tip nozzles, and other accessories and equipment?

(c) Gas cylinders, regulators and caps and other relevant accessories and equipment have been inspected periodically and certified by HSO as "Safe for Use".

(d) Carry out all such further checks that are required by the manufacturer's official maintenance and repair manual.

If any items are found to be missing or defective, the Contractor shall prohibit use until it has been repaired or replaced and the equipment has been inspected, tested and certified as "Safe for Use" by HSO, before it can be used.

(2) Handling of gas welding and cutting equipment

Workers engaged in gas cutting and welding shall be aware of the following requirements:

JC1O: Revised "Workers" to "Welders"
NK1: Modified as commented.

(a) Gas hoses and gas weld sets, shall not be damaged or worn and have no risk of gas leakage;

(b) Gas weld sets shall be turned off when not in use and shall not be left lying around;

(c) Gas pressure regulators shall not be operated during cutting or welding operation;

(d) Connections between cylinders, gas hoses and gas weld sets shall be securely tightened with appropriate connectors;

(e) When tip nozzle overheats, backfire is likely to occur, therefore interrupt

6.8.4 Gas Welding and Cutting

The Contractor shall take the following measures for gas welding and cutting.

(1) Check measures before:

(a) ~~Backfire prevention device~~ flashback arrestor to stop flame back up into the equipment or gas supply line is installed?

(b) There is no damage to gas cylinders, regulators, ~~backfire prevention device~~ flashback arrestor, hose bands, hoses, blow pipes, tip nozzles, and other accessories and equipment?

(c) Gas cylinders, regulators and caps and other relevant accessories and equipment have been inspected periodically and certified by HSO as "Safe for Use".

(d) Carry out all such further checks that are required by the manufacturer's official maintenance and repair manual.

If any items are found to be missing or defective, the Contractor shall prohibit use until it has been repaired or replaced and the equipment has been inspected, tested and certified as "Safe for Use" by HSO, before it can be used.

(2) Handling of gas welding and cutting equipment

~~Workers~~ Welders engaged in gas cutting and welding shall be aware of the following requirements:

(a) Gas hoses and gas weld sets, shall not be damaged or worn and have no risk of gas leakage;

(b) Gas weld sets shall be turned off when not in use and shall not be left lying around;

(c) Gas pressure regulators shall not be operated during cutting or welding operation;

(d) Connections between cylinders, gas hoses and gas weld sets shall be securely tightened with appropriate connectors;

(e) When tip nozzle overheats, ~~backfire~~ flashback is likely to occur, therefore

酸素を僅かに出しながら水中に漬けて冷却すること →E 7.8.4 (2)(e)に規定済み (f) 作業を終了または中断する時は、必ず容器バルブを完全に閉め、調整器のガスを完全に抜くこと →E 7.8.4 (2)(f)に規定済み	continuous working, from time to time and cool the nozzle by submerging in water whilst discharging oxygen at low pressure; and (f) When finishing or interrupting work, completely close the container valves and vent gas in regulators.	continuous working, from time to time and cool the nozzle by submerging in water whilst discharging oxygen at low pressure; and (f) When finishing or interrupting work, completely close the container valves and vent gas in regulators.	interrupt continuous working, from time to time and cool the nozzle by submerging in water whilst discharging oxygen at low pressure; and (f) When finishing or interrupting work, completely close the container valves and vent gas in regulators.
(3) ガス容器の取り扱い ガス容器を取扱う作業員に、次のことを周知、徹底させること。→J 7.8.4 (3)冒頭部に規定済み	(3) Handling of gas cylinders Workers shall be trained to handle gas cylinders so that they are aware of the following requirements:	(3) Handling of gas cylinders Workers shall be trained to handle gas cylinders so that they are aware of the following requirements: JC1: Replaced “Workers” with “Welders and workers” NK1: Modified as commented.	(3) Handling of gas cylinders ~~Workers~~ Welders and workers shall be trained to handle gas cylinders so that they are aware of the following requirements:
(a) ガス容器は次の場所に置かないこと →(i)～(iii)は E 7.8.4 (3)(a)に規定済み (i) 通風又は換気の不十分な場所 (ii) 火気を使用する場所及びその附近 (iii) 火薬類、危険物その他の爆発性若しくは発火性の物又は多量の易燃性の物を製造し、又は取り扱う場所及びその附近	(a) Not to place gas cylinders: (i) Where there is insufficient ventilation. (ii) Near to fires, flames, heat sources, electrical sparks or grinding sparks. (iii) Near to Dangerous Goods or Hazardous Substances or near to Hazardous Areas.	(a) Not to place gas cylinders: (i) Where there is insufficient ventilation. (ii) Near to fires, flames, heat sources, electrical sparks or grinding sparks. (iii) Near to Dangerous Goods or Hazardous Substances or near to Hazardous Areas.	(a) Not to place gas cylinders: (i) Where there is insufficient ventilation. (ii) Near to fires, flames, heat sources, electrical sparks or grinding sparks. (iii) Near to Dangerous Goods or Hazardous Substances or near to Hazardous Areas.
(b) 取扱いは丁寧に行い、投げる等で衝撃を与えないこと →E 7.8.4 (3)(b)に規定済み	(b) Handle gas cylinders with care and do not drop, throw or mishandle;	(b) Handle gas cylinders with care and do not drop, throw or mishandle;	(b) Handle gas cylinders with care and do not drop, throw or mishandle;
(c) 高温の作業環境下では、容器を遮光し、直射日光に晒さない等、容器が高温にならない措置を講じること →E 7.8.4 (3)(c)に規定済み	(c) Keep cylinders cool by shading and do not expose to direct sunlight;	(c) Keep cylinders cool by shading and do not expose to direct sunlight;	(c) Keep cylinders cool by shading and do not expose to direct sunlight;
(d) 転倒の恐れがないよう保持すること →E 7.8.4 (3)(d)に規定済み	(d) Position during storage and use so that there is no risk of falling;	(d) Position during storage and use so that there is no risk of falling;	(d) Position during storage and use so that there is no risk of falling;
(e) 運搬する際は、容器にキャップを施すこと →E 7.8.4 (3)(e)に規定済み	(e) Seal cylinders when transporting;	(e) Seal cylinders when transporting;	(e) Seal cylinders when transporting;
(f) 溶解アセチレンの容器は立てて置くこと →E 7.8.4 (3)(f)に規定済み	(f) Place ~~empty~~ acetylene containers upright;	(f) Place ~~empty acetylene containers upright~~ compressed gas cylinders in an upright position at all times except, if necessary, for short periods of time while cylinders are actually being hoisted or carried; JC: Replaced (f) with “the Compressed gas cylinders shall be secured in an upright position at all times except, if necessary, for short periods of time while cylinders are actually being hoisted or carried” in OSHA 1926.350 Gas welding and cutting (a) Transporting, moving, and storing compressed gas cylinders, (9)	(f) Place ~~empty acetylene containers upright~~ compressed gas cylinders in an upright position at all times except, if necessary, for short periods of time while cylinders are actually being hoisted or carried;
(g) ガス容器は、電気装置のアース線の付近に置かないこと →E 7.8.4 (3)(g)に規定済み	(g) Do not place gas cylinders in the vicinity of lightning conductors or grounding rods for electrical equipment;	(g) Do not place gas cylinders in the vicinity of lightning conductors or grounding rods for electrical equipment;	(g) Do not place gas cylinders in the vicinity of lightning conductors or grounding rods for electrical equipment;
(h) 容器には、充空の表示を行い、使用前又は使用中と、それ以外の容器との区別を常時明らかにすること →E 7.8.4 (3)(b)に規定済み	(h) Mark all gas cylinders as either full or empty, and separate from other cylinders in storage and before and during use; and	(h) Mark all gas cylinders as either full or empty, and separate from other cylinders in storage and before and during use; and	(h) Mark all gas cylinders as either full or empty, and separate from other cylinders in storage and before and during use; and
(i) 凍結のおそれがあるときは、雨濡れや湿気の多いところにガス容器を置かないこと。口金や減圧弁が凍った時は温湯を使用して融解し、直接火気を使用しないこと →E 7.8.4 (3)(i)に規定済み	(i) When there is a risk of freezing, do not place gas cylinders in wet or humid places. When valves of cylinder or regulating valves freeze, thaw them out with hot water, do not flame or direct fire.	(i) When there is a risk of freezing, do not place gas cylinders in wet or humid places. When valves of cylinder or regulating valves freeze, thaw them out with hot water, do not flame or direct fire.	(i) When there is a risk of freezing, do not place gas cylinders in wet or humid places. When valves of cylinder or regulating valves freeze, thaw them out with hot water, do not flame or direct fire.
(4) 切断作業時の措置 (a) 屋内の作業場所等では換気を行うこと →E 7.8.4 (4)(a)に規定済み	(4) Safety measures for gas welding and cutting work	(4) Safety measures for gas welding and cutting work	(4) Safety measures for gas welding and cutting work

(b) ガス切断装置のガス漏れの点検を行う場合は、石けん水を使用する等の安全な方法により行い、火気は使用しないこと
→E 7.8.4 (4)(b)に規定済み
(c) 作業を行う場所の近くには適当な消火設備又は消火器を備えておき、必要な時に直ちに使用できるよう常に維持すること
→E 7.8.4 (4)(c)に規定済み
(d) 使用する際は、容器の口金に付着している油類、塵埃を除去すること
→E 7.8.4 (4)(d)に規定済み
(e) 点火及び消化は、酸素供給バルブを閉じて行うこと
→E 7.8.4 (4)(e)に規定済み
(f) 当該作業の作業員には保護眼鏡及び保護手袋を着用させること。
→E 7.8.4 (4)(f)に規定済み

(5) ガス切断作業装置の定期点検

ガス切断作業装置は、4.1.7[建設機械の点検・整備]及び 4.1.9[定期点検]に準拠して定期点検を行うこと。
→E 7.8.4 (5)(a)に対応する規定あり。

7.8.4 電気溶接、ガス切断作業における火災予防

請負者は、電気溶接、ガス切断作業による火災の予防のために、次の措置を講じなければならない。
→E 7.8.5 冒頭部に規定済み

(1) 可燃・引火物又は爆発性の材料を入れたことのある容器を溶接又は切断するときは、容器を洗浄してから作業すること。
→E 7.8.5 (1)に規定済み

(2) 溶接・切断等の作業は、可能な場合には火災に対して安全な場所に移動して行うこと。移動できない場合は、火災の危険性のあるものを移動するか、火花等に対する適切な防護措置を講じること。
→E 7.8.5 (2)に対応する規定あり。

(3) 可燃・引火性塗料が使用されている場所、あるいは可燃・引火物がある場所及びほこりが堆積し火災の危険のある場所では溶接・切断等の作業をしないこと。
→E 7.8.5 (3)に対応する規定済み。→可燃・引火性塗料、可燃・引火物、埃のある場所等を追記する。

(a) Ensure that all internal and external work areas are fully ventilated;
(b) When checking for gas leakage from the gas welding or cutting equipment, use a liquid detergent or similar, never use flames or fire.
(c) Provide adequate fire extinguishing equipment near the working place, always maintained and certified, suitably labelled, available and positioned so that it can be used immediately when necessary.
(d) Remove oil and dust adhering to the valve of gas cylinders.
(e) Ignition and digestion shall be accomplished only with oxygen supply valve closed.
(f) Ensure that workers wear appropriate PPE including personal face protectors for welding and protective gloves as specified in JSSS 2.9 [*Personal Protective Equipment (PPE)*].
(g) Instruct all workers not to look directly at the weld with their naked eyes.

(5) Periodical inspection of gas welding and cutting equipment.

MD:DCI will coordinate with JSSS 4.1 after that Section is *reviewed:*

(a) Gas welding and cutting equipment shall be inspected and tested periodically in accordance with JSSS 4.1.7 [*Inspection and Maintenance of Construction Machine*] and JSSS 4.1.9 [*Periodical Inspection*].

7.8.5 Fire Prevention

The Contractor shall take all necessary measures to prevent fires caused by welding and cutting operations, including:

(1) When welding or cutting is carried out on/in containers previously filled with Dangerous Goods or Hazardous Material, the containers shall be thoroughly cleaned so that they are completely free from such Dangerous Goods or Hazardous Material before starting work.
(2) Welding or cutting work shall be carried out at place where there is a risk of causing fire either to adjacent buildings or to Contractor's Equipment, Goods, debris, waste or other materials, then fire prevention measures shall be adopted. This may include moving all such Contractor's Equipment, Goods, debris, waste or other materials, from the work and taking other protective measures.
(3) Welding or cutting work shall not be conducted near Dangerous Goods or

(a) Ensure that all internal and external work areas are fully ventilated;
(b) When checking for gas leakage from the gas welding or cutting equipment, use a liquid detergent or similar, never use flames or fire.
(c) Provide adequate fire extinguishing equipment near the working place, always maintained and certified, suitably labelled, available and positioned so that it can be used immediately when necessary.
(d) Remove oil and dust adhering to the valve of gas cylinders.
(e) Ignition and digestion shall be accomplished only with oxygen supply valve closed.
(f) Ensure that workers wear appropriate PPE including personal face protectors for welding and protective gloves as specified in JSSS 2.9 [*Personal Protective Equipment (PPE)*].
(g) Instruct all workers not to look directly at the weld with their naked eyes.

(5) Periodical inspection of gas welding and cutting equipment.

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(a) Gas welding and cutting equipment shall be inspected and tested periodically in accordance with JSSS 4.1.7 [*Inspection and Maintenance of Construction Machine*] and JSSS 4.1.9 [*Periodical Inspection*].

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(a) Ensure that all internal and external work areas are fully ventilated;
(b) When checking for gas leakage from the gas welding or cutting equipment, use a liquid detergent or similar, never use flames or fire.
(c) Provide adequate fire extinguishing equipment near the working place, always maintained and certified, suitably labelled, available and positioned so that it can be used immediately when necessary.
(d) Remove oil and dust adhering to the valve of gas cylinders.
(e) Ignition and digestion shall be accomplished only with oxygen supply valve closed.
(f) Ensure that workers wear appropriate PPE including personal face protectors for welding and protective gloves as specified in JSSS 2.9 [*Personal Protective Equipment (PPE)*].
(g) Instruct all workers not to look directly at the weld with their naked eyes.

(5) Periodical inspection of gas welding and cutting equipment.

(a) Gas welding and cutting equipment shall be inspected and tested periodically in accordance with JSSS 4.1.7 [*Inspection and Maintenance of Construction Machine*] and JSSS 4.1.9 [*Periodical Inspection*].

6.8.5 Fire Prevention

The Contractor shall take all necessary measures to prevent fires caused by welding and cutting operations, including:

(1) When welding or cutting is carried out on/in containers previously filled with Dangerous Goods or Hazardous Material, the containers shall be thoroughly cleaned so that they are completely free from such Dangerous Goods or Hazardous Material before starting work.
(2) Welding or cutting work shall be carried out at place where there is a risk of causing fire either to adjacent buildings or to Contractor's Equipment, Goods, debris, waste or other materials, then fire prevention measures shall be adopted. This may include moving all such Contractor's Equipment, Goods, debris, waste or other materials, from the work and taking other protective measures.
(3) Welding or cutting work shall not be conducted near Dangerous Goods or

(4) 溶接、切断作業場所には、適切な消火器を設置し、必要な時に直ちに使用できるよう常に維持すること。→E 7.8.5 (4)に規定済み (5) 溶接・切断作業が、壁、床、天井及びその近辺で行われる場所において、溶接・切断の火花が壁、床、天井に入り、又はこれらに溶接・切断の熱が伝わることにより火災の危険性がある場合には、監視員を配置すること。 →規定なし。MD：7.8.1 (3) above, the following is not necessary. →追記する。	Hazardous Substances or in or near to Hazardous Areas. (4) Appropriate types and quantities of fire extinguisher shall be provided, near the working place, always maintained and certified, suitably labelled, available and positioned so that it can be used immediately when necessary.	Hazardous Substances or in or near to Hazardous Areas. NK1: I wonder if it is easy for the Contractor to see concrete examples such as the place where combustible or inflammables paint is used, combustible materials or inflammables are present, or dust accumulates. (4) Appropriate types and quantities of fire extinguisher shall be provided, near the working place, always maintained and certified, suitably labelled, available and positioned so that it can be used immediately when necessary. (5) Spotter(s) shall be provided at welding or cutting work place when there is risk of fire by the heat transmitted or sparks of welding or cutting getting into walls, floors, ceilings and so on. NK1: From the serious fatal fire accident of 5 dead and 40 injured in building construction site in Japan in 2018 shown in the following site, we want to add (5) referring to the OSHA Clause below. https://www.japantimes.co.jp/news/2018/07/27/national/five-killed-40-injured-huge-fire-construction-site-tokyo-suburb-tama/#.XqPSROR7l9A *§1926.352 Fire prevention.* *(f) When welding, cutting, or heating is performed on walls, floors, and ceilings, since direct penetration of sparks or heat transfer may introduce a fire hazard to an adjacent area, the same precautions shall be taken on the side on which the welding is being performed.*	Hazardous Substances or in or near to Hazardous Areas, for example places where combustible or inflammables paint is used, combustible materials or inflammables are present, or dust accumulates. (4) Appropriate types and quantities of fire extinguisher shall be provided, near the working place, always maintained and certified, suitably labelled, available and positioned so that it can be used immediately when necessary. (5) Spotter(s) shall be provided at welding or cutting work place when there is risk of fire by the heat transmitted or sparks of welding or cutting getting into walls, floors, ceilings and so on.

Minutes of Meeting, Attachment C, Details of Discussion in the 39th to 42th Meetings , January 17, 22, 24, and 27, 2020

Chapter 7 Temporary Works

No	Item discussed	Action by NK
	7.1.1 “with the Contract requirement for TW”	The “with the Contract requirements” will be deleted and the sentences will be modified.
	7.1.1 (5) HSO’s duties The current sentence states that the HSO will check the temporary structure to certify it, and confirm when the TW will be removed and certify it also. I think that the role of HSO is to mainly confirm that the construction is being performed in accordance with the safety plan. Wouldn't the present stipulation mean that the HSO would be very busy to killing his time only to check work procedure and not be able to see the whole thing?	HSO should always be ultimately responsible as the leader really of the Contractor’s safety team with support duties delegated as necessary to a number of personnel including Operation Leaders. This is described in Chapter 1.10.1 and has been discussed. No change is required.
	7.1.3 (3) “unless otherwise stated in the Contract”	User Guide will describe the Employer shall specify his requirements regarding instrumentation and recording system. The expression “unless otherwise stated in the Bidding Documents” (interchangeable with Contract) should remain in the Contractor’s document.
	Sub-Clause 7.1.3 (4): Requirements for Instrumentation Isn't that specified in the Contract Document series? At present, the description is left to the Contractor's discretion. Is it no problem?	NK will change the documents so that Employer specifies his requirements for instrumentation and monitoring of property outside the Site and Engineer’s involvement with instrumentation and monitoring of Contractor’s work within the Site. JICA agreed and will provide hard copy of example.

No	Item discussed	Action by NK
	7.1.3 (5) (a) Management by Visual Inspection As for measurement using instruments, the Employer should be involved. Thus, change the description to "What is specified in Annex 1.3 ...".	NK stated the Employer will be, this will be specified.
	7.1.3 (5) (b) Management by Instrument Measurement 1) Involvement of Engineer and 2) The contract documents should stipulate the target structure to be measured, the measurement method, and the allowable measurement values. The Engineer should be involved in the review process. If the affected third-party structures and affected areas are included, shouldn't the Engineer (or the Employer in some cases) be strongly involved?	Documents will be studied and if necessary changes made to include appropriate reference. Changes must be carefully worded to avoid any effect to the Contractor's basic responsibility under the Contract (otherwise JSSS may have a liability). NK will add this in User Guide.
	7.1.4 Compliance standards	JICA and NK will discuss and include standards accordingly.
	7.1.5 Specialist Temporary Works Necessary or not?	It is intended to cover specialist ground and temporary works that can be carried out by a limited number of specialists. To be further considered in future draft.
	7.2 EARTHWORK SUPPORT How about calling it "Temporary" Earth Retaining Structure? (Same for Cofferdam)	No need to change (see also the definition).
	7.2.2 Planning and Design Only site information at the time of bidding is described. How about adding "Any relevant site information that the contractor has encountered or obtained during the execution of the Works".	NK will add further requirements deriving from Contractor's further studies since commencement.
	7.2.3 Inspection and Monitoring JICA hope "Visual Monitoring" is fine.	NK leave it as it is.
	7.2.5 Safety Measures for Shoring (1) Change shoring to include "Walings and Struts" throughout.	NK leave it as it is.
	7.2.5 (4) Since wooden is not used in Japan, can it be deleted?	As this is not for use in Japan and timber is widely used NK leave it as it is.
	7.2.7 Adjacent Goods, Excavated Spoil and the like Although "and the like" is often used throughout, but be careful. "and the like" is used when similar next terms are arranged in parallel. In this case simply in etc.?	This is a common phrase in contract and specification wording and has common interpretation that there are further similar things that are to be included. Et cetera (etc.) does not necessarily have the same meaning, it depends what precedes it and should not be generally used in Specifications. NK explained and understood by JICA, no change required.
	7.3.4 General Safety and Construction Requirements (Shoring) This is a retaining item and is not related to the Cofferdam.	Cofferdams also require strutting and shoring. It is already stated in the draft as "Shore Strut Support". NK leave it as it is.
	7.4 WALKWAYS, LADDERS AND STEPLADDERS Pedestrian Walkway should be easier to understand. This is term in Singapore and Canada.	NK suggest that "Walkway" is more appropriate used in OSHA and defined as: "If an area is, or could be, used to gain access to other locations, it is to be considered a walkway. ... A general work location where one or more employees are performing work, such as a shipyard, pier, barge, vessel, or vessel section." NK leave it as it is. NK will clean up editing of 7.4.1 (1).
	7.4.4 Portable Ladders and Stepladders	These are same as draft in English. NK leave it as it is.

No	Item discussed	Action by NK
	Copyright: It seems that it is the content that brought some specifications. If there is no copyright issue, it can be used as it is.	
	7.5 SCAFFOLDING The content is different from the Japanese ver. Check it again, please.	The comment is correct, it is very different basically because MD considered it necessary to modify as mentioned in the draft version which also included some guidance notes, comments and queries. NK will discuss the draft with JICA and necessary changes.
	7.5.2 Compliance Standards (1) (b): ANSI/ASSP A10.8 – 2019 Scaffolding Safety Requirements Is it new information? JICA hasn't confirmed it yet. (2) Is there any specified ground for safety factor 4?	(1) (b) ANSI is included in Japanese Draft. (2) It is from OSHA §1926.451 General requirements copied below. (a) Capacity. (1) Except as provided in paragraphs, each scaffold and scaffold component shall be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load applied or transmitted to it. NK leave it as it is.
	7.5.8. Scaffold Assembly, Erection, Alteration and Dismantling Generally (3) Cannot understand what it means. (6) Not 45cm, 40cm is correct	(3) NK will modify it so that platform is for scaffolding workers. (6) In UK, they are usually 22.5cm wide, in US 25.4 cm (10 inches) therefore even ignoring gaps, minimum working platform width cannot usually be 40cm. In Japan 40cm for working platform. OSHA is: "It is recommended that the width of a working platform shall be a minimum of 600 millimetres wide and a scaffold which is used for the deposit of materials shall be a minimum of 800 millimetres wide. A scaffold used for the support of a higher platform should be at least 1.05 metres wide." JICA considers different standards are acceptable, and applicable standards in principle are 1st is Japanese regulation and 2nd is OSHA. NK will discuss with JICA.
	7.5.9 Mobile Elevating Work Platforms Items (7), (8) and (9) Cannot understand.	NK modify them and discuss with JICA.
	7.5.10 General Inspection and Maintenance of Scaffolding (2) The following items are not well understood.	NK modify them and discuss with JICA.
	7.6 ELEVATED ACCESS STRUCTURES Title of Section: Is this expression appropriate?	NK think so yes, there is no international standard wording and NK developed it. It has functional meaning in three words. NK consider it is necessary to define this and has included in Annex 1.1 (issue 7) as follows: (7) "Elevated Access Structures" means substantial, elevated, temporary working areas, usually comprised of structural steel columns, beams, framing and floor decking and used for performing work at sites with difficult access or with restricted room for construction operations or steeply sloping or offshore sites. NK leave it as it is.
	7.6.2 (c) Use of Measures to prevent Vehicles from falling Does this expression of "continuous "W" Section" mean the road surface to be jagged?	It means steel crash barriers. NK leave it as it is.
	7.6.4 Inspection and Maintenance It is not necessary to check the temporary gantry every week. Target might be about decks, railings, wheels?	The extent of weekly inspection is variable. NK would recommend that a check at least on a weekly basis (particularly settlement) is very necessary. NK leave it as it is.
	It raises the further question, Should JICA copyright JSSS.	Probably not but to be considered by JICA.

Chapter 7 Temporary Works
Discussion Points for meeting on 27 January 2020
(Draft internal 25/01/2020 MD)

Including Result of Discussion

Selected Items for Discussion and Clarification:

Sub-Clause 7.1.1 (5)

JICA: The current sentence states that the HSO will check the temporary structure to certify it, and confirm when the TW will be removed and certify it also. I think that the role of HSO is to mainly confirm that the construction is being performed in accordance with the safety plan. Wouldn't the present stipulation mean that the HSO would be very busy to killing his time only to check work procedure and not be able to see the whole thing?

NK: HSO should always be ultimately responsible as the leader really of the Contractor's safety team with support duties delegated as necessary.
This is described in Chapter 1.10.1 and has been discussed

Result: Discussed in relation to Chapter 1.10.1 and resolved, no change required.

Sub-Clause 7.1.3 (4): Requirements for Instrumentation

JICA: Isn't that specified in the Contract Document series? At present, the description is left to the Contractor's discretion. Is it no problem?

NK: We will change the documents so that Employer specifies his requirements for instrumentation and monitoring of property outside the Site and
Engineer's involvement with instrumentation and monitoring of Contractor's work within the Site.

Result: NK approach agreed, Date san will provide hard copy of example.

Sub-Clause 7.1.3 (5) (a) Management by Visual Inspection

JICA: As for measurement using instruments, the Employer should be involved.
Thus, change the description to "What is specified in Annex 1.3 ...".

NK: Employer will be, this will be specified

Result: See above

Sub-Clause 7.1.3 (5) (b) Management by Instrument Measurement

JICA: 1) Involvement of Engineer and
2) The contract documents should stipulate the target structure to be measured, the measurement method, and the allowable measurement values.

NK: Documents will be studied and if necessary changes made to include appropriate reference. Changes must be carefully worded to avoid any effect to the Contractor's basic responsibility under the Contract otherwise JICA may have a liability

JICA The Engineer should be involved in the review process.

NK: Yes, see above but it needs careful wording to avoid any effect on the contractor's liability otherwise JICA may have a liability

(Same answer applies to the many references to this subject)

Result: See above

JICA: If the affected third-party structures and affected areas are included, shouldn't the Engineer (or the Employer in some cases) be strongly involved?

NK: Yes, see above, will be added to documents (in user guide).

Result: See above

Sub-Clause 7.1.4 Compliance standards

MD note: Please refer to the earlier full draft and kindly advise of which standards are NOT to apply.

Result: JICA and NK will discuss and advise MD accordingly

Sub-Clause 7.1.5. Specialist Temporary Works

JICA: Necessary or not?

NK: It is intended to cover specialist ground and temporary works.
Please let me know if required or not

Result: Delete not Required

7.2 EARTHWORK SUPPORT

JICA: How about calling it "Temporary" Earth Retaining Structure? (Same for Cofferdam),

NK: Change will be made.

Result: No need to change (see also the definition)

Sub-Clause 7.2.2. Planning and Design

JICA: Only site information at the time of bidding is described. How about adding "Any relevant site information that the contractor has encountered or obtained during the execution of the Works".

NK: Other investigation is necessary after commencement and this will be added

Result: NK to add further requirements deriving from Contractor's further studies since commencement.

Sub-Clause 7.2.3. Inspection and Monitoring

JICA: I hope “Visual Monitoring” is fine.
NK (MD): Please let me know if it is not, I am editing the specification only and I assume that it represented your agreed requirements. Please check as necessary.
Result: Leave as it is
Sub-Clause 7.2.5. Safety Measures for Shoring
JICA: (1) Change shoring to include “Walings and Struts” throughout.
NK: Will be changed; suggest this clause already covers it, (should be “waling and strutting”).
Result: Leave as it is
Sub-Clause 7.2.5 (4)
JICA: Since wooden is not used in Japan, can it be deleted?
NK: This is not for use in Japan and timber is widely used
Result: Leave as it is
Sub-Clause 7.2.7. Adjacent Goods, Excavated Spoil and the like
JICA: Although “and the like” is often used throughout, but be careful. “and the like” is used when similar next terms are arranged in parallel. In this case simply in etc.?
NK: This is a common phrase in contract and specification wording and has common interpretation that there are further similar things that are to be included.
Et cetera (etc.) does not necessarily have the same meaning, it depends what precedes it and should not be generally used is Specifications.
Result: explained and understood by JICA, no change required
Sub-Clause 7.3.4. General Safety and Construction Requirements
JICA: (Shoring) This is a retaining item and is not related to the Cofferdam.
NK: Comment not understood, coffer dams also require strutting and shoring.
It is already stated in the draft as “Shore Strut Support”.
Shall this be changed to strutting?
Result: Leave as it is
7.4. WALKWAYS, LADDERS AND STEPLADDERS
NK General Comment: This section has already been given some further editing
JICA: Pedestrian Walkway should be easier to understand.
This is the case in Singapore and Canada.
NK: We suggest that “Walkway” is more appropriate, is used in OSHA and defined as:
“If an area is, or could be, used to gain access to other locations, it is to be considered a walkway. ... A general work location where one or more employees are performing work, such as a shipyard, pier, barge, vessel, or vessel section.”
(MD: Please confirm what is required)
Result: Leave as it is.
Clean up editing of 7.4.1 (1)
Sub-Clause 7.4.4. Portable Ladders and Stepladders
Result: Leave as it is
JICA Copyright: It seems that it is the content that brought some specifications. If there is no copyright issue, it can be used as it is.
MD Note: I don’t really understand the comment but please note that I am not checking copyright compliance, this is a JICA/NK responsibility which I assumed had been complied with.
Please check and if there are any issues please advise me.
Result: Leave as it is
It raises the further question, I suggest that JICA should copyright JSSS.
Copyright of JSSS: To be considered buy JICA
7.5. SCAFFOLDING
JICA: The content is different from the Japanese ver. Check it again, please.
MD: Your comment is correct, it is very different basically because I considered that the draft is not up to a reasonable standard.
MD General Comment:
Please also note that I had provided a draft version which included some guidance notes, comments and queries. This appears to have been ignored.
NK Please provide clarification to my queries.
Result: Discuss scaffolding compliance standards with NK.
NK to Discuss Scaffolding draft with JICA and advise MD or any changes.
Sub-Clause 7.5.2. Compliance Standards
JICA: (1) (b): ANSI/ASSP A10.8 – 2019 Scaffolding Safety Requirements
Is it new information? JICA hasn't confirmed it yet.
MD: This is included in your draft, please confirm what is required.
Also, please refer to my draft and note that I am still awaiting advice on this, please refer to my earlier full draft
NK to Discuss Scaffolding draft with JICA and advise MD or any changes.

JICA: (2) Is there any specified grounds for safety factor 4?
NK: Yes, please refer to OSHA.
Please note also that the draft is not sufficient or compatible with OSHA
Result: Nothing to change leave JICA reference in unless otherwise advised by NK.

Sub-Clause 7.5.3. Tubular Steel Scaffolding.
(and same JICA comment in 7.5.4, 7.5.5 and 7.5.6
JICA: Item title: Is it new information? JICA hasn't confirmed it yet.
MD: Yes I have edited this as I think necessary.
I don't understand what is meant by JICA hasn't confirmed?
I have edited what I have received and the document that I have issued contains terms which I believe are understandable.
Please study my earlier draft and confirm if it is acceptable or if necessary, advise me of any particular changes that you require.
Please also note that I have asked questions in my draft which are still not answered.
Result: NK will discuss with JICA and advise MD
Sub-Clause 7.5.8. Scaffold Assembly, Erection, Alteration and Dismantling Generally
JICA: Item (3) Cannot understand what it means.
NK (MD) Please refer to your draft item 7.5.6 (4), it is difficult to understand but I can give some meaning, much better if you clarify, Original text was:
"For scaffolds with a height of 2m or more, when carrying out works of fastening, removing or handling over materials for scaffoldings, provide scaffolding boards having a width of 40 cm or more,"
Result: MD to edit, platform is for scaffolding workers
JICA Item (6) Not 45cm, 40cm is correct
NK (MD):Please refer to my note in the draft document sent to you.
"Scaffold Boards are usually 225 wide.
In UK, they are usually 22.5cm wide, in US 25.4 cm (10 inches) therefore even ignoring gaps, minimum working platform width cannot usually be 40cm.
JICOSH is 40cm for working platform.
OSHA is:
"It is recommended that the width of a working platform shall be a minimum of 600 millimetres wide and a scaffold which is used for the deposit of materials shall be a minimum of 800 millimetres wide. A scaffold used for the support of a higher platform should be at least 1.05 metres wide."
Please confirm exactly what is required.
Result: NK to consider, discuss with JICA and advise MND accordingly
Sub-Clause 7.5.9 Mobile Elevating Work Platforms
JICA Items (7), (8) and (9) Cannot understand (7) to (9).
NK (MD): I find it difficult but not impossible however, please refer to the NK draft, items 7.5.8 (e) (ii) to (iv).
I have included the same text here without any real change.
I agree that your draft is difficult to understand but I can just about do that.
Please advise what is required.
Result: NK to consider, discuss with JICA and advise MND accordingly
Item (12)
JICA: I think it is not necessary for passenger seat?
NK (MD):The NK draft states:
"When using the mobile elevating work platform, workers shall not be boarded on other than the passenger seat and working floor, and "
I have not really changed this, understanding that your draft had been agreed.
Please advise what is required.
Result: Leave as it is
Sub-Clause 7.5.10. General Inspection and Maintenance of Scaffolding
JICA: The following items are not well understood.
NK (MD) There are a number of items listed most of which are excluded from the NK draft which I suggest are necessary.
Please review and advise what is required.
Result: NK to consider, discuss with JICA and advise MD accordingly
7.6. ELEVATED ACCESS STRUCTURES
Title of Section:
JICA: Is this expression appropriate?
NK (MD): I think so yes, there is no international standard wording and I was asked to develop something.
It has functional meaning in three words.
I also consider it is necessary to define this therefore please also refer to the definition I have included in Annex 1.1 (issue 7)

(7) "Elevated Access Structures" means substantial, elevated, temporary working areas, usually comprised of structural steel columns, beams, framing and floor decking and used for performing work at sites with difficult access or with restricted room for construction operations or steeply sloping or offshore sites.

Result: Leave as it is

(c) Use of Measures to prevent Vehicles from falling

JICA: Does this expression mean the road surface to be jagged?

NK: Not clear but no, it means steel crash barriers as stated

Result: Leave as it is

Sub-Clause 7.6.4. Inspection and Maintenance

JICA: It is not necessary to check the temporary gantry every week. Target might be about decks, railings, wheels?

NK (MD) If that is your instruction I will change, however, please note that the extent of weekly inspection is variable. Considering the requirements of (4) below, I would recommend that a check at least on a weekly basis (particularly settlement) is very necessary.
If it is not a weekly check, what is the suggested frequency?

Result: Leave as it is.

Chapter 1 (Issue 7)

1.35 Contractor's Equipment, Temporary Works, Safety Equipment and PPE

1.35.1. Contractor's Equipment, Temporary Works, Safety Equipment and PPE to be used upon the Works, (for example electrical systems, welding and cutting equipment, scaffolding, system Formwork and Falsework, etc.) together with all components, systems, materials and equipment, safety equipment and PPE (referred to collectively in this clause as Contractor's Equipment and Temporary Works), shall be suitable and fit for the purpose for which they are intended.
All shall be used in full accordance with the manufacturer's printed instructions or accepted industry practice and shall be used, stored, handled, assembled, erected, installed, maintained and dismantled by qualified, skilled, specially trained and experienced personnel.

1.35.2. The Contractor shall ensure that all items of Contractor's Equipment and Temporary Works for use upon the Works are inspected by the HSO (or his delegated and technically qualified assistant) at the required location before the commencement of any operation or use and regularly inspected thereafter to ensure continued compliance with the foregoing. Following any such inspection, all tested items shall be labelled by the Contractor with clear, durable and weatherproof labels confirming the last/current date of inspection, date of next inspection and signed by the HSO, thereby certifying the items as being safe for use.
If the HSO ascertains at any time that any items are suitable for such certification he shall immediately stop all use of that item, label the item as not being safe for use, stop all work for which that item and any associated items is being used and cease any such work until the situation is corrected by repair, re-testing and certifying. Similarly, the Engineer may issue instructions to stop all use of any item and stop all work for which that item and any associated items is used when it is discovered that the certification is not available or is not currently valid.

1.35.3. The Engineer may also instruct that any Contractor's Equipment and Temporary Works shall be subjected to examination, inspection, measurement or testing, by the Contractor at the expense of the Contractor.
If, as a result of such examination, inspection, measurement or testing, any such Contractor's Equipment and Temporary Works is found to be defective, or otherwise not in accordance with JSSS or the Contract, the Engineer may reject such Contractor's Equipment and Temporary Works by giving notice to the Contractor, with reasons. The Contractor shall then promptly make good the defect and ensure by repair as necessary and re-testing that the rejected item(s) complies with the Contract.

1.35.4. As confirmed in Form JSSS/BSD Bidder's Safety Declaration (refer to JSSS Annex 1.3 [*Additional Contractor Forms*]), the Contractor shall mobilise for use upon the Works:

(1) New and up to date Personal Protective Equipment (PPE) and other safety equipment and Temporary Works of an international standard, suitable and fit for the purpose for which it is intended, in full working order, complete with all necessary spare parts and consumables, suitable and safe for use on the Works, all to meet with the consent of the Engineer and in sufficient quantities to allow for replacement in the case of being worn-out, lost or damaged.

(2) New or recent Contractor's Equipment and Temporary Works, not more than five (5) years old upon the date that it is mobilised to the Site, all suitable and fit for the purpose for which it is intended, in full working order, clean, non-polluting, complete with all necessary spare parts and consumables, suitable and safe for use on the Works; and that all of the above will be used correctly and for the purpose intended.

Contractor's Equipment and Temporary Works shall be pre-inspected at origin at the expense of the Contractor before shipment by an independent testing, inspection and certification agency to ensure compliance with the foregoing paragraph subject to receiving the consent of the Engineer.

1.37 Design and Management of Temporary Works

1.37.1. Unless otherwise specified in the Particular Safety Specification, the Contractor is required to comply with BS5975: Code of Practice for Temporary Works Procedures and the Permissible Stress Design of Falsework.

1.37.2. An alternative standard is acceptable by reference to JSSS 1.4.1 [*Specified Standards and Regulations*] providing that the proposed alternative also contains equivalent or higher standards for the management of Temporary Works including Class A Falsework.

1.37.3. It is to be noted that BS5975 constitutes guidance and recommendations and it is not quoted herein as if it constitutes a specification or an integral part of JSSS. The Contractor shall however justify in writing any course of action that deviates from the recommendations of BS5975 and shall submit such justification to the Engineer for his information and consent.

1.37.4. It is to be noted that certain design standards included or referred to in the BS (for example wind loadings), are restricted to use in the United Kingdom, in which case the Contractor shall be assumed to have adopted the design standards applicable in the Country of the Works.

1.37.5. The Contractor shall prepare and implement suitable procedures whereby all Temporary Works staff during the course of their work and on completion shall prepare and sign formal records of all Temporary Works under their management and control, thereby certifying that all has been performed, completed and validated in accordance with BS5975. All such records shall be in a format and content subject to the consent of the Engineer and all shall be made available for inspection by the Engineer.

1.37.6. Without affecting the Contractor's responsibilities for design of the Temporary Works, the Engineer shall cooperate with the Contractor's Temporary Works staff and shall provide pertinent information about the design of the Permanent Works which may be of relevance and assistance to the Contractor with the Temporary Works design.

The Contractor shall submit Method Statements for any parts of the Temporary Works (including designs and calculations of Falseworks) as may be requested by the Engineer for his review in accordance with JSSS **エラー！参照元が見つかりません。** [*Contractor's Method Statements*]. If the Engineer chooses to review same, this shall not be construed as a check or validation of the Contractor's design or methods.

The Engineer has no obligation under the Contract to review Temporary Works design, however he may choose to do so for those parts which he considers to be of vital importance for safety. The Contractor shall cooperate and work with the Engineer on this task to demonstrate that the Contractor has systems in place to ensure compliance with BS 5975. The Engineer shall have no obligation to issue any response or comment, however, if he chooses to do so, any such response or comment shall be deemed to be provided in good faith, shall be treated accordingly under GC 3.1 [*Engineer's Duties and Authority*] Sub-Subclause (c) and issued without prejudice to the Contractor's overriding responsibility for the safety and adequacy of the Temporary Works.

1.37.7. In accordance with JSSS **エラー！参照元が見つかりません。** [P*roper Placement of Contractor's Personnel*], the Contractor shall ensure that the design, erection, maintenance, dismantling and removal of Temporary Works, are all carried out by competent and experienced persons and in a controlled and closely supervised manner.

1.37.8. For further information on monitoring the performance of Temporary Works, refer to JSSS 6.1.3. [*Inspection and Monitoring of Temporary Works*].

1.37.9. Irrespective of any legal requirement under the Laws of the Country, all of the Contractor's Temporary Works specialist staff shall have appropriate academic, educational or vocational qualification for Temporary Works coordination, design or supervision as appropriate. Such staff shall also have work experience in construction and in Temporary Works design or supervision as appropriate. The Contractor shall ascertain for himself that all such staff are qualified to perform their duties.

JSSS in English (NK R2 for issue 2 of 2020/4/25) (JICA Comments to Issue 1 of 2020/1/14 & NK Actions)	JSSS in English Issue 2 (with comments by MD of 2020/4/28)	JSSS in English Issue 2 (2020.5.18 for issue 3 (Draft Final))
Chapter 6. TEMPORARY WORKS	**Chapter 6. TEMPORARY WORKS**	**Chapter 6. TEMPORARY WORKS**
6.1 GENERAL REQUIREMENTS	**6.1 GENERAL REQUIREMENTS OF TEMPORARY WORKS**	**6.1 GENERAL REQUIREMENTS OF TEMPORARY WORKS**
6.1.1 Design and Provision of TW Generally	6.1.1 Design and Provision of Temporary Works Generally	6.1.1 Design and Provision of Temporary Works Generally
6.1.2 Method Statements	6.1.2 Method Statements	6.1.2 Method Statements
6.1.3 Inspection and Monitoring of TW	6.1.3 Monitoring Impact of Works on Other Properties	6.1.3 Monitoring Impact of Works on Other Properties
6.1.4 Compliance Standards	6.1.4 Compliance Standards	6.1.4 Compliance Standards
6.2 EARTHWORK SUPPORT	**6.2 EARTHWORK SUPPORT**	**6.2 EARTHWORK SUPPORT**
6.2.1 General	6.2.1 General	6.2.1 General
6.2.2 Planning and Design	6.2.2 Planning and Design	6.2.2 Planning and Design
6.2.3 Inspection and Monitoring	6.2.3 Inspection and Monitoring	6.2.3 Inspection and Monitoring
6.2.4 General Requirements	6.2.4 General Safety and Construction Requirements	6.2.4 General Safety and Construction Requirements
6.2.5 Safety Measures for Shoring	6.2.5 Safety Measures for Shoring	6.2.5 Safety Measures for Shoring
6.2.6 Safety Measures for Ground Anchor Work	6.2.6 Safety Measures for Ground Anchor Work	6.2.6 Safety Measures for Ground Anchor Work
6.2.7 Adjacent Goods, Excavated Material and the like	6.2.7 Adjacent Goods, Excavated Spoil and the like	6.2.7 Adjacent Goods, Excavated Spoil and the like
6.3 COFFERDAMS	**6.3 COFFERDAMS**	**6.3 COFFERDAMS**
6.3.1 General	6.3.1 General	6.3.1 General
6.3.2 Planning and Design	6.3.2 Planning and Design	6.3.2 Planning and Design
6.3.3 Inspection and Monitoring	6.3.3 Inspection and Monitoring	6.3.3 Inspection and Monitoring
6.3.4 General Requirements	6.3.4 General Safety and Construction Requirements	6.3.4 General Safety and Construction Requirements
6.3.5 Adverse Sudden Rise of Water Level	6.3.5 Excessive and Sudden Rise in Water Level	6.3.5 Excessive and Sudden Rise in Water Level
6.3.6 Monitoring Water Level and Other Conditions	6.3.6 Monitoring Water Level and Other Conditions	6.3.6 Monitoring Water Level and Other Conditions
6.4 WALKWAYS, LADDERS AND STEPLADDERS	**6.4 WALKWAYS, LADDERS AND STEPLADDERS**	**6.4 WALKWAYS, LADDERS AND STEPLADDERS**
6.4.1 General	6.4.1 General	6.4.1 General
6.4.2 Walkways	6.4.2 Walkways	6.4.2 Walkways
6.4.3 Emergency Exits and Evacuation Routes	6.4.3 Emergency Exits and Evacuation Routes	6.4.3 Emergency Exits and Evacuation Routes
6.4.4 Portable Ladders and Stepladders	6.4.4 Vertical Access	6.4.4 Vertical Access
6.4.5 Inspection	6.4.5 Portable Ladders and Stepladders	6.4.5 Portable Ladders and Stepladders
	6.4.6 Inspection	6.4.6 Inspection
6.5 SCAFFOLDING	**6.5 SCAFFOLDING**	**6.5 SCAFFOLDING**
6.5.1 General	6.5.1 General	6.5.1 General
6.5.2 Compliance Standards	6.5.2 Compliance Standards	6.5.2 Compliance Standards
6.5.3 Platform of Scaffolding	6.5.3 Notices to be Displayed on Scaffolds	6.5.3 Notices to be Displayed on Scaffolds
6.5.4 Supported Scaffoldings	6.5.4 Scaffold Platforms	6.5.4 Scaffold Platforms
6.5.5 Suspended Scaffoldings	6.5.5 Supported Scaffolds	6.5.5 Supported Scaffolds
6.5.6 Mobile Scaffoldings	6.5.6 Suspended Scaffolds	6.5.6 Suspended Scaffolds
6.5.7 Trestle Scaffolds	6.5.7 Mobile Scaffolds	6.5.7 Mobile Scaffolds
6.5.8 Notices to be Displayed on Scaffolds	6.5.8 Trestle Scaffolds	6.5.8 Trestle Scaffolds
6.5.9 Scaffold Assembly, Erection, Alteration and Dismantling Generally	6.5.9 Scaffolding Assembly, Erection, Alteration and Dismantling Generally	6.5.9 Scaffolding Assembly, Erection, Alteration and Dismantling Generally
6.5.10 Mobile Elevating Work Platforms (Aerial Lifts)	6.5.10 General Inspection and Maintenance of Scaffolding	6.5.10 General Inspection and Maintenance of Scaffolding
6.5.11 General Inspection and Maintenance of Scaffolding	6.5.11 Mobile Elevating Work Platforms	6.5.11 Mobile Elevating Work Platforms
6.6 ELEVATED ACCESS STRUCTURES	**6.6 ELEVATED ACCESS STRUCTURES**	**6.6 ELEVATED ACCESS STRUCTURES**
6.6.1 General	6.6.1 General	6.6.1 General
6.6.2 Design and Management Generally	6.6.2 Design and Management Generally	6.6.2 Design and Management Generally
6.6.3 Further Safety Requirements	6.6.3 Further Safety Requirements	6.6.3 Further Safety Requirements
6.6.4 Inspection and Maintenance	6.6.4 Inspection and Maintenance	6.6.4 Inspection and Maintenance
6.7 TEMPORARY ELECTRICAL INSTALLATIONS	**6.7 TEMPORARY ELECTRICAL INSTALLATIONS**	**6.7 TEMPORARY ELECTRICAL INSTALLATIONS**
6.7.1 General	6.7.1 General	6.7.1 General
6.7.2 Compliance Standards	6.7.2 Compliance Standards	6.7.2 Compliance Standards
6.7.3 General Safety Requirements	6.7.3 General Safety Requirements	6.7.3 General Safety Requirements
6.7.4 Method statement for Temporary Electrical Installations	6.7.4 Method statement for Temporary Electrical Installations	6.7.4 Method statement for Temporary Electrical Installations
6.7.5 Responsible Personnel	6.7.5 Responsible Personnel	6.7.5 Responsible Personnel
6.7.6 Inspection, Maintenance and Repair	6.7.6 Inspection, Maintenance and Repair	6.7.6 Inspection, Maintenance and Repair
6.7.7 Safety Measures during the Work	6.7.7 Safety Measures during the Work	6.7.7 Safety Measures during the Work
6.8 ELECTRIC AND GAS WELDING AND CUTTING	**6.8 ELECTRIC AND GAS WELDING AND CUTTING**	**6.8 ELECTRIC AND GAS WELDING AND CUTTING**
6.8.1 General	6.8.1 General	6.8.1 General
6.8.2 Compliance Standards	6.8.2 Compliance Standards	6.8.2 Compliance Standards
6.8.3 Electric Welding and Cutting		

6.8.4 Gas Welding and Cutting 6.8.5 Fire Prevention	6.8.3 Electric Welding and Cutting 6.8.4 Gas Welding and Cutting 6.8.5 Fire Prevention	6.8.3 Electric Welding and Cutting 6.8.4 Gas Welding and Cutting 6.8.5 Fire Prevention
JC: Comments by JICA, (JCxx): No. of JICA Comments NK: Reply to the comments and revision from Issue 1. MM: Minute of Meeting of No. 39 to 42 on 2020/1/17, 22, 24 & 27 5. Comments on the Chapters 1, 2, 3 and 7 JICA and NK discussed JICA's comments on Chapters 1, 2, 3 and 7. Details with results of discussions are shown in abbreviated form in the Attachment C. Discussion on Chapters 1 and 3 was based upon a review at the meetings of the JICA original commented documents. Discussion on Chapters 2 and 7 was based upon a list of main discussion points prepared by NK and as shown in the Attachment D and E.	Update changes by MD since Issue 1 Changes due to JICA and NK comments *Comments and queries* JICA/NK: Due to the number and nature of the comments and changes received, I have prepared a further notes, explanations and suggestions in this issue to help with further understanding. This document needs to be read together with other chapters particularly chapter 7, to obtain a full understanding. Due to the present content, I would prefer to review, edit, check all cross references and finalise after receiving your response to this issue.	NK: NK は、JICA の Issue1 へのコメントの対応案 R2(左欄)を作成し、MD 氏へ送付した。MD 氏は R2 にもとづき JICA 及び NK のコメントに対応した Issue2 (中央欄)を作成した。右欄は、NK が Issue 2 を見直し、提案する Issue 2 である。 本 Issue 2 への JICA のコメントをもとに、本 5 章仮設工事のドラフトファイナルを作成致します。
6. (7.) TEMPORARY WORKS (JC01) NK: 章番号で旧７、新６が混在しています。 JC01: もう少し、用語、内容、英語での表現を精査しないと議論の土台にならないように思います。 The terms, content, and English expressions need to be scrutinized a bit more to be discussed. JC1: Revised taking into consideration the comment above. **6.1 (7.1) GENERAL REQUIREMENTS** This Section 7.1 applies to all TW included in JSSS Chapter 7. **6.1.1 (7.1.1) Design and Provision of TW Generally** Unless otherwise stated in the Contract, the Contractor shall take all necessary measures for the study, design, management, provision, safe use and safe removal of all TW as necessary to safely and systematically execute the Permanent Works and in accordance with JSSS ~~1.33~~1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*], ~~1.35~~1.37 [*Design and Management of Temporary Works*] and the specified standards. The Contractor shall comply with the Contract requirements (JC02)for TW and: JC02: Contract requirements の内容が明確でない、あるいは意図的に省略されたとき、すべてコントラクターに委ねることにならないか。 When the contents of the Contract requirements are not clear or intentionally omitted, I wonder if responsibilities will be left to the Contractor? NK1: Contract requirements は、JSSS 以外の契約の中の他の規定を意味しています。請負者任せになるのではないかとの懸念に関し、次のように考えます。 "as specified in the Contract/Special Safety Specification"と規定し、JSSS に最低限の要求事項を規定しない場合、コメントとおりの意図的省略が懸念されます。 "unless otherwise stated in the Contract/Special Safety Specification"と記述し、JSSS に請負者への最低限の要求事項を規定することで、請負者任せにしないことになります。 本款では、(1)から(6)に請負者の要求事項を規定しておりますので、本文はこのままとします。 The Contract requirements mean other requirements stipulated in other parts of the Contract than JSSS. We respond to the comments if responsibilities will be left to the Contractor or not.	**6. TEMPORARY WORKS** **6.1 GENERAL REQUIREMENTS OF TEMPORARY WORKS** This Section 6.1 applies to all Temporary Works included in JSSS Chapter 6. **6.1.1 Design and Provision of Temporary Works Generally** Unless otherwise specified in the Particular Safety Specification, the Contractor shall take all necessary measures for the study, design, management, provision, safe use and safe removal of all Temporary Works as necessary to safely and systematically execute the Permanent Works and in accordance with JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*], JSSS 1.37 [*Design and Management of Temporary Works*] and the specified standards. The Contractor shall comply with the requirements specified in the Contract for Temporary Works and:	**6. TEMPORARY WORKS** **6.1 GENERAL REQUIREMENTS OF TEMPORARY WORKS** This Section 6.1 applies to all Temporary Works included in JSSS Chapter 6. **6.1.1 Design and Provision of Temporary Works Generally** Unless otherwise specified in the Particular Safety Specification, the Contractor shall take all necessary measures for the study, design, management, provision, safe use and safe removal of all Temporary Works as necessary to safely and systematically execute the Permanent Works and in accordance with JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*], JSSS 1.37 [*Design and Management of Temporary Works*] and the specified standards. The Contractor shall comply with the requirements specified in the Contract for Temporary Works and:

In case JSSS stipulates “as specified in the Contract/Special Safety Specification” and does not specify minimum requirements in JSSS, there is worry that the Employer intentionally omit to specify the requirements.
It can be avoided by the JSSS when JSSS stipulates “unless otherwise stated in the Contract/Special Safety Specification” and minimum requirements to the Contractor.
With above reasons, we leave the clauses as it is.

(1) Provide TW which are fit for the purpose for which they are intended and fully in accordance with the JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*].

(2) Manage the design, use and removal of TW fully in accordance with JSSS 1.35 [*Design and Management of Temporary Works*].

(3) Maintain and repair all TW when in use to ensure the continued optimal and safe performance.

(4) Monitor all TW when in use and any affected PW, existing buildings, structures, ground or surfaces that may be affected by the TW through regular inspection and (where necessary and specified) with relevant instrumentation to ensure that the TW are performing safely, to the designed limits and intended purpose.

(5) The Contractor shall establish procedures whereby:

(a) No unauthorised modification of TW is allowed.

(b) No unauthorised use of TW is allowed.

(c) The HSO shall inspect all TW upon completion of erection and certify and label them as “Safe for Use” before any use is allowed. (JC03)

JC03: HSO が仮設構造をチェックして certify する。TW の撤去時期を確認して certify するようになっている。 HSO の役割は safety Plan に準拠して施工されているかを確認することではないかと思料。
これでは全く HSO が現場の作業手順に忙殺され全体を見ることが出来なくならないか。
(This comment in English is recorded in MM below.)

MM: Sub-Clause 7.1.1 (5)

JICA: The current sentence states that the HSO will check the temporary structure to certify it, and confirm when the TW will be removed and certify it also. I think that the role of HSO is to mainly confirm that the construction is being performed in accordance with the safety plan. Wouldn't the present stipulation mean that the HSO would be very busy to killing his time only to check work procedure and not be able to see the whole thing?

NK: HSO should always be ultimately responsible as the leader really of the Contractor's safety team with support duties delegated as necessary.

This is described in Chapter 1.10.1 and has been discussed

Result: Discussed in relation to Chapter 1.10.1 and resolved, no change required.

Chapter 1, 1.10 (Issue 6) stipulate as follows:
1.10 HSO - Scope of Duties
1.10.1 The HSO shall devote his full time and attention to maintaining health and safety upon the Works and protecting against accidents.
Chapter 1 (Issue 7)
1.12.3. Supporting Staff
(1)The Contractor shall also appoint such further supporting personnel as the HSO may from time to time deem necessary or as may be instructed by the Engineer, to permit the HSO to perform his duties.

(1) Provide Temporary Works which are fit for the purpose for which they are intended and fully in accordance with the JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*].

(2) Manage the design, use and removal of Temporary Works fully in accordance with JSSS 1.37 [*Design and Management of Temporary Works*].

(3) Maintain and repair all Temporary Works when in use to ensure the continued optimal and safe performance.

(4) Monitor all Temporary Works when in use and any affected Permanent Works, existing buildings, structures, ground or surfaces that may be affected by the Temporary Works through regular inspection and (where necessary and specified) with relevant instrumentation to ensure that the Temporary Works are performing safely, to the designed limits and intended purpose.

(5) The Contractor shall establish procedures whereby:

(a) Unauthorised modification of Temporary Works is not allowed;

(b) Unauthorised use of Temporary Works is not allowed;

(c) The HSO shall inspect all Temporary Works upon completion of erection and certify and label them as “Safe for Use” before any use is allowed;

(1) Provide Temporary Works which are fit for the purpose for which they are intended and fully in accordance with the JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*].

(2) Manage the design, use and removal of Temporary Works fully in accordance with JSSS 1.37 [*Design and Management of Temporary Works*].

(3) Maintain and repair all Temporary Works when in use to ensure the continued optimal and safe performance.

(4) Monitor all Temporary Works when in use and any affected Permanent Works, existing buildings, structures, ground or surfaces that may be affected by the Temporary Works through regular inspection and (where necessary and specified) with relevant instrumentation to ensure that the Temporary Works are performing safely, to the designed limits and intended purpose.

(5) The Contractor shall establish procedures whereby:

(a) Unauthorised modification of Temporary Works is not allowed;

(b) Unauthorised use of Temporary Works is not allowed;

(c) The HSO shall inspect all Temporary Works upon completion of erection and certify and label them as “Safe for Use” before any use is allowed;

1.13 HSO - Scope of Duties and Authority
1.13.1. ditto
1.13.2.The particular scope of duties and authority of the HSO shall cover (but shall not be limited to) the following:
(1)Health and Safety Management Work:
(c)Regular (daily) inspections of the Works at the Site to ensure the Contractor's compliance with the Safety Plan, Instructions and other measures;

NK1: HSO は安全に全責任を負います。安全の点検方法は次が想定されます。
(1) (NK 案) HSO 及び HSO の補助員（HSO が作業主任等に権限委譲）が、安全計画に従い点検を、直接行う。
(2) (JC 案) 現場担当や作業主任等が、安全計画に従い点検する。HSO は、現場の安全点検の遂行を管理する。
これらの長短所は以下である。
(1)の場合、全ての点検の責任が HSO にあり、安全上不備がある場合、改善や修理、作業開始の中止等が即時に行える利点がある。現場の HSO の補助員は、2 つの指揮系統（工区責任者等と HSO）に属することとなることから、事前の調整が重要である。
(2)の場合、安全の責任は、現場担当や作業主任等の点検を行うもの又は工区責任者等となる。この場合、現場進捗や費用管理と安全管理は相反する。そのため、進捗や費用が優先され、安全が次となる。HSO からの指示は、PM、工区責任者、現場担当や作業主任の流れとなり、即時の安全対策ができない。

NK1: HSO に安全の責任があることを明確にし、JSSS に規定の安全管理を遂行させるために、(f)へのコメントへの回答の通り、原案通りを提案します。
The clauses make clear the HSO has full responsibility to the Safety. To make the HSO execute the HSO's duties stipulated in the JSSS, the clauses are left as they are as explained in (f) below.

(d) The HSO shall regularly inspect TW and certify and label them appropriately to ensure the continuous safe use or, in the event that faults are discovered, certify them as "Not Safe for Use" and prevent access to the TW until repaired and re-inspected.

(e) The HSO inspects TW upon the completion of the required PW and before TW are dismantled, demolished and removed accompanied by the ~~TWS and TWC~~ Contractor's Temporary Works specialist staff specified in JSSS 1.37.12 as appropriate, and certifies that the PW are completed and the TW can be removed.

(f) The HSO inspects after removal of the TW to ensure that removal has been completed properly and that no part of the TW remains, that any rectification of the PW is completed and all is left in safe order and condition. (JC04)

JC04: From (c)-(f). Should it be HSO? Attention should be paid to harmony with BS5975 (in particular 11.2.3 and 11.3.3 of BS5975).

NK1:安全に関する責任は HSO にあり、HSO は全ての作業、仮設物の安全を確認する責務があります。
第 1 章では次のように規定しています。1.37 Design and Management of Temporary Works の BS5975 の規定内容に従い(e)と(f) は変更します。
The HSO is responsible for the safety and has duty to confirm the safety of whole works and TW. Chapter 1 stipulates as below. Following the provisions of BS5975 stipulated in 1.37 Design and Management of Temporary Works, (e) and (f) are modified.
1.12.3. Supporting Staff
(1) The Contractor shall also appoint such further supporting personnel as the HSO may from time to time deem necessary or as may be instructed by the Engineer, to permit the HSO to perform his duties.

(d) The HSO shall regularly inspect Temporary Works and certify and label them appropriately to ensure the continuous safe use or, in the event that faults are discovered, certify them as "Not Safe for Use" and prevent access to the Temporary Works until repaired and re-inspected;

(e) The HSO shall inspect Temporary Works upon the completion of the required Permanent Works and before Temporary Works are dismantled, demolished and removed accompanied by the Contractor's Temporary Works specialist staff specified in JSSS 1.37 [*Design and Management of Temporary Works*] as appropriate, and certify that the Permanent Works are completed and the Temporary Works can be safely removed; and

(f) The HSO shall inspect after removal of the Temporary Works to ensure that removal has been completed properly and that no part of the Temporary Works remains, that any rectification of the Permanent Works is completed and all is left in safe order and condition.

(d) The HSO shall regularly inspect Temporary Works and certify and label them appropriately to ensure the continuous safe use or, in the event that faults are discovered, certify them as "Not Safe for Use" and prevent access to the Temporary Works until repaired and re-inspected;

(e) The HSO shall inspect Temporary Works upon the completion of the required Permanent Works and before Temporary Works are dismantled, demolished and removed accompanied by the Contractor's Temporary Works specialist staff specified in JSSS 1.37 [*Design and Management of Temporary Works*] as appropriate, and certify that the Permanent Works are completed and the Temporary Works can be safely removed; and

(f) The HSO shall inspect after removal of the Temporary Works to ensure that removal has been completed properly and that no part of the Temporary Works remains, that any rectification of the Permanent Works is completed and all is left in safe order and condition.

(2) Such further supporting personnel may include Operation Leaders and/or other senior specialist and qualified Contractor's Personnel.
(In this section, supporting staff are TWC and).
The last comments of MD are copied below:
I refer to my comments against JSSS 1.3 and 1.14:
"…. The position and authority of the HSO for the health safety on the Works should not be compromised. Who he requires assistance from is really his choice and it is dependent upon many factors such as the contractor's organisation, who is available, the general experience, capability and skill level of workers. We or the Engineer should have no interest in who he delegates support to providing the HSO does his job properly."
and "For further understanding, the Contractor's Representative has similar in fact heavier responsibilities but we (nor FIDIC) consider defining which of his staff do what to support him, I do not recommend that we try to do it."
The HSO should remain responsible for maintaining safety at all times; if he delegates and who he delegates to and how they communicate, is his choice and responsibility.
Regarding the management of construction performance, quality, quantity and environmental compliance etc. etc. other persons are independently responsible.
I suggest that the Engineer has no duty to advise or direct the Contractor how to manage his internal affairs and I advise against trying to do this.
In terms of 8.2.(3) JSSS is for safety matters, so the HSO must inspect this and other works to assess that all is safe.
The construction staff must also inspect and give instructions etc for other purposes but surely it is not within the scope of JSSS to advise on that.
Sometimes also, opinions will differ because interests are different, for example the HSO may not allow piling work to start if he perceives any risk to safety.
On the other hand, a construction manager or site engineer may choose to take risks for example to speed up the start if work is running late.
If we state, "the Contractor shall.." this unnecessarily introduces ambiguity to JSSS and I do advise against it.
I suggest that if any change is to be made (which I do not think necessary) it should however be in Chapter 1 which prevails.
All other chapters of JSSS would be better confined to safety and therefore generally refer to HSO.

(6) Safety Plan for TW

The Contractor shall include details of all TW in the Safety Plan to be submitted in accordance with JSSS 1.6 [*Contractor's Safety Plan - Temporary Works*].

6.1.2 Method Statements

Refer to JSSS 1.7 [*Contractor's Method Statements*].

6.1.3 Inspection and Monitoring of TW (JC05)

JC05: モニタリングの要求項目と許容値は契約図書に規定されるべきもので、請負者はそれらを満足する具体的な計画を立て、エンジニアにその同意を求め施工する手順になる。ここの書きぶりは、計測項目やその許容値まで請負者に委ねる様に理解される。強い違和感がある。
Requirements on monitoring and permissible values should be specified in the contract documents, following that, the Contractor shall prepare a concrete plan to get consent by the Engineer and proceed to construction. Present description seems the measurement items and its allowable values are left to the Contractor's discretion. I feel strong sense of discomfort.
NK: 特別な要求事項は Particular Safety Specification(PSS)に規定します。JSSS では請負者が遵守すべき最低限の事項を規定することと致します。unless otherwise specified in the PSSS という規定でコメントに対応し変更します。

(6) Safety Plan for Temporary Works

The Contractor shall include details of all Temporary Works in the Safety Plan to be submitted in accordance with JSSS 1.7 [*Contractor's Safety Plans*].

6.1.2 Method Statements

Refer to JSSS 1.9 [*Contractor's Method Statements*].

6.1.3 Monitoring Impact of Works on Other Properties

This subclause is not only applicable to Temporary Works but also to Excavation, Piling, Earthwork Support, Coffer dams and maybe others and for which the requirements are not stated or not clearly stated.

I have therefore changed the heading as above so that it has wider coverage.

Rather than include separate and repetitive requirements in other Chapters and Sections, for your assistance I have developed this clause as a standard cross reference.

Please refer to my earlier comments on this subject in JSSS 7.2.1 (6) regarding the stipulation of "criteria of allowable values".

I suggest that there is no need to add the wording "regarding the allowable measurement, control values and control limit values," to this subclause.

(6) Safety Plan for Temporary Works

The Contractor shall include details of all Temporary Works in the Safety Plan to be submitted in accordance with JSSS 1.7 [*Contractor's Safety Plans*].

6.1.2 Method Statements

Refer to JSSS 1.9 [*Contractor's Method Statements*].

6.1.3 Monitoring Impact of Works on Other Properties

Special requirements will be specified in Particular Safety Specification(PSS). JSSS specify minimum requirements to be taken by the Contractor. The comments above will be taken in by specifying "unless otherwise specified in the PSSS,…" and modifying the description below.

(1) The Contractor shall prepare a Monitoring Plan as a part of the Method Statement, for the purpose of demonstrating that the particular TW are performing safely, to the designed limits and for the intended purpose.

(2) Monitoring shall be accomplished through regular inspection, measurement and survey.

(3) Where TW are providing structural support to the Permanent Works or to existing buildings, structures, roads, railways, ground, substrata, surfaces, paving and the like that may be affected or potentially affected by the performance of the TW, and unless otherwise stated the ~~Contract~~ (JC06) Particular Safety Specification, the Contractor shall provide and install an instrumentation and recording system that will provide comprehensive, accurate and contemporary or live data with records, showing the performance characteristics of the TW.

JC06: For "unless otherwise stated in the Contract". ????

NK1: The phrases after "unless otherwise stated in the Contract" specifies the minimum requirements for which the Contractor shall take action.
User Guide will describe the Employer shall specify his requirements regarding instrumentation and recording system.

This will (if necessary) be described in the Particular Safety Specification but I recommend that this will be the exception rather than the norm.

For your assistance, I have added to and edited this subclause and added requirements for the Engineer's consent and involvement.

I have also included appropriate cross reference to this subclause in Chapter 7 and 8 Excavation and Piling

(1) The Contractor shall monitor the Temporary Works to demonstrate that they are performing safely, to the designed limits and for the intended purpose.

(2) The Contractor shall also monitor any vibration, settlement and other potentially damaging effects arising out of the execution of the Works to ascertain if these are causing any adverse effect to ground, buildings, structures and other properties, paved areas, roads, footpaths, fences, railways, waterways, drainage, utilities or any other property on the Site or outside the Site (collectively referred to in this Section as "other properties") to ensure that no damage or weakening is caused to such other properties.

(3) Monitoring shall be accomplished by the Contractor through regular inspection, measurement and survey and instrument monitoring and recording as determined by the nature and scope of the Works or as required by the Particular Safety Specification.

(4) Works that require monitoring shall include the following where any risk of damage is perceived by the HSO or Engineer:

(a) Excavation Works (including Blasting Works);

(b) Foundation Piling Works;

(c) Ground improvement;

(d) Temporary ~~ground~~ dewatering in underground; (NK: deleted.)

(e) Temporary Works such as major items of Earthwork Support, Coffer Dams and the like; to demonstrate that they are performing safely, to the designed limits and for the intended purpose;

(f) Other parts of the Works required to evidence the Contractor's compliance with the Contract; and

(g) Other parts of the Works which may be specified in the Particular Safety Specification.

(5) The Contractor shall prepare a monitoring plan as a part of the Safety Plan for the above Works which shall describe:

(a) The Contractor's proposed maximum monitoring criteria for vibration, settlement and all other potential effects of the ~~Excavation~~ Works, which by the Contractor's own calculations will ensure that no damage or weakening is caused to other properties; (NK: deleted.)

(for Reference) Weaken: meaning and example of use
https://dictionary.cambridge.org/dictionary/english/weaken?q=weakening
means to (cause to) become less strong, powerful, determined, or effective: e.g.
We know that prolonged exposure to vibration can weaken aircraft components.

(b) The types, locations and numbers of monitoring instruments and other equipment;

(c) The measurement frequency and recording methods; and

(1) The Contractor shall monitor the Temporary Works to demonstrate that they are performing safely, to the designed limits and for the intended purpose.

(2) The Contractor shall also monitor any vibration, settlement and other potentially damaging effects arising out of the execution of the Works to ascertain if these are causing any adverse effect to ground, buildings, structures and other properties, paved areas, roads, footpaths, fences, railways, waterways, drainage, utilities or any other property on the Site or outside the Site (collectively referred to in this Section as "other properties") to ensure that no damage or weakening is caused to such other properties.

(3) Monitoring shall be accomplished by the Contractor through regular inspection, measurement and survey and instrument monitoring and recording as determined by the nature and scope of the Works or as required by the Particular Safety Specification.

(4) Works that require monitoring shall include the following where any risk of damage is perceived by the HSO or Engineer:

(a) Excavation Works (including Blasting Works);

(b) Foundation Piling Works;

(c) Ground improvement;

(d) Temporary dewatering in underground;

(e) Temporary Works such as major items of Earthwork Support, Coffer Dams and the like; to demonstrate that they are performing safely, to the designed limits and for the intended purpose;

(f) Other parts of the Works required to evidence the Contractor's compliance with the Contract; and

(g) Other parts of the Works which may be specified in the Particular Safety Specification.

(5) The Contractor shall prepare a monitoring plan as a part of the Safety Plan for the above Works which shall describe:

(a) The Contractor's proposed maximum monitoring criteria for vibration, settlement and all other potential effects of the Works, which by the Contractor's own calculations will ensure that no damage or weakening is caused to other properties;

(b) The types, locations and numbers of monitoring instruments and other equipment;

(4) ~~Requirements for instrumentation systems shall be as follows:~~ Unless otherwise stated in the Particular Safety Specification regarding the instruments and measurement methods, locations and structures, and numbers of measurement points, requirements for instrumentation systems shall be as follows: (JC07)

(d) The countermeasures to be applied when the actual measured values are close to or exceed the various minimum, intermediate and maximum criteria.

(6) The Contractor shall:

(a) Provide and maintain all survey equipment, monitoring and recording equipment to provide comprehensive, accurate and contemporary or live data with records, showing the performance characteristics of the Temporary Works;

(b) Provide qualified staff to perform the monitoring;

(c) Maintain and calibrate the monitoring equipment as necessary throughout the execution of the Works;

(d) Perform survey and monitoring on a regular basis throughout the execution of the Works;

(e) Confirm the occurrence and extent of any adverse impact of the Works execution by means of regular inspections of all other properties;

(f) Take the measures prescribed when necessary to comply with the Contractor's obligations, propose remedial measures and implement such measures after receiving the consent of the Engineer;

(g) Evaluate the measurement results and modify the monitoring criteria as necessary; and

(h) Submit an evaluation report if necessary with any changes to the Safety Plan for ~~Excavation~~ Works to the Engineer before proceeding with the ~~Excavation~~ Works. (NK: deleted.)

The following has been edited and included above:

~~(6) The Contractor shall prepare a Monitoring Plan as a part of the Method Statement, for the purpose of demonstrating that the particular Temporary Works are performing safely, to the designed limits and for the intended purpose.~~

~~(7) Monitoring shall be accomplished through regular inspection, measurement and survey.~~

~~(8) Where Temporary Works are providing structural support to the Permanent Works or to ground, foundations, buildings, structures, roads, railways, waterways, paved areas or any other property, either on or outside the Site that may be affected or potentially affected by the performance of the Temporary Works, and unless otherwise specified in the Particular Safety Specification, the Contractor shall provide and install an instrumentation and recording system that will provide comprehensive, accurate and contemporary or live data with records, showing the performance characteristics of the Temporary Works.~~

(9) Requirements for instrumentation systems shall be as follows:

(c) The measurement frequency and recording methods; and

(d) The countermeasures to be applied when the actual measured values are close to or exceed the various minimum, intermediate and maximum criteria.

(6) The Contractor shall:

(a) Provide and maintain all survey equipment, monitoring and recording equipment to provide comprehensive, accurate and contemporary or live data with records, showing the performance characteristics of the Temporary Works;

(b) Provide qualified staff to perform the monitoring;

(c) Maintain and calibrate the monitoring equipment as necessary throughout the execution of the Works;

(d) Perform survey and monitoring on a regular basis throughout the execution of the Works;

(e) Confirm the occurrence and extent of any adverse impact of the Works execution by means of regular inspections of all other properties;

(f) Take the measures prescribed when necessary to comply with the Contractor's obligations, propose remedial measures and implement such measures after receiving the consent of the Engineer;

(g) Evaluate the measurement results and modify the monitoring criteria as necessary; and

(h) Submit an evaluation report if necessary with any changes to the Safety Plan for Works to the Engineer before proceeding with the Works.

(7) Requirements for instrumentation systems shall be as follows:

JC07: 契約図書において指示されるものではないか。コントラクターの裁量に委ねているように読めないか
(The above comment in English is recorded in MM below.)

MM: JICA: Isn't that specified in the Contract Document series? At present, the description is left to the Contractor's discretion. Is it no problem?

NK: We will change the documents so that Employer specifies his requirements for instrumentation and monitoring of property outside the Site and Engineer's involvement with instrumentation and monitoring of Contractor's work within the Site.

Result: NK approach agreed, Date san will provide hard copy of example.

(a) The Contractor shall select instruments and measurement methods that meet the purpose of the measurement;

(b) The Contractor shall determine locations and numbers of measurement points which meet the purpose of measurement and need for safety management. The locations of measurement shall be where measurement can be continuously made throughout the period of earth retaining works are provided;

(c) The instrumentation shall be regularly calibrated and protected against damage by the Contractor;

(d) The HSO~~, TWC~~ (JC08) and other relevant Contractor's Personnel shall monitor the data and take all necessary corrective action consequent to such monitoring to ensure the continued complaint and safe performance of all TW; and

JC08: 削除すべき。To delete "TWC".
NK: deleted.

(e) The Engineer shall be invited to attend the inspections and data collection to ensure the Contractor's compliance in accordance JSSS 1.8 [Engineer's Safety Representative], JSSS 1.9 [Safety Compliance Instructions from the Engineer] and JSSS 1.14 [Joint Site Safety Inspections].

(5) Management based on Monitoring and Inspection (JC09)

JC09: 計器計測をするものは発注者が関わるべきもの　Annex1.3 で指定のものについては…といった書き方にする。(This comment is recorded below.)

MM: JC: As for measurement using instruments, the Employer should be involved. Thus, change the description to "What is specified in Annex 1.3 ...".
NK: NK stated the Employer will be, this will be specified.
Result: See above

(a) Management by Visual Inspection

If and when the Contractor finds any abnormality through visual inspection, the Contractor shall take necessary measures in accordance with the degree of abnormality, including verification of inspection results through measurement, survey or added instrumentation and the implementation of urgent countermeasures.

(b) Management by Instrument Measurement (JC10&11)

JC10: やはり、計器によって計測をする仮設構造物は少なく、重要仮設であることが殆どなので、エンジニアの役割を記載したい。コントラクターが計測計画を作成しエンジニアに提出し、計測ウォーニングレベルを協議の上で設定するのがいいのでは。
There are few temporary structures which monitoring shall be made with instruments, and most of them are important temporary structures, so I want to

(a) The Contractor shall select instruments and measurement methods that meet the purpose of the measurement;

(b) The Contractor shall determine locations and numbers of measurement points which meet the purpose of measurement and need for safety management. The locations of measurement shall be where measurement can be continuously made throughout the period of ~~earth retaining~~ works are provided; (NK: modified.)

(c) The instrumentation shall be regularly calibrated and protected against damage by the Contractor;

(d) The HSO and other relevant Contractor's Personnel shall monitor the data and take all necessary corrective action consequent to such monitoring to ensure the continued compliant and safe performance of all Temporary Works; and

(e) The Engineer shall be invited to attend the inspections and data collection to ensure the Contractor's compliance in accordance JSSS 1.10 [*Engineer's Safety Representative*], JSSS 1.11 [*Safety Compliance Instructions from the Engineer*] and JSSS 1.16 [*Joint Site Safety Inspections*].

(10) Management based on Monitoring and Inspection

(a) Management by Visual Inspection:

If and when the Contractor finds any abnormality through visual inspection, the Contractor shall take necessary measures in accordance with the degree of abnormality, including verification of inspection results through measurement, survey or added instrumentation and the implementation of urgent countermeasures.

(b) Management by Instrument Measurement:

The wording of the following clause is correct there is no need to add the wording "regarding the allowable measurement, control values and control limit values,".

This will (if necessary) be described in the Particular Safety Specification but I recommend that this will be the exception rather than the norm.

(a) The Contractor shall select instruments and measurement methods that meet the purpose of the measurement;

(b) The Contractor shall determine locations and numbers of measurement points which meet the purpose of measurement and need for safety management. The locations of measurement shall be where measurement can be continuously made throughout the period of works are provided;

(c) The instrumentation shall be regularly calibrated and protected against damage by the Contractor;

(d) The HSO and other relevant Contractor's Personnel shall monitor the data and take all necessary corrective action consequent to such monitoring to ensure the continued compliant and safe performance of all Temporary Works; and

(e) The Engineer shall be invited to attend the inspections and data collection to ensure the Contractor's compliance in accordance JSSS 1.10 [*Engineer's Safety Representative*], JSSS 1.11 [*Safety Compliance Instructions from the Engineer*] and JSSS 1.16 [*Joint Site Safety Inspections*].

(8) Management based on Monitoring and Inspection

(a) Management by Visual Inspection:

If and when the Contractor finds any abnormality through visual inspection, the Contractor shall take necessary measures in accordance with the degree of abnormality, including verification of inspection results through measurement, survey or added instrumentation and the implementation of urgent countermeasures.

(b) Management by Instrument Measurement:

stipulate the role of the Engineer in JSSS. My suggestion is as follows;
The Contractor shall prepare the monitoring plan, submit it to the Engineer, and set the warning monitoring level by consulting with the Engineer.

JC11: 契約図書に、計測すべき対象構造物・計測方法と許容計測値が規定されるべき。
The contract documents shall stipulate the structures to be monitored, the measurement method, and the allowable measurement values.

MM: Sub-Clause 7.1.3 (5) (b) Management by Instrument Measurement
JICA:1) Involvement of Engineer and
2) The contract documents should stipulate the target structure to be measured, the measurement method, and the allowable measurement values.
NK: Documents will be studied and if necessary changes made to include appropriate reference. Changes must be carefully worded to avoid any effect to the Contractor's basic responsibility under the Contract otherwise JICA may have a liability

JICA: The Engineer should be involved in the review process.
NK: Yes, see above but it needs careful wording to avoid any effect on the contractor's liability otherwise JICA may have a liability
(Same answer applies to the many references to this subject)
Result: See above

JICA: If the affected third-party structures and affected areas are included, shouldn't the Engineer (or the Employer in some cases) be strongly involved?
NK: Yes, see above, will be added to documents (in user guide).
Result: See above

Unless otherwise stated in the ~~Contract~~ Particular Safety Specification, regarding the allowable measurement, control values and control limit values, the Contractor shall determine control limit values based initially upon the allowable displacement or stress in the design, then the following stepwise control values shall be established as necessary.

(i) Primary control value:

Increase the incidence and degree of care over inspections and commence preparing countermeasures which will be implemented if and when the measurement value reaches the secondary control value.

(ii) Secondary control value:

Suspend work and implement the countermeasures.

(iii) Control limit value

Stop work immediately, prohibit entry of any unauthorised persons to the affected area(s), (JC12) take radical measures to prevent failure and review construction method. (JC13)

JC12: 影響を与えた第三者の構造物・affected area も含むとすると、エンジニア(場合によっては発注者)が強く関与すべきではないか。
If the affected third-parties' structures and affected areas are included, shall the Engineer (or the Employer in some cases) be strongly involved?
NK1:計測値の報告を追加で規定します。
Reporting of measured is added as right.

JC13: review においてもエンジニアが関与すべき。

I have edited the clause and added requirements for the Engineer's consent and involvement:

Unless otherwise specified in the Particular Safety Specification, the Contractor shall determine control limit values based initially upon the allowable displacement or stress in the design, then the following stepwise control values shall be established by the Contractor and necessary actions taken:

(i) Primary control value:

When this value is reached, the Contractor shall increase the incidence and degree of care over inspections and commence preparing countermeasures which will be implemented if and when the measurement value reaches the secondary control value and obtain the Engineer's consent for such countermeasures.

The Contractor shall submit the measured values on a weekly basis to the Engineer unless otherwise instructed by the Engineer.

(ii) Secondary control value:

When this value is reached and unless otherwise instructed by the Engineer, the Contractor shall stop the relevant part of the Works and implement the countermeasures.

(iii) Control limit value:

When this value is reached, the Contractor shall immediately stop the relevant part of the Works, advise all affected persons, prohibit entry of any unauthorised persons to the affected area(s), take radical measures to prevent failure, review and revise the Method Statement and Safety Plan, and comply with the Engineer's Instructions before proceeding.

The following has been edited and included above:

~~When the measured value reaches each of the above control values, the Contractor shall implement the measures stated.~~

Unless otherwise specified in the Particular Safety Specification, the Contractor shall determine control limit values based initially upon the allowable displacement or stress in the design, then the following stepwise control values shall be established by the Contractor and necessary actions taken:

(i) Primary control value:

When this value is reached, the Contractor shall increase the incidence and degree of care over inspections and commence preparing countermeasures which will be implemented if and when the measurement value reaches the secondary control value and obtain the Engineer's consent for such countermeasures.

The Contractor shall submit the measured values on a weekly basis to the Engineer unless otherwise instructed by the Engineer.

(ii) Secondary control value:

When this value is reached and unless otherwise instructed by the Engineer, the Contractor shall stop the relevant part of the Works and implement the countermeasures.

(iii) Control limit value:

When this value is reached, the Contractor shall immediately stop the relevant part of the Works, advise all affected persons, prohibit entry of any unauthorised persons to the affected area(s), take radical measures to prevent failure, review and revise the Method Statement and Safety Plan, and comply with the Engineer's Instructions before proceeding.

Engineers should be involved in the review.
NK1: added.

The Contractor shall submit the measured values of (i) weekly or as agreed by the Engineer and those of (ii) and (iii) immediately after measured to the Engineer.

When the measured value reaches each of the above control values, the Contractor shall implement the measures stated and report to the Engineer.

The Contractor shall submit the revised Method Statement including the reviewed construction method to the Engineer.

6.1.4 Compliance Standards (JC14)

(1) By reference to JSSS 1.35 [*Design and Management of Temporary Works*] the Contractor shall comply with BS5975: 2019 Code of Practice for Temporary Works Procedures and the Permissible Stress Design of Falsework.

(2) In relation to TW, the Contractor shall also comply with: (JC15)

(a) BS EN 12811-1 Temporary works equipment-Part 1: Scaffolds - Performance requirements and general design;

(b) BS EN 12812 Falsework. Performance requirements and general design; and

(c) Such other standards that are referred to in particular parts of JSSS.

(3) ~~Where strength and durability are essential for the performance of TW and where no other suitable standards exist in respect of TW, the Contractor shall comply with the relevant parts of the following standards~~: (JC15)When the Contractor design TW with design standards other than specified in the JSSS and the Particular Safety Specification, the Contractor shall propose internationally acceptable design standards to be applied for TW design to the Engineer for his consent.

JC14, MM: Sub-Clause 7.1.4 Compliance standards
MD note: Please refer to the earlier full draft and kindly advise of which standards are NOT to apply.
Result: JICA and NK will discuss and advise MD accordingly

JC15: ここをどうする？
How does this part these (2) and (3) be dealt with?

~~The Contractor shall submit the measured values of (i) weekly or as agreed by the Engineer and those of (ii) and (iii) immediately after measured to the Engineer.~~

~~When the measured value reaches each of the above control values, the Contractor shall implement the measures stated and report to the Engineer.~~

~~The Contractor shall submit the revised Method Statement including the reviewed construction method to the Engineer.~~

I suggest that the following clause be added to ensure that the contract requirements are clear and that no ambiguity exists. Please note also that this is based upon the sample (Hong Kong MTR) provided by JICA.

(11) Contract Compliance

Notwithstanding the requirements of this subclause of JSSS, the Contractor is reminded of his overall responsibility under the Contract in respect of damage to property.

The Contractor shall satisfy himself that the monitoring criteria and requirements specified above, or in other respective Chapters of JSSS and/or in the Particular Safety Specification, are sufficient to comply with his obligations under the Contract and he shall take any additional measures necessary to avoid damage to property.

6.1.4 Compliance Standards

(1) By reference to JSSS 1.37 [*Design and Management of Temporary Works*] and unless otherwise specified in the Particular Safety Specification, the Contractor shall comply with BS5975: 2019 Code of Practice for Temporary Works Procedures and the Permissible Stress Design of Falsework.

(2) In relation to Temporary Works, the Contractor shall also comply with:

(a) BS EN 12811-1 Temporary works equipment-Part 1: Scaffolds - Performance requirements and general design;

(b) BS EN 12812 Falsework. Performance requirements and general design; and

(c) Such other standards that are referred to in particular parts of JSSS.

~~(3) Where strength and durability are essential for the performance of TW and where no other suitable standards exist in respect of TW, the Contractor shall comply with the relevant parts of the following standards: When the Contractor design TW with design standards other than specified in the JSSS and the Particular Safety Specification, the Contractor shall propose internationally acceptable design standards to be applied for TW design to the Engineer for his consent~~

There is no need for the above original clause because of the comment received and also no need for the additional wording as this is covered by JSSS 1.4.5, 1.4.6 and 1.4.7

~~6.1.1 Specialist Temporary Works~~

~~(4) All Temporary Works (including systems or components thereof)~~

(9) Contract Compliance

Notwithstanding the requirements of this subclause of JSSS, the Contractor is reminded of his overall responsibility under the Contract in respect of damage to property.

The Contractor shall satisfy himself that the monitoring criteria and requirements specified above, or in other respective Chapters of JSSS and/or in the Particular Safety Specification, are sufficient to comply with his obligations under the Contract and he shall take any additional measures necessary to avoid damage to property.

6.1.4 Compliance Standards

(1) By reference to JSSS 1.37 [*Design and Management of Temporary Works*] and unless otherwise specified in the Particular Safety Specification, the Contractor shall comply with BS5975~~: 2019~~ Code of Practice for Temporary Works Procedures and the Permissible Stress Design of Falsework.

(2) In relation to Temporary Works, the Contractor shall also comply with:

(a) BS EN 12811-1 Temporary works equipment-Part 1: Scaffolds - Performance requirements and general design;

(b) BS EN 12812 Falsework. Performance requirements and general design; and

(c) Such other standards that are referred to in particular parts of JSSS.

JC15: BS 8002 において temporary retaining wall (TRW)設計を除外するとは規定されていないように読めます。
さらに、TRW は市街地の土木作業においては、隣接した第三者の構造物（建築、土木構造物）を含む土質基礎部分をサポートすることも容易に想定され、この時 BS 5975 でカバーしきれるものでしょうか？
BS 8002 が参照する BS EN 1990-2002 の Geotechnical Category の概念も重要になるのではないでしょうか。
また、場内電気配線／機器も仮設設計に属するものとすると、BS 5975 では対応していません。ご検討ください。
以上のような視点で記載された standards の必要性においても検討されたい。
BS 8002 seems that it does not stipulate that the design of Temporary Retaining Wall (TRW) is excluded.
In addition, it may be necessary to support the soil including adjacent third-parties' structure foundations (buildings, civil structures) in urban areas. In this case, is it sufficient to refer only to BS 5975? As an example, the concept of the Geotechnical Category of BS EN 1997 referred to by BS 8002 may also be important.
In addition, BS 5975 does not specify electrical wiring / equipment in the Site which are a part of TW design. Please study these. From the view points above, please reconsider the appropriateness of the standards listed.

NK: Main purpose of JSSS is to specify measures for safety. There are so many standards for the design of various kinds of TW. The Contractor shall propose internationally acceptable design standards to be applied for TW design to the Engineer for his consent. (Reference clause is JSSS 1.4.1 copied below.)

1.4.1 Specified Standards and Regulations:

(1) Any reference standard or regulation specified in JSSS may be substituted with an equivalent alternative which, unless stated otherwise, shall mean that an alternative is acceptable but only after the Contractor has submitted a formal request with supporting particulars to the Engineer and has obtained the consent of the Engineer who shall give such consent only if, in his opinion, the alternative is internationally acceptable and that it provides an equivalent or higher standard than the standard or regulation specified.

(2) Where JSSS refers to the standards and regulations of other countries, such reference is only to the technical requirements contained in such standards and regulations and not to the related laws or legal enforceability of any of those other countries.

Refer to above notes particularly the following repeated here:

Unless the stated design standards show standards of related TW they should not be included here otherwise this will be "over-specified" and the specification will perhaps be abused for example by engineers demanding new materials when they are not necessary.

Are these following standards necessary? I have included the above new preamble but feel that the following should be deleted, they are not TW or applicable to TW:

(a) ~~BS 6031 Code of practice for earthworks;~~
(b) ~~BS 8002 Code of practice for earth retaining structures;~~
(c) ~~BS 8002 Code of practice for earth retaining structures;~~
(d) ~~BS 8004 Code of practice for foundations;~~
(e) ~~BS 8081 Code of Practice for grouted anchors;~~
(f) ~~BS EN 1993 (all parts) Eurocode 1. Basis of structural design;~~
(g) ~~BS EN 1992 (all parts) Eurocode 2. Design of concrete structures;~~
(h) ~~BS EN 1993 (all parts) Eurocode 3. Design of steel structures; and~~
(i) ~~BS EN 1997-1 Eurocode 7. Geotechnical design. General rules.~~ (JC16)

~~such as selected types of Earthwork Support, Cofferdams, Scaffolding and the like shall be executed by qualified specialist Contractors or Subcontractors that are appropriately and especially skilled and experienced with the particular type of Temporary Works, using qualified, skilled and experienced personnel with appropriate types and quantities of specialist equipment.~~

~~(5) If the Contractor for the Works is not required to be such a qualified specialist then at Design or Bidding Stage, the Implementing Agency should take measures to procure qualified specialist Subcontractors and then specify or instruct that the work be carried out by nominating such Subcontractors in accordance with GC 5. [*Nominated Subcontractors*] against a Provisional Sum to be included in the Bidding Documents for that purpose.~~

~~(6) If not and unless otherwise stated or named in the Contract, the Contractor should be required to appoint a qualified and specialist Subcontractor, qualification criteria shall be given in the Bidding Document and prior Engineer's consent shall be obtained in accordance with GC 4.4 [*Subcontractors*] for any Subcontractor that meets such criteria.~~

The above was to apply to specialist contractors which may be required for particular proprietary types of TW.

It is deleted based upon JICA/NK instruction

JC16: 殆どの Standard は本設構造の設計に関連する内容なので削除してもいい。
Most Standards above are related to the design of the main structure and may be deleted.
NK: Deleted.

6.1.5 ~~Specialist Temporary Works~~ (JC17&18)

JC17: Is this Clause necessary?
NK1: This clause is deleted because the TW shall be designed and constructed under the responsibility of the Contractor unless otherwise specified to use specialist TW in the Contract, and we don't know the project adopted "specialist contractors" and "nominated contractor" for TW.

MM: Sub-Clause 7.1.5 Specialist Temporary Works
JICA: Necessary or not?
NK: It is intended to cover specialist ground and temporary works.
Please let me know if required or not
Result: Delete not Required

~~(1) Specialist TW (including systems or components thereof) such as types of Earthwork Support, Cofferdams and the like shall be executed by qualified specialist Contractors or Subcontractors that are appropriately and especially skilled and experienced with the particular type of TW, using qualified, skilled and experienced personnel with appropriate types and quantities of specialist equipment.~~

~~(2) If the Contractor for the Works is not required to be such a qualified specialist then at Design or Bidding Stage, the Implementing Agency should take measures to procure qualified specialist Subcontractors and then specify or instruct that the work be carried out by nominating such Subcontractors in accordance with GC 5. [*Nominated Subcontractors*] against a Provisional Sum to be included in the Bidding Documents for that purpose.~~

~~(3) If not and unless otherwise stated or named in the Contract, the Contractor should be required to appoint a qualified and specialist Subcontractor, qualification criteria shall be given in the Bidding Document and prior Engineer's consent shall be obtained in accordance with GC 4.4 [*Subcontractors*] for any Subcontractor that meets such criteria.~~

JC18: GC 5 [Nominated Subcontractors]を採用することに違和感を覚えます。
Implementing Agency はまず Contract Document 作成のコンサルタントにその設計業務を実施させ（従って必要な地質調査・室内試験等も行わせることになり、これが contract Data として開示されることになります）、その結果を入札図書に開示し、応札者にはそれらの情報に基づいて、自らの解釈で設計を行い、実施に当たってはエンジニアの介在が必要になる、と考えています。GC 5 の採用提案は、その設計下請けの設計に対する品質に問題があるとしたとき、発注者に責任が及ぶことも考えられます。
For GC 5. [Nominated Subcontractors] on (2). For using GC 5 [Nominated Subcontractors], something feels wrong with my idea. Because, the Implementing Agency firstly have the consultant who prepares the Contract Document perform the design work and disclose the results in the tender documents. The bidder designs based on this information. The proposal to adopt GC 5 may also be liable to the Employer if there is a problem with the quality of the design subcontracting
NK: Deleted.

6.2 EARTHWORK SUPPORT (JC19)	**6.2 EARTHWORK SUPPORT**	**6.2 EARTHWORK SUPPORT**

JC19: BS8002: Code of practice for earth retaining structures では、”Earth Retaining Structure”と記載している。[Temporary Earth Retaining Structure]とすればどうか。
BS 8002 stated "Earth Retaining Structure". How about calling it as [Temporary Earth Retaining Structure]?

MM: 7.2 EARTHWORK SUPPORT
JICA: How about calling it “Temporary” Earth Retaining Structure? (Same for Cofferdam),
NK: Change will be made.
Result: No need to change (see also the definition below)
Definition:
A1.1.2
(7) “Earthwork Support” means the permanent or temporary structural support arrangements to prevent the collapse or weakening of the surfaces of any excavation including for example basement, pit, trench or slope excavation.

6.2.1 General

(1) Refer to JSSS Annex 1.1:[*Definitions and Abbreviations*] for the definition of Earthwork Support.

(2) The Contractor must protect the structural integrity of ground, buildings, structures, roads, railways, waterways, services and adjacent surfaces that may be affected by excavation or Earthwork Support works and ensure the safety of all persons, whilst they are working in, under or adjacent to any excavation and the avoidance of any damage to property.

(3) Earthwork Support (JC20) can include for example the provision of:

JC20: Capital Letter ではない。
It should not be capitalized term.
NK: Defined in A1.1.2, so capitalized.

(a) Timberwork including sheeting, planking, strutting and support systems;

(b) Steel sheet piling including shoring, strutting and support systems;

(c) Specialist support systems such as diaphragm walling, steel pipe piling, contiguous piling, soldier piling and lagging, and the like;

(d) Sloping or battering sides of excavations; and

(e) Ground improvement, slope stabilisation, injection, ground freezing and the like.

(f) Ground Anchor (JC21)

JC21: (f)Ground Anchor が必要かと考えます。I think (f) is necessary.
NK: Add as commented.

MM(20200220) : 2. 英文第 8 章土工工事
(2) 深さ 1.5m 以上の掘削では、原則土留め工を設置することを規定する。
2. Chapter 8 Excavation Works
(2) In principle, excavation more than 1.5m high shall be specified to provide earth retaining.
NK: Added as (4)

(4) The Contractor shall provide earth retaining for the excavation equal to or deeper than 1.5 m in principle other than the case that excavation can be made with safe slopes depending on the soil conditions.

JICA/NK: Please note that there are no specified compliance standards (OSHA or HSE) for either this Section 6.2 or Excavation in Chapter 7, therefore either this needs to be added or you need to assure yourselves that these requirements are complete and comprehensive. From my own review this does appear to be comprehensive.

6.2.1 General

(1) Refer to JSSS Annex 1.1:[*Definitions and Abbreviations*] for the definition of Earthwork Support.

(2) The Contractor shall maintain the structural integrity of ground, buildings, structures, roads, railways, waterways, services and surface paving and the like that can be affected by Excavation Works and shall provide and maintain whatever Earthwork Support is necessary to comply with this requirement and ensure the safety of all persons that are in, under or adjacent to any excavation and to avoid any damage to persons and property on or outside the Site.

(3) Earthwork Support shall include for example the provision of:

(a) Timberwork including sheeting, planking, strutting and support systems;

(b) Steel sheet piling including shoring, strutting and support systems;

(c) Specialist support systems such as diaphragm walling, steel pipe piling, contiguous piling, soldier piling and lagging, and the like;

(d) Ground improvement, slope stabilisation, injection, ground freezing and the like; and

(e) Ground Anchors

The following has been added by JICA/NK via their comment.

Please refer to my comment against JSSS 7.2.1 (5) and also 7.5.1 and note that for reasons given there, I do not recommend that this OSHA requirement be added here, hence the deletion here and elsewhere in Chapter 7:

MD comment against 7.2.1 (5) ((4)?) : See above, all sides shall be supported, even a 1m excavation can cause 13stabilization and danger.

Comment against 7.5.1: (1)When performing trench excavation with depth of 1.5m or more, adequate and stable Earthwork Support shall be provided.; and

The above is not recommended as it conflicts with other clauses, please refer to earlier notes. It is deleted here and dealt with in Section 6.2 (6.3?).

~~(4) The Contractor shall provide earth retaining for the excavation equal to or deeper than 1.5 m in principle other than the case that excavation can be made with safe slopes depending on the soil conditions.~~

As an exception something like the following might be permissible but I am really not comfortable and do not recommend even this:

6.2.1 General

(1) Refer to JSSS Annex 1.1:[*Definitions and Abbreviations*] for the definition of Earthwork Support.

(2) The Contractor shall maintain the structural integrity of ground, buildings, structures, roads, railways, waterways, services and surface paving and the like that can be affected by Excavation Works and shall provide and maintain whatever Earthwork Support is necessary to comply with this requirement and ensure the safety of all persons that are in, under or adjacent to any excavation and to avoid any damage to persons and property on or outside the Site.

(3) Earthwork Support shall include for example the provision of:

(a) Timberwork including sheeting, planking, strutting and support systems;

(b) Steel sheet piling including shoring, strutting and support systems;

(c) Specialist support systems such as diaphragm walling, steel pipe piling, contiguous piling, soldier piling and lagging, and the like;

(d) Ground improvement, slope stabilisation, injection, ground freezing and the like; and

(e) Ground Anchors

(4) Without prejudice to the Contractor’s overriding obligations as specified above, the requirements for providing Earthwork Support

6.2.2 Planning and Design

Unless otherwise stated in the Contract, the Contractor shall design all Earthwork Support so that it is fit for the purpose for which it is intended and take account of all factors including:

NK: (2)から(4)の規定に対し、JC で“発注者が指定すべき”とコメントあります。(2)から(4)は設計上考慮すべき項目を列挙しています。これらは、GC4.18 の具体的項目です。

JICA commented to specify places, values, etc. in (2) to (4) by the Employer. The (2) to (4) below specify items to be taken into consideration in the design. These are concrete items for GC 4.18 below.

GC4.18 Protection of the Environment

The Contractor shall take all reasonable steps to protect the environment (both on and off the Site) and to limit damage and nuisance to people and property resulting from pollution, noise and other results of his operations.

コメントに対応するために、(6)に Particular Safety Specification の規定を設計に考慮することを追記します。

Added (6) to include the above comments.

(1) All relevant site data (JC22) which may have been provided by the Employer in the Bidding Documents and any relevant site information that the Contractor has encountered or obtained during the execution of the Works together with all necessary further information as to risks, contingencies and other circumstances which the Contractor shall be deemed to have obtained in accordance with GC 4.10 [*Site Data*].(JC22)

JC22: 入札時点の Site Information だけしか記載されていない。”Any relevant site information that the Contractor has encountered or obtained during the execution of the Works”を追記しては。(Comment in English is in MM below.)

MM: Sub-Clause 7.2.2. Planning and Design

JICA: Only site information at the time of bidding is described. How about adding “Any relevant site information that the contractor has encountered or obtained during the execution of the Works”.

NK: Other investigation is necessary after commencement and this will be added

Result: NK to add further requirements deriving from Contractor’s further studies since commencement.

(2) Ground water level (JC23)and potential of liquefaction, boiling or piping, heave and the like and the prevention of any damaging effect upon excavations and Earthwork Support.(JC24)

JC23: 地下水位の低下が可能か否か、これは発注者が指定すべき。

Whether or not the groundwater level can be lowered shall be specified by the Employer.

NK: 本款の序文で請負者が設計で考慮すべき事項は次であるとして(1)以下を規定している。ここで地下水位を下げて良いとは規定していない。考慮すべ

(4) Without prejudice to the Contractor’s overriding obligations as specified above, the requirements for providing Earthwork Support may be waived by the HSO for the following excavations which have been inspected at the Site by the HSO and judged by him to be safe, stable and free from any risk of movement or collapse:

To MD, the above (4) seems too contractual stipulation. Is it possible to specify it more understandable for people at the Site?

(a) Excavation in rock; and

(b) Excavation less than 1.5 m deep.

(5) For sloping or benched sides to excavations (in lieu of Earthwork Support), refer to JSSS 7.2.1 (3) [*Excavation Work - Particular Safety Measures*]

6.2.2 Planning and Design

The Contractor shall design all Earthwork Support so that it is fit for the purpose for which it is intended and take account of all factors including:

(1) All relevant site data which may have been provided by the Employer in the Bidding Documents and any relevant site information that the Contractor has encountered or obtained during the execution of the Works, together with all necessary further information as to risks, contingencies and other circumstances which the Contractor shall be deemed to have obtained in accordance with GC 4.10 [*Site Data*].

Although it is not necessary (as it follows anyway), the above wording has been added as per comment given

(2) Ground water and potential of liquefaction, boiling or piping, heave and the like and the prevention of any damaging effect upon excavations and Earthwork Support.

It is not correct to add “level” above as the Contractor must take account of the existence and all effects of any ground water, e.g. its nature, pressure, flow etc

may be waived by the HSO for the following excavations which have been inspected at the Site by the HSO and judged by him to be safe, stable and free from any risk of movement or collapse:

(a) Excavation in rock; and

(b) Excavation less than 1.5 m deep.

(5) For sloping or benched sides to excavations (in lieu of Earthwork Support), refer to JSSS 7.2.1 (3) [*Excavation Work - Particular Safety Measures*].

6.2.2 Planning and Design

The Contractor shall design all Earthwork Support so that it is fit for the purpose for which it is intended and take account of all factors including:

(1) All relevant site data which may have been provided by the Employer in the Bidding Documents and any relevant site information that the Contractor has encountered or obtained during the execution of the Works, together with all necessary further information as to risks, contingencies and other circumstances which the Contractor shall be deemed to have obtained in accordance with GC 4.10 [*Site Data*].

(2) Ground water and potential of liquefaction, boiling or piping, heave and the like ~~and~~ for the design of and the prevention of any damaging effect upon excavations and Earthwork Support. (NK: Added.)

き事項の一つが地下水である。記述は変更しない。ただし、地下水位とするために Ground water level へ変更します。
The first sentence mentioned to take account of all factors including (1) and others. There is not mentioned whether ground water level can be lowered. One of factors to be considered is ground water level. The term of ground water is replaced with ground water level.

JC24: これも発注者が規定すべき。
These shall also be stipulated by the Employer.
NK: これらの項目は、設計上考慮すべき事項であることから、(6)を追記します。
This is items to be considered, so added (6).

(3) Affect by the Earthwork Support (JC25) on existing buildings, structures, roads, railways, ground, substrata, surfaces, paving and the like such as displacement, heave or groundwater fluctuation.

JC25: 発注者が許容値を規定すべき。
The Employer shall specify the allowable value.
NK: Ditto as (2).

(4) Vibration from site operations (e.g. piling) or adjacent traffic or railways and the like. (JC26)

JC26: 発注者が許容値を規定すべき。
The Employer shall specify the allowable value.
NK: Ditto as (2).

(5) Access and working space (JC27) necessary to execute the Permanent Works.

JC27: GC 4.13 Rights of Way and Facilities の初めの文節において、発注者が準備するべき。また、"Site"は working areas も含めて、発注者が準備するべき。
In the first clause of GC 4.13 Rights of Way and Facilities, it shall be prepared by the Employer. Also, "Site" shall be prepared by the Employer, including working areas.
NK1: (5)は設計で考慮すべき項目である。契約で提供された現場内でどのように土留めを行うかのために、アクセスと作業スペースを考慮することと規定しており、変更する必要は無いと考えます。
(5) specifies two factors to be taken account in the design. Those shall be designed in the Site provided by the Employer. We consider not necessary to modify (5).

(6) Values of ground water level fluctuation , vibration, displacement and other damage and nuisance to people, property and existing structures, etc. not to exceed specified in the Particular Safety Specification.

(3) The effect by the Earthwork Support on existing buildings, structures, roads, railways, ground, substrata, surfaces, paving and the like such as displacement, heave or groundwater fluctuation.

(4) Vibration from site operations (e.g. piling) or adjacent traffic or railways and the like.

(5) Access and working space necessary to execute the Permanent Works.

~~(6) Values of ground water level fluctuation , vibration, displacement and other damage and nuisance to people, property and existing structures, etc. not to exceed specified in the Particular Safety Specification.~~

NK2: JICA コメントにもとづき上記(6)の追記を提案し、MD 氏と交信しました。MD 氏から、FIDIC GC4.10 及び 17.1、Hong Kong MTR の CC2.1.9 を参照し、GC の原則である請負者はどの建物へも被害を起こさない責務を厳守すべきであり、発注者に責任が生じる許容値を規定する(6)追記はすべきでないと、下記のように助言しています。
NK は MD 氏の下記の助言に同意し、(6)の追記は提案しないことに致しました。

MD's Comments is as follows on allowable values proposed in (6):

I disagree with the addition of the above subclause. Please refer to GC 4.10 under which the Employer shall make available "all relevant data in the Employer's possession on sub-surface and hydrological conditions at the Site" (underline added).

(3) The effect by the Earthwork Support on existing buildings, structures, roads, railways, ground, substrata, surfaces, paving and the like such as displacement, heave or groundwater fluctuation.

(4) The effect by vibration from site operations (e.g. piling) on existing buildings, structures, roads, railways, ground, substrata, surfaces, paving and the like. ~~or adjacent traffic or railways and the like.~~ (NK: modified.)

(5) Access and working space necessary to execute the Permanent Works.

	It remains however entirely the risk and responsibility of the contractor to interpret such data (if any is made available) and to then determine what effect this will have upon the manner in which he performs the Works. *GC 4.10 also states:* *"To the extent which was practicable (taking account of cost and time), the Contractor shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances which may influence or affect the Tender or Works. To the same extent, the Contractor shall be deemed to have inspected and examined the Site, its surroundings, the above data and other available information, and to have been satisfied before submitting the Tender as to all relevant matters, including (without limitation):* *(a) the form and nature of the Site, including sub-surface conditions,* *(b) the hydrological and climatic conditions,* *etc.* *It is incorrect and even dangerous contractually to state that Earthwork Support (which is the subject of this section and completely the responsibility of the Contractor) should have any allowable tolerances or that any allowable margins of "damage and nuisance to people, property and existing structures, etc. (whatever that may actually mean), is acceptable or is contractually or legally supportable.* *This has little if anything to do with safety and I am sure unintentionally, appears aimed only for the benefit of the contractor.* *I do not recommend the inclusion and have therefore deleted this addition.* *Please also refer to my notes on potential damage to other properties caused by excavation, blasting and piling.* MD's comment in Chapter 7 Excavation Works, 7.2 PARTICULAR SAFETY MEASURES 7.2.1 General (6) *The original text of the above clause has been suggested to be revised by JICA/NK as follows:* The Contractor shall execute all Excavation Works and associated filling, backfilling and support work so that the criteria of allowable values specified in the Contract (see the Particular Safety Specification) or instructed by the Engineer to avoid adverse effects to surrounding areas and buildings, including existing foundations, structures, roads, paved areas or the like, by excavation are to be respected. In this regard, the Contractor shall take all necessary measures to prevent the occurrence of such adverse effects by designing and providing permanent or temporary supports and reinforcement before commencing Excavation Works. *I do not recommend that the above change be made for the following reasons:* *The essential basis of the Contract (and the rule of Law in most countries) is that the Works shall be executed by the Contractor without causing any damage at all to neighbouring properties.* *If any damage is caused then the Employer is open to claim for repairing such damage from adjacent owners and for which the Contractor should be liable subject to the requirements of the Contract.* *FIDIC GC 17.1 (b) applies.* *Insurance may also be compromised if not handled properly under GC 18.3.(d)*	

	(ii). *The added text to this clause is not necessary, it confuses any meaning and implies that there is some flexibility i.e. that some damage or "adverse effect" is acceptable if it falls within "allowable values" when as a common basis this is not correct.* *If anything, it would be better to state as originally drafted namely as a common default the Contractor shall cause NO damage to surrounding areas and buildings, etc. etc.. when performing the Works, as this is the usual legal and contractual obligation of the Contractor.,* *I recommend that the default situation should be that the Contractor is instructed as a general rule via JSSS to set up and manage monitoring to ensure his compliance (i.e. that damage does not occur), This is in principle as the earlier draft of JSSS.* *This will require further development of the contractor's monitoring requirements and I have drafted a new clause 7.5.3 to deal with this.* *In any exceptional rare case for example on large projects in congested areas and where damage is likely and unavoidable then the Employer should already have consulted and agreed with the owners and residents that the Works can be executed in a manner that may cause some damage and has agreed that compensation will be paid for such damage in accordance with a scale of damage. However, I suggest that this should not be a norm or a usual situation and that JSSS or the User Guide should not imply that this is a common option and I suggest that it should be the exception rather than the norm. Otherwise it will be misunderstood by some Executing Agencies that such damage may be allowable when actually it is isn't.* *During our January 2020 discussion, I said I would research this further and requested JICA to provide examples of the reference documentation for the Hong Kong MTR.* *I have briefly studied the information provided by JICA and consequently believe that this may have been wrongly interpreted. In reviewing I feel it is important to note that:* *1) Damage is the responsibility of the Contractor and the Engineer has no authority to determine what damage is acceptable or not.* *2) The Engineer is not part of the relationship between Site owner and adjacent owners and if any damage is caused to neighbouring property, the Engineer's opinion is not relevant, adjacent owners usually have a basic right of claim against the Employer.* *JICA appear to consider that some damage to adjacent buildings, structures, railway, roads, footpaths slopes and utilities etc., is "allowable" within certain specified limits but I feel that this is not correct and not supportable under the HK MTR information provided.* *It is apparent that:* *1) No damage or deformation to buildings, paving and services, etc. is allowable* *2) If any damage is caused, the Contractor shall stop the Works and shall then be responsible for proposing and implementing remedial measures.* *I consider that monitoring of any movement is not for the purpose of judging whether damage is reasonable or not but is to predict whether any damage is likely to occur, in which case, it then in total becomes the contractor's responsibility to remedy.*	

6.2.3 Inspection and Monitoring

Refer to JSSS 6.1.3 [*Inspection and Monitoring of TW*] for general requirements, specific requirements for work in this Section are stated below.

NK: JSSS 1.3.11 [Inspection and Monitoring of TW] stipulate as follows:
1.37.11 For further information on monitoring the performance of Temporary Works, refer to JSSS 6.1.3. [Inspection and Monitoring of Temporary Works].

NK: Referring to the JC comment to (2) below, the preparation of Inspection and Monitoring Plan and include in Safety Plan are added to the above sentence.

The Contractor shall prepare Inspection and Monitoring Plan of visual inspection and instrument monitoring in accordance with this 6.2.3 and include the Inspection and Monitoring Plan in the Safety Plan for the Earth Support.
In addition to the above, the Inspection and Monitoring Plan shall be prepared for the Earth Support, other structures and locations are specified to be specially monitored in the Particular Safety Plan,

(1) Visual Inspection ~~and Monitoring~~ (JC27)

JC27: visual monitoring でよいのでは。
The title of "Visual Monitoring" seems better.

MM: Sub-Clause 7.2.3 Inspection and Monitoring

Please note also that in the sample provided for the Hong Kong MTR, whilst sample monitoring ranges are provided, Specifications Clause 2.19 (3) on page 2/10, makes clear that this is for information only and that in any event, the Contractor must meet his obligations under the Contract:

> ***"the Contractor shall satisfy himself that the specified criteria is adequate to fulfil his contractual obligations and shall take any additional measures necessary to avoid damage to property."***

Pages 40 and 42 are missing from the provided copy of the HK MTR Conditions of Contract, therefore I cannot complete my review of the Contractor's obligations for care of the Works under Clause 22 of the Contract.

I do not in any event recommend the concept of the Employer or Engineer establishing measurement criteria as a general rule for predicting damage, as it is difficult to do and if wrong it could affect liability of the Employer and Engineer and even JICA if they are called upon to fund it.

This can be complex legal and contractual territory that I recommend should not be dealt with by JSSS as if it were a simple and common issue.

FIDIC GC 17.1 (b) below applies and I suggest that it should not be compromised by the suggested addition to this clause.

> *GC 17 Risk and Responsibility*
>
> *17.1 Indemnities The Contractor shall indemnify and hold harmless the Employer, … against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of:*
>
> *(b) damage to or loss of any property, real or personal (other than the Works), to the extent that such damage or loss arises out of or in the course of or by reason of the Contractor's design (if any), the execution and completion of the Works and the remedying of any defects, unless and to the extent that any such damage or loss is attributable to any negligence, willful act or breach of the Contract by the Employer, the Employer's Personnel, their respective agents, or anyone directly or indirectly employed by any of them.*

6.2.3 Inspection and Monitoring

I think that "Inspection" and "monitoring" are both correct in this heading here as they are different and this is therefore clear.

Please note though that I have greatly expanded JSSS 6.1.3 for reasons given there so this clause 6.2.3 can be much reduced to omit any duplication.

Refer to JSSS 6.1.3 [***Monitoring Impact of Works on Other Properties***].

Further requirements for work in this Section are stated below.

(1) Visual Inspection and Monitoring

6.2.3 Inspection and Monitoring

Refer to JSSS 6.1.3 [***Monitoring Impact of Works on Other Properties***].

Further requirements for work in this Section are stated below.

(1) Visual Inspection and Monitoring

JICA: I hope “Visual Monitoring” is fine.
NK (MD): Please let me know if it is not, I am editing the specification only and I assume that it represented your agreed requirements. Please check as necessary.
Result: Leave as it is.

NK1: The following is comparison of terms “inspection” and “monitoring”
1) GC 4.20 Employer’s Equipment and Free-Issue Materials
The Contractor shall then visually inspect them, and shall promptly give notice to the Engineer
GC 20.1 Contractor’s Claims
the Engineer may, after receiving any notice under this Sub-Clause, monitor the record-keeping and/or instruct the Contractor to
from internet, their difference is as follows:
2) https://wikidiff.com/monitoring/inspection
inspection is act of examining something, often closely while
monitoring is the act of listening, carrying out surveillance on, and/or recording the emissions of one's own or allied forces for the purpose of maintaining and improving procedural standards and security, or for reference, as applicable.
3) https://dictionary.cambridge.org/dictionary/english/inspection
Inspection: the act of looking at something carefully, or an official visit to a building or organization to check that everything is correct and legal:
Monitoring: to watch and check a situation carefully for a period of time in order to discover something about it:
Visual Inspection は目視、Monitoring は監視と考え、(1)は Visual Inspection に変更します。

(a) The Contractor shall prepare a Visual Inspection (JC28) ~~checklist~~ Plan depending on the characteristics of the Site and the required Earthwork Support and carry out regular inspections based upon the content of the ~~checklist~~ Plan; and

JC28: Visual monitoring では？ Is it Visual monitoring?
NK: Same as（1）above.

(b) Examples of Inspection Objects and Inspection ~~Types~~ Items (JC29) are given in the following Table.

JC29: (b) is modified to “Sample Items of visual monitoring are given in the following table.”
NK: The difference between terms of examples and sample is as follows:
http://www.differencebetween.net/language/words-language/difference-between-example-and-sample/
Both “example” and “sample” imply a part and also act like representatives of a whole. An example, by definition, is a noun that shows and mirrors other things. ... On the other hand, a sample is a small part of something much bigger. Unlike an example, a sample is random and not specific.
The term of “Examples” is left and the “Type” is replaced with “Items”.

Table 6(7).2.1: Visual Inspection ~~Checklist~~ Items

	Inspection Object	Inspection ~~Type~~ Items
1	Earthwork Support: Faces, sheeting and piling	Meander/horizontal displacement and vertical displacement along top. Crack, deflection and swelling. Water leakage, mud inflow. Opening of joints or gaps in Earthwork Support.
2	Earthwork Support: Piles, walings and strutting	Deflection, twist of struts and waling and other members. Settlement, floatation and twist of piles Vertical or horizontal displacement, of struts and waling and other members. Opening of joints or breakage of cross members,

(a) The Contractor shall prepare a Visual Inspection Plan depending on the characteristics of the Site and the required Earthwork Support and carry out regular inspections based upon the content of the Plan; and

(b) Examples of inspection objects and inspection items are given in the following Table.

Table 6.2.1: Visual Inspection Plan

	Object	Inspection Items
1	Earthwork Support: Faces, sheeting and piling	Meander/horizontal displacement and vertical displacement along top. Crack, deflection and swelling. Water leakage, mud inflow. Opening of joints or gaps in Earthwork Support.
2	Earthwork Support: Piles, walings and strutting	Deflection, twist of struts and waling and other members. Settlement, floatation and twist of piles Vertical or horizontal displacement, of struts and waling and other members. Opening of joints or breakage of cross members,

(a) The Contractor shall prepare a Visual Inspection Plan depending on the characteristics of the Site and the required Earthwork Support and carry out regular inspections based upon the content of the Plan; and

(b) Examples of inspection objects and inspection items are given in the following Table.

Table 6.2.1: Visual Inspection Plan

	Object	Inspection Items
1	Earthwork Support: Faces, sheeting and piling	Meander/horizontal displacement and vertical displacement along top. Crack, deflection and swelling. Water leakage, mud inflow. Opening of joints or gaps in Earthwork Support.
2	Earthwork Support: Piles, walings and strutting	Deflection, twist of struts and waling and other members. Settlement, floatation and twist of piles Vertical or horizontal displacement, of struts and waling and other members. Opening of joints or breakage of cross members, or breakage and loosening of bolts.
	Base of excavation	Water spring and ground water flow.

		or breakage and loosening of bolts.
3	Base of Excavation	Water spring and ground water flow. Sand boiling. Heaving of the base. Liquefaction.
4	Neighbouring or adjacent ground, paving and roads	Cracks, collapse, subsidence of pavement or ground surfaces, Opening of joints in paving and kerbs
5	Neighbouring or adjacent Buildings or Structures	Cracks, weakening, subsidence, deformation and tilting of structures
6	Underground Utilities	Displacement or leakage of or damage to underground utilities

(2) Instrument Monitoring

(a) ~~Unless otherwise stated in the Contract,~~ the Contractor shall prepare an Instrument Monitoring ~~checklist~~ Plan depending on the characteristics of the Site, the ground conditions and the required Earthwork Support and carry out ~~ongoing~~ monitoring based upon the content of the ~~checklist~~ Plan . (JC30)

To MD: May we know what the “ongoing” means.

JC30: 契約の記載がなければ、コントラクターは計器計測の準備をすることから記載が始まっている。その前に、重要な仮設に関しては、契約に記載がなくても、Visual and Instrument Monitoring の計画を作成し、エンジニアに提出しなければならない。次のように
(a) the Contractor shall prepare an Instrument Monitoring checklist .....”
It is stipulated “Unless otherwise stated in the Contract, the Contractor are to prepare for instrument measurement.”
Prior to this sentence, it is necessary to stipulate that for important temporary constructions, a plan for Visual and Instrument Monitoring shall be prepared and submitted to the Engineer, even if not stated in the contract as (a) the Contractor shall prepare an Instrument Monitoring checklist .....”.

JC30: 英語の表現がおかしい。
English expression seems inappropriate.

NK: Unless otherwise stated in the Contract…の規定を、次のように解釈します。
契約に規定が無い限り、請負者は、現場の特定、地盤条件、必要な土留めの樹生興に応じた計測によるモニタリングの計画を作成し、モニタリングを実施しなくてはならない。（ongoing の意味は不明のため MD 氏へ問いあわせます。）
提案の“even if not stated in the contract”と同じ意味と考えます。
JC で提案の特別に重要な仮設構造物の選定は、現規定では請負者の判断次第となりますので、Particular Safety Plan で規定することが必要と考えます。
We consider that the sentence of “Unless otherwise stated in the Contract” and JC’s proposed sentence “even if not stated in the contract…” are almost same meaning.
The proposed “important temporary constructions” need to be specified in the Particular Safety Plan.

NK: JC のコメントを考慮し、本款の出だしに Inspection and Monitoring Plan の作成と、エンジニアに提出される Safety Plan に含めることを追加して規定します。及び特別にモニタリングすべき構造物は、PSS に規定することを規定します。→6.1.3(3)に追記済み。
Considering the JC comment, at the beginning of this Clause, it is added that Inspection and Monitoring Plan shall be prepared and included in the Safety Plan. The important TW to be monitored is specified in the PSS.→Added in 6.1.3(3)

(b) Examples of ~~I~~ inspection ~~O~~ objects and ~~I~~ inspection ~~Types~~ ~~I~~ items

		Opening of joints or breakage of cross members, or breakage and loosening of bolts.
3	Base of excavation	Water spring and ground water flow. Sand boiling. Heaving of the base. Liquefaction.
4	Neighbouring or adjacent ground, paving and roads	Cracks, collapse, subsidence of pavement or ground surfaces, Opening of joints in paving and kerbs
5	Neighbouring or adjacent buildings or structures	Cracks, weakening, subsidence, deformation and tilting of structures
6	Underground utilities	Displacement or leakage of or damage to underground utilities

(2) Instrument Monitoring

(a) The Contractor shall prepare an Instrument Monitoring Plan depending on the characteristics of the Site, the ground conditions and the required Earthwork Support and carry out monitoring based upon the content of the Plan; and

		Sand boiling. Heaving of the base. Liquefaction.
4	Neighbouring or adjacent ground, paving and roads	Cracks, collapse, subsidence of pavement or ground surfaces, Opening of joints in paving and kerbs
5	Neighbouring or adjacent buildings or structures	Cracks, weakening, subsidence, deformation and tilting of structures
6	Underground utilities	Displacement or leakage of or damage to underground utilities

(2) Instrument Monitoring

(a) The Contractor shall prepare an Instrument Monitoring Plan depending on the characteristics of the Site, the ground conditions and the required Earthwork Support and carry out monitoring based upon the content of the Plan; and

(b) Examples of inspection objects and inspection items are given in the following Table.

are given in the following Table.(JC31)

JC31: (b) may be modified to "Sample Items of Instrument monitoring are given in the following table."
NK: As explained in 7.2.3 (b), NK suggest example is used.

Table 6(7).2.2: Instrument Monitoring ~~Checklist~~ Items

	Object	Inspection ~~Type~~ Items
1	Earthwork Support: Faces, sheeting and piling	Displacement, stress of Earthwork Support Earth pressure and water pressure acting on Earthwork Support
2	Earthwork Support: Piles, walings and strutting	Axial force of walings, struts, other supports and ground anchors.
3	Base of Excavation	Displacement of base of excavation, Water pressure of spring of water, water inflow
4	Neighbouring or adjacent ground, paving and roads	Displacement of neighbouring or adjacent ground, Ground water level
5	Neighbouring or adjacent buildings or structures	Displacement; ~~cracks, weakening,~~ subsidence, deformation and tilting of structures
6	Underground Utilities	Displacement of~~, damage or leakage to~~ underground utilities

6.2.4 General ~~Safety and Construction~~ requirements (JC32)

JC32: 削除. To be deleted.
NK: deleted.→Chapter 7 Excavation is included, so title is left as it is.

(1) Excavations shall be protected from and kept free of ground water and surface water at all times.

(2) Earthwork Support works shall proceed progressively so that no excavated faces (JC33) are left without support or at risk of weakening or collapse at any time.

JC33: excavated wall??
NK: the term of face is left as it is as it is used in HSE as follows:
https://www.hse.gov.uk/quarries/hardtarget/tips.htm
Tips and excavation, The faces of excavations have to be kept stable
Not modified.

(b) Examples of inspection objects and inspection items are given in the following Table.

Table 6.2.2: Instrument Monitoring Plan

	Object	Inspection Items
1	Earthwork Support: Faces, sheeting and piling	Displacement, stress of Earthwork Support Earth pressure and water pressure acting on Earthwork Support
2	Earthwork Support: Piles, walings and strutting	Axial force of walings, struts, other supports and ground anchors.
3	Base of Excavation	Displacement of base of excavation, Water pressure of ground water, rate of water inflow
4	Neighbouring or adjacent ground, paving and roads	Displacement of neighbouring or adjacent ground, Ground water level
5	Neighbouring or adjacent buildings or structures	Displacement; cracks, ~~weakening,~~ subsidence, deformation and tilting of structures I suggest that this should remain. NK: Instrument for measuring weakening may not be available, so weakening is deleted.
6	Underground utilities	Displacement or leakage of or damage to underground utilities I suggest that this should be consistent with the visual inspection Plan. . NK: Instrument for measuring damage may not be available, so damage is deleted.

6.2.4 General Safety and Construction Requirements

~~1) Excavations shall be protected from and kept free of ground water and surface water at all times.~~

Above is already included already in Chapter 7 Excavation

The following items are transferred here from Chapter 7 as they are of general application:

(1) Materials and equipment to be used for Earthwork Support shall be appropriate for the width and depth of the excavation and free from damage or defects that might impair their proper function.

No need following as already covered by JSSS 1.35

~~(2) Manufactured (prefabricated) materials for Earthwork Support shall be used in accordance with the instructions and recommendations given in the manual of the manufacturer.~~

There are no such drawings in JSSS and no meaning to this requirement. This is also all Contractor design.

~~(3) Earthwork Support designed by the Contractor shall be installed in accordance with the design and construction procedure~~

Table 6.2.2: Instrument Monitoring Plan

	Object	Inspection Items
1	Earthwork Support: Faces, sheeting and piling	Displacement, stress of Earthwork Support Earth pressure and water pressure acting on Earthwork Support
2	Earthwork Support: Piles, walings and strutting	Axial force of walings, struts, other supports and ground anchors.
3	Base of Excavation	Displacement of base of excavation, Water pressure of ground water, rate of water inflow
4	Neighbouring or adjacent ground, paving and roads	Displacement of neighbouring or adjacent ground, Ground water level
5	Neighbouring or adjacent buildings or structures	Displacement; cracks, subsidence, deformation and tilting of structures
6	Underground utilities	Displacement or leakage of underground utilities

6.2.4 General Safety and Construction Requirements

(1) Materials and equipment to be used for Earthwork Support shall be appropriate for the width and depth of the excavation and free from damage or defects that might impair their proper function.

6.2.5 Safety Measures for Shoring (JC34)

JC34: ここで言っているのは腹起しとストラットなので、Walings and Struts という表現でいい。
MM: Sub-Clause 7.2.5.Safety Measures for Shoring
JICA: (1) Change shoring to include “Walings and Struts” throughout.
NK: Will be changed; suggest this clause already covers it, (should be “waling and strutting”).
Result: Leave as it is.
NK: (1) defines shoring include walings, strutting and others, so the title is left as it is.

Unless otherwise stated in the Contract:

(1) “Shoring” shall include waling, shoring, strutting and like support.(JC35)

JC35: 表題を変更すれば削除 If the title is changed, delete it.
NK: Title is not changed, so (1) is left.

(2) Shoring (JC36) shall be securely installed and fixed to Earthwork Support to prevent detachment and any movement or failure.

JC36: Walings and Struts ?
NK: Title is not changed, so (2) is left.

(3) All members acting in compression (excluding diagonal struts) shall be butt-jointed, and timber shoring (JC37) shall be jointed with two or more doubling plates.

JC37: 木製は日本では使用せず。削除しても
MM: Sub-Clause 7.2.5 (4)
JICA: Since wooden is not used in Japan, can it be deleted?
NK: This is not for use in Japan and timber is widely used
Result: Leave as it is

(4) Connecting parts of shoring or diagonal shoring or intersections,

~~drawings.~~

The following is not completely clear however it is already covered by 6.2.1 (2) above

~~(4) Earthwork Support with sufficient strength shall be provided to protect workers from collapse of the ground in and structures near the excavation site.~~

(5) Workers shall not be allowed to enter any excavation until Earthwork Support is installed prior to the work;

(6) Earthwork Support shall proceed progressively so that no excavated faces are left without support or at risk of weakening or collapse at any time.

(7) Excavation to a level greater than 60cm below the bottom of Earthwork Support shall not be allowed;

(8) If temporary removal of individual members of Earthwork Support is necessary, safety measures shall be taken to ensure the safety of workers, such as installing additional temporary struts to support the additional loads imposed on parts of the system;

(9) When removing Earthwork Support, the Contractor shall prohibit anyone other than the workers engaged in the removal work to enter the working area and vicinity; and

(10) Backfilling and compaction of any excavation shall be performed in parallel with the removal of Earthwork Support.

6.2.5 Safety Measures for Shoring

~~Unless otherwise stated in the Contract~~:

(1) “Shoring” shall include waling, shoring, strutting and like support.

(2) Shoring shall be securely installed and fixed to Earthwork Support to prevent detachment and any movement or failure.

(3) All members acting in compression (excluding diagonal struts) shall be butt-jointed, and timber shoring shall be jointed with two or more doubling plates.

(2) Workers shall not be allowed to enter any excavation until Earthwork Support is installed prior to the work;

(3) Earthwork Support shall proceed progressively so that no excavated faces are left without support or at risk of weakening or collapse at any time.

(4) Excavation to a level greater than 60cm below the bottom of Earthwork Support shall not be allowed;

(5) If temporary removal of individual members of Earthwork Support is necessary, safety measures shall be taken to ensure the safety of workers, such as installing additional temporary struts to support the additional loads imposed on parts of the system;

(6) When removing Earthwork Support, the Contractor shall prohibit anyone other than the workers engaged in the removal work to enter the working area and vicinity; and

(7) Backfilling and compaction of any excavation shall be performed in parallel with the removal of Earthwork Support.

6.2.5 Safety Measures for Shoring

(1) “Shoring” shall include waling, shoring, strutting and like support.

(2) Shoring shall be securely installed and fixed to Earthwork Support to prevent detachment and any movement or failure.

(3) All members acting in compression (excluding diagonal struts) shall be butt-jointed, and timber shoring shall be jointed with two or more doubling plates.

(4) Connecting parts of shoring or diagonal shoring or intersections~~,~~ shall be reinforced with backing plates and bolts (timber) and welding with reinforcing plates (steel).

shall be reinforced with backing plates and bolts (timber) and welding with reinforcing plates (steel).

(5) ~~Intermediate piles~~ (JC38) Struts shall be securely and rigidly supported by ~~shoring~~ intermediate piles, when the intermediate piles are provided.

JC38: It is stated that the intermediate piles will be secured, but "Shouldn't it be a statement that Struts should be securely installed?"
NK: Modified.

(6) When shoring is fixed to or relies on an existing structure or building, the Contractor shall ascertain that the structure or building is able to withstand the applied load.

(7) Gaps between Earthwork Support and shoring shall be securely packed with suitable ~~wedges~~ (JC39) materials.

NK39: Retaining Walls/Piles and Walings shall be contacted with suitable materials としては
I propose to modify as "Retaining Walls/Piles and Walings shall be contacted with suitable materials"?
NK: Modified.

(8) Connections of shoring shall be reinforced with bolted (timber) (JC40) or welded (steel) stiffeners.

JC40: Since wooden material is not used in Japan, can it be deleted?
NK: leaved it as it is.

6.2.6 Safety Measures for Ground Anchor Work

Unless otherwise stated in the Contract:

(1) Prevent anyone other than designated (JC41) personnel from operating the boring machine(JC42).

JC41: replace designated with permitted?
NK: leave as it is as designate means assign a job or role to (someone) and almost same as permit.

JC42: replace machine with equipment?
NK: BS 8081 Code of practice for grouted anchors use the terms as follows:
Machine: drilling machine, Equipment: mixers, pumps.
Boring machine is left as it is.

(2) Prevent anyone from accessing the rear of the tension jack to prevent workers from injury through breaking of the anchor tendon during tensioning. (JC43)

JC43: 意味が多分通じない。
I think (2) cannot be understood.
NK: (2) is the stipulation in the Japanese set-version. OSHA stipulation is as follows:
OSHA Subpart Q—Concrete and Masonry Construction
§1926.701 General requirements.
(c) Post-tensioning operations. (1) No employee (except those essential to the post-tensioning operations) shall be permitted to be behind the jack during tensioning operations.
NK: Alternative proposal:
Prevent anyone (except those essential to the post-tensioning operations) from accessing behind the jack during tensioning operations of the anchor tendon.
NK ask MD to review this stipulation.

(3) Check for any damage in the grout ~~pressure~~ (JC43)hoses and joints before commencing any grout injection.

(4) Connecting parts of shoring or diagonal shoring or intersections, shall be reinforced with backing plates and bolts (timber) and welding with reinforcing plates (steel).

The following is taken from the draft

(5) Struts shall be securely and rigidly fixed with intermediate piles, when the intermediate piles are provided.

(6) When shoring is fixed to or relies on an existing structure or building, the Contractor shall ascertain that the structure or building is able to withstand the applied load.

"Wedges" is correct:

(7) Gaps between Earthwork Support and shoring shall be securely packed with suitable wedges.

(8) Connections of shoring shall be reinforced with bolted (timber) or welded (steel) stiffeners.

6.2.6 Safety Measures for Ground Anchor Work

~~Unless otherwise stated in the Contract:~~

(1) Prevent anyone other than designated personnel from operating the boring machine.

(2) ~~Prevent anyone from accessing the rear of the tension jack to prevent workers from injury through breaking of the anchor tendon during tensioning.~~

(3) Prevent anyone (except those essential to the post-tensioning operations) from accessing behind the tensioning jack during tensioning to prevent any injury through breaking of the anchor tendon during tensioning.

(5) Struts shall be securely and rigidly fixed with intermediate piles, when the intermediate piles are provided.

(6) When shoring is fixed to or relies on an existing structure or building, the Contractor shall ascertain that the structure or building is able to withstand the applied load.

(7) Gaps between Earthwork Support and shoring shall be securely packed with suitable wedges.

(8) Connections of shoring shall be reinforced with bolted (timber) or welded (steel) stiffeners.

6.2.6 Safety Measures for Ground Anchor Work

(1) Prevent anyone other than designated personnel from operating the boring machine.

(2) Prevent anyone (except those essential to the post-tensioning operations) from accessing behind the tensioning jack during tensioning to prevent any injury through breaking of the anchor tendon during tensioning.

(3) Check for any damage in the grout hoses and joints before commencing any grout injection.

JC43: deleted.

6.2.7 Adjacent Goods, Excavated ~~spoil~~ material (JC44)and the like

(1) When placing any Goods, excavated spoil and the like (JC45) on the ground surface at the top and adjacent to any excavation, take measures to prevent it from falling. (JC46)

JC44: 捨て土ではないので。
I guess that the term to be used is not "spoil" but "excavated materials".
NK1: BS defines as follows:
BS 6100-3: Building and civil engineering – Vocabulary –
Part 3: Civil engineering – General
03 23023 spoil: excavated material that is unsuitable or surplus to requirements
Modified, however MD commented spoil is correct. NK agree to this because excavated earth/rock shall be immediately removed from the site and excavated spoil materials shall not be placed on the site.

JC45: 全体に and the like を多用しているが、要注意です。and the like は同様の次項を並列した際に使用。この場合は単に etc.では？
Although "and the like" is often used throughout JSSS, but be careful.
"and the like" is used when similar next terms are arranged in parallel. In this case simply in etc.?

MM: Sub-Clause 7.2.7. Adjacent Goods, Excavated Spoil and the like

JICA: Although "and the like" is often used throughout, but be careful. "and the like" is used when similar next terms are arranged in parallel. In this case simply in etc.?
NK: This is a common phrase in contract and specification wording and has common interpretation that there are further similar things that are to be included.
Et cetera (etc.) does not necessarily have the same meaning, it depends what precedes it and should not be generally used is Specifications.
Result: explained and understood by JICA, no change required

JC46: Is English expression of (1) appropriate?
NK: It is considered (1) is understandable and appreciate.

(2) Do not place any Goods, excavated ~~spoil~~(JC47)~~-~~material, backfill material and the like where the weight exceeds the load considered in the design of the Earthwork Support.

JC47: Same comments as (1) above.
NK: Modified, however MD commented spoil is correct. NK agree to this because excavated earth/rock shall be immediately removed from the site and excavated spoil materials shall not be placed on the Earth Support.

6.3 COFFERDAMS (JC48)

JC48: Temporary Cofferdam としては？
I propose to modify to "Temporary Cofferdam".
NK: Referring to the definition of the term of "cofferdam" in BS and US Army Corps of Engineers, the cofferdams are temporary structure:
BS ISO 6707-1 3.1.2.24 cofferdam
structure (3.1.1.4), usually temporary, that is built to support the surrounding ground (3.4.2.1) or to exclude water or soil (3.4.2.2) sufficiently to permit work within it to proceed safely without excessive pumping.
US Army Corps of Engineers EM 385-1-1 Manual
APPENDIX Q Definitions
Cofferdam: a temporary structure used to keep water (and earth) out of an excavation during construction of the permanent structure.
The title is left as it is.

(4) Check for any damage in the grout hoses and joints before commencing any grout injection.

6.2.7 Adjacent Goods, Excavated Spoil and the like

"Spoil" is correct

(1) When placing any Goods, excavated spoil and the like on the ground surface at the top and adjacent to any excavation, take measures to prevent it from falling.

(2) Do not place any Goods, excavated spoil, backfill material and the like where the weight exceeds the load considered in the design of the Earthwork Support.

6.3 COFFERDAMS

6.2.7 Adjacent Goods, Excavated Spoil and the like

(1) When placing any Goods, excavated spoil and the like on the ground surface at the top and adjacent to any excavation, take measures to prevent it from falling.

(2) Do not place any Goods, excavated spoil, backfill material and the like where the weight exceeds the load considered in the design of the Earthwork Support.

6.3 COFFERDAMS

6.3.1 General

(1) Refer to JSSS Annex 1.1:[*Definitions and Abbreviations*] for the definition of Cofferdam.

(2) Cofferdams are generally constructed as earth dykes, caissons, steel sheet piling, double steel sheet piles, steel beam piles and the like.

6.3.2 Planning and Design

Unless otherwise stated in the Contract/Particular Safety Specification, the Contractor shall design Cofferdams (JC48)so that they are fit for the purpose for which they are intended and take account of all relevant factors (JC49) including: (JC50)

JC48: temporary cofferdam では？Capital letter でしょうか？
Are "Cofferdams" "temporary cofferdam"?
Is "Cofferdams" capitalized term?
NK: "Cofferdams" is defined in Annex A1.1.2 as follows, so capitalized term is used as it is.:
(3)"Cofferdam" means a temporary enclosing wall constructed in water, to permit the enclosed area to be pumped out and used as safe and accessible working space.
Not modified.

JC49: relevant factors として下さい。
Please replace "factors" with "relevant factors"
NK1: Modified.

JC50: 下記事項を including としてすべて名詞止にするのは難しいのでは。内容が複雑すぎます。
It seems difficult to include the following factors which are described in form of noun-type stop (ending a sentence with a noun or noun phrase). This paragraph is too complex to understand.
NK1: We considers they can be understood, but we will ask MD to review this comment.

(1) All relevant site data (JC51) which may have been provided by the Employer in the Bidding Documents and any relevant site information that the Contractor has encountered or obtained during the execution of the Works together with all necessary further information as to risks, contingencies and other circumstances which the Contractor shall be deemed to have obtained in accordance with GC 4.10 [*Site Data*].

JC51: 入札時点の Site Information だけしか記載されていない。"Any relevant site information that the Contractor has encountered or obtained during the execution of the Works"を追記しては。
Only Site Information at the time of bidding is described. How about adding, "Any relevant site information that the Contractor has encountered or obtained during the execution of the Works"
NK: Added.

(2) The effect of any vibration (JC52) from site operations (e.g. driven piling).

JC52: Allowable value should be specified in the contract documents. For Blasting, there are regulatory values such as Restriction on Peak Particle Velocity and Vibration Amplitude, and for Noise, there are level on "max", "sound pressure level (85 dBA)" and "peak sound level (110 dB)".
NK1: The requirement shall be specified in the Particular Safety Specification (PSS). The User Guide will advise the Employer to specify their requirement in the PSS.
A phrase regarding the PSS is added at the first sentence and a stipulation is added at the end of 6.3.2 regarding the specified values in the PSS.

6.3.1 General

(1) Refer to JSSS Annex 1.1:[*Definitions and Abbreviations*] for the definition of Cofferdam.

(2) Cofferdams are generally constructed as earth dykes, caissons, steel sheet piling, double steel sheet piles, steel beam piles and the like.

6.3.2 Planning and Design

Unless otherwise specified in the Particular Safety Specification, the Contractor shall design Cofferdams so that they are fit for the purpose for which they are intended and take account of all relevant factors including:

Please note the above wording "Unless otherwise specified in the Particular Safety Specification" within the context of the JICA comment on the following:

(1) All relevant site data which may have been provided by the Employer in the Bidding Documents and any relevant site information that the Contractor has encountered or obtained during the execution of the Works, together with all necessary further information as to risks, contingencies and other circumstances which the Contractor shall be deemed to have obtained in accordance with GC 4.10 [*Site Data*].

(2) The effect of any vibration from site operations (e.g. driven piling).

The JICA comment to add "allowable values" for vibration (e.g. from piling) in the Particular Safety Specification is not agreed with and not recommended. If this is Contractor Design (which is usually the case for Temporary Works), the Contractor is completely responsible for the design and performance. Cofferdams shall be designed to accommodate the Contractor's own construction methods which the Employer may not be aware at the design stage and has limited or no control over during the construction stage. In any case this is adequacy and safety

6.3.1 General

(1) Refer to JSSS Annex 1.1:[*Definitions and Abbreviations*] for the definition of Cofferdam.

(2) Cofferdams are generally constructed as earth dykes, caissons, steel sheet piling, double steel sheet piles, steel beam piles and the like.

6.3.2 Planning and Design

Unless otherwise specified in the Particular Safety Specification, the Contractor shall design Cofferdams so that they are fit for the purpose for which they are intended and take account of all relevant factors including:

(1) All relevant site data which may have been provided by the Employer in the Bidding Documents and any relevant site information that the Contractor has encountered or obtained during the execution of the Works, together with all necessary further information as to risks, contingencies and other circumstances which the Contractor shall be deemed to have obtained in accordance with GC 4.10 [*Site Data*].

(2) The effect of any vibration from site operations (e.g. driven piling).

(MD commented against it in right.)

(3) Access and working space necessary to execute the ~~Permanent~~ (JC52) Works.(JC53)

JC52: 削除 Permanent だけではないので
Delete it. Because not only permanent.
NK1: deleted.

JC53: This is an issue to be considered by the Employer. Planning access roads to meet the Contractor's own requirements is not just a provision of cofferdam.
NK1: Replied in (2) of 7(6).3.2.

(4) ~~River or tidal flow rates, highest and lowest water levels and tidal levels, wave height, required freeboard and any other relevant river, lake or marine conditions.~~ (JC54 & JC55) River discharge, water levels, tide levels, wave height, free board, seismic load, external force and any other relevant river, lake or marine conditions.

JC54: 要言葉の整理
Terms shall be reviewed and organized.
NK1: modified.

JC55: 発注者が考慮すべき事
This is an issue to be considered by the Employer.
NK1: NK1: Replied in (2) of 7(6).3.2.

(5) Marine traffic. (JC56)

JC56: Working Site establishment on the surface of water to deal with other vessels' traffic, shall be given in the contract documents prepared by the Employer.
NK1: NK1: Replied in (2) of 7(6).3.2.

(6) Avoidance of any damage (JC56) by piling operations and the protection and improvement (JC56) of the structural integrity of existing river or canals, banks, dykes and the like.

JC56: 影響を苦慮する対象物(構造物等)とその許容値は契約図書に明記されるべき
Objects (structures, etc.) to be considered for impact and their allowable values should be clearly specified in contract documents.
NK1: Replied in (2) of 7(6).3.2.

(7) ~~Reduction of river cross sectional area, resultant increased flow rates and suction effects with a consequent requirement for protection and improvement of the structural integrity of existing river or canals, banks, dykes and the like.~~ (JC57&58) Reduction of river cross sectional area, increased flow rates and protection and improvement of the structural integrity of existing river or canals, banks, dykes and the like.

JC57: 種々の事項を一緒に記載しているので分からない。
Since various items are described together, they cannot be understood.
NK: Modified.

JC58:河川工事に伴う有効流量断面積の減少は請負者の責任ではなく、その工事計画段階で対処されなければならない。従って、対処方法を契約図書で明示しなければならない。

of cofferdams must be 100% not 99% and this should not be compromised by given "allowable" margins.

Please refer to further comments on this subject in JSSS 7.2.1 (6) and 7.6.9. (NK: which are copied in in 6.2.2 (6) NK" above.)

(3) Access and working space necessary to execute the Works.

I refer to the JICA comment "This is an issue to be considered by the Employer. Planning access roads to meet the Contractor's own requirements is not just a provision of cofferdam." This is not correct within the purpose of the clause. This clause describes the extent of inclusion within the contractor's own design and with regard to access, the Contractor must provide for whatever access and working space for the Works that is available and within which he must confine his operations. The Employer has no obligation to plan the contractor's access roads or operations for him, he must provide the site area of course but the contractor must design and plan his work to fit within this. What is the connection here with safety?

(4) River discharge, water levels, tide levels, wave height, free board, seismic load, external force and any other relevant river, lake or marine conditions.

I have reworded the above as requested but tidal flow rates are not now covered.

I refer to the JICA comment "This is an issue to be considered by the Employer". Why is this an issue for the Employer? This clause is for the scope of the contractor's design obligations and the contractor must take account of all of these factors within his design. Whether the employer provides information or not does not affect this and is of no relevance to the wording of this clause.

What is the connection here with safety?

(5) Marine traffic.

I refer to the JICA comment "Working Site establishment on the surface of water to deal with other vessels' traffic, shall be given in the contract documents prepared by the Employer."

This is not the always the case and is not an obligation of the Employer. Please refer to further comments on this subject in JSSS 7.2.1 (2) and 6.2.2. (6)

(6) Avoidance of any damage by piling operations and the protection and improvement of the structural integrity of existing river or canals, banks, dykes and the like.

Ditto.

(7) Reduction of river cross sectional area, increased flow rates and protection and improvement of the structural integrity of existing river or canals, banks, dykes and the like.

(3) Access and working space necessary to execute the Works.

(4) River discharge, water levels, tide levels, wave height, free board, seismic load, external force and any other relevant river, lake or marine conditions.

(5) Marine traffic.

(6) Avoidance of any damage by piling operations and the protection and improvement of the structural integrity of existing river or canals, banks, dykes and the like.

(7) Reduction of river cross sectional area, increased flow rates and protection and improvement of the structural integrity of existing river or canals, banks, dykes and the like.

Reduction of the effective flow area due to river works is not the responsibility of the Contractor, but must be dealt with at the construction planning stage.
Therefore, the countermeasures must be clearly stated in the contract documents.

NK1: NK think all above JC comments have been already defined in (1) underlined. So, NK leave it as it is.

(8) ~~Effects of tides, wave action, flooding and the like, the consequent need for additional shoring and avoidance of loosening of shoring and joints.~~ (JC59&60) Rigid structural design of Cofferdams in case of structures consisting of sheet piling, walings, struts by jointing between struts, walings and others not to be loosened by floods, waves, etc.

JC59: 理解不能。cannot understand.

NK: Modified.

JC60: Cofferdam 設計時の与条件であり、前項(4)の条件に伴う動荷重も含めての指摘と考える。freeboard は発生する気象条件から発生する波高を推算し、前項(4)の highest water level にそれを加算し、かつ freeboard を考慮する等の規定がスペックで規定されるべきである。

This is a condition given during the design of the Cofferdam, and is considered to be an indication including the dynamic load associated with the condition in (4) above. Freeboard should estimate the wave height generated from the meteorological conditions, add it to the highest water level in the previous section (4), and incorporate provisions such as consideration of the freeboard into the specifications.

NK1: Replied in (2) of 7(6).3.2.

(9) Provision of at least two ~~safe escape routes~~ (JC61) emergency evacuation routes from the working ~~areas~~ (JC62) place by means of ladders, stairs, etc. to evacuate in the case of danger of collapsing of or inundation in the Cofferdam. ~~water penetration~~(JC63).

JC611: 言葉の整理が必要

Need to organize terms.

NK1: modified.

JC62: Replacement of terms:

For “safe escape routes”. →emergency evacuation routes.

For “working areas”. →working place.

NK1: modified.

JC63: 水がちょろちょろの浸潤で避難する訳がない。danger of collapse of cofferdam では？

For “water penetration”. There is no reason to evacuate because of the penetration of water. ”danger of collapse of cofferdam” is better.

NK1: modified.

(10) Provision of life-saving equipment including buoyancy jackets, lifebuoy, ropes and (where necessary) standby boats.

(11) Measures for safe dismantling and removal.

(12) Water pollution prevention measure(JC64)

JC64: 契約図書規定されるべき。This shall be specified in the Contract.

NK1: Water pollution shall be stipulated in specification for environment but not in JSSS, so not added. (MD added with modification.)

(13) Values of vibration, displacement and other damage and nuisance to people, property and existing structures, etc. not to exceed specified in the Particular Safety Specification

NK1: as mentioned for (2), addition of (13) is made. (NK1: The requirement shall be specified in the Particular Safety Specification (PSS). The User Guide will advise the Employer to specify their requirement in the PSS.

(8) Effects of tides, wave action, flooding and the like, the consequent need for additional shoring and avoidance of loosening of shoring and joints.

I suggest that the above is better than that now given, these are “relevant factors”.

(9) Provision of at least two safe escape routes from the working areas by means of ladders, stairs, etc. to evacuate in the case of any danger of collapse of or inundation in the Cofferdam.

Your requirement to change the above to “emergency evacuation routes” is not clear. Are these additional to the normal safe escape routes if so how many are required in total? NK: the above is OK.

(10) Provision of life-saving equipment including buoyancy jackets, lifebuoy, ropes and (where necessary) standby boats.

(11) Measures for avoiding water pollution from construction and dismantling of cofferdams.

I think that the above is a reasonable suggestion and should be added here.

(12) Measures for safe dismantling and removal.

(8) Effects of tides, wave action, flooding and the like, the consequent need for additional shoring and avoidance of loosening of shoring and joints.

(9) Provision of at least two safe escape routes from the working areas by means of ladders, stairs, etc. to evacuate in the case of any danger of collapse of or inundation in the Cofferdam.

(10) Provision of life-saving equipment including buoyancy jackets, lifebuoy, ropes and (where necessary) standby boats.

(11) Measures for avoiding water pollution from construction and dismantling of cofferdams.

(12) Measures for safe dismantling and removal.

A phrase regarding the PSS is added at the first sentence and a stipulation is added at the end of 6.3.2 regarding the specified values in the PSS.)
(NK proposed the above (13) but withdraw after discussion with MD.)

6.3.3 Inspection and Monitoring

Refer to JSSS ~~6.1.3~~ 1.3.11 [*Inspection and Monitoring of TW*] for general requirements, specific requirements for work in this Section are stated below.

The Contractor shall prepare Inspection and Monitoring Plan of visual inspection and instrument monitoring in accordance with this 6.3.3 and include the Inspection and Monitoring Plan in the Safety Plan for the Cofferdams.

In addition to the above, the Inspection and Monitoring Plan shall be prepared for the Cofferdams, other structures and locations are specified to be specially monitored in the Particular Safety Plan,

(1) Visual Inspection ~~and Monitoring~~ (NK)

(a) The Contractor shall prepare a Visual Inspection ~~checklist~~ Plan (NK) depending on (JC66)the characteristics of the Cofferdam and carry out regular inspections (JC67) based upon the content of the ~~checklist~~ Plan.

JC66: この表現はおかしい。reflected では？
This expression of "depending on" seems to be incorrect, I think. "reflected" is correct?
NK: depending on は、～に応じの意味があります。
It has meaning of "to be decided by or to change according to the stated thing:", so leave it as it is.

JC67: inspections →monitoring?
NK: NK leave it as it is.
NK1: Inspection check list is replaced with Inspection check plan.

(b) Examples of Inspection Objects and Inspection ~~Types~~ Items are given in the following Table.(JC68)

JC68: Propose to replace (b) with Sample Items of Visual monitoring are given in the following table.
NK1: as replied in 7(6).2.3 (1) (b), modified.

Table 6(7).3.1: Visual Inspection ~~Checklist~~ Items

	Inspection Object	Inspection ~~Type~~ Items
1	Cofferdam Generally	Water seepage. Ability and capacity of pumping arrangements to maintain safe working conditions. Meander/horizontal displacement and vertical displacement along top. Crack, deflection and swelling. Opening of joints.
2	Piles, shoring and strutting	Deflection, twist of piles, struts and waling and other members. Opening of joints or breakage of piles, cross members, or breakage and loosening of bolts.
3	Base of Excavation	Water spring and ground water flow. Sand boiling. Heaving of the base. ~~Liquefaction.~~
5	Neighbouring or adjacent Structures	Cracks, weakening, subsidence, deformation and tilting of structures

6.3.3 Inspection and Monitoring

Refer to JSSS 6.1.3 [*Monitoring Impact of Works on Other Properties*].

The additional two paragraphs requested by the comments are not now necessary, requirements are included in JSSS 6.1.3

Further requirements for work in this Section are stated below.

(1) Visual Inspection and Monitoring

(a) The Contractor shall prepare a Visual Inspection Plan depending on the characteristics of the Cofferdam and carry out regular inspections based upon the content of the Plan; and

(b) Examples of Inspection Objects and Inspection items are given in the following Table.

Table 6.3.1: Visual Inspection Plan

	Object	Inspection Items
1	Cofferdam generally	Water seepage. Ability and capacity of pumping arrangements to maintain safe working conditions. Meander/horizontal displacement and vertical displacement along top. Crack, deflection and swelling. Opening of joints.
2	Piles, shoring and strutting	Deflection, twist of piles, struts and waling and other members. Opening of joints or breakage of piles, cross members, or breakage and loosening of bolts.
3	Base of excavation	Water spring and ground water flow. Sand boiling. Heaving of the base.
5	Neighbouring Properties or Structures on or	Cracks, weakening, subsidence, deformation and tilting of structures

6.3.3 Inspection and Monitoring

Refer to JSSS 6.1.3 [*Monitoring Impact of Works on Other Properties*].

Further requirements for work in this Section are stated below.

(1) Visual Inspection and Monitoring

(a) The Contractor shall prepare a Visual Inspection Plan depending on the characteristics of the Cofferdam and carry out regular inspections based upon the content of the Plan; and

(b) Examples of Inspection Objects and Inspection items are given in the following Table.

Table 6.3.1: Visual Inspection Plan

	Object	Inspection Items
1	Cofferdam generally	Water seepage. Ability and capacity of pumping arrangements to maintain safe working conditions. Meander/horizontal displacement and vertical displacement along top. Crack, deflection and swelling. Opening of joints.
2	Piles, shoring and strutting	Deflection, twist of piles, struts and waling and other members. Opening of joints or breakage of piles, cross members, or breakage and loosening of bolts.
3	Base of excavation	Water spring and ground water flow. Sand boiling. Heaving of the base.
5	Neighbouring Properties or Structures on or	Cracks, weakening, subsidence, deformation and tilting of structures

~~6~~	~~Underground Utilities~~	~~Displacement, damage or leakage to underground utilities~~

To MD: Please seen details about the above table in document A1.

(2) Instrument Monitoring

(a) ~~Unless otherwise stated in the Contract,~~ the Contractor shall prepare an Instrument Monitoring ~~checklist~~ Plan depending on (JC69) the characteristics of the Site, the ground conditions and the required Earthwork Support and carry out ongoing monitoring based upon the content of the ~~checklist~~ Plan.

JC69: As commented above.
NK1: as replied to (1) above.

(b) Examples of ~~I~~ inspection ~~O~~ objects and ~~I~~ inspection ~~Types~~ ~~I~~ items are given in the following Table. (JC70)

JC70: 前述の表を参照
As commented in 7.2.2.
NK1: modified.

Table 6(7).3.2: Instrument Monitoring ~~Checklist~~ Items (JC71)

JC71: 前述の表を参照。 As commented in 7.2.2.
NK1: modified.

	Monitoring Object	~~Inspection~~ Monitoring ~~Type~~ Items
1	Cofferdam Generally	Displacement, stress of ~~Earthwork Support~~ Cofferdams Earth pressure and water pressure acting on ~~Earthwork Support~~ Cofferdams
2	Shoring and strutting	Axial force of strut and other supports ~~and ground anchors~~.
3	Base of Excavation	Displacement of base of excavation Water pressure of spring of water, water inflow
5	Neighbouring or adjacent structures	Displacement,~~ cracks, weakening,~~ subsidence, deformation and tilting of structures
~~6~~	Underground Utilities	~~Displacement, damage or leakage to underground utilities~~

To MD: Please see details about the above table in document A1 (sent you.).

6.3.4 General ~~Safety and Construction~~ Requirements

Unless otherwise stated in the Contract/Particular Safety Specification, the Contractor shall comply with the following requirements: (JC72 & 73)

~~(1) Shoring shall be securely installed and fixed to Cofferdam to prevent detachment and any movement or failure.~~
~~(2) All members acting in compression (excluding diagonal struts) shall be butt jointed, and timber shoring shall be jointed with two or more doubling plates.~~
~~(3) Connecting parts of shoring or diagonal shoring or intersections, shall be reinforced with backing plates and bolts (timber) and welding with reinforcing plates (steel).~~
~~(4) Gaps between Cofferdam and shoring shall be securely packed with suitable wedges.~~
~~(5) Connections of shoring shall be reinforced with welded stiffeners.~~

JC72: 土留めの項目で仮締切とは異なる。

	Properties or Structures on or outside the Site	tilting of structures

(2) Instrument Monitoring

(a) The Contractor shall prepare an Instrument Monitoring Plan depending on the characteristics of the Site, the ground conditions and the required ~~Earthwork Support~~ Cofferdams and carry out ongoing monitoring based upon the content of the Plan; and.

(b) Examples of inspection objects and inspection items are given in the following Table.

Table 6.3.2: Instrument Monitoring Plan

	Object	**Monitoring Items**
1	Cofferdam Generally	Displacement, stress of Cofferdams Earth pressure and water pressure acting on Cofferdams
2	Shoring and strutting	Axial force of strut and other supports.
3	Base of Excavation	Displacement of base of excavation Water pressure of spring of water, water inflow
5	Neighbouring properties or structures on or outside the Site	Displacement, cracks, subsidence, deformation and tilting of structures

6.3.4 General Safety and Construction Requirements

	outside the Site	

(2) Instrument Monitoring

(a) The Contractor shall prepare an Instrument Monitoring Plan depending on the characteristics of the Site, the ground conditions and the required ~~Earthwork Support~~ Cofferdams and carry out ongoing monitoring based upon the content of the Plan; and.

(b) Examples of inspection objects and inspection items are given in the following Table.

Table 6.3.2: Instrument Monitoring Plan

	Object	**Monitoring Items**
1	Cofferdam Generally	Displacement, stress of Cofferdams Earth pressure and water pressure acting on Cofferdams
2	Shoring and strutting	Axial force of strut and other supports.
3	Base of Excavation	Displacement of base of excavation Water pressure of spring of water, water inflow
5	Neighbouring properties or structures on or outside the Site	Displacement, cracks, subsidence, deformation and tilting of structures

6.3.4 General Safety and Construction Requirements

These are requirements for retaining and not related to the Cofferdam.

NK1: Cofferdams also require strutting and shoring. Modified to refer to the construction method of the Earthwork Support.

JC73: 施工品質・設計に属する規定で、安全規定とは異なる、と考えます。
The above requirements are belonging to construction quality and design, and differs from the safety requirement.

NK1: Some other sections also specify same to ensure construction safety, so it is suggested that above description is left after modification.

~~In addition, the Contractor shall:~~

(1) Construct the Cofferdams with shoring by the same method stipulated in JSSS 6.2.5 [Safety Measures for Shoring] for Earthwork Support.

(2) Train (JC74) all Contractor's Personnel to work in the Cofferdams ~~as necessary~~ so that they are aware of all risks and countermeasures including water leakage, adverse weather, severe waves or adverse river or marine conditions, so that they can work safely and when necessary, evacuate the working areas efficiently and safely.

JC74: Cofferdam 内での一般土木作業員に対するトレーニングとは何か？ 作業員は安全が確保されていることを前提に作業に入るのであり、作業員個々に Cofferdam の健全性に留意するような要求は違和感がある。請負者が作業中止基準を定め退避指示を発令することが通常である。
What is training for general civil workers in Cofferdam? Workers start works on the premise that safety is ensured, and I feel strange for each worker to pay attention to the soundness of Cofferdam stipulate in this (1). It is common for the Contractor to set work stop criteria and issue evacuation order.

NK1:作業員に対して、通常より、Cofferdam 内で発生し得る危険事項について説明、注意喚起を促す目的の規定です。現状の記述を残すことを提案します。
This stipulate that the Contractor shall explain the risks in the Cofferdams and make workers pay attentions to the risk. NK propose to leave it as it is.

(3) Display visible and clear warning notices of all hazards and advisory notices giving directions and information, including emergency contacts, emergency escape routes, directions to and locations of life-saving equipment, assembly areas, escape boats and the like. (JC74)

(4) Implement measures to prevent collisions with marine or river traffic, including warning signs and lights during the night or in heavy rain mist or fog.

JC74: 水域内での作業水域確保の規定は、発注者からの出されるべきである。
The Employer shall issue requirements to secure working areas in the water.

NK1: これは一般的な規定であり、特別な規定は PSS に規定することとする。
This is general safety requirement. The PSS will specify particular requirement when necessary.

(5) Establish a system and appoint a person to issue order to Evacuate Contractor's Personnel whenever there is any danger due to water leakage through or overtopping on Cofferdams or from the ground within the working area. (JC745

JC75: 請負者が締め切り内全体の安全の確認をする体制確立を規定すべきではないか。誰が退避指示を出すのか、規定すべき。
The Contractor should establish a system to confirm the safety of the Cofferdams. The parson in charge to issue the evacuation order should be specified.

NK1: Modified.

(6) Implement repair and improvement measures to ensure the safety of Contractor's Personnel and prevent any personnel from re-

(1) Construct the Cofferdams with shoring by the same method stipulated in JSSS 6.2.5 [*Safety Measures for Shoring*].

(2) Train all Contractor's Personnel who are to work on the construction, maintenance and removal of the Cofferdam or within the Cofferdam, so that they are aware of all risks and countermeasures including water leakage, adverse weather, severe waves or adverse river or marine conditions, so that they can work safely and when necessary, evacuate the working areas efficiently and safely.

(3) Display visible and clear warning notices of all hazards and advisory notices giving directions and information, including emergency contacts, emergency escape routes, directions to and locations of life-saving equipment, assembly areas, escape boats and the like.

(4) Implement measures to prevent collisions with marine or river traffic, including warning signs and lights during the night or in heavy rain mist or fog.

(5) Establish a system to confirm the safety of the Cofferdams, appoint a person-in-charge who shall be present at all times and shall be responsible for issuing an evacuation order if and when necessary.

(6) Evacuate Contractor's Personnel whenever there is any danger due to water leakage through or overtopping on Cofferdams or from the ground within the working area. (NK: Added.)

(1) Construct the Cofferdams with shoring by the same method stipulated in JSSS 6.2.5 [*Safety Measures for Shoring*].

(2) Train all Contractor's Personnel who are to work on the construction, maintenance and removal of the Cofferdam or within the Cofferdam, so that they are aware of all risks and countermeasures including water leakage, adverse weather, severe waves or adverse river or marine conditions, so that they can work safely and when necessary, evacuate the working areas efficiently and safely.

(3) Display visible and clear warning notices of all hazards and advisory notices giving directions and information, including emergency contacts, emergency escape routes, directions to and locations of life-saving equipment, assembly areas, escape boats and the like.

(4) Implement measures to prevent collisions with marine or river traffic, including warning signs and lights during the night or in heavy rain mist or fog.

(5) Establish a system to confirm the safety of the Cofferdams, appoint a person-in-charge who shall be present at all times and shall be responsible for issuing an evacuation order if and when necessary.

(6) Evacuate Contractor's Personnel whenever there is any danger due to water leakage through or overtopping on Cofferdams or from the ground within the working area.

(7) Implement repair and improvement measures to ensure the safety of Contractor's Personnel and prevent any personnel from re-entering

entering the Cofferdam until it has been inspected by the HSO and certified by him to be “Safe for Use”.

6.3.5 Adverse ~~Changes in~~ Sudden Rise of Water Level. (JC76)

JC76a: adverse change の場合は避難しかないので、ここは文脈から Sudden Increase of Water Level では
In the case of adverse change, evacuation is the only solution, isn’t it? Is it proper to replace the title with Sudden Increase of Water Level?
NK1: 水位が仮締切の天端より相当低い時は水位の急上昇は危険ではない。仮締切を越流するような急上昇を対象とした場合、現タイトルでよいのでは。
The sudden rise of water level is not dangerous when water level is much lower the top of Cofferdam. The measures for the sudden rise of water level which will overtop the Cofferdam are specified below. So, the title is not changed.

JC76b: 前項 7.3.2 (4)及び(8)の状況を超える状況とは、台風やそれに伴う洪水、津波などを想定される。
The situation that exceeds the situation of 7.3.2 (4) and (8) in the preceding paragraph is assumed to be a typhoon, flood, tsunami, etc.
NK1: Yes.

JC76c: 全体として文章のつながりが不明瞭。(2)の described below はどこを指しているのか。(3)の Monitoring conditions は measure なのか、等。
Overall , the connection of sentences is unclear. For example, which does the “described below” in (2) point? Are the “Monitoring conditions” in (3) measures?
NK: For “described below”, change it to “shown in 7(6).3.6”. For “Monitoring Condition”, NK specifically describes.

(1) The Contractor shall be aware of and assess any risk due to adverse and sudden rise in water level above the design basis for the highest water level and prepare for this as applicable in the Safety Plan.

(2) This shall include procedures for monitoring water levels as described below.

To MD: “This” means the safety Plan? I want to stipulate what “This” means.

(3) Measures for this shall include:

(a) Monitoring ~~conditions~~ (JC77) of water levels with equipment at the Site and obtaining forecasting information of water levels;

JC77: Monitoring conditions とは何か。ここでは水位計、潮位標(tidal gauge)、さらには自記風向風速計、自記気圧計などが想定される。high standard を要求するのであれば、発注者が規定すべき。
What are monitoring conditions? A water gauge, a tidal gauge, a self-recording anemometer, a self-recording barometer, and the like are assumed. If high standards are required, the Employer should specify it.
NK1: Modified. This is general safety requirement. The PSS will specify particular requirement when necessary.

(b) ~~Training of all Contractor’s Personnel;~~(JC78)

JC78: procedures for monitoring water levels から乖離している
deviates from procedures for monitoring water levels
NK1: Training is specified in 6.3.4 (2), so (b) is deleted.

(c) Communications among persons in charge of monitoring of water levels, responsible for the works in the Cofferdams, the HSO and workers in the Cofferdam; (JC79)

JC79: 水域管理者との Communication でしょうか？
Communication with water area managers?
NK1: The communication is between persons in charge of monitoring of the water level,

(7) Implement repair and improvement measures to ensure the safety of Contractor’s Personnel and prevent any personnel from re-entering the Cofferdam until it has been inspected by the HSO and certified by him to be “Safe for Use”.

6.3.5 Excessive and Sudden Rise in Water Level

(1) The Contractor shall be aware of and assess any risk due to ~~adverse~~ excessive and sudden rise in water level above the design basis for the highest water level and prepare for this as applicable in the Safety Plan. (NK: Made consistent with the title of 6.3.5.)

(2) The Safety Plan shall include procedures for monitoring water levels as described below.

(a) Monitoring water levels with instruments and recording equipment at the Site and obtaining forecasting information of water levels;

(b) Communications among persons in charge of monitoring of water levels, persons responsible for the works in the Cofferdams, the HSO and workers in the Cofferdam;

the Cofferdam until it has been inspected by the HSO and certified by him to be “Safe for Use”.

6.3.5 Excessive and Sudden Rise in Water Level

(1) The Contractor shall be aware of and assess any risk due to excessive and sudden rise in water level above the design basis for the highest water level and prepare for this as applicable in the Safety Plan.

(2) The Safety Plan shall include procedures for monitoring water levels as described below.

(a) Monitoring water levels with instruments and recording equipment at the Site and obtaining forecasting information of water levels;

(b) Communications among persons in charge of monitoring of water levels, persons responsible for the works in the Cofferdams, the HSO and workers in the Cofferdam;

responsible for the safety in the Cofferdams, issuing evacuation order and workers in the Cofferdam.

(d) Instructions to Contractor's Personnel for evacuation;

(e) Stop work in accordance with JSSS 1.10 [*HSO – Scope of Duties*] ; and

(f) Resume work when water level has subsided and after inspection and certification by the HSO that it is safe to do so. (JC80)

JC80: procedures for monitoring water levels から乖離している。
The stipulation of (b)-(f) deviates from procedures for monitoring water levels.
NK1: (3) specifies measures for adverse sudden rise of water level. It is not only monitoring water level but also other measures given as (b) to (f). Modified.

6.3.6 Monitoring Water Level and Other Conditions (JC81)

JC81: 前項 7.3.5 (a)でコメント済み。high standard を要求するのであれば、契約図書で具体的に明記すべき。
Commented in the previous section 7.3.5 (a). If a high standard is required, it should be clearly stated in the contract documents.
NK1: This is general safety requirement. The PSS will specify particular requirement when necessary.

In addition to the requirements of JSSS ~~2.1.6.~~ 2.1.7 [*Monitoring and Records*] and unless otherwise stated in the Contract/Particular Safety Specification, the Contractor shall monitor and keep records of all climatic, river and/or marine conditions in the direct vicinity of any Cofferdam including for example, the water level at various times throughout the day, tidal data, speed and direction of waterflow, wave height, wind speed and direction.

The Contractor shall provide <u>all instruments and facilities</u> (JC82) to obtain the data and submit reports to the Engineer on a daily basis and compile on weekly basis.

JC82: 自記記録方式の波高計、潮位計、水位計、流速計、濁度計は求められるのは、異常気象・海象等の force majeure あるいは unforeseeable physical condition 判定のための資料として必要であれば、発注者でその規格を規定すべきである。請負者の自己判断によることはばらつきが生じ好ましくない。
If the Employer needs data for decision of force majeure or unforeseeable physical conditions such as abnormal weather and sea conditions, the employer shall specify the specification of self-recording wave height meter, tide gauge, water gauge, current meter, and turbidity meter.
The self-determination by the Contractor is not preferable because the specification may vary.
NK1: This is general safety requirement. The PSS will specify particular requirement when necessary.

6.4 <u>WALKWAYS</u>, LADDERS AND STEPLADDERS (JC83)

JC83: Pedestrial Walkway とした方が分かりやすいのでは。 Singapore やカナダの事例ではそうなっています。
Is it easy to understand to use "Pedestrian Walkway"? This term is used in Singapore and Canada.
NK1: Considering the following information, NK leaves as they are as walkways are used only for pedestrian.
JSSS Chap 2 (Issue 3) 2.5.7 (1) defines them as follows:
JSSS 2.5.7 Temporary Access Around the Site
(1) Walkways and Passageways
<u>Walkways" mean pedestrian footpaths</u> at ground level <u>/ working places</u>(NK added) or ramped for the use of Contractor's Personnel.

(c) Instructions to Contractor's Personnel for evacuation;

(d) Stop work in accordance with JSSS 1.13 [*HSO – Scope of Duties and Authority*]; and

(e) Resume work when water level has subsided and after inspection and certification by the HSO that it is safe to do so.

6.3.6 Monitoring Water Level and Other Conditions

In addition to the requirements of JSSS 2.1.7 [*Monitoring and Records*] ~~and unless otherwise stated in the Contract,~~ the Contractor shall monitor and keep records of all climatic, river and/or marine conditions in the direct vicinity of any Cofferdam including for example, the water level at various times throughout the day~~, tidal data, speed and direction of waterflow, wave height, wind speed and direction~~. (NK: These items are deleted because they are difficult measured and also not directly necessary for the safety of the Cofferdam.)

The Contractor shall provide all instruments and facilities to obtain the data and submit reports to the Engineer on a daily basis and compile on weekly basis.

6.4 WALKWAYS, LADDERS AND STEPLADDERS

(c) Instructions to Contractor's Personnel for evacuation;

(d) Stop work in accordance with JSSS 1.13 [*HSO – Scope of Duties and Authority*]; and

(e) Resume work when water level has subsided and after inspection and certification by the HSO that it is safe to do so.

6.3.6 Monitoring Water Level and Other Conditions

In addition to the requirements of JSSS 2.1.7 [*Monitoring and Records*], the Contractor shall monitor and keep records of all climatic, river and/or marine conditions in the direct vicinity of any Cofferdam including for example, the water level at various times throughout the day.

The Contractor shall provide all instruments and facilities to obtain the data and submit reports to the Engineer on a daily basis and compile on weekly basis.

6.4 WALKWAYS, LADDERS AND STEPLADDERS

Passageways" are the same as walkways but are covered by a roof and maybe also have sides in order to protect all personnel from falling objects or adjacent activities.
OSHA defines and stipulates as follows:
Subpart L—Scaffolds §1926.450 Scope, application and definitions applicable to this subpart.
Walkway means a portion of a scaffold platform used only for access and not as a work level.
§1926.851 Stairs, passageways, and ladders.
(a) Only those stairways, passageways, and ladders, designated as means of access to the structure of a building, shall be used. Other access ways shall be entirely closed at all times.
HSE use the terms as follows:
HSE L24 (Second edition) 2013 Approved Code of Practice and guidance: Workplace (Health, Safety and Welfare) Regulations 1992 123 To prevent slips and trips:
・ *keep walkways and work areas clear of obstructions;*
Regulation 25 Facilities for rest and to eat meals Disabled persons 25A Where necessary, those parts of the workplace (including in particular doors, passageways, stairs, showers, washbasins, lavatories and workstations) used

6.4.1 General

(1) This Section comprises safety measures relating to the movement (JC84) ~~or~~ of persons to and around the Site and includes temporary ~~pedestrian~~ walkways, pedestrian bridges, portable ladders and stepladders.

JC84: "the movement"とは何の movement でしょうか？
What does the "the movement" mean? What is doing movement?
NK1: movement of the persons. Modified.
NK: The following (2) is added as general requirement moved from 6.4.2 (9).

(2) The Contractor shall provide Contractor's Personnel the facilities of walkways, pedestrian bridges, ramps, portable ladders and stepladders, stairs and ladders, and the like to enable them to get to their work location in a safe and convenient manner.

(3) For temporary steps and staircase structures the requirements of JSSS ~~6.5~~ 6.5 [*Scaffolding*] shall apply.

(4) For Fall prevention from walkways, ladders and stepladders the requirements of JSSS 2.5 [*Fall Prevention*] shall apply.

(5) Details of the following shall be included in the Safety Plan required by JSSS ~~1.6~~ 1.7 [*Contractor's Safety Plan ~~Temporary Works~~*]:

To MD: I want to ask you to modify this referring to Issue 7 for (6).

(a) Locations and available periods of walkways to be provided;

(b) Drawings of walkway structures, indicating structure type, materials and main dimensions for bridge type (JC85) walkways where the height and length is 10m or more;

JC85: bridge type? pedestrian walkway on a platform?
NK1: 架設通路の意味です。Leave it as it is.

(c) Types of temporary walls, barriers or other separation between walkways and working areas or roads ~~or footpaths~~ on ~~or around~~ the Site; and (JC86)

JC86: 英語が分からない。 Cannot understand what this sentence means.
NK1: Modified and restricted walkways on the Site.

6.4.1 General

(1) This Section comprises safety measures relating to the safe movement to and around the Site of all Contractor's Personnel, Employer's Personnel and all other persons that are entitled to be on the Site and includes temporary walkways, bridges and ramps, portable ladders, stepladders and stairs.

I have included comments and have extended the above wording of the above to accommodate the added clause 6.4.2 (9).

(2) For temporary steps and staircase structures the requirements of JSSS 6.5 [Scaffolding] shall apply.

(3) For Fall prevention from walkways, ladders and stepladders the requirements of JSSS 2.5 [*Fall Prevention*] shall apply.

(4) Details of the following shall be included in the Safety Plan required by JSSS 1.7 [*Contractor's Safety Plans*]:

(a) Locations and available periods of walkways to be provided;

(b) Drawings of walkway structures, indicating structure type, materials and main dimensions for bridge type walkways where the height and length is 10m or more;

(c) Types of temporary walls, barriers or other separation between walkways and working areas, roads or footpaths on or around the Site; and

6.4.1 General

(1) This Section comprises safety measures relating to the safe movement to and around the Site of all Contractor's Personnel, Employer's Personnel and all other persons that are entitled to be on the Site and includes temporary walkways, bridges and ramps, portable ladders, stepladders and stairs.

(2) For temporary steps and staircase structures the requirements of JSSS 6.5 [Scaffolding] shall apply.

(3) For Fall prevention from walkways, ladders and stepladders the requirements of JSSS 2.5 [*Fall Prevention*] shall apply.

(4) Details of the following shall be included in the Safety Plan required by JSSS 1.7 [*Contractor's Safety Plans*]:

(a) Locations and available periods of walkways to be provided;

(b) Drawings of walkway structures, indicating structure type, materials and main dimensions for bridge type walkways where the height and length is 10m or more;

(c) Types of temporary walls, barriers or other separation between walkways and working areas, roads or footpaths on or around the Site; and

(d) Locations of emergency exits and evacuation routes.(JC87)

JC87: emergency evacuation routes でいいのでは。
Is “emergency evacuation routes” better?
NK1: Leaved it as it is.

6.4.2 Walkways

The Contractor shall:

(1) Provide designated (JC88) walkways ~~to,~~ in and around the various workplaces at the Site to ensure the safe and secure movement of all persons at all times.

JC88: To modify it to “designate pedestrian walkways.
NK1: Both seems OK. NK asks MD to consider the comment.
To MD, please review which is proper.

(2) Provide and maintain clear signage ~~with adequate lighting~~ so that all users are aware of the locations and routes of the walkways and can safely use them. ~~same and so that all Contractor's Personnel engaged in adjacent working operations are aware of and avoid entering such locations and routes.~~ (JC89)

JC89: 英語不明。 Cannot understand this sentence means.
NK: Modified.

(3) ~~Provide potable lighting such as head torches, lanterns, hand-held torches or the like for workers where considered necessary by the HSO.~~ Provide and maintain adequate lighting on ~~–~~ the walkways except when potable lighting such as head torches, lanterns, hand-held torches or the like is provided for workers where considered necessary by the HSO.(JC90)

JC90a: 日本語のスペックと内容が違う。
(3) is different from the Japanese JSSS version.
NK1: Modified referring to Japanese version.

JC90b: 安衛則 541 条では、坑道・常時通行の用に供しない場所で労働者に適当な照明具を所持させるときは、照明設備は除外としている。ここではそれを HSO の判断にゆだねているが、適切か？又、坑道などでは停電時対応の非常灯が設備されていても、cap lamp（防爆型）の携行を求める鉱山法もあり得るが。
Article 541 of the Jap. Regulation precludes the use of lighting equipment when workers are required to have appropriate lighting equipment in tunnels or places not used for regular pass. However, (3) is left to the discretion of the HSO, is it appropriate?
In addition, even if an emergency light is installed in a mine tunnel or the like in case of a power outage, there is a mine law that requires carrying a cap lamp (explosion-proof type).
NK1: Modified (2) and (3) to simply specify.

(4) Ensure that walkways have sufficient dimensions (JC91) and load capability for the intended purpose.

JC91: Propose replace with dimensions with width
NK leave it as it is.

(5) Ensure that there are no obstacles in walkways and that surfaces are level and safe, maintain all in a clean and orderly condition to avoid any falls, slips and injury.

(6) Ensure that temporary bridge type walkways shall have sufficient dimensions (JC92) and load capability for the intended purpose.

JC92: Propose replace with dimensions with width

The above use of “footpaths” and “around the Site” is correct, it refers to the site boundary where any public footpaths and/or roads require separation and protection from construction site operations.

(d) Locations of emergency exits and evacuation routes.

6.4.2 Walkways

The Contractor shall:

(1) Provide designated walkways to, in and around the various workplaces at the Site to ensure the safe and secure movement of all persons at all times.

The above wording is all correct, even if no temporary construction is necessary the phrase covers all.

(2) Provide and maintain clear signage so that all users are aware of the locations and routes.

(3) Provide and maintain adequate lighting except when portable lighting such as head torches, lanterns, hand-held torches or the like is provided for workers where considered necessary by the HSO.

(4) Ensure that walkways have sufficient dimensions and load-bearing capability for the intended purpose.

(5) Ensure that there are no obstacles in walkways and that surfaces are level and safe, maintain all in a clean and orderly condition to avoid any falls, slips and injury.

(d) Locations of emergency exits and evacuation routes.

6.4.2 Walkways

The Contractor shall:

(1) Provide designated walkways to, in and around the various workplaces at the Site to ensure the safe and secure movement of all persons at all times.

(2) Provide and maintain clear signage so that all users are aware of the locations and routes.

(3) Provide and maintain adequate lighting except when portable lighting such as head torches, lanterns, hand-held torches or the like is provided for workers where considered necessary by the HSO.

(4) Ensure that walkways have sufficient dimensions and load-bearing capability for the intended purpose.

(5) Ensure that there are no obstacles in walkways and that surfaces are level and safe, maintain all in a clean and orderly condition to avoid any falls, slips and injury.

(6) Ensure that temporary bridge type walkways shall have sufficient dimensions and load capability for the intended purpose.

NK: leave it as it is.

(7) Ensure that ramps do not exceed a gradient of 30 degrees and that they are provided with handrails. Steeper gradients walkways shall be provided with steps or staircases or ladders where appropriate.

To MD: Is this addition correct?

(8) Ensure that ramps, steps and staircases have slip resistant surfaces and that they are provided with handrails and toe boards in accordance with JSSS 2.5.5 [*Handrails*] and JSSS 2.5.6 [*Toeboards*].(JC93)

JC93: 英語不明。 Cannot understand this sentence means.
JC1: No modification is made.

~~(9) Ensure that Contractor's Personnel working at heights or depths in excess 1.5m, are provided with facilities to enable them to get to their work location in a safe and convenient manner.~~ (JC94)

JC94: English expression is correct?
NK: Expression is correct. The above (9) shall be modified and moved to 6.4.1 General (2) because this general requirement and the 1.5 m height limitation shall be removed..

6.4.3 Emergency Exits and Evacuation Routes (JC95)

The Contractor shall provide clear and illuminated signage so that all persons are made aware of the locations of emergency exits and of the locations and routes of emergency walkways ladders and the like for evacuation and maintain all such locations and routes in a clean, safe and readily available condition.

JC95: 前項 7.4.2 において安全な walkway の規定がされているので、その内のいずれか(複数？)を emergency exits and/or evacuation routes として兼ねる設備のような規定でよいのではないか。
また、ここでは ladder/stepladder も考慮されるべきかと。
Some of walkways specified in 7.4.2 may be specified as can be specified as emergency exits and/or evacuation routes. Ladder/stepladder should be considered as emergency exits and/or evacuation routes here.
NK: Modified.

6.4.4 Portable Ladders and Stepladders (JC96)

JC96a: どっかのスペックを持ってきた内容となっている。著作権の問題がなければ可。

(6) Ensure that temporary bridge type walkways shall have sufficient dimensions and load capability for the intended purpose.

(7) Ensure that ramps do not exceed a gradient of 30 degrees and that they are provided with handrails. Steeper gradients shall be provided with steps or staircases or ladders where appropriate.

The addition of "walkways" to the above is not necessary within the context of the clause.

(8) Ensure that ramps, steps and staircases have slip resistant surfaces and that they are provided with handrails and toe boards in accordance with JSSS 2.5.5 [*Handrails*] and JSSS 2.5.6 [*Toeboards*].

(9) ~~Ensure that Contractor's Personnel working at heights or depths in excess of 1.5m, are provided with facilities to enable them to get to their work location in a safe and convenient manner.~~

I have included the relevant parts of the above as requested in 6.4.1 (1) above.

6.4.3 Emergency Exits and Evacuation Routes

The Contractor shall provide clear and illuminated signage so that all persons are made aware of the locations of emergency exits and of the locations and routes of emergency walkways, steps, ladders and the like for evacuation and maintain all such locations and routes in a clean, safe and readily available condition.

6.4.4 Vertical Access

The Contractor shall provide steps, stairs and ramps as means of providing safe access or egress from excavations or different working levels.

Steps and stairs ramps shall be constructed from:

(1) Scaffolding in accordance with JSSS 6.5 [*Scaffolding*], provided with handrails and non-slip treads.

(2) Portable ladders in accordance with JSSS 6.4.5 [*Portable Ladders and Stepladders*].

(3) Purpose made timber or metal ramps with plywood boarding and structural timber framing.

I have added the above so that it is coordinated with the addition in Excavation, clause 7.2.2 (3) Install facilities such as stairs and ramps as means of access or egress from the excavation site in accordance with JSSS 6.4.4 [Vertical Access].

(7) Ensure that ramps do not exceed a gradient of 30 degrees and that they are provided with handrails. Steeper gradients shall be provided with steps or staircases or ladders where appropriate.

(8) Ensure that ramps, steps and staircases have slip resistant surfaces and that they are provided with handrails and toe boards in accordance with JSSS 2.5.5 [*Handrails*] and JSSS 2.5.6 [*Toeboards*].

6.4.3 Emergency Exits and Evacuation Routes

The Contractor shall provide clear and illuminated signage so that all persons are made aware of the locations of emergency exits and of the locations and routes of emergency walkways, steps, ladders and the like for evacuation and maintain all such locations and routes in a clean, safe and readily available condition.

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Steps and stairs ramps shall be constructed from:

(1) Scaffolding in accordance with JSSS 6.5 [*Scaffolding*], provided with handrails and non-slip treads.

(2) Portable ladders in accordance with JSSS 6.4.5 [*Portable Ladders and Stepladders*].

(3) Purpose made timber or metal ramps with plywood boarding and structural timber framing.

6.4.5 Portable Ladders and Stepladders

It seems that the provisions here are copy of other specifications. If there is no copyright issue, they can be used as they are.
NK1: 和文案と同じです。These are same as draft in Japanese. NK leave them as they are.

JC96b: 7.4.4 (1)-(4)において HSG150 (3rd edition, published 2006), Ladders and stepladders page 41 of 141 を参照されることを希望します。
I hope to refer to HSG150 (3rd edition, published 2006), Ladders and stepladders page 41 of 141for 7.4.4 (1) to (4).
NK: We referred to the relevant parts of HSG150 and modified.

The Contractor shall comply with the following requirements regarding the use portable ladders and stepladders:

(1) ~~Structure and specification of~~ (JC97) Portable ladders shall:

JC97: こんな書き方があるのか。タイトルを Portable Ladders として Potable ladder shall; (a).....
Is there such way of writing? I propose to replace the title with, for example, "Portable Ladders", and "Potable ladder shall; (a) .."
NK1: modified as commented.

(a) ~~Shall~~ Be of sound structure, clean and not contaminated by any slippery material;

(b) Be without visible signs of defect, damage, corrosion, and shall otherwise in safe condition;

(c) Be at least 30 cm wide;

(d) Have steps with an interval of 25cm to 35cm and evenly spaced; and

(e) Have slip-proof steps or have other measures to prevent slipping.

(2) ~~Structure and specification of~~ (JC98) Stepladders shall:

JC98: Same as above.
NK1: Modified.

(a) ~~Shall~~ Be of sound structure, clean and not contaminated by any slippery material; (JC99)

JC99: 前項(1) (a)と重複 Same as the previous section (1) (a) Duplicates.
NK: Requirement is same for (1) and (2).

(b) Without visible signs of defect, damage, corrosion, and shall otherwise in safe condition; (JC100)

JC100: 前項(1) (b)と重複 Same as the previous section (1) (b). Duplicates.
NK: Ditto.

(c) The angle between the front rail (JC101) and the floor shall not exceed 75 degrees and for folding stepladders they shall be equipped with a lock (such as a spreader with lock) to secure the angle made by the front rail and the floor;

JC101: HSG 150 では"stiles"としているようです。
In HSG 150, the "front rail" seems to be used as "stiles".
NK: "front rail" is used in US The Code of Federal Regulations of the United States of America.
https://books.google.co.jp/books?id=woU6AAAAIAAJ&pg=PA72&lpg=PA72&dq=front+rail+step+ladder&source=bl&ots=S38ct5egJ7&sig=ACfU3U0uHTs_ADUHGctBGXwmY5rGwsu5IA&hl=ja&sa=X&ved=2ahUKEwj7-baBn-zoAhUKBKYKHci4A-cQ6AEwE3oECAsQMg#v=onepage&q=front%20rail%20step%20ladder&f=false
Left as it is.

(d) Steps shall be non-slip and of sufficient size to ensure safe

6.4.5 Portable Ladders and Stepladders

The Contractor shall comply with the following requirements regarding the use of portable ladders and stepladders:

(1) Portable ladders shall:

(a) Be of sound structure, clean and not contaminated by any slippery material;

(b) Be without visible signs of defect, damage, corrosion, and shall otherwise in safe condition;

(c) Be at least 30 cm wide;

(d) Have steps with an interval of 25cm to 35cm and evenly spaced; and

(e) Have slip-proof steps or have other measures to prevent slipping.

(2) Stepladders shall

(a) Be of sound structure, clean and not contaminated by any slippery material;

(b) Be without visible signs of defect, damage, corrosion, and shall otherwise in safe condition;

(c) Have an angle between the front rail and the floor not exceeding 75 degrees and for folding stepladders they shall be equipped with a lock (such as a spreader with lock) to secure the angle made by the front rail and the floor;

The Contractor shall comply with the following requirements regarding the use of portable ladders and stepladders:

(1) Portable ladders shall:

(a) Be of sound structure, clean and not contaminated by any slippery material;

(b) Be without visible signs of defect, damage, corrosion, and shall otherwise in safe condition;

(c) Be at least 30 cm wide;

(d) Have steps with an interval of 25cm to 35cm and evenly spaced; and

(e) Have slip-proof steps or have other measures to prevent slipping.

(2) Stepladders shall

(a) Be of sound structure, clean and not contaminated by any slippery material;

(b) Be without visible signs of defect, damage, corrosion, and shall otherwise in safe condition;

(c) Have an angle between the front rail and the floor not exceeding 75 degrees and for folding stepladders they shall be equipped with a lock (such as a spreader with lock) to secure the angle made by the front rail and the floor;

operation; and.

(e) Rails shall have non-slip feet or shoes.

(3) Use of ladders and stepladders

(Unless otherwise stated, the following requirements apply to both ladders and stepladders)

(a) Users must read and follow all labels/markings on ladders, be aware of and never exceed the maximum load rating of a ladder and of the weight it is supporting, including the weight of any tools or equipment;

(b) Users must avoid electrical hazards, always look for overhead power lines before handling ladders. Avoid using metal ladders near power lines or exposed energised electrical equipment;

(c) Ladders must be inspected prior to use. If a ladder is damaged, it must be removed from service and suitably tagged until repaired or discarded;

(d) Ladders shall only be placed on a stable, firm and sufficiently strong base giving level and safe support and so that the rungs or steps remain horizontal, as well as any loading placed on it;

(e) Ladders shall maintain an angle between foot and floor of L (horizontal length): H (height) = 1: 4 (75.5 degrees);

(f) Ladders shall have the top projecting at least 1 m over the landing floor;

(g) Ladders shall not be placed on boxes, or other unstable bases to obtain additional height and connected ladders to give greater height or reach shall not be allowed;

(h) Suspended ladders shall be anchored in a secure manner so that they cannot be displaced or swing;

(i) Ladders shall be secured before any use and prevented from slipping during use by:

(i) Securing the side rails at or near the top and the bottom;

(ii) Providing an effective anti-slip shoe or foot; and

(iii) Having another worker support the lower part of the ladder.

(j) No extendable ladder shall be used where its sections cannot be locked and which could therefore move while in use;

(k) Where a ladder or a series of ladders rise for a vertical height of 9 m or more above the base level, safe landing areas or rest platforms shall be provided at suitable intervals wherever possible;

(l) Every ladder shall be used in such a way that:

(i) A secure handhold and secure support are always available to the user; and

(ii) The user can maintain a safe handhold when carrying a load unless, in the case of a step ladder, the maintenance of a handhold is not practicable when a

(d) Steps shall be non-slip and of sufficient size to ensure safe operation; and.

(e) Rails shall have non-slip feet or shoes.

(3) Use of ladders and stepladders

(Unless otherwise stated, the following requirements apply to both ladders and stepladders)

(a) Users shall read and follow all labels/markings on ladders, be aware of and never exceed the maximum load rating of a ladder and of the weight it is supporting, including the weight of any tools or equipment;

(b) Users shall avoid electrical hazards, always look for overhead power lines before handling ladders. Avoid using metal ladders near power lines or exposed energised electrical equipment;

(c) Ladders shall be inspected prior to use. If a ladder is damaged, it shall be removed from service and suitably tagged until repaired or discarded;

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(e) Ladders shall maintain an angle between foot and floor of L (horizontal length): H (height) = 1: 4 (75.5 degrees);

(f) Ladders shall have the top projecting at least 1 m over the landing floor;

(g) Ladders shall not be placed on boxes, or other unstable bases to obtain additional height and connected ladders to give greater height or reach shall not be allowed;

(h) Suspended ladders shall be anchored in a secure manner so that they cannot be displaced or swing;

(i) Ladders shall be secured before any use and prevented from slipping during use by:

(i) Securing the side rails at or near the top and the bottom;

(ii) Providing an effective anti-slip shoe or foot; and

(iii) Having another worker support the lower part of the ladder.

(j) No extendable ladder shall be used where its sections cannot be locked and which could therefore move while in use;

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(i) A secure handhold and secure support are always available to the user; and

(ii) The user can maintain a safe handhold when carrying a

(d) Steps shall be non-slip and of sufficient size to ensure safe operation; and.

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(3) Use of ladders and stepladders

(Unless otherwise stated, the following requirements apply to both ladders and stepladders)

(a) Users shall read and follow all labels/markings on ladders, be aware of and never exceed the maximum load rating of a ladder and of the weight it is supporting, including the weight of any tools or equipment;

(b) Users shall avoid electrical hazards, always look for overhead power lines before handling ladders. Avoid using metal ladders near power lines or exposed energised electrical equipment;

(c) Ladders shall be inspected prior to use. If a ladder is damaged, it shall be removed from service and suitably tagged until repaired or discarded;

(d) Ladders shall only be placed on a stable, firm and sufficiently strong base giving level and safe support and so that the rungs or steps remain horizontal, as well as any loading placed on it;

(e) Ladders shall maintain an angle between foot and floor of L (horizontal length): H (height) = 1: 4 (75.5 degrees);

(f) Ladders shall have the top projecting at least 1 m over the landing floor;

(g) Ladders shall not be placed on boxes, or other unstable bases to obtain additional height and connected ladders to give greater height or reach shall not be allowed;

(h) Suspended ladders shall be anchored in a secure manner so that they cannot be displaced or swing;

(i) Ladders shall be secured before any use and prevented from slipping during use by:

(i) Securing the side rails at or near the top and the bottom;

(ii) Providing an effective anti-slip shoe or foot; and

(iii) Having another worker support the lower part of the ladder.

(j) No extendable ladder shall be used where its sections cannot be locked and which could therefore move while in use;

(k) Where a ladder or a series of ladders rise for a vertical height of 9 m or more above the base level, safe landing areas or rest platforms shall be provided at suitable intervals wherever possible;

(l) Every ladder shall be used in such a way that:

(i) A secure handhold and secure support are always available to the user; and

(ii) The user can maintain a safe handhold when carrying a load unless, in the case of a step ladder, the maintenance of a handhold is not practicable when a load is carried, and a risk assessment has demonstrated that the use of a stepladder is justified because of the low risk and the short

load is carried, and a risk assessment has demonstrated that the use of a stepladder is justified because of the low risk and the short duration of use. (4) Additional Requirements for Use of Stepladders (a) Stepladders shall not be used for work at heights of 2m or more. The Contractor shall adopt other measures for work in excess of 2m such as or providing scaffolding in accordance with JSSS 6.5 [*Scaffolding*]; (b) Step ladders shall not be used as a single ladder or in a partially closed position; (c) Treads of stepladders shall have the correct sized area and slip resistant finish for safe working. (d) Restraint Clasps shall be securely locked before any use. (e) Stepladders shall not be placed on unstable or uneven surfaces. (f) Stepladders shall not be positioned in front of doors. (g) The top rung of a ladder or step of a step ladder shall not be used as a rung/step unless designed for that purpose. (h) For use of Stepladders as a support for trestle scaffolding refer to JSSS 6.5 [*Scaffolding*]. **6.4.5 Inspection** In accordance with JSSS ~~1.11~~ 1.13 [*HSO - Scope of Duties and Authority*] the HSO shall regularly inspect all walkways, ladders and step ladders, ensure that same are safe and fit for the intended purpose and visibly certify each as “Safe for Use” or otherwise.	load unless, in the case of a step ladder, the maintenance of a handhold is not practicable when a load is carried, and a risk assessment has demonstrated that the use of a stepladder is justified because of the low risk and the short duration of use. (4) Additional Requirements for Use of Stepladders (a) Stepladders shall not be used for work at heights of 2m or more. The Contractor shall adopt other measures for work in excess of 2m such as or providing Scaffolding in accordance with JSSS 6.5 [*Scaffolding*]; (b) Step ladders shall not be used as a single ladder or in a partially closed position; (c) Treads of stepladders shall have the correct sized area and slip resistant finish for safe working. (d) Restraint Clasps shall be securely locked before any use; (e) Stepladders shall not be placed on unstable or uneven surfaces; (f) Stepladders shall not be positioned in front of doors; (g) The top rung of a ladder or step of a step ladder shall not be used as a rung/step unless designed for that purpose; and (h) For use of Stepladders as a support for trestle Scaffolds refer to JSSS 6.5 [*Scaffolding*]. **6.4.6 Inspection** In accordance with JSSS 1.13 [*HSO - Scope of Duties and Authority*] the HSO shall regularly inspect all walkways, ladders and step ladders, ensure that same are safe and fit for the intended purpose and visibly certify each as “Safe for Use” or otherwise.	duration of use. (4) Additional Requirements for Use of Stepladders (a) Stepladders shall not be used for work at heights of 2m or more. The Contractor shall adopt other measures for work in excess of 2m such as or providing Scaffolding in accordance with JSSS 6.5 [*Scaffolding*]; (b) Step ladders shall not be used as a single ladder or in a partially closed position; (c) Treads of stepladders shall have the correct sized area and slip resistant finish for safe working. (d) Restraint Clasps shall be securely locked before any use; (e) Stepladders shall not be placed on unstable or uneven surfaces; (f) Stepladders shall not be positioned in front of doors; (g) The top rung of a ladder or step of a step ladder shall not be used as a rung/step unless designed for that purpose; and (h) For use of Stepladders as a support for trestle Scaffolds refer to JSSS 6.5 [*Scaffolding*]. **6.4.6 Inspection** In accordance with JSSS 1.13 [*HSO - Scope of Duties and Authority*] the HSO shall regularly inspect all walkways, ladders and step ladders, ensure that same are safe and fit for the intended purpose and visibly certify each as “Safe for Use” or otherwise.
6.5 SCAFFOLDING (JC102) JC102: HSG 150 3rd edition 2006 General access scaffolds (page 28/141)を参照されて全面的な改訂が望まれます。 I hope revision is fully made with reference to HSG 150 3rd edition 2006 General access scaffolds (page 28/141). JC1: 指針をベースに作成した和文にもとに、必要な事項及び規定を追加する形で英文を作成しています。和文での必要事項を網羅していますが、HSG は具体的な数値規定がないため参照とはせず、**OSHA をベースとした規定に 6.5 全体を改訂致します。** This English JSSS was prepared based on the Japanese version which was prepared based on the safety guidelines of Ministry of Construction, Japan. 6.5 has covered requirements in Japanese version. However, **6.5 is modified based on OSHA because HSG does not specify concrete values required for JSSS.** To MD: I modified based on OSHA because the OSHA provision are easy to refer for example to names of types and dimensions of scaffoldings in internet and HSG are not so much as OSHA. Please kindly understand my modification because JICA comments they cannot understand NK English draft. **NK1: 足場の種類・名称を OSHA の規定に合わせて変更します。単管足場に加えて、枠組足場を追記します。**	**6.5 SCAFFOLDING**	**6.5 SCAFFOLDING**

The names and types of scaffoldings are modified following OSHA. Fabricated frame Scaffolding as a part of supported scaffoldings.
To MD: Based on OSHA, I added and modified Scaffoldings all as below.

NK1: 足場の規定を次のように変更致します。

6. SCAFFOLDING (目次の比較) (黄色網掛は名称変更、青色は追加です。)

No.	Issue 1	No.	Issue 2 (Revised from Issue 1)	Referred OSHA
6.5.1	General	6.5.1	General	
6.5.2	Compliance Standards	6.5.2	Compliance Standards	
6.5.7	Notices to be Displayed on Scaffolds	6.5.3	Notices to be Displayed on Scaffolds	
		6.5.4	Scaffold Platforms	
6.5.3	Tubular Steel Scaffolding (鋼管足場)	6.5.5	Supported Scaffolds (下から支えられた足場) (1)General (2)Tube and Coupler Scaffolds (単管足場) (3)Fabricated Frame Scaffolds(枠組足場)	Subpart L-Scaffolds, 1926.451 General requirements (a) (b) and (c)
6.5.4	Suspended Scaffolds (つり足場)	6.5.6	Suspended Scaffolds	1926.452 Additional requirements applicable to specific types of scaffolds
6.5.5	Tower Scaffolds (including Mobile Tower Scaffolds) (移動式足場)	6.5.7	Mobile Scaffolds	1926.452 (w)
6.5.6	Trestle Scaffolds(架台)	6.5.8	Trestle Scaffolds	
6.5.8	Scaffold Assembly, Erection, Alteration and Dismantling Generally	6.5.9	Scaffolding Assembly, Erection, Alteration and Dismantling Generally	
6.5.10	General Inspection and Maintenance of Scaffolding	6.5.10	General Inspection and Maintenance of Scaffolding	
6.5.9	Mobile Elevating Work Platforms()	6.5.11	Mobile Elevating Work Platforms	

6.5.1 General (JC103)

JC103: 日本語 ver.とは異なる内容となっている。
MM: JICA: The content is different from the Japanese ver. Check it again, please.
MD: The comment is correct, it is very different basically because MD considered it necessary to modify as mentioned in the draft version which also included some guidance notes, comments and queries.
NK : We will discuss the draft with JICA and necessary changes.
NK1: 上記にもとづき、種類名称を変えて英文を変更します。
We will revise this Section referring to MD's comment in Issue 1 and OSHA.
"Scaffolding" is defined in Chapter 1 A1.1.2 as follows:
(22) "Scaffold" or "Scaffolding" means a temporary structure or structures that provide access on or from which persons work or to support Goods.

(1) This Section contains requirements for various types of Scaffolding defined in JSSS Chapter 1, A1.1.2 including ~~tubular steel~~ supported scaffoldings for example tube and coupler, ~~and modular or system~~

6.5.1 General

(1) This Section contains requirements for various types of Scaffolding ~~defined in JSSS Chapter 1, A1.1.2~~ including supported scaffolds (for example tube and coupler scaffolds and fabricated frame scaffolds),

6.5.1 General

(1) This Section contains requirements for various types of Scaffolding including supported scaffolds (for example tube and coupler scaffolds

fabricated frame, mobile scaffoldings, suspended scaffolding for example interior hung scaffolding, trestle scaffoldings in various configurations and mobile elevating work platforms.	mobile scaffolds, suspended scaffolds ~~for example interior hung scaffolding~~, trestle scaffolds ~~in various configurations~~ and mobile elevating work platforms.	and fabricated frame scaffolds), mobile scaffolds, suspended scaffolds trestle scaffolds and mobile elevating work platforms.
	To avoid any criticism or misunderstanding, I have not generally altered your revised clauses (except punctuation and as shown in red fonts) but please note as follows:	
	If OSHA is used individual types are referred to as "Scaffolds" collectively it is "Scaffolding".	
	"Scaffolding" is a plural noun, so no need for an "s"	
	There is not always a need to cross reference to Annex 1 Definitions, whenever a definition is used, capitalisation is sufficient.	
	Various types mean for example tube and coupler scaffolds and fabricated frame scaffolds	
	Various configurations mean for example "interior hung scaffolding" or "trestle scaffolding".	
(2) Not all types are separately described in this Section and the requirements of this Section are therefore of general application. Requirements for any one type of Scaffolding shall also apply generally to all types and configurations unless otherwise stated or apparent from the wording and context.	(2) Not all types of Scaffolding are separately described in this Section and the requirements of this Section are therefore of general application. Requirements for any one type of Scaffolding shall also apply generally to all types and configurations unless otherwise stated or apparent from the wording and context.	(2) Not all types of Scaffolding are separately described in this Section and the requirements of this Section are therefore of general application. Requirements for any one type of Scaffolding shall also apply generally to all types and configurations unless otherwise stated or apparent from the wording and context.
(3) All ~~tubular steel~~ scaffolding shall be designed, erected, tested, inspected, used, dismantled and removed by Contractor's Personnel (JC104) who ~~that~~ that have been trained and certified for such operations in accordance with JSSS ~~1.16~~ 1.18 [*Proper Placement of Contractor's Personnel*].	(3) All Scaffolding shall be designed, erected, tested, inspected, used, dismantled and removed by Contractor's Personnel that have been trained and certified for such operations in accordance with JSSS 1.18 [*Proper Placement of Contractor's Personnel*].	(3) All Scaffolding shall be designed, erected, tested, inspected, used, dismantled and removed by Contractor's Personnel that have been trained and certified for such operations in accordance with JSSS 1.18 [*Proper Placement of Contractor's Personnel*].
JC104: Contractor's Personnel なのは当然のこと It is obvious who do those is Contractor's Personnel. NK1: Important thing is to specify that Personnel trained and certified for such operations shall be assigned. The actions required are for design, erection, test, inspect, use, dismantle and removal, therefore this sentence does not specify personnel positions like HSO, worker, Operation Leader. Therefore, not modified.		
~~(4) All modular or system scaffolding (consisting of prefabricated individual components, braces and accessories) shall be designed, assembled, erected, tested, inspected, used, dismantled and removed by Contractor's Personnel (JC105) that have been trained and certified for such operations in accordance with JSSS 1.16 [*Proper Placement of Contractor's Personnel*].~~		
JC105: 前コメントに同じ。書きます？ Same as previous comment. Is it necessary to stipulate? NK1: (3) and (4) are merged in (3)		
(4) All scaffolding work when the manufacturer's written instructions exist for example for fabricated frames, mobile elevating work platforms shall be carried out strictly in accordance with the manufacturer's written instructions.	(4) All Scaffolding, ~~when the manufacturer's written instructions exist for example for fabricated frames, mobile elevating work platforms~~ shall be carried out in compliance with the manufacturer's written instructions or the design of the Contractor.	(4) All Scaffolding shall be carried out in compliance with the manufacturer's written instructions or the design of the Contractor.
	The above (green) has been changed to be consistent with other clauses.	
	I do not recommend the added NK wording in red as it has little or no meaning and reduces the ability to apply this requirement properly. The origin text is necessary to support proper training :	
	What is the meaning of exist? "Available"? "Cannot find it"?	

(5) The design, management, provision, safe use and safe removal of Scaffolding shall comply with the requirements of 1.37 [Design and Management of Temporary Works].

(6) ~~Please refer to all other related JSSS requirements including but not restricted to~~ (JC106 & 107): Handrails, toeboards and ladders in Scaffolding shall be provided in accordance with JSSS 2.5.5 [Handrails], 2.5.6 [Toeboards] and 7.4 [Walkways, Ladders and Stepladders], respectively.

JC106: この表現は好ましくない。必要であれば、関連クローズをすべて書き出すことが望まれる。スペック作成者の信頼度が下がる。
The expression of "but not restricted to "is not desirable. If necessary, it is desirable to write out all relevant closes. The reliability of the spec writer is reduced.
NK1: The (7) above will be deleted based on the JC's comment and the point that Compliance Standards is defined in 7.5.2.
JC107:英語不明。 Cannot understand this sentence means.
NK: Deleted (a) to (e) and added common requirement in (7) below from 6.5.3.

~~(a) JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*];~~
~~(b) JSSS 1.35 [*Design and Management of Temporary Works*]~~
~~(c) JSSS 2.5 [*Fall Prevention*]~~
~~(d) JSSS 2.6 [*Falling Objects*];~~
~~(e) JSSS 6.4.4 [*Portable Ladders and Stepladders*];~~

(7) Unless specified for each scaffolding, each scaffold and scaffold component shall be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load applied or transmitted to it.

(8) Scaffolds and scaffold components must not be loaded in excess of their maximum intended loads or rated capacities, whichever is less. (JC108)

JC108: HSG 150 3rd edition 2006 General access scaffolds 145 項で明記されている。
It is clarified in the General access scaffolds, section 145, HSG 150 3rd edition 2006.
NK1: No modification.

(9) Scaffolding shall not be used for any purpose other than the intended original purpose and for example shall never be used for hoisting loads. ~~The Contractor shall provide other specific types of Contractor's Equipment (such as material hoists) for that purpose.~~ (JC109)

JC109: HSG 150 3rd edition 2006 General access scaffolds 145 項では明記されている。 It is clarified in the General access scaffolds, section 145, HSG 150 3rd edition 2006.
NK1: No modification.

(10) Scaffolding shall be removed immediately upon completion of the work for which it is provided. (JC110)

JC110: General で記述することでしょうか？ Shall it be written in General?

Why bother to include the clause if it is not vital or if it can be avoided? It is not old material and all should be available on line.

NK: There are scaffolding designed and constructed by the Contractor at the site such as tube and coupler scaffolds. The Contractor can obtain the specifications (strength, etc.) of tubes and couplers but may not the manufacturer's written instructions. NK added "and design of the Contractor".

(5) The design, management, provision, safe use and safe removal of Scaffolding shall comply with the requirements of ~~JSSS 1.37 [Design and Management of Temporary Works]~~ 6.1.1 [Design and Provision of Temporary Works Generally]. (NK modifies)

The above suggested change is not recommended, the original text is correct. JSSS 7.1.1 includes JSS 1.37 but also includes additional requirements.

~~(6) Please refer to all other related JSSS requirements including but not restricted to:~~

The use of the term "but not restricted to" in the above is perfectly acceptable in legal documents of this type and does not reduce "the reliability of the spec writer" as suggested. It is designed to aid the reader without creating a commitment or obligation for the writer. To omit the following is therefore OK but not helpful particularly bearing in mind the complicated nature or JSSS.

If not required, above (6) heading requires deletion.

NK: As (a) to (e) are deleted, so (6) is deleted now.

~~(a) JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*];~~
~~(b) JSSS 1.37 [*Design and Management of Temporary Works*]~~
~~(c) JSSS 2.5 [*Fall Prevention*]~~
~~(d) JSSS 2.6 [*Falling Objects*];~~
~~(e) JSSS 6.4.4 [*Portable Ladders and Stepladders*];~~

(7) Unless specified elsewhere in JSSS or in any of the compliance standards, all Scaffolding and Scaffold components shall be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load applied or transmitted to it.

I suggest as above

(8) Scaffolds and Scaffold components shall not be loaded in excess of their maximum intended loads or rated capacities, whichever is less.

(9) Scaffolding shall not be used for any purpose other than the intended original purpose and for example shall never be used for hoisting loads. The Contractor shall provide other specific types of Contractor's Equipment (such as material hoists) for that purpose.

NK state no change for above so why delete?
NK: We agreed to your stipulation and will not delete it.

(10) Scaffolding shall be removed immediately upon completion of the work for which it is provided.

(5) The design, management, provision, safe use and safe removal of Scaffolding shall comply with the requirements of JSSS 6.1.1 [Design and Provision of Temporary Works Generally].

(6) Unless specified elsewhere in JSSS or in any of the compliance standards, all Scaffolding and Scaffold components shall be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load applied or transmitted to it.

(7) Scaffolds and Scaffold components shall not be loaded in excess of their maximum intended loads or rated capacities, whichever is less.

(8) Scaffolding shall not be used for any purpose other than the intended original purpose and for example shall never be used for hoisting loads. The Contractor shall provide other specific types of Contractor's Equipment (such as material hoists) for that purpose.

(9) Scaffolding shall be removed immediately upon completion of the work for which it is provided.

NK: It shall be specified in General because (10) is a part of 6.5.1 General for all Scaffolding.

(11) ~~All Temporary Electrical Installations~~ (JC111a)~~shall be designed, installed, inspected, tested, altered and removed by Contractor's Personnel that qualified, trained and certified for such operations in accordance with JSSS 1.16 [Proper Placement of Contractor's Personnel].~~ (JC111b)

JC111a: temporary electrical installation とは？ What is temporary electrical installation?
JC11b: 不要、ここは scaffolding の規定。 Not required as this is the requirement for scaffolding.
NK: Deleted.

6.5.2 Compliance Standards

(1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], any items in this Section or relevant to the subject of this Section and which are not fully covered by JSSS, the Contractor shall comply with the technical requirements of any one of the following standards:

(a) OSHA PART 1926-Safety and Health Regulations for Construction, Subpart L-Scaffolds;

(b) ANSI/ASSP A10.8 (JC112) – 2019 Scaffolding Safety Requirements equipment - Part 1: Scaffolds - Performance requirements and general design, USA; and

(c) BS EN12811-1:2003 Temporary works equipment - Part 1: Scaffolds - Performance requirements and general design, UK.

JC112: 新 内容未確認 Is it new information? JICA hasn't confirmed it yet.
NK1: ANSI is included in Japanese draft. Left it as it is.

(2) ~~Unless otherwise stated in the Contract or in any of the standards for compliance, each scaffold and scaffold component must support without failure its own weight and at least four times~~ (JC113a)~~the maximum intended load applied or transmitted to it.~~ (JC113b)

JC113a: 安全係数 4 の根拠？ Are there any specified grounds for safety factor 4?
JC113b: 参考までに関連する standard を示してください。 Please indicate relevant standard.
NK: It is from OSHA §1926.451 General requirements below.
a) Capacity. (1) Except as provided in paragraphs, each scaffold and scaffold component shall be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load applied or transmitted to it.
(2)above is moved to 6.5.1 (7).

6.5.2 Compliance Standards

(1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], any items in this Section or relevant to the subject of this Section and which are not fully covered by JSSS, the Contractor shall comply with the technical requirements of any one of the following standards:

(a) OSHA PART 1926-Safety and Health Regulations for Construction, Subpart L-Scaffolds;

(b) ANSI/ASSP A10.8 – 2019 Scaffolding Safety Requirements equipment - Part 1: Scaffolds - Performance requirements and general design, USA; and

(c) BS EN12811-1:2003 Temporary works equipment - Part 1: Scaffolds - Performance requirements and general design, UK.

Further to our earlier discussion on permission to work and signage and in the absence of any further formation I have drafted the following. This includes previous clause 6.5.9 and all is here as it applies generally:

6.5.3 Notices to be Displayed on Scaffolds

(1) Following inspections by HSO, suitable signage shall be applied to Scaffolds clearly indicating for example:

(a) "Scaffold Complete and Safe For Use";

(b) "Scaffold Not Complete - Do Not Use"; and

(c) "Scaffold Not Safe For Use".

6.5.2 Compliance Standards

(1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], any items in this Section or relevant to the subject of this Section and which are not fully covered by JSSS, the Contractor shall comply with the technical requirements of any one of the following standards:

(a) OSHA PART 1926-Safety and Health Regulations for Construction, Subpart L-Scaffolds;

(b) ANSI/ASSP A10.8 – 2019 Scaffolding Safety Requirements equipment - Part 1: Scaffolds - Performance requirements and general design, USA; and

(c) BS EN12811-1:2003 Temporary works equipment - Part 1: Scaffolds - Performance requirements and general design, UK.

6.5.3 Notices to be Displayed on Scaffolds

(1) Following inspections by HSO, suitable signage shall be applied to Scaffolds clearly indicating for example:

(a) "Scaffold Complete and Safe For Use";

(b) "Scaffold Not Complete - Do Not Use"; and

(c) "Scaffold Not Safe For Use".

6.5.3 Platform of Scaffolding

NK1: 作業床に関し各節でそれぞれ規定していますので、まとめて新款 6.5.4 足場床を、OSHA を遵守することを追加します。
As each Section specifies Platform, new section 6.5.3 is added below to specify generally for all scaffold and comply with OSHA.

The platform of Scaffolding shall comply to the following:

(1) Each platform on all working levels of scaffoldings shall be fully planked or decked between the front uprights and the ~~guardrail~~ handrails supports as follows:

(a) Platforms shall be of adequate size and strength and with true dimension and no twist or bending, no splits, holes or damage.

(b) Each platform unit shall be installed so that the space between adjacent units and the space between the platform and the uprights is no more than 2.5 cm wide, except where the Contractor can demonstrate that a wider space is necessary.

(c) Where the Contractor makes the demonstration provided for in paragraph (a) above, the platform shall be planked or decked as fully as possible and the remaining open space between the platform and the uprights shall not 24 cm.

(d) The requirement to provide full planking or decking does not apply to platforms used solely as walkways or solely by the workers performing scaffold erection or dismantling. In these situations, only the planking that the Contractor establishes is necessary to provide safe working conditions is required.

(2) Except as provided separately for each Scaffolding, platform and walkway shall be at least ~~46~~ 45 cm wide.

Where scaffolds must be used in areas that the Contractor can demonstrate are so narrow that platforms and walkways cannot be at least ~~46~~ 45 cm wide, such platforms and walkways shall be as wide as feasible, and the workers on those platforms and walkways shall be protected from fall hazards by the use of handrails and/or personal fall arrest systems.

(3) Except as provided separately for each Scaffolding, the front edge of all platforms shall not be more than 36 cm from the face of the work, unless handrails are erected along the front edge and/or personal fall arrest systems are used to protect the workers from falling.

(4) Other requirements than specified in the above, the platform of Scaffolding shall comply the provisions in OSHA Subpart L-Scaffolds, 1926.451 General requirements, (b) Scaffold platform construction.

(2) When any Scaffold is to be used for loading of Goods, the Contractor shall display a notice indicating the maximum load capacity of each Scaffold.

(3) Scaffolds shall also be tagged with the names of the erector and the person responsible for inspection and maintenance of the Scaffold.

(4) All notices shall be clearly visible and in easy-to-see locations.

The following is added by NK:

6.5.4 Scaffold Platforms

Scaffold platforms shall comply with the following:

(1) Each platform on all working levels of Scaffolding shall be fully planked or decked between the front uprights and the handrail supports as follows:

(a) Platforms shall be of adequate size and strength and with true dimension and no twist or bending, no splits, holes or damage;

(b) Each platform unit shall be installed so that the space between adjacent units and the space between the platform and the uprights is no more than 2.5 cm wide, except where the Contractor can demonstrate that a wider space is necessary;

(c) Where the Contractor makes the demonstration provided for in paragraph (b) above, the platform shall be planked or decked as fully as possible and the remaining open space between the platform and the uprights shall not exceed 24 cm; and

(d) The requirement to provide full planking or decking does not apply to platforms used solely as walkways or solely by the workers performing Scaffold erection or dismantling. In these situations, only the planking that the Contractor establishes is necessary to provide safe working conditions is required.

(2) Except as may be provided separately for individual types of Scaffold, Scaffold platforms and walkways shall be at least 45 cm wide.

Where scaffolds must be used in areas that the Contractor can demonstrate are so narrow that platforms and walkways cannot be at least 45 cm wide, such platforms and walkways shall be as wide as feasible, and the workers on those platforms and walkways shall be protected from fall hazards by the use of handrails and/or personal fall arrest systems.

(3) Except as provided separately for individual types of Scaffold, the front edge of all platforms shall not be more than 36 cm from the face of the work, unless handrails are erected along the front edge and/or personal fall arrest systems are used to protect the workers from falling.

(4) Further requirements to those specified above, shall comply with the provisions of OSHA Subpart L-Scaffolds, 1926.451 General requirements, (b) Scaffold platform construction.

(2) When any Scaffold is to be used for loading of Goods, the Contractor shall display a notice indicating the maximum load capacity of each Scaffold.

(3) Scaffolds shall also be tagged with the names of the erector and the person responsible for inspection and maintenance of the Scaffold.

(4) All notices shall be clearly visible and in easy-to-see locations.

6.5.4 Scaffold Platforms

Scaffold platforms shall comply with the following:

(1) Each platform on all working levels of Scaffolding shall be fully planked or decked between the front uprights and the handrail supports as follows:

(a) Platforms shall be of adequate size and strength and with true dimension and no twist or bending, no splits, holes or damage;

(b) Each platform unit shall be installed so that the space between adjacent units and the space between the platform and the uprights is no more than 2.5 cm wide, except where the Contractor can demonstrate that a wider space is necessary;

(c) Where the Contractor makes the demonstration provided for in paragraph (b) above, the platform shall be planked or decked as fully as possible and the remaining open space between the platform and the uprights shall not exceed 24 cm; and

(d) The requirement to provide full planking or decking does not apply to platforms used solely as walkways or solely by the workers performing Scaffold erection or dismantling. In these situations, only the planking that the Contractor establishes is necessary to provide safe working conditions is required.

(2) Except as may be provided separately for individual types of Scaffold, Scaffold platforms and walkways shall be at least 45 cm wide.

Where scaffolds must be used in areas that the Contractor can demonstrate are so narrow that platforms and walkways cannot be at least 45 cm wide, such platforms and walkways shall be as wide as feasible, and the workers on those platforms and walkways shall be protected from fall hazards by the use of handrails and/or personal fall arrest systems.

(3) Except as provided separately for individual types of Scaffold, the front edge of all platforms shall not be more than 36 cm from the face of the work, unless handrails are erected along the front edge and/or personal fall arrest systems are used to protect the workers from falling.

(4) Further requirements to those specified above, shall comply with the provisions of OSHA Subpart L-Scaffolds, 1926.451 General requirements, (b) Scaffold platform construction.

6.5.4 Supported Scaffoldings

NK1: 6.5 の序文で説明しました下から支持された足場として、OSHA 1926.451 General requirements, (c) Criteria for supported Scaffolds を参考に 6.5.4 を新規に規定します。

As explained in the beginning of 6.5, the 6.5.4 below is specified referring to OSHA Subpart L-Scaffolds, 1926.451 General requirements, (c) Criteria for supported Scaffolds.

(1) General

(a) The Scaffolds with a height to base width (including outrigger supports, if used) ratio of more than four to one (4:1) shall be restrained from tipping by guying, tying, bracing, or equivalent means

(b) Poles, legs, posts, frames, and uprights shall bear on base plates and mud sills or other adequate firm foundation.

(c) Footings shall be level, sound, rigid, and capable of supporting the loaded Scaffolding without settling or displacement.

(d) Poles, legs, posts, frames, and uprights shall be plumb and braced to prevent swaying and displacement.

(e) Scaffolds over 38.0 m in height above their base plates shall be designed in accordance with JSSS 1.37 [Design and Management of Temporary Works], and shall be constructed and loaded in accordance with such design.

(f) When moving platforms to the next level, the existing platform shall be left undisturbed until the new bearers or end frames have been set in place and braced prior to receiving the new platforms.

(g) Other general requirements than specified in the above, the supported Scaffolding shall comply the provisions in OSHA Subpart L-Scaffolds, 1926.451 General requirements, (c) Criteria for supported scaffolds.

6.5.4 ~~Tubular Steel Scaffolding.~~ (JC113)

JC113a: 内容は新? Are the contents new?

NK1: 鋼管足場の和文に追加しています。 They are addition to Japanese version.

JC113b: (1)以下(5)まで、特に Tubular steel scaffolding に限定した規定でないように思います。BS EN 12811-1 を参照すれば、特に Annex B や C において設計上の

I have generally not altered your above revised clause (except punctuation and as shown in red fonts) but please note as follows:

If using OSHA terms, the heading and phrase would read better as "Scaffold Platform".

6.5.5 Supported Scaffolds

(1) General

(a) Scaffolds with a height to base width (including outrigger supports, if used) ratio of more than four to one (4:1) shall be restrained from tipping by guying, tying, bracing, or equivalent means;

(b) Poles, legs, posts, frames, and uprights shall bear on base plates and mud sills or other adequate firm foundation;

(c) Footings shall be level, sound, rigid, and capable of supporting the loaded Scaffolding without settling or displacement;

(d) Poles, legs, posts, frames, and uprights shall be plumb and braced to prevent swaying and displacement;

(e) ~~Scaffolds over 38.0 m in height above their base plates shall be designed in accordance with JSSS 1.37 [*Design and Provision of Temporary Works Generally*] and shall be constructed and loaded in accordance with such design.~~

NK: reviewed again OSHA. The requirement is as below. There are same requirements for other scaffolds. The (e) is only for that of 38m high. JSSS 1.37 has already covered designer required, so NK deleted (e) now.

(6) Scaffolds over 125 feet (38.0 m) in height above their base plates shall be designed by a registered professional engineer, and shall be constructed and loaded in accordance with such design

(f) When moving platforms to the next level, the existing platform shall be left undisturbed until the new bearers or end frames have been set in place and braced prior to receiving the new platforms; and

(g) Further requirements to those specified above, shall comply with the provisions of OSHA Subpart L-Scaffolds, 1926.451 General requirements, (c) Criteria for supported Scaffolds.

I have generally not altered your above revised clause (except punctuation and as shown in red fonts) but please note as follows:

If using OSHA terms, the heading and term would read better as "Supported Scaffolds".

I suggest the cross reference to JSSS 1.37 in para (e) be changed to JSSS 6.1.1 [Design and Provision of Temporary Works Generally] which includes JSS 1.37 but also includes additional requirements.

6.5.5 Supported Scaffolds

(1) General

(a) Scaffolds with a height to base width (including outrigger supports, if used) ratio of more than four to one (4:1) shall be restrained from tipping by guying, tying, bracing, or equivalent means;

(b) Poles, legs, posts, frames, and uprights shall bear on base plates and mud sills or other adequate firm foundation;

(c) Footings shall be level, sound, rigid, and capable of supporting the loaded Scaffolding without settling or displacement;

(d) Poles, legs, posts, frames, and uprights shall be plumb and braced to prevent swaying and displacement;

(e) When moving platforms to the next level, the existing platform shall be left undisturbed until the new bearers or end frames have been set in place and braced prior to receiving the new platforms; and

(f) Further requirements to those specified above, shall comply with the provisions of OSHA Subpart L-Scaffolds, 1926.451 General requirements, (c) Criteria for supported Scaffolds.

(2) Tube and Coupler Scaffolds

安全対策(カップラーやベースジャッキの強度)が規定されています。
(1) to (5) below, I think it is not requirements limited to tubular steel scaffolding. With reference to BS EN 12811-1, design safety measures (strength of couplers and base jacks) are specified in Annex B and C in particular.

JC1: BS EN 12811-1 の順守を 6.5.2(1)(c)に規定しています。鋼管足場に特有な事項を規定することとし、ここに残します。
The compliance to BS EN 12811-1 is stipulated in 6.5.2(1)(c). To specify particular requirements for the tubular steel scaffolding, the clauses are left and modified.

(1) ~~Tubular steel scaffolding comprises steel tubes and connector clips, with boarded working platforms, handrails, toe boards and access ladders, steps or stairs.~~
(2) ~~Ladders shall be provided in accordance with JSSS 6.4 [*Walkways, Ladders and Stepladders*].~~
(3) ~~Handrails shall be provided in accordance with JSSS 2.5.5 [*Handrails*].~~
(4) ~~Toeboards shall be provided in accordance with JSSS 2.5.6 [*Toeboards*].~~
(5) ~~The following safety measures shall apply:~~
(e) ~~Ensure that all scaffolding is erected plumb, level and squared;~~
(f) ~~Prevent any scaffold from moving, sliding, rocking or settling by ensuring that posts are securely founded and provided with mudsills or other base plate types and measures to distribute the load, screw jacks or other levelling devices;~~
(g) ~~Ensure that all joints between scaffolding tubes are formed with the correct type of coupling and that all are securely fixed and tightened;~~
(h) ~~Ensure that all scaffolds are securely anchored or tied to supporting structures;~~
(i) ~~Ensure that all scaffolding is securely braced with stays, raking and cross bracing to render the scaffold stable and secure for the purpose and in all likely climatic and other relevant conditions;~~
(j) ~~Provide working platforms of sufficient dimension and structural capability to perform the required function;~~
(k) ~~Ensure that working platforms are close boarded with no open joints in excess of 3cm and that toeboards are provided;~~
(l) ~~Ensure that all scaffold boards are adequately secured to the scaffold structure to prevent any movement, detachment or displacement; and~~
(m) ~~Ensure that all holes left by putlogs and supports after dismantling shall be repaired in a safe working manner.~~

NK1: NK1: (2) to (4) are moved to 6.5.1 (7).

NK1: 6.5.4 Tubular Steel Scaffolding に代わり、6.5 の序文で提案の単管足場を、OSHA 1926.452 Additional requirements applicable to specific types of Scaffolds, (b) Tube and coupler Scaffolds.を参考に 6.5.4 (2)に新規に規定します。
For 6.5.4Tubular Steel Scaffoldings, Tube and Coupler Scaffolding explained in the beginning of 6.5 is specified in (2) below referring to OSHA Subpart L-Scaffolds, 1926. 452 Additional requirements applicable to specific types of Scaffolds, (b) Tube and coupler Scaffolds.

(2) Tube and Coupler Scaffolding

(a) Transverse bracing forming an “X” across the width of the scaffold shall be installed at the scaffold ends and at least at every third set of posts horizontally (measured from only one end) and

(2) Tube and Coupler Scaffolds

every fourth runner vertically.

(b) On straight run scaffolds, longitudinal bracing across the inner and outer rows of posts shall be installed diagonally in both directions, and shall extend from the base of the end posts upward to the top of the scaffold at approximately a 45 degree angle.

(c) Where conditions preclude the attachment of bracing to posts, bracing shall be attached to the runners as close to the post as possible.

(d) Bearers shall be installed transversely between posts, and when coupled to the posts, shall have the inboard coupler bear directly on the runner coupler. When the bearers are coupled to the runners, the couplers shall be as close to the posts as possible.

(e) Runners shall be installed along the length of the Scaffolding, located on both the inside and outside posts at level.

(f) Couplers shall be of a structural metal, such as drop-forged steel, malleable iron, or structural grade aluminum. The use of gray cast iron is prohibited.

(g) Other requirements than specified in the above, the tube and coupler Scaffolding shall comply the provisions in OSHA Subpart L-Scaffolds, 1926.452 Additional requirements applicable to specific types of scaffolds, (b) Tube and coupler scaffolds.

NK1: 和文で鋼管足場として規定した枠組足場を、OSHA 1926.452 Additional requirements applicable to specific types of Scaffolds, (c) Fabricated frame Scaffolds を参考に 6 新規に.5.4 (3)を規定します。

Fabricated frame Scaffolding specified in Tubular steel scaffolding is specified in (3) below referring to OSHA Subpart L-Scaffolds, 1926. 452 Additional requirements applicable to specific types of Scaffolds, (c) Fabricated frame Scaffolds.

(3) Fabricated frame Scaffolding

(a) Frames and panels shall be braced by cross, horizontal, or diagonal braces, or combination thereof, which secure vertical members together laterally. The cross braces shall be of such length as will automatically square and align vertical members so that the erected scaffold is always plumb, level, and square. All brace connections shall be secured.

(b) Frames and panels shall be joined together vertically by coupling or stacking pins or equivalent means.

(c) Where uplift can occur which would displace scaffold end frames or panels, the frames or panels shall be locked together vertically by pins or equivalent means.

(d) Brackets used to support cantilevered loads shall:

(i) Be seated with side-brackets parallel to the frames and end-brackets at 90 degrees to the frames;

(ii) Not be bent or twisted from these positions; and

(iii) Be used only to support personnel, unless the scaffold has

(a) Transverse bracing forming an "X" across the width of the Scaffold shall be installed at the Scaffold ends and at least at every third set of posts horizontally (measured from only one end) and every fourth runner vertically;

(b) On straight run Scaffolds, longitudinal bracing across the inner and outer rows of posts shall be installed diagonally in both directions, and shall extend from the base of the end posts upward to the top of the Scaffold at approximately a 45 degree angle;

(c) Where conditions preclude the attachment of bracing to posts, bracing shall be attached to the runners as close to the post as possible;

(d) Bearers shall be installed transversely between posts, and when coupled to the posts, shall have the inboard coupler bear directly on the runner coupler. When the bearers are coupled to the runners, the couplers shall be as close to the posts as possible;

(e) Runners shall be installed along the length of the Scaffold, located on both the inside and outside posts at level;

(f) Couplers shall be of a structural metal, such as drop-forged steel, malleable iron, or structural grade aluminium, the use of grey cast iron is prohibited; and

(g) Further requirements to those specified above, shall comply with the provisions of OSHA Subpart L-Scaffolds, 1926.452 Additional requirements applicable to specific types of Scaffolds, (b) Tube and coupler Scaffolds.

I have generally not altered your above revised clause (except punctuation and as shown in red fonts)

(3) Fabricated Frame Scaffolds

(a) Frames and panels shall be braced by cross, horizontal, or diagonal braces, or combination thereof, which secure vertical members together laterally. The cross braces shall be of such length as will automatically square and align vertical members so that the erected Scaffold is always plumb, level, and square. All brace connections shall be secured;

(b) Frames and panels shall be joined together vertically by coupling or stacking pins or equivalent means;

(c) Where uplift can occur, which would displace Scaffold end frames or panels, the frames or panels shall be locked together vertically by pins or equivalent means;

(d) Brackets used to support cantilevered loads shall:

(i) Be seated with side-brackets parallel to the frames and end-

been designed for other loads.

(e) Other requirements than specified in the above, the fabricated frame Scaffolding shall comply the provisions in OSHA Subpart L-Scaffolds, 1926.452 Additional requirements applicable to specific types of scaffolds, (c) Fabricated frame scaffolds.

6.5.5 ~~Suspended Scaffolds~~ (JC114)

JC114a:内容は新? Is it new specification?
NK: 和文に追加済みです。 It has been added to Japanese version.

JC114b: OSHA の HP(以下に添付)をすれば以下(2)(b)&(c)が適合しない scaffold もありそうです。ここ(7.5.4) 全体の規定を参照した規格を再確認してください。
https://www.osha.gov/SLTC/etools/scaffolding/suspended/index.html なお、tubular steel scaffolding が上部の構造物から支持されている場合は、7.5.4 には適合しない、7.5.3 に含まれると理解してよいですか？
In OSHA's HP (attached below), it seems that (2) (b) & (c) cannot apply to some scaffolds. Please check the standards to cover whole requirements of 7.5.4.
https://www.osha.gov/SLTC/etools/scaffolding/suspended/index.html
Can we understand that the tubular steel scaffolding which is supported by the upper structure is not appropriate to be specified in 7.5.4 and it shall be included in 7.5.3?
NK1: 和文は、OSHA の Catenary 形式のつり足場を規定しています。そのため、その他の形式の吊り足場は OSHA に準じることと規定します。
The Japanese JSSS specifies for interior hung type in OSHA. JSSS will specify for other types of suspended Scaffold to comply to OSHA.
Interior hung type: Platform suspended from the ceiling or roof structure by fixed-length supports.)

(1) ~~Suspended scaffolds comprise working platforms suspended from upper levels for example with ropes, cables or chains and with all necessary support framing.~~

(2) ~~The following safety measures shall apply (except gondola suspended scaffolds):~~

(a) ~~The maximum loading capacity~~ (JC115)~~of the working platform shall be determined to ensure a safety factor of 10 or more for hanging wire ropes and hanging steel wires, 5 or more for hanging chains and hanging hooks, 2.5 or more for hanging steel bands and fulcrums at the bottom and top of the hanging scaffolds and 5 or more for timber.~~

JC115: maximum loading を足場の部分の強度から決定すると読める。手順が逆ではないか。又、OSHA、1926.451(a)(3) には、Each suspension rope, including connecting hardware, used on non-adjustable suspension scaffolds shall be capable of supporting, without failure, at least 6 times the maximum intended load applied or transmitted to that rope.とあり、他にも安全係数が規定されている。以下の安全に関する係数についても参照・確認されたい。
It can be read that the maximum loading is determined from the strength of the scaffold part. Is the decision order reversed? In OSHA, 1926.451 (a) (3), Each suspension rope, including connecting hardware, used on non-adjustable suspension scaffolds shall be capable of supporting, without failure, at least 6 times the maximum intended load applied or transmitted to that rope.
There are other safety factors. Please refer to and confirm the following safety factors.
NK1: English version was prepared based on Japanese version.

(d) Brackets used to support cantilevered loads shall:

(i) Be seated with side-brackets parallel to the frames and end-brackets at 90 degrees to the frames;

(ii) Not be bent or twisted from these positions; and

(iii) Be used only to support personnel, unless the Scaffold has been designed for other loads.

(e) Further requirements to those specified above, shall comply with the provisions of OSHA Subpart L-Scaffolds, 1926.452 Additional requirements applicable to specific types of Scaffolds, (c) Fabricated frame Scaffolds.

I have generally not altered your above revised clause (except as shown in red fonts)

6.5.6 Suspended Scaffolds

brackets at 90 degrees to the frames;

(ii) Not be bent or twisted from these positions; and

(iii) Be used only to support personnel, unless the Scaffold has been designed for other loads.

(e) Further requirements to those specified above, shall comply with the provisions of OSHA Subpart L-Scaffolds, 1926.452 Additional requirements applicable to specific types of Scaffolds, (c) Fabricated frame Scaffolds.

6.5.6 Suspended Scaffolds

Each safety factor in E 7.5.4 (2) (a) above is the English translation of the Japanese Set Ver. J 7.5.3 (1), and those safety factor has been already determined in the past meeting.
Modified to refer to directly OSHA.

~~*In the above are "hanging wire ropes" and "hanging steel wires" the same? If not please advise what they are. I assume that this could be "ropes" and "steel cables" but please clarify with a spec for ropes.*~~

(b) ~~Timber boarded working platforms shall be provided to provide a safe and uninterrupted working surface.~~
~~Alternatively, proprietary type Light Weight Staging (LWS), shall be provided to provide a safe and uninterrupted working platform. LWS shall be 0.45m wide aluminium frame with slip-resistant coated plywood decking or similar, al shall be designed, tested and approved to the appropriate class of BS 2037 Class 1 and suitable for the required use.~~

(c) ~~Handrails shall be provided in accordance with JSSS 2.5.5 [*Handrails*].~~(JC115)

(d) ~~Toeboards shall be provided in accordance with JSSS 2.5.6 [*Toeboards*].~~(JC115)

(e) ~~Suspension ropes and cables must be connected to overhead supports by shackles, clips, thimbles, or equivalent means.~~

JC115: Already commented.
NK1: Modified.

(4) ~~Do not use hanging wire ropes where:~~
- (i) ~~10% or more of the element wires (excluding filler wires) are not in one continuous tensile strand.~~
- (ii) ~~There is a reduction in the diameter exceeding 7% of the original nominal diameter.~~
- (iii) ~~There are any kinks or any deformation or corrosion.~~

(5) ~~Do not use hanging chains where:~~
- (i) ~~Elongation exceeds 5% of the original length at the date of manufacture.~~
- (ii) ~~There is a reduction in the diameter of links exceeding 10% of the original diameter at the date of manufacture.~~
- (iii) ~~There are any breaks, splits, cracks, or any deformation or corrosion~~

(6) ~~Do not use any hanging steel wires or hanging steel belts where there is any deformation, damage or corrosion.~~

Why are these different to hanging wire ropes as above? please clarify:

(7) ~~Measures when constructing suspended scaffolds~~
- (a) ~~Working platforms shall be minimum 45 cm wide and close boarded with no open joints;~~
- (b) ~~All scaffold boards shall be adequately secured to the scaffold structure to prevent any movement, detachment or displacement; and~~
- (c) ~~Stays shall be provided to prevent movement or displacement of the working platform.~~

(8) ~~Prohibited activity~~
~~The use of any ladders or stepladders on suspended scaffolding is prohibited.~~

NK1: 6.5.5 で規定のつり足場を、OSHA 1926.452 Additional requirements applicable to specific types of Scaffolds を参考に、6.5.5 に内容を代えて規定します。OSHA で規定の複数の種類のつり足場の中の和文で規定の interior hung scaffolds を 6.5.5(2)に規定します。
The Suspended Scaffoldings in 6.5.5 is specified referring to OSHA 1926.452 Additional requirements applicable to specific types of Scaffolds. Out of various

types of Suspended Scaffoldings specified in OSHA, interior hung scaffolds is specified in 6.5.5(2).

6.5.5 Suspended Scaffoldings

(1) General

(a) Suspended Scaffoldings comprise working platforms suspended from upper levels for example with ropes, cables or chains and all necessary support framing, and with or without hoisting equipment.

(b) The Contractor shall comply to the requirements stipulated for the suspended scaffolds in OSHA, Subpart L-Scaffolds, 1926.451 [General requirements] and 1926.452 [Additional requirements applicable to specific types of scaffolds].

(2) The following safety measures shall apply to the interior hung scaffolds which are suspended only from the roof structure or other structural member such as ceiling beams and non-adjustable:

(a) Capacity of interior hung Scaffoldings;

(i) Each scaffold and scaffold component except as provided (ii) below shall be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load applied or transmitted to it.

(ii) Each suspension rope, including connecting hardware, used on suspension scaffolds shall be capable of supporting, without failure, at least 6 times the maximum intended load applied or transmitted to that rope.

(b) Construction of interior hung Scaffoldings;

(i) Overhead supporting members (roof structure, ceiling beams, or other structural members) shall be inspected and checked for strength before the scaffold is erected;

(ii) Suspension ropes and cables shall be connected to the overhead supporting members by shackles, clips, thimbles, or other means that meet equivalent criteria (e.g., strength, durability).

(c) Inspection

(i) The Scaffolding shall be inspected before every work shift and If any abnormality is found, the work shall be stopped.

(ii) Wire ropes, chains, hooks and chains used in the Scaffolding shall be inspected before every work shift in accordance with JSSS 5.4.1 [Hoisting and Rigging Equipment] (4)(a) [Wire ropes], (b) [Chains] and (c)[Hooks, shackles]. If any abnormality is found, they shall be replaced.

(d) Prohibited activity
The use of any ladders or stepladders on suspended Scaffoldings shall be prohibited.

(1) General

(a) Suspended Scaffolds comprise working platforms suspended from upper levels for example with ropes, cables or chains and all necessary support framing, with or without hoisting equipment; and

(b) Further requirements to those specified above for suspended Scaffolds, shall comply with the provisions of OSHA, Subpart L-Scaffolds, 1926.451 [General requirements] and 1926.452 [Additional requirements applicable to specific types of Scaffolds].

(2) The following safety measures shall apply to interior hung Scaffolds which are suspended ~~only~~ from ~~the~~ roof structures, ceiling beams or other structural members. ~~such as ceiling beams and which non-adjustable~~:

(a) Capacity: of interior hung Scaffolds:

(i) Each Scaffold and Scaffold component except as provided (ii) below shall be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load applied or transmitted to it; and

(ii) Each suspension rope, including connecting hardware, used on non-adjustable suspension Scaffolds shall be capable of supporting, without failure, at least 6 times the maximum intended load applied or transmitted to that rope.

(b) Construction: of interior hung Scaffolds:

(i) Overhead supporting members (roof structure, ceiling beams, or other structural members) shall be inspected and checked for strength before the Scaffold is erected; and

(ii) Suspension ropes and cables shall be connected to the overhead supporting members by shackles, clips, thimbles, or other means that meet equivalent criteria (e.g. strength, durability).

(c) Inspection:

(i) Scaffolds shall be inspected before every work shift and If any abnormality is found, the work shall be stopped; and

(ii) Wire ropes, chains, hooks and shackles used in the Scaffolds shall be inspected before every work shift in accordance with JSSS 5.4.1 [Hoisting and Rigging Equipment] (~~4)(a) [Wire ropes], (b) [Chains] and (c)[Hooks, shackles]~~. If any abnormality is found, they shall be replaced.

(d) Prohibited activity

(1) General

(a) Suspended Scaffolds comprise working platforms suspended from upper levels for example with ropes, cables or chains and all necessary support framing, with or without hoisting equipment; and

(b) Further requirements to those specified above for suspended Scaffolds, shall comply with the provisions of OSHA, Subpart L-Scaffolds, 1926.451 [General requirements] and 1926.452 [Additional requirements applicable to specific types of Scaffolds].

(2) The following safety measures shall apply to interior hung Scaffolds which are suspended from roof structures, ceiling beams or other structural members.–

(a) Capacity: of interior hung Scaffolds:

(i) Each Scaffold and Scaffold component except as provided (ii) below shall be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load applied or transmitted to it; and

(ii) Each suspension rope, including connecting hardware, used on non-adjustable suspension Scaffolds shall be capable of supporting, without failure, at least 6 times the maximum intended load applied or transmitted to that rope.

(b) Construction: of interior hung Scaffolds:

(i) Overhead supporting members (roof structure, ceiling beams, or other structural members) shall be inspected and checked for strength before the Scaffold is erected; and

(ii) Suspension ropes and cables shall be connected to the overhead supporting members by shackles, clips, thimbles, or other means that meet equivalent criteria (e.g. strength, durability).

(c) Inspection:

(i) Scaffolds shall be inspected before every work shift and If any abnormality is found, the work shall be stopped; and

(ii) Wire ropes, chains, hooks and shackles used in the Scaffolds shall be inspected before every work shift in accordance with JSSS 5.4.1 [Hoisting and Rigging Equipment]. If any abnormality is found, they shall be replaced.

(d) Prohibited activity

The use of any ladders or stepladders on suspended Scaffolds shall be prohibited.

6.5.6 ~~Tower Scaffolds (including Mobile Tower Scaffolds)~~ (JC116)

JC116a: 移動式足場　内容は全て新?　Is it new specification?
NK1: 7(6).5.5 is prepared based on Japanese 7.5.4 Movable Scaffold.

JC116b: HSE document “Health and safety in construction”, 160 If a tower scaffold is used;を参照されることをお勧めします。同様に、Mobile Tower Scaffolding についても、同じ HSE document の 173 When using MEWPs を参照されること、お勧めします。
We recommend that the HSE document “Health and safety in construction”, 160 If a tower scaffold is used is referred.　Similarly, for Mobile Tower Scaffolding, refer to 173 When using MEWPs in the same HSE document.
NK1: Japanese version was prepared based on HSE.

(1) ~~Tower scaffolds comprise one or more working platforms in a tower structure arrangement, with integral access steps, stairs or ladders and which are usually constructed with prefabricated or specialist system scaffolding and components.~~

(2) ~~The following safety measures shall apply:~~

(a) ~~Provide measures to prevent tower scaffolds from moving, sliding, rocking or settling by ensuring that the base is level and vertical posts are securely founded and equipped with mudsills or other base plate types and measures to distribute the load, screw jacks or other levelling devices and castors;~~

(b) ~~Ensure that all joints are formed with the correct type of fittings or components and that all parts are secure and tightened;~~

(c) ~~Ensure that all tower scaffolds are securely anchored or tied to supporting surfaces;~~ (JC117)

JC117: all tower scaffolds が anchoring/tying される必要がありますか？
Do all tower scaffolds need to be anchoring / tying?
NK1: NK propose to add a condition that anchoring should be performed when used.

(d) ~~Ensure that all scaffolds are securely braced with appropriate beams, trusses, raking and cross bracing to render the scaffold stable and secure for the purpose and in all conditions;~~

(e) ~~Provide working platforms of sufficient dimension and structural capability to perform the required function;~~

(f) ~~Working platforms shall be close boarded with no open joints;~~

(g) ~~All scaffold boards shall be adequately secured to the scaffold structure to prevent any movement, detachment or displacement; and~~

(3) ~~Additional Measures for Mobile Scaffolds~~

(a) ~~Ensure that castors and brakes are of sufficient capability and maintained in full working order; and~~

(b) ~~Ensure that adequate restraints are provided to give additional stability when in use.~~

(4) ~~Safety Measures to apply before relocating Mobile Scaffolds:~~

(a) ~~Check the floor surface in advance to prevent mobile scaffolds from overturning due to any irregularities or obstructions;~~

(b) ~~Move mobile scaffolds only after releasing brakes on all castors;~~

(c) ~~Do not move mobile scaffolds when any workers or Goods are on the scaffold;~~

(d) ~~Ensure that there are no obstructions in the route including any overhead obstructions; and~~

The use of any ladders or stepladders on suspended Scaffolds shall be prohibited.

I have generally not altered your above revised clause (except punctuation and as shown in red fonts) but please note as follows:

If using OSHA terms, the heading and term would read better as “Suspended Scaffolds”.

6.5.7 Mobile Scaffolds

6.5.7 Mobile Scaffolds

(e) ~~Do not allow any persons other than workers engaged in the relocation to enter the moving areas of the moving scaffolds and the vicinity.~~

(5) ~~Ensure that the following measures for example have been taken before any Tower or Mobile Scaffold is put into use:~~

(a) ~~Scaffold is positioned in at the nearest location to the work location so that workers can perform their work safely and without risk of injury or fall;~~

(b) ~~Brakes are activated at all times except during movement.~~

(c) ~~Effectiveness of brakes has been checked before operating.~~

(d) ~~Alternatively, fix ratchet and pawl system to the castors and secure the scaffold to a firm structure.~~

(e) ~~Mobile scaffolds are not used where there are irregularities or slopes, and~~

(f) ~~When outriggers are provided, ensure that there are no abnormalities in the outrigger mounting and ensure that they are extended properly and securely founded.~~

(3) ~~Prohibited activity~~

~~Use of Tower scaffolds shall be prohibited for the following:~~

(a) ~~Use as a support for lifting dropping Goods, debris or waste materials or for dropping same;~~

(b) ~~Use for the purpose of providing a barrier by covering with sheet material with the risk of collapse due to exposure to wind;~~

(c) ~~Use for work of grit blasting or water jetting, where the reaction force can destabilise the Scaffolds or workers on the scaffold; and~~

(d) ~~Use as floor to support mobile ladders, stepladders, trestles.~~

NK1: 6.5.6 で規定の Tower Scaffolds (including Mobile Tower Scaffolds)を、OSHA 1926.452 Additional requirements applicable to specific types of Scaffolds (w) Mobile scaffolds を参考に、6.5.6 に内容を代えて規定します。

The Tower Scaffolds (including Mobile Tower Scaffolds) is specified in 6.5.6 below referring to OSHA 1926.452 Additional requirements applicable to specific types of scaffolds, (w) Mobile scaffolds.

6.5.6 Mobile Scaffoldings

(1) Scaffoldings shall be braced by cross, horizontal, or diagonal braces, or combination thereof, to prevent racking or collapse of the scaffold and to secure vertical members together laterally so as to automatically square and align the vertical members. Scaffoldings shall be plumb, level, and squared. All brace connections shall be secured.

(2) Scaffolding casters and wheels shall be locked with positive wheel and/or wheel and swivel locks, or equivalent means, to prevent movement of the Scaffolding while the Scaffolding is used in a stationary manner.

(3) Manual force used to move the Scaffolding shall be applied as close to the base as practicable, but not more than 1.5 m above the supporting surface.

(4) Power systems used to propel mobile Scaffoldings shall be designed for such use. Forklifts, trucks, similar motor vehicles or add-on motors shall not be used to propel scaffolds unless the Scaffolding is designed for such propulsion systems.

(5) Scaffolds shall be stabilized to prevent tipping during movement.

(1) Mobile Scaffolds shall be braced by cross, horizontal, or diagonal braces, or combination thereof, to prevent racking or collapse of the Scaffold and to secure vertical members together laterally so as to automatically square and align the vertical members. Scaffolds shall be plumb, level, and squared. All brace connections shall be secured.

(2) Scaffold casters and wheels shall be locked with positive wheel and/or wheel and swivel locks, or equivalent means, to prevent movement of the Scaffold while the Scaffold is used in a stationary manner.

(3) Manual force used to move the Scaffold shall be applied as close to the base as practicable, but not more than 1.5 m above the supporting surface.

(1) Mobile Scaffolds shall be braced by cross, horizontal, or diagonal braces, or combination thereof, to prevent racking or collapse of the Scaffold and to secure vertical members together laterally so as to automatically square and align the vertical members. Scaffolds shall be plumb, level, and squared. All brace connections shall be secured.

(2) Scaffold casters and wheels shall be locked with positive wheel and/or wheel and swivel locks, or equivalent means, to prevent movement of the Scaffold while the Scaffold is used in a stationary manner.

(3) Manual force used to move the Scaffold shall be applied as close to the base as practicable, but not more than 1.5 m above the supporting surface.

(4) Power systems used to propel mobile Scaffolds shall be designed for such use. Forklifts, trucks, similar motor vehicles or add-on

(6) Platforms shall not extend outward beyond the base supports of the Scaffolding unless outrigger frames or equivalent devices are used to ensure stability.

(7) Where leveling of the Scaffolding is necessary, screw jacks or equivalent means shall be used.

(8) Caster stems and wheel stems shall be pinned or otherwise secured in Scaffolding legs or adjustment screws.

(9) Safety measures shall be applied before relocating the Scaffoldings:
- (a) Check the floor surface in advance to prevent the Scaffoldings from overturning due to any irregularities or obstructions;
- (b) Move the Scaffoldings only after releasing brakes on all castors;
- (c) Do not move the Scaffoldings when any workers or Goods are on the scaffold,
- (d) Ensure that there are no obstructions in the route including any overhead obstructions; and
- (e) Do not allow any persons other than workers engaged in the relocation to enter the moving areas of the Scaffoldings and the vicinity.

(10) Prohibited activity

Use of the Scaffoldings shall be prohibited for the following:
- (a) Use as a support for lifting dropping Goods, debris or waste materials or for dropping same;
- (b) Use for the purpose of providing a barrier by covering with sheet material with the risk of collapse due to exposure to wind;
- (c) Use for work of grit blasting or water jetting, where the reaction force can destabilise the Scaffoldings or workers on the scaffold; and
- (d) Use as floor to support mobile ladders, stepladders, trestles.

(11) Other requirements than specified in the above, the fabricated frame Scaffolding shall comply the provisions in OSHA Subpart L-Scaffolds, 1926.452 Additional requirements applicable to specific types of scaffolds, (w) Mobile scaffolds.

~~6.5.7 Trestle Scaffolds~~ (JC117)

JC117a: 脚立足場　内容は新 Is it new specification?

NK1:　7.5.9 脚立を用いての作業の際の留意事項脚立足場の英訳です。This is not new. This is Japanese 7.5.9.

JC117b: 漠然と想像は出来ますが、OSHA1926.451-General requirements を参照しても見つかりません。参考にした資料の開示をお願いします。I can vaguely imagine it, but I can't find it by looking at OSHA1926.451-General requirements. Please disclose the reference materials.

NK1: It is specified in OSHA.

(4) Power systems used to propel mobile Scaffolds shall be designed for such use. Forklifts, trucks, similar motor vehicles or add-on motors shall not be used to propel Scaffolds unless the Scaffold is designed for such propulsion systems.

(5) Scaffolds shall be stabilised to prevent tipping during movement.

(6) Platforms shall not extend outward beyond the base supports of the Scaffold unless outrigger frames or equivalent devices are used to ensure stability.

(7) Where levelling of the Scaffold is necessary, screw jacks or equivalent means shall be used.

(8) Caster stems and wheel stems shall be pinned or otherwise secured in Scaffold legs or adjustment screws.

(9) Safety measures shall be applied before relocating the Scaffolds:
- (a) Check the floor surface in advance to prevent the Scaffold from overturning due to any irregularities or obstructions;
- (b) Move the Scaffold only after releasing brakes on all castors;
- (c) Do not move the Scaffold when any workers or Goods are on the Scaffold;
- (d) Ensure that there are no obstructions in the route including any overhead obstructions; and
- (e) Do not allow any persons other than workers engaged in the relocation to enter the moving areas of the Scaffold or in the vicinity.

(10) Prohibited activity

Use of the Scaffolds shall be prohibited for the following:
- (a) Use as a support for lifting ~~dropping~~ Goods, debris or waste materials or for dropping same; (NK deleted.)
- (b) Use for the purpose of providing a barrier by covering with sheet material with the risk of collapse due to exposure to wind;
- (c) Use for work of grit blasting or water jetting, where the reaction force can destabilise the Scaffold or workers on the Scaffold; and
- (d) Use as floor to support mobile ladders, stepladders, trestles.

(11) Further requirements to those specified above shall comply with the provisions of OSHA Subpart L-Scaffolds, 1926.452 Additional requirements applicable to specific types of scaffolds, (w) Mobile scaffolds.

I have generally not altered your above revised clause (except punctuation and as shown in red fonts) but please note as follows:

No need plural "scaffoldings". The heading and term would be more correct as "Mobile Scaffolds" not Scaffolding

"Distortion" may be a more internationally understandable word than "racking"

6.5.8 Trestle Scaffolds

motors shall not be used to propel Scaffolds unless the Scaffold is designed for such propulsion systems.

(5) Scaffolds shall be stabilised to prevent tipping during movement.

(6) Platforms shall not extend outward beyond the base supports of the Scaffold unless outrigger frames or equivalent devices are used to ensure stability.

(7) Where levelling of the Scaffold is necessary, screw jacks or equivalent means shall be used.

(8) Caster stems and wheel stems shall be pinned or otherwise secured in Scaffold legs or adjustment screws.

(9) Safety measures shall be applied before relocating the Scaffolds:
- (a) Check the floor surface in advance to prevent the Scaffold from overturning due to any irregularities or obstructions;
- (b) Move the Scaffold only after releasing brakes on all castors;
- (c) Do not move the Scaffold when any workers or Goods are on the Scaffold;
- (d) Ensure that there are no obstructions in the route including any overhead obstructions; and
- (e) Do not allow any persons other than workers engaged in the relocation to enter the moving areas of the Scaffold or in the vicinity.

(10) Prohibited activity

Use of the Scaffolds shall be prohibited for the following:
- (a) Use as a support for lifting Goods, debris or waste materials or for dropping same;
- (b) Use for the purpose of providing a barrier by covering with sheet material with the risk of collapse due to exposure to wind;
- (c) Use for work of grit blasting or water jetting, where the reaction force can destabilise the Scaffold or workers on the Scaffold; and
- (d) Use as floor to support mobile ladders, stepladders, trestles.

(11) Further requirements to those specified above shall comply with the provisions of OSHA Subpart L-Scaffolds, 1926.452 Additional requirements applicable to specific types of scaffolds, (w) Mobile scaffolds.

6.5.8 Trestle Scaffolds

https://www.osha.gov/SLTC/etools/scaffolding/supported/specialty.html#Step_Platform_and_Trestle_Ladder_Scaffolds
Step, Platform, and Trestle Ladder Scaffold

(1) ~~Trestle scaffolds can comprise:~~
  (a) ~~Special proprietary type free-standing trestle platforms; or~~
  (b) ~~LWS as specified in JSSS 6.5.5 [*Suspended Scaffold*] or scaffold boards or supported on stepladders or other tripod type portable ladders.~~
(2) ~~For requirements on Stepladders refer to JSSS 6.4.4 [*Portable Ladders and Stepladders*].~~
(3) ~~The following safety measures shall apply:~~
  (a) ~~The distance between the centre lines of the supporting stepladders shall not exceed 1.8m, width of the LWS or scaffold boards shall be at least 0.45m.~~
  (b) ~~If timber scaffold boards are used, the overlap between boards shall be at least 20cm.~~
  (c) ~~The length of projection of the platform from the end support shall be at least 10cm and not more than one-eighteenth of the length of the boards (unless otherwise approved by the HSO).~~

JC1: 和文の規定をもとに作成した英文案を次のように推敲しました。
Trestle Scaffoldings is specified in 6.5.7 based on the Japanese version above.

6.5.7 Trestle Scaffoldings

(1) Trestle Scaffoldings can comprise:
  (a) Special proprietary type free-standing trestle platforms; or
  (b) Scaffold boards or supported on stepladders or other tripod type portable ladders.

NK: 架台(ウマ)を指す。

(2) For requirements on Stepladders refer to JSSS 6.4.4 [*Portable Ladders and Stepladders*].
(3) The following safety measures shall apply:
  (a) The distance between the centre lines of the supporting stepladders shall not exceed 1.8m, width of the scaffold boards shall be at least 45 cm.
  (b) Scaffoldings' platforms shall not be placed any higher than the second highest rung or step of the ladder supporting the platform.
  (c) If timber scaffold boards are used, the overlap between boards shall be at least 20cm.
  (d) The length of projection of the platform from the end support shall be at least 10cm and not more than one-eighteenth of the length of the boards.

(1) Trestle Scaffold~~s~~ can comprise:
  (a) Special proprietary type free-standing trestle platforms; or
  (b) Scaffold boards or lightweight staging boards supported on stepladders or other tripod type portable ladders.
(2) For requirements on Stepladders refer to JSSS 6.4.5 [*Portable Ladders and Stepladders*].
(3) The following safety measures shall apply:
  (a) The distance between the centre lines of the supporting stepladders shall not exceed 1.8m, width of the Scaffold boards shall be at least 45 cm;
  (b) Scaffold boards ~~platforms~~ shall not be placed any higher than the second highest rung or step of the ladder supporting the platform;
  (c) If timber Scaffold boards are used, the overlap between boards shall be at least 20cm; and
  (d) The length of projection of the platform from the end support shall be at least 10cm and not more than one-eighteenth of the length of the boards.

(1) Trestle Scaffolds can comprise:
  (a) Special proprietary type free-standing trestle platforms; or
  (b) Scaffold boards or lightweight staging boards supported on stepladders or other tripod type portable ladders.
(2) For requirements on Stepladders refer to JSSS 6.4.5[*Portable Ladders and Stepladders*].
(3) The following safety measures shall apply:
  (a) The distance between the centre lines of the supporting stepladders shall not exceed 1.8m, width of the Scaffold boards shall be at least 45 cm;
  (b) Scaffold boards shall not be placed any higher than the second highest rung or step of the ladder supporting the platform;
  (c) If timber Scaffold boards are used, the overlap between boards shall be at least 20cm; and
  (d) The length of projection of the platform from the end support shall be at least 10cm and not more than one-eighteenth of the length of the boards.

6.5.8 Notices to be Displayed on Scaffolds (JC118)

In addition to any notices for use following inspections by HSO, the Contractor shall display a notice indicating the maximum load capacity of each scaffold, together with the name of the person responsible for inspection and maintenance of the scaffold.

All notices shall be clearly visible and in easy-to-see locations.

JC118: HSO の役割について再度討議することが必要ではないか。HSO は作業を中断するなど安全に関してはプロマネよりも強い権限を持つ。ここでは Scaffolds を検査して証明するような施工に密着したロールを持たせている。自分が証明したものに対して自分で使用停止するようなロールでは機能しないと考えるが、いかが。
I think it is necessary to discuss the role of HSO again. HSOs have greater authority than professional managers regarding safety issue such as suspending work.
Here, the HSO has a role that is deeply involved in construction procedure such as inspecting and proving Scaffolds. However, the role the present stipulation indicates that stops the use of what the HSO have proven himself will not work as a mechanism. How about this?
JC1: The duty of HSO is discussed in Chapter 1, so no modify is made.

6.5.9 Scaffold Assembly, Erection, Alteration and Dismantling Generally

The Contractor shall take the following measures when assembling or erecting, assembling, altering or dismantling operation on all types of scaffolding:

(1) Scaffolding shall be assembled or erected, altered and dismantled only by competent personnel and the work should always be carried out under the direction of a competent Superintendent.

(2) Working areas where scaffolding is being assembled or erected, altered and dismantled shall be designated as Dangerous Areas, and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any non - authorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(3) During erection of scaffolding 2m high and above, boarded areas shall be provided for safe temporary storage of scaffolding tubes, couplings, fittings or components and other materials and equipment. (JC119)

JC119: MM: 意味が理解できない。 Cannot understand what it means.
JC1: 足場材の仮置き場の設置を規定しています。
The meaning is as mentioned above. No modification is made.

(4) All workers engaged assembly or erection, alteration and dismantling of any scaffolding shall be provide with PFAS and ensure that such workers use this.

(5) ~~Scaffold boards shall be of adequate size and strength and with true dimension and no twist or bending, no splits, holes or damage.~~

(6) ~~Working platforms shall be at least 45cm wide~~. (JC120)

JC120: 40cm では？ Is it 40cm?
NK1: The platforms width is 40 cm in Japan, 60cm in UK and 18 inches (45.7 cm) in OSHA.
The provisions for Scaffoldings in JSSS are mostly referred to OSHA, therefore rounded width of 45 cm from 45.7 cm is used.

I have generally not altered your above revised clause (except punctuation and as shown in red fonts) but please note as follows:

No need plural "scaffoldings"

The heading and term would be more correct as "Trestle Scaffolds" not Scaffolding

~~6.5.9 Notices to be Displayed on Scaffolds~~

Clause transferred to 6.5.3 above and expanded.

6.5.9 Scaffolding Assembly, Erection, Alteration and Dismantling Generally

The Contractor shall take the following measures when assembling or erecting, assembling, altering or dismantling operation on all types of Scaffolding:

(1) Scaffolding shall be assembled or erected, altered and dismantled only by competent personnel and the work should always be carried out under the direction of a competent Superintendent.

(2) Working areas where Scaffolding is being assembled or erected, altered and dismantled shall be designated as Dangerous Areas, and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any non - authorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(3) During erection of Scaffolding 2m high and above, boarded areas shall be provided for safe temporary storage of Scaffolding tubes, couplings, fittings or components and other materials and equipment.

(4) All workers engaged in the assembly or erection, alteration and dismantling of any Scaffolding shall be provide with PFAS and ensure that such workers use this.

6.5.9 Scaffolding Assembly, Erection, Alteration and Dismantling Generally

The Contractor shall take the following measures when assembling or erecting, assembling, altering or dismantling operation on all types of Scaffolding:

(1) Scaffolding shall be assembled or erected, altered and dismantled only by competent personnel and the work should always be carried out under the direction of a competent Superintendent.

(2) Working areas where Scaffolding is being assembled or erected, altered and dismantled shall be designated as Dangerous Areas, and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any non - authorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(3) During erection of Scaffolding 2m high and above, boarded areas shall be provided for safe temporary storage of Scaffolding tubes, couplings, fittings or components and other materials and equipment.

(4) All workers engaged in the assembly or erection, alteration and dismantling of any Scaffolding shall be provide with PFAS and ensure that such workers use this.

NK1: The quality and width are specified in 6.5.3 Platform of Scaffolding (1) (a) and (2), respectively, so (5) and (6) are deleted.

(7) ~~The clearance between planks shall not exceed 3 cm and the clearance between floors and standards shall not exceed 12cm.~~ (JC121)

JC121:??
NK1: The spaces of 2.5 cm and 24 cm are specified in 6.5.3 Platform of Scaffolding (1) (b) and (c), so (7) is deleted.

(8) Scaffold boards shall each be securely fixed at a sufficient number of points to provide constant support to with no movement, dislocation and no gaps that mat create a dropping hazard.

(9) When moving scaffold boards, ensure that they are securely supported in at least three (3) locations, the length of any projection from supports shall be at least 10cm and not exceeding one-eighteenth of the length of the scaffolding boards.

(10) When stacking the timber sole plate or runners ensure that they are stacked in the longitudinal direction, over supports and with 20 cm overlaps.

6.5.11 General Inspection and Maintenance of Scaffolding (JC126)

JC126: この節では HSO がアクティブな役割を負担している。staff とした方がいいのでは?
In this section the HSO has an active role. Wording as "staff" is better?
NK1: Duty of HSO is discussed in Chapter 1, so it is left.

Further to the requirements of JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the Contractor shall comply with the following:

(1) Every scaffold from which a person could fall 2m or more must be thoroughly examined by the HSO (or his delegated assistant):

(a) Before it is brought into use;

(b) After any substantial alteration or extension;

(c) At least once in every 7 days; and

(d) Whenever it has been exposed to adverse climatic conditions, earthquake or other factors which may have affected its safety.

(2) A written record of the thorough examination and the regular inspections and details of any repair measures must be prepared and kept by the HSO.

(3) The thorough examination and regular inspections shall include: (JC127)

JC127: 下記の事項が良く理解できない
MM: The following items cannot be understood well.
JC1:(MD) There are a number of items listed most of which are excluded from the NK draft which I suggest are necessary.
Please review and advise what is required.

(5) Scaffold boards shall each be securely fixed at a sufficient number of points to provide constant support with no movement or dislocation and no gaps that may create a dropping hazard.

(6) When moving Scaffold boards, ensure that they are securely supported in at least three (3) locations, the length of any projection from supports shall be at least 10cm and not exceeding one-eighteenth of the length of the Scaffold boards.

(7) When stacking the timber sole plate or runners ensure that they are stacked in the longitudinal direction, over supports and with 20 cm overlaps.

I suggest that the following 6.5.10 is moved to here. It is at the end of your draft but it is actually a general scaffolding requirement similar to the above. It is then followed by the hoist which is really a stand-alone subclause already including its own inspection and maintenance. (NK agreed.)

6.5.10 General Inspection and Maintenance of Scaffolding

Further to the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the Contractor shall comply with the following:

(1) Every Scaffold from which a person could fall 2m or more shall be thoroughly examined by the HSO (or his delegated assistant):

(a) Before it is brought into use;

(b) After any substantial alteration or extension;

(c) At least once in every 7 days; and

(d) Whenever it has been exposed to adverse climatic conditions, earthquake or other factors which may have affected its safety.

(2) A written record of the examination and regular inspections with details of any repair measures shall be prepared and kept by the HSO.

(3) The examinations and regular inspections shall include:

(5) Scaffold boards shall each be securely fixed at a sufficient number of points to provide constant support with no movement or dislocation and no gaps that may create a dropping hazard.

(6) When moving Scaffold boards, ensure that they are securely supported in at least three (3) locations, the length of any projection from supports shall be at least 10cm and not exceeding one-eighteenth of the length of the Scaffold boards.

(7) When stacking the timber sole plate or runners ensure that they are stacked in the longitudinal direction, over supports and with 20 cm overlaps.

6.5.10 General Inspection and Maintenance of Scaffolding

Further to the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the Contractor shall comply with the following:

(1) Every Scaffold from which a person could fall 2m or more shall be thoroughly examined by the HSO (or his delegated assistant):

(a) Before it is brought into use;

(b) After any substantial alteration or extension;

(c) At least once in every 7 days; and

(d) Whenever it has been exposed to adverse climatic conditions, earthquake or other factors which may have affected its safety.

(2) A written record of the examination and regular inspections with details of any repair measures shall be prepared and kept by the HSO.

(3) The examinations and regular inspections shall include:

NK1: Modified them and discuss with JICA.

(a) Check if the Scaffold is provided and used in accordance with the Method Statement, Safety Plan and its design.

(b) ~~Check the structural condition of the Scaffold and of any deterioration, defect or damage~~

(c) Check if the bracing, crossing ties, toe boards, handrails and mid-rails (JC128) which are provided are not missing.

JC128: 前項 7.5.4 でコメント済み。Commented already in 7.5.4
NK1: Cannot understand the comment.

(d) Check items include:

(i) Condition of working platforms and of any damage to fixings;

(ii) Condition and any loosening at the fastening, connecting and mounting, portions of standards, ledgers, brackets, and the like;

(iii) Condition and any damage and corrosion of couplings, fittings, clamps and accessories;

(iv) Fall prevention facilities are intact and secure;

(v) Condition of mountings and presence of toe boards;

(vi) Condition of bases, screw jacks, castors, brakes, sole plates and the like and ensure there is no movement or settlement;

(vii) Condition of mountings and presence of diagonal bracings, stays, anchors, ties and other bracing, support or reinforcement materials;

(viii) Condition of mountings and presence of posts, standards, ledgers and transoms.

(4) The Contractor shall carry out all necessary remedial and repair work necessary to rectify any deterioration, defect or damage and shall if necessary stop the use of the Scaffolding until such work has been properly completed, re-inspected and re-certified as "Safe for Use" by the HSO.

~~6.5.11 Mobile Elevating Work Platforms~~ (JC122)

JC122: 前項 7.5.5 で including Mobile Tower Scaffolds として扱っていますが、本項との区別が付きにくいです。確認願います。
Although it is treated as Mobile Tower Scaffolds in the previous section 7.5.5, it is difficult to distinguish from this section. Please check.
NK1: 移動足場(Mobile Tower Scaffolds)と高所作業車(mobile elevating work platforms/aerial lifts)を、それぞれ 6.5.5 と 6.5.11 に規定します
Tower Scaffolds (including Mobile Tower Scaffolds) is specified in 6.5.5 Mobile Scaffoldings. Mobile elevating work platforms/aerial lifts is specified in 6.5.11. The term of mobile elevating work platforms is used in UK and that is aerial lifts in OSHA. The both terms are stipulated in 6.5.11.
NK1: 6.5.11 は、OSHA 1926.453 Aerial lifts を参考に全体的に変更しました。
Revised overall including OSHA provisions in 1926.453 Aerial lifts.

This section specifies for the mobile elevating work platforms (aerial lifts) including extensible boom platforms, articulating boom platforms, vertical towers and a combination of any such devices.

(a) Check that the Scaffold is provided and used in accordance with the Method Statement, Safety Plan and its design;

(b) Condition of working platforms and of any damage to fixings;

(c) Condition and any loosening at the fastening, connecting and mounting, portions of standards, ledgers, brackets, and the like;

(d) Condition and any damage and corrosion of couplings, fittings, clamps and accessories;

(e) Fall prevention facilities are intact and secure;

(f) Condition of mountings and presence of toe boards;

(g) Condition of bases, screw jacks, castors, brakes, sole plates and the like and ensure there is no movement or settlement;

(h) Condition of mountings and presence of diagonal bracings, stays, anchors, ties and other bracing, support or reinforcement materials; and

(i) Condition of mountings and presence of posts, standards, ledgers and transoms.

(4) The Contractor shall carry out all necessary remedial and repair work necessary to rectify any deterioration, defect or damage and shall if necessary stop the use of the Scaffolding until such work has been properly completed, re-inspected and re-certified as "Safe for Use" by the HSO.

6.5.11 Mobile Elevating Work Platforms

(a) Check that the Scaffold is provided and used in accordance with the Method Statement, Safety Plan and its design;

(b) Condition of working platforms and of any damage to fixings;

(c) Condition and any loosening at the fastening, connecting and mounting, portions of standards, ledgers, brackets, and the like;

(d) Condition and any damage and corrosion of couplings, fittings, clamps and accessories;

(e) Fall prevention facilities are intact and secure;

(f) Condition of mountings and presence of toe boards;

(g) Condition of bases, screw jacks, castors, brakes, sole plates and the like and ensure there is no movement or settlement;

(h) Condition of mountings and presence of diagonal bracings, stays, anchors, ties and other bracing, support or reinforcement materials; and

(i) Condition of mountings and presence of posts, standards, ledgers and transoms.

(4) The Contractor shall carry out all necessary remedial and repair work necessary to rectify any deterioration, defect or damage and shall if necessary stop the use of the Scaffolding until such work has been properly completed, re-inspected and re-certified as "Safe for Use" by the HSO.

6.5.11 Mobile Elevating Work Platforms

The following safety measures shall apply for placing and operating mobile elevating work platforms:

(1) ~~Only trained Contractor's Personnel, certified as such by the HSO~~ (JC123) ~~shall be permitted to operate and all operation shall carry out in accordance with the manufacturer's written instruction.~~

JC123: HSO が certify する？HSO は Safety System が機能しているかを確認する立場では？
Does HSO certifies? I think the role of HSO is to check whether the Safety System is working.
NK1: Duty of HSO is discussed in Chapter 1, so it is left.

(2) ~~Mobile elevating work platforms shall never be used beyond the load limit specified by the manufacturer, which shall also be clearly displayed on the equipment.~~

(3) ~~Take necessary measures avoid overturning including fully extending outriggers and preventing uneven settling of the ground.~~

(4) Designate operation as "Dangerous Work" and in accordance with JSSS 2.3 [*Prohibition of Entry – Dangerous Work*], demarcate work areas and take measures to prevent entry to unauthorised personnel.

(5) ~~Do not switch off or isolate any safety devices.~~

(6) ~~Drive only after lowering the working platform to the specified lowest descent position.~~

(7) ~~In the case of any mobile elevating work platform that is not operated remotely from the working platform, the equipment shall never be driven with a worker on the working platform.~~

(8) ~~In the case of any mobile elevating work platform that is operated remotely from the working platform, the equipment shall never be driven on unlevel surfaces, soft or weak ground.~~

(9) ~~In the case of any mobile elevating work platform that is not operated remotely from the working platform, the following measures shall be taken when driving the equipment:~~ (JC124)

JC124: (7)～(9)よく意味が分かりません。
MM: Cannot understand (7) to (9).
JC1: Modified and deleted.

(a) ~~Place Spotter to guide the mobile elevating work platform in accordance with JSSS 2.4 [*Spotters, Flagmen and the like*],~~

(b) ~~Determine signals in accordance with JSSS 2.4.5 [*Signals*], and~~

(c) ~~Determine in advance the appropriate working speed limit for the mobile elevating work platform according to the height of the working platform and the length of the boom, etc. and ensure that the operator never drives the equipment in excess of this limit.~~

(10) ~~When leaving the operating position and when work is not continuing or stopped the operator shall:~~

(a) ~~Put the working platform in the lowest position~~

(b) ~~Stop the prime engine/motor~~

(c) ~~Apply the parking brake securely and ensure the equipment is securely parked.~~

(11) ~~If a worker is working on the working platform or is about to work, ensure that the parking brake is securely applied.~~

(12) ~~When using the mobile elevating work platform, workers shall be positioned only on the passenger~~ seat (JC125) ~~or on the working platform.~~

JC125: passenger seat は余分 I think it is not necessary for passenger seat?
NK: Agree. Deleted (12).

(13) ~~Working Platform Operation~~
~~When operating the working platform at a place other than the structure or building floor, ensure communication is possible between the worker on the working platform and the person operating the working platform.~~
~~Establish the necessary signals and locate a Spotter in accordance with JSSS 2.4 [*Spotters, Flagmen and the Like*].~~

(14) ~~Working on the Working Platform~~
(a) ~~Have workers use PPE including PFRS;~~
(b) ~~Prohibit workers from take dangerous actions such as moving from the working platform to a steel structure, standing on and working from handrail, and~~
(c) ~~Stop work at a height of 2m or more in case of adverse weather in accordance with JSSS 2.7 [Adverse Weather Requirements].~~

(15) ~~Inspection and maintenance of mobile elevating work platform~~

Following to be coordinated later with Section 4
(a) ~~Carry out inspection of mobile elevating work platform in accordance with JSSS 4.1.5 [*Inspection and Maintenance*] and JSSS 4.2.1 [*Inspection and Maintenance*],~~
(b) ~~Repair work of mobile elevating work platform and installation/removal of its working platform shall be carried out following JSSS 4.2.5 [*Safety Measures during Inspection and Maintenance Work*] and JSSS 4.2.6 [*Safety measures at Installation and Removal Work of Attachments, etc.*].~~

NK: after finalization of Chap. 4, reference no. shall be adjusted.

(16) ~~Prohibition of use for other purposes~~
~~Mobile elevating work platforms shall not be used for any purpose other than the intended original purpose and for example shall never be used for hoisting loads.~~

6.5.10 Mobile Elevating Work Platforms

This section specifies for the mobile elevating work platforms (aerial lifts) including extensible boom platforms, articulating boom platforms, vertical towers and a combination of any such devices.

The following safety measures shall apply for placing and operating mobile elevating work platforms:

(1) General

(a) Only trained Contractor's Personnel, certified as such by the HSO shall be permitted to operate the mobile elevating work platforms in accordance with JSSS 1.18 [Proper Placement of Contractor's Personnel.

(b) All operation shall be carried out in accordance with the manufacturer's written instruction.

(c) Mobile elevating work platforms shall never be used beyond the load limit specified by the manufacturer, which shall also be clearly displayed on the equipment.

(d) Any safety devices shall not be switched off or isolated.

(2) Measures before operation of mobile elevating work platform:

(a) Designate operation as "Dangerous Work" and in accordance with JSSS 2.3 [Prohibition of Entry - Dangerous Work],

This Subclause specifies requirements for mobile elevating work platforms (also known as aerial lifts) including extendable boom platforms, articulating boom platforms, vertical towers and a combination of any such devices.

(1) The following safety measures shall apply for placing and operating mobile elevating work platforms:

(a) Only trained Contractor's Personnel, certified as such by the HSO shall be permitted to operate in accordance with JSSS 1.18 [Proper Placement of Contractor's Personnel];

(b) All operation shall be carried out in accordance with the manufacturer's written instructions;

(c) Mobile elevating work platforms shall never be used beyond the load limit specified by the manufacturer, which shall also be clearly displayed on the equipment; and

(d) Safety devices shall not be switched off or isolated.

This Subclause specifies requirements for mobile elevating work platforms (also known as aerial lifts) including extendable boom platforms, articulating boom platforms, vertical towers and a combination of any such devices.

(1) The following safety measures shall apply for placing and operating mobile elevating work platforms:

(a) Only trained Contractor's Personnel, certified as such by the HSO shall be permitted to operate in accordance with JSSS 1.18 [Proper Placement of Contractor's Personnel];

(b) All operation shall be carried out in accordance with the manufacturer's written instructions;

(c) Mobile elevating work platforms shall never be used beyond the load limit specified by the manufacturer, which shall also be clearly displayed on the equipment; and

(d) Safety devices shall not be switched off or isolated.

(2) Measures before operation of mobile elevating work platform:

(a) Designate operation as "Dangerous Work" and in accordance with JSSS 2.3 [*Prohibition of Entry - Dangerous Work*], demarcate work areas and take measures to prevent entry to

demarcate work areas and take measures to prevent entry to unauthorised personnel.

(b) Place Spotter to guide the mobile elevating work platform in accordance with JSSS 2.4 [Spotters, Flagmen and the like],

(c) Determine signals in accordance with JSSS 2.4.5 [Signals], and

(d) Determine in advance the appropriate working speed limit for the mobile elevating work platform according to the height of the working platform and the length of the boom, etc. and ensure that the operator never drives the equipment in excess of this limit.

(3) Measures at locating mobile elevating work platform:

(a) The parking brakes of vehicle shall be set.

(b) Wheel chocks shall be installed before using the mobile elevating work platforms on an incline, provided they can be safely installed.

(c) When outriggers are used, they shall be positioned on pads or a solid surface.

(d) Lift controls shall be tested each day prior to use to determine that such controls are in safe working condition.

(4) Measures at operation on mobile elevating work platform:

(a) Workers shall always stand firmly on the floor of the basket/working platform, and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position;

(b) Have workers use PPE including PFRS;

(c) Prohibit workers from take dangerous actions such as moving from the working platform/basket to neighbouring structure, standing on and working from handrail,

(d) When the mobile elevating work platform has both platform (upper) and lower controls. Upper controls shall be in or beside the platform within easy reach of the operator. Lower controls shall provide for overriding the upper controls. Controls shall be plainly marked as to their function. Lower level controls shall not be operated unless permission has been obtained from the worker in the lift, except in case of emergency,

(e) When leaving the operating position and when work is not continuing or stopped the operator of the mobile elevating work platform shall:

(i) Put the working platform in the lowest position;

(ii) Stop the prime engine/motor;

(iii) Apply the parking brake securely and ensure the equipment is securely parked; and

(f) Stop work at a height of 2 m or more in case of adverse weather in accordance with JSSS 2.7 [Adverse Weather Requirements].

(5) Measures of moving mobile elevating work platform

(2) Measures before operation of mobile elevating work platform:

(a) Designate operation as "Dangerous Work" and in accordance with JSSS 2.3 [*Prohibition of Entry - Dangerous Work*], demarcate work areas and take measures to prevent entry to unauthorised personnel;

(b) Place a Spotter to guide the mobile elevating work platform in accordance with JSSS 2.4 [*Spotters, Flagmen and the like*] ~~and who can request help and lower the working platform should the operator be incapacitated and if somebody does fall, have an escape or recovery plan in place before hand;~~ (NK: The added part is different from requests to Spotter in other Chapters such as Contractor's equipment, so the added part is deleted.)

(c) Determine signals in accordance with JSSS 2.4.5 [*Signals*], and

(d) Determine in advance the appropriate working speed limit for the mobile elevating work platform according to the height of the working platform and the length of the boom, etc. and ensure that the operator never drives the equipment in excess of this limit.

(3) Measures at locating mobile elevating work platform:

(a) The parking brakes of vehicle shall be set;

(b) Wheel chocks shall be installed before using the mobile elevating work platforms on an incline, provided they can be safely installed;

(c) When outriggers are used, they shall be positioned on pads or a solid surface; and

(d) Lift controls shall be tested each day prior to use to determine that such controls are in safe working condition.

(4) Measures at operation on mobile elevating work platform:

(a) Workers shall always stand firmly on the floor of the basket/working platform, and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position;

(b) Workers shall use PPE including PFRS;

(c) Workers shall be prohibited from taking dangerous actions such as moving from the working platform/basket to neighbouring structure, standing on and working from handrail;

(d) When the mobile elevating work platform has both platform (upper) and lower controls, the upper controls shall be in or beside the platform within easy reach of the operator. Lower controls shall provide for overriding the upper controls. Controls shall be plainly marked as to their function. Lower level controls shall not be operated unless permission has been obtained from the worker in the lift, except in case of emergency;

(e) When leaving the operating position and when work is not continuing or stopped the operator of the mobile elevating work platform shall:

(i) Put the working platform in the lowest position;

(ii) Stop the prime engine/motor; and

unauthorised personnel;

(b) Place a Spotter to guide the mobile elevating work platform in accordance with JSSS 2.4 [*Spotters, Flagmen and the like*];

(c) Determine signals in accordance with JSSS 2.4.5 [*Signals*], and

(d) Determine in advance the appropriate working speed limit for the mobile elevating work platform according to the height of the working platform and the length of the boom, etc. and ensure that the operator never drives the equipment in excess of this limit.

(3) Measures at locating mobile elevating work platform:

(a) The parking brakes of vehicle shall be set;

(b) Wheel chocks shall be installed before using the mobile elevating work platforms on an incline, provided they can be safely installed;

(c) When outriggers are used, they shall be positioned on pads or a solid surface; and

(d) Lift controls shall be tested each day prior to use to determine that such controls are in safe working condition.

(4) Measures at operation on mobile elevating work platform:

(a) Workers shall always stand firmly on the floor of the basket/working platform, and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position;

(b) Workers shall use PPE including PFRS;

(c) Workers shall be prohibited from taking dangerous actions such as moving from the working platform/basket to neighbouring structure, standing on and working from handrail;

(d) When the mobile elevating work platform has both platform (upper) and lower controls, the upper controls shall be in or beside the platform within easy reach of the operator. Lower controls shall provide for overriding the upper controls. Controls shall be plainly marked as to their function. Lower level controls shall not be operated unless permission has been obtained from the worker in the lift, except in case of emergency;

(e) When leaving the operating position and when work is not continuing or stopped the operator of the mobile elevating work platform shall:

(i) Put the working platform in the lowest position;

(ii) Stop the prime engine/motor; and

(iii) Apply the parking brake securely and ensure the equipment is securely parked.

(f) Stop work at a height of 2 m or more in case of adverse weather in accordance with JSSS 2.7 [*Adverse Weather Requirements*].

(a) Mobile elevating work platform shall not be moved when the boom is elevated in a working position with workers in the basket, except for equipment which is specifically designed for this type of operation.

(b) Before moving the mobile elevating work platform for travel, the boom(s) shall be inspected to see that it is properly cradled and outriggers are in stowed position.

(6) Inspection and maintenance of mobile elevating work platform

(a) Carry out inspection of mobile elevating work platform in accordance with JSSS 4.1.5 [Inspection and Maintenance] and JSSS 4.2.1 [Inspection and Maintenance],

(b) Repair work of mobile elevating work platform and installation/removal of its working platform shall be carried out following JSSS 4.2.5 [Safety Measures during Inspection and Maintenance Work] and JSSS 4.2.6 [Safety measures at Installation and Removal Work of Attachments, etc.].

(7) Prohibition of use for other purposes

Mobile elevating work platforms shall not be used for any purpose other than the intended original purpose and for example shall never be used for hoisting loads.

(iii) Apply the parking brake securely and ensure the equipment is securely parked.

(f) Stop work at a height of 2 m or more in case of adverse weather in accordance with JSSS 2.7 [*Adverse Weather Requirements*].

(5) Measures of moving mobile elevating work platform

(a) Mobile elevating work platform shall not be moved when the boom is elevated in a working position with workers in the basket, except for equipment which is specifically designed for this type of operation; and

(b) Before moving the mobile elevating work platform for travel, the boom(s) shall be inspected to see that it is properly cradled and outriggers are in stowed position.

(6) Inspection and maintenance of mobile elevating work platform

(a) Carry out inspection in accordance with JSSS 4.2 [*Requirements Generally*]; and

(b) Carry out maintenance, repair and installation/removal of the working platform in accordance with JSSS 4.2.2 [*Defects and Repair During Operation*], JSSS 4.3.3 [*Safety Measures During Cleaning, Inspection and Maintenance*] and JSSS 4..3.6 [*Safety Measures During Connection of Attachments*].

(7) Prohibition of use for other purposes

Mobile elevating work platforms shall not be used for any purpose other than the intended original purpose and for example shall never be used for hoisting loads.

(5) Measures of moving mobile elevating work platform

(a) Mobile elevating work platform shall not be moved when the boom is elevated in a working position with workers in the basket, except for equipment which is specifically designed for this type of operation; and

(b) Before moving the mobile elevating work platform for travel, the boom(s) shall be inspected to see that it is properly cradled and outriggers are in stowed position.

(6) Inspection and maintenance of mobile elevating work platform

(a) Carry out inspection in accordance with JSSS 4.2 [*Requirements Generally*]; and

(b) Carry out maintenance, repair and installation/removal of the working platform in accordance with JSSS 4.2.2 [*Defects and Repair During Operation*], JSSS 4.3.3 [*Safety Measures During Cleaning, Inspection and Maintenance*] and JSSS 4..3.6 [*Safety Measures During Connection of Attachments*].

(7) Prohibition of use for other purposes

Mobile elevating work platforms shall not be used for any purpose other than the intended original purpose and for example shall never be used for hoisting loads.

6.6 ELEVATED ACCESS STRUCTURES (JC129)

JC129: この英語訳でいいですか？？
MM: Is this expression of elevated access structures appropriate?
NK1: MD think so yes, there is no international standard wording and MD developed it. It has functional meaning in three words.
MD considers it is necessary to define this and has included in Annex 1.1 (issue 7) as follows:
(7) "Elevated Access Structures" means substantial, elevated, temporary working areas, usually comprised of structural steel columns, beams, framing and floor decking and used for performing work at sites with difficult access or with restricted room for construction operations or steeply sloping or offshore sites.
Result: Leave as it is

6.6.1 General

Elevated Access Structures (as defined in JSSS Annex 1.1) (JC131) act as an access, parking, temporary working and storage area and to accommodate Contractor's Equipment, Goods and temporary facilities to permit the construction operations to be performed from the Elevated Access Structures ~~on an immediately underlying or adjacent~~ (JC132) in the Site. (JC130)

JC130: もう少し的確に表現しないと意味が伝わりません。
Unless otherwise described a little more properly, the meaning will not be understood. Proposed as below.
"act as a temporary working platform for heavy-usage such as a working platform for heavy machineries, a concrete mixing plant or a considerable large storage area. It is in some case, a part access bridge to the working area."

6.6 ELEVATED ACCESS STRUCTURES

6.6.1 General

Elevated Access Structures act as temporary access, parking, working and/or storage areas which also accommodate Contractor's Equipment, Goods and temporary facilities as necessary to permit the construction operations to be performed from these structures on the underlying or adjacent working area(s) within the Site.

Please note that because of access restrictions, these structures can be over or along the side of the new works and therefore the wording "underlying or adjacent" is correct.

6.6 ELEVATED ACCESS STRUCTURES

6.6.1 General

Elevated Access Structures act as temporary access, parking, working and/or storage areas which also accommodate Contractor's Equipment, Goods and temporary facilities as necessary to permit the construction operations to be performed from these structures on the underlying or adjacent working area(s) within the Site.

NK1: NK considers the sentence is understandable by adding some words.
The working platforms are used in UK for work at height for example scaffold as shown below. To avoid the same term used for work at height, the proposed term of Elevated Access Structures is better to be used.
The Work at Height Regulations 2005、OSHA, UK defines as “working platform”—
(a) means any platform used as a place of work or as a means of access to or egress from a place of work;
(b) includes any scaffold, suspended scaffold, cradle, mobile platform, trestle, gangway, gantry and stairway which is so used.
MD will review the above comment and modify id necessary.

JC131: 作業構台のことと思いますが、Annex 1.1 には見当たりません。英訳の難しいところとも考えられますが、MD さんがこれを理解している、と考えてよいのでしょうか？
I think it is a work gantry, but I can't find it in Annex 1.1. It may be difficult to translate into English, but can you think that MD understands this?
NK1: “Elevated Access Structures” is defined in JSSS Annex 1.1 (7). MD understood its meaning as NK showed photos for it.

JC132: adjacent “Site”は妙です。発注者が規定した Site の中に構築されるものです。”working area”は”Site”の中に設定されるべきものです(GC 1.1.6.7 “Site”参照ください)。水域上の working area も、Site の中に設営されます。以下この錯誤による規定の矛盾が散見されるようです。改善ください。
Adjacent “Site” is strange. It is built in the Site specified by the Employer. “Working area” should be set in “the Site” (refer to GC 1.1.6.7 “Site”). The working area over the water area is also set up in the Site. It seems that inconsistencies in the rules due to this misunderstanding are seen below. Please improve them.
NK1: Modified.

6.6.2 Design and Management Generally

(1) The design, management, provision, safe use and safe removal of Elevated Access Structures shall comply with the requirements of JSSS 6.1.1 [*Design and Provision of TW Generally*].

(2) For related JSSS requirements, refer to the following and other related parts of JSSS including:

(a) JSSS 1.~~33~~35 [*Contractor’s Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*];

(b) JSSS 1.~~35~~ 37 [*Design and Management of Temporary Works*]

~~(c) JSSS 2.5 [*Fall Prevention*]~~

~~(d) JSSS 2.6 [*Falling Objects*];~~

JC1: (a) and (b) are left and others are deleted because they are general requirements.

(3) Erection and Removal of Elevated Access Structures

The Contractor shall:

(a) Designate any working areas where an Elevated Access Structures is being erected, altered or removed as Dangerous Areas, and the Contractor shall enclose the working area where possible with temporary fences or barriers, prevent entry of any non - authorised personnel or prevent vessels from entering in the case of offshore or marine works and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*]. (JC133)

JC133: Comment 7.6.1 に同じです。Site の確保方法は発注者が仕様書・図面などで

6.6.2 Design and Management Generally

(1) The design, management, provision, safe use and safe removal of Elevated Access Structures shall comply with the requirements of JSSS 6.1.1 [*Design and Provision of Temporary Works Generally*].

(2) For related JSSS requirements, refer to the following and other related parts of JSSS including:

(a) JSSS 1.35 [Contractor’s Equipment, Temporary Works, Safety Equipment and PPE]; and

(b) JSSS 1.37 [Design and Management of Temporary Works].

(3) Erection and Removal of Elevated Access Structures

The Contractor shall:

(a) Designate any working areas where any Elevated Access Structures are being erected, altered or removed as Dangerous Areas and enclose the working area where possible with temporary fences or barriers, prevent entry of any unauthorised personnel or prevent vessels from entering in the case of offshore or marine works and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work];*

6.6.2 Design and Management Generally

(1) The design, management, provision, safe use and safe removal of Elevated Access Structures shall comply with the requirements of JSSS 6.1.1[*Design and Provision of Temporary Works Generally*].

(2) For related JSSS requirements, refer to the following and other related parts of JSSS including:

(a) JSSS 1.35 [Contractor’s Equipment, Temporary Works, Safety Equipment and PPE]; and

(b) JSSS 1.37 [Design and Management of Temporary Works].

(3) Erection and Removal of Elevated Access Structures

The Contractor shall:

(a) Designate any working areas where any Elevated Access Structures are being erected, altered or removed as Dangerous Areas and enclose the working area where possible with temporary fences or barriers, prevent entry of any unauthorised personnel or prevent vessels from entering in the case of offshore or marine works and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work];*

設置場所・使用を規定しておくべきことです。水域上の Site についても同様です。
Same as comment for adjacent Site. The method of securing the site should be such that the Employer should specify the installation location and use in the specifications and drawings. The same goes for Sites on water area.
NK1: 架設構台の建設現場は、2.3 に規定の危険な作業地域に指定して安全対策を取ることを規定しています。建設現場は、7.6.1 で in the Site と規定していますので、(a)の変更は不要です。
This clause specifies to designate the site as Dangerous Areas and take safety measures following JSSS 2.3 [Prohibition of Entry - Dangerous Work]. The construction of Elevated Access Structures is made in the Site as specified in 7.6.1. Therefore, no modification is made.

(b) ~~Implement safety measures for lifting and slinging work in accordance with JSSS~~ 6 [*Lifting and Slinging Work*].

NK1: This is a general requirement, so it may be deleted.
MD: To be coordinated with JSSS 6 later. Rigging?
The following is not necessary it is already a requirement of JSSS 1.13 [Contractor's Safety Management Activities]

(c) Use of Measures to prevent Vehicles from falling

The Contractor shall provide and fix continuous "W" Section, (JC134) heavy duty commercial type galvanised steel crash barriers of suitable strength and height (minimum 1.5m) with posts, fixings and fittings, to the entire perimeter of all Elevated Access Structures where they are used by vehicles or Contractor's Equipment, to prevent such vehicles or Contractor's Equipment from falling where there is any risk.

The Contractor shall also provide steel angle or channel kerbs welded to the surface of the decking in locations where vehicles or Contractor's Equipment are working or parking to prevent the vehicles or Contractor's Equipment accidentally moving and colliding with the crash barrier.

All crash barriers and kerbs shall be painted in black and yellow bands to show them as a hazard.

JC134: 路面をギザギザにすることでしょうか？
MM: Does this expression mean the road surface to be jagged?
JC1: It means steel crash barriers.
Result: Leave it as it is.

(d) Use of Measures to prevent collision with Marine Vessels

For offshore work, the Contractor shall provide all necessary warning signs, audible alarms, beacons and lighting and serve all notices to the marine or other relevant authorities as necessary to ensure that all shipping, boats and other vessels are aware of changes to navigation due to the presence of any Elevated Access Structures and that all risk of collision is avoided.

6.6.3 Further Safety Requirements

The Contractor shall take all necessary measures to ensure the safe provision, use and removal of Elevated Access Structures, including but not restricted to the following:

(1) Provide warning notices clearly showing the maximum safe

(b) Use of Measures to prevent Vehicles from falling;

The Contractor shall provide and fix continuous "W" Section, heavy duty commercial type galvanised steel crash barriers of suitable strength and height (minimum 1.5m) with posts, fixings and fittings, to the entire perimeter of all Elevated Access Structures where they are used by vehicles or Contractor's Equipment, to prevent such vehicles or Contractor's Equipment from falling where there is any risk.

The Contractor shall also provide steel angle or channel kerbs welded to the surface of the decking in locations where vehicles or Contractor's Equipment are working or parking to prevent the vehicles or Contractor's Equipment accidentally moving and colliding with the crash barrier.

All crash barriers and kerbs shall be painted in black and yellow bands to show them as a hazard.

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The Contractor shall take all necessary measures to ensure the safe provision, use and removal of Elevated Access Structures, including but not restricted to the following:

(1) Provide warning notices clearly showing the maximum safe working

(b) Use of Measures to prevent Vehicles from falling;

The Contractor shall provide and fix continuous "W" Section, heavy duty commercial type galvanised steel crash barriers of suitable strength and height (minimum 1.5m) with posts, fixings and fittings, to the entire perimeter of all Elevated Access Structures where they are used by vehicles or Contractor's Equipment, to prevent such vehicles or Contractor's Equipment from falling where there is any risk.

The Contractor shall also provide steel angle or channel kerbs welded to the surface of the decking in locations where vehicles or Contractor's Equipment are working or parking to prevent the vehicles or Contractor's Equipment accidentally moving and colliding with the crash barrier.

All crash barriers and kerbs shall be painted in black and yellow bands to show them as a hazard.

(c) Use of Measures to prevent collision with Marine Vessels;

For offshore work, the Contractor shall provide all necessary warning signs, audible alarms, beacons and lighting and serve all notices to the marine or other relevant authorities as necessary to ensure that all shipping, boats and other vessels are aware of changes to navigation due to the presence of any Elevated Access Structures and that all risk of collision is avoided.

6.6.3 Further Safety Requirements

The Contractor shall take all necessary measures to ensure the safe provision, use and removal of Elevated Access Structures, including but not restricted to the following:

(1) Provide warning notices clearly showing the maximum safe working

working load in clearly visible locations.

(2) Ensure that the Contractor, together with any other parties considered collectively, NEVER exceed the maximum safe working load.

(3) Provide any further signs containing user information or other mandatory usage requirements such as speed limits and markings all as necessary to demarcate roadways and walkways, working, storage, parking and other areas.

(4) Designate any Elevated Access Structures during use as Dangerous Areas and take all further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(5) Provide walkways in accordance with JSSS 6.4.2 [*Walkways*] (JC135),

JC135: pedestrian walkway としてください。
Change it to "Pedestrian walkway", please.
NK1: The walkways are specified in 6.4.1 as follows.
6.4.1 General
(1) This Section comprises safety measures relating to the movement of persons to and around the Site and includes temporary walkways, pedestrian bridges, portable ladders and stepladders.
To make term consistent, "walkway" is used. Leaved as it is.

(6) Provide adequate lighting to ensure the safety of Contractor's Equipment, equipment of other parties, vehicles and persons in transit or whilst working.

(7) (for offshore work) Provide rescue and lifesaving equipment to be used in the event that any persons fall into the sea, including a rescue tender and life belts or the like.

(8) Provide PFAS or PFRS (JC136) to workers at construction and removal of Elevated Access Structures, where appropriate.

JC136: 高所作業の時なので、基本的には組立・撤去時か？まとめて Abbreviations を記載することが必要
Since they are the systems for working at heights, basically should it be specified that it be supplied at the time of assembly and removal? Abbreviations must be described together.
NK1: Definitions of two terms are specified in Chapter 1, A1.1.2 (17) and (18).

(9) Prevent any accident or collision by ensuring that all Contractor's Personnel that may be working on Elevated Access Structures and any Employer's personnel and other persons that may be present on such structures are fully informed about the work that may be in progress from time to time, including transportation and delivery of Goods and of the measures and any precautions that must be complied with.

6.6.4 Inspection and Maintenance

Further to the requirements of JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the Contractor shall comply with the following:

(1) Every Elevated Access Structure must be thoroughly examined by the ~~HSO~~ (JC137) ~~(or his delegated assistant)~~:

JC137: the Contractor でいいのでは？ Better to "the Contractor"?
NK1: The duty of HSO is discussed in Chapter 1, so no modify is made.

(a) Before it is brought into use;

load in clearly visible locations.

(2) Ensure that the Contractor, together with any other parties considered collectively, NEVER exceed the maximum safe working load.

(3) Provide any further signs containing user information or other mandatory usage requirements such as speed limits and markings all as necessary to demarcate roadways and walkways, working, storage, parking and other areas.

(4) Designate all work to and on any Elevated Access Structures and during use, as Dangerous Work and take all further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(5) Provide walkways in accordance with JSSS 6.4.2 [*Walkways*],

(6) Provide adequate lighting to ensure the safety of Contractor's Equipment, equipment of other parties, vehicles and persons in transit or whilst working.

(7) (for offshore work) Provide rescue and lifesaving equipment to be used in the event that any persons fall into the sea, including a rescue tender and life belts or the like.

(8) Provide PFAS or PFRS to workers where appropriate including those engaged in the construction and removal of the Elevated Access Structures.

(9) Prevent any accident or collision by ensuring that all Contractor's Personnel that may be working on Elevated Access Structures and any Employer's personnel and other persons that may be present on such structures are fully informed about the work that may be in progress from time to time, including transportation and delivery of Goods and of the measures and any precautions that must be complied with.

6.6.4 Inspection and Maintenance

Further to the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*] the Contractor shall comply with the following:

(1) Every Elevated Access Structure shall be thoroughly examined by the HSO:

(a) Before it is brought into use;

load in clearly visible locations.

(2) Ensure that the Contractor, together with any other parties considered collectively, NEVER exceed the maximum safe working load.

(3) Provide any further signs containing user information or other mandatory usage requirements such as speed limits and markings all as necessary to demarcate roadways and walkways, working, storage, parking and other areas.

(4) Designate all work to and on any Elevated Access Structures and during use, as Dangerous Work and take all further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(5) Provide walkways in accordance with JSSS 6.4.2 [*Walkways*],

(6) Provide adequate lighting to ensure the safety of Contractor's Equipment, equipment of other parties, vehicles and persons in transit or whilst working.

(7) (for offshore work) Provide rescue and lifesaving equipment to be used in the event that any persons fall into the sea, including a rescue tender and life belts or the like.

(8) Provide PFAS or PFRS to workers where appropriate including those engaged in the construction and removal of the Elevated Access Structures.

(9) Prevent any accident or collision by ensuring that all Contractor's Personnel that may be working on Elevated Access Structures and any Employer's personnel and other persons that may be present on such structures are fully informed about the work that may be in progress from time to time, including transportation and delivery of Goods and of the measures and any precautions that must be complied with.

6.6.4 Inspection and Maintenance

Further to the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*] the Contractor shall comply with the following:

(1) Every Elevated Access Structure shall be thoroughly examined by the HSO:

(a) Before it is brought into use;

(b) After any substantial alteration or extension; (c) At least once in every 7 days (JC138); and JC138: 必ずしも毎週仮設構台を確認する必要はないと考えます。デック、手すり、輪留めくらい？ MM: It is not necessary to check the Elevated Access Structure every week. Check might be made on the decks, handrails, car stops? JC1: If that is your instruction I will change, however, please note that the extent of weekly inspection is variable. Considering the requirements of (4) below, I would recommend that a check at least on a weekly basis (particularly settlement) is very necessary. If it is not a weekly check, what is the suggested frequency? Results: Leave it as it is. (d) Whenever it has been exposed to adverse climatic conditions, heavy seas, earthquake or other factors which may have affected its safety. (2) A written record of the thorough examination and the regular inspections and details of any repair measures must be prepared by the HSO (JC139). JC139:HSO ??? NK1: The duty of HSO is discussed in Chapter 1, so no modify is made. (3) The thorough examination and regular inspections shall include: (a) Check if the Elevated Access Structure is provided and used in accordance with the Method Statement, Safety Plan and its design. (b) Check items include: (i) The structural condition of the Elevated Access Structure and of any deterioration, defect, damage or settlement; (ii) Fall prevention and all other safety requirements and facilities are intact and fully operational; and (iii) All other requirements of this Section are still being complied with. (4) The Contractor shall carry out all necessary remedial and repair work necessary to rectify any deterioration, defect or damage and shall if necessary stop the use of the Elevated Access Structure until such work has been properly completed, re-inspected and re-certified as “Safe for Use” by the HSO.	(b) After any substantial alteration or extension; (c) At least once in every 7 days; and (d) Whenever it has been exposed to adverse climatic conditions, heavy seas, earthquake or other factors which may have affected its safety. (2) A written record of the examination and regular inspections and details of any repair measures shall be prepared by the HSO. (3) The examination and regular inspections shall include: (a) Check if the Elevated Access Structure is provided and used in accordance with the Method Statement, Safety Plan and its design; (b) Check items include: (i) The structural condition of the Elevated Access Structure and of any deterioration, defect, damage or settlement; (ii) Fall prevention and all other safety requirements and facilities are intact and fully operational; and (iii) All other requirements of this Section are still being complied with. (4) The Contractor shall carry out all necessary remedial and repair work necessary to rectify any deterioration, defect or damage and shall if necessary stop the use of the Elevated Access Structure until such work has been properly completed, re-inspected and re-certified as “Safe for Use” by the HSO.	(b) After any substantial alteration or extension; (c) At least once in every 7 days; and (d) Whenever it has been exposed to adverse climatic conditions, heavy seas, earthquake or other factors which may have affected its safety. (2) A written record of the examination and regular inspections and details of any repair measures shall be prepared by the HSO. (3) The examination and regular inspections shall include: (a) Check if the Elevated Access Structure is provided and used in accordance with the Method Statement, Safety Plan and its design; (b) Check items include: (i) The structural condition of the Elevated Access Structure and of any deterioration, defect, damage or settlement; (ii) Fall prevention and all other safety requirements and facilities are intact and fully operational; and (iii) All other requirements of this Section are still being complied with. (4) The Contractor shall carry out all necessary remedial and repair work necessary to rectify any deterioration, defect or damage and shall if necessary stop the use of the Elevated Access Structure until such work has been properly completed, re-inspected and re-certified as “Safe for Use” by the HSO.
6.7 TEMPORARY ELECTRICAL INSTALLATIONS To MD: I found the following document you might referred to for this Section in HSE. May I know titles of other document for my reference in future. 1) HSE Safety Topics: Electricity - Systems in buildings https://www.hse.gov.uk/construction/safetytopics/systems.htm 2) HSE HSG85 (Third edition) Published 2013 Electricity at work: Safe working practices https://www.hse.gov.uk/pubns/books/hsg85.htm 3) HSE: Guidance: The Electricity at Work, Regulations 1989 https://www.hse.gov.uk/pubns/priced/hsr25.pdf To MD: Comments in this Section are marked as follows: JICA : sentences in yellow highlighted NK: sentences in blue highlighted **6.7.1 General**	**6.7 TEMPORARY ELECTRICAL INSTALLATIONS** **6.7.1 General**	**6.7 TEMPORARY ELECTRICAL INSTALLATIONS** **6.7.1 General**

(1) This Section contains safety requirements for the provision, use, relocation, repair and removal of temporary electrical power and lighting installations at the Site.

NK1: Added relocation, repair mentioned in Japanese version.

(2) As this Section relates to temporary installations to be used during construction, temporary wiring methods can be of a class less than would be required for a permanent installation.

NK1: Is this necessary mention “less than permanent”?

Mains switchgear, equipment and outlets however shall comply with the same standards as for a permanent installation.

(3) Although this work is temporary, it shall be particularly noted that temporary electrical installations ~~must~~ shall be designed, installed, inspected, tested, altered and removed by Contractor’s Personnel that are qualified electricians, trained and certified for such operations in accordance with JSSS 1.~~16~~18 [*Proper Placement of Contractor’s Personnel*] and that follow strict procedures prepared by the Contractor and specified in the Method Statement and Safety Plan.

(4) The Contractor must shall take precautions against the risk of death or injury from electricity during construction work. Refurbishment work in existing buildings presents the greatest risk and all ~~must~~ shall be planned, managed and monitored to ensure that workers are not exposed to risk from electricity.

(5) The temporary electrical installations and all equipment used ~~must~~ shall be safe, regularly inspected and properly maintained.

(6) Temporary electrical installations shall be removed immediately upon completion of the work for which they are used.

NK1: “must” and “shall” are used above, can we use all only “shall”?

6.7.2 Compliance Standards

By reference to JSSS 1.4 [*JSSS ~~Laws and Reference Standards~~ Compliance with JSSS and Other Regulations*], for any items in this Section or relevant to the subject of this Section and which are not fully covered by JSSS, the Contractor shall comply with the technical requirements of OSHA PART 1926-Safety and Health Regulations for Construction, Subpart K-Electrical; 1926.405 Wiring Methods, Components and Equipment for General Use.

NK1: Is it necessary to stipulate section no. 1926.405??

6.7.3 General Safety Requirements

The Contractor shall avoid accidents to workers engaged on electrical works and also those workers ~~who are~~ who are not electricians but who are carrying out other works, ~~such as plumbers and joiners~~ by taking appropriate measures including the following:

(1) Understanding the system

(a) Ensure that ~~those~~ Contractor’s Personnel responsible for planning, managing or performing any part of the Works fully understand the electrical system on Site or inside any existing building where

(1) This Section contains safety requirements for the provision, use, relocation, repair and removal of temporary electrical power and lighting installations at the Site.

(2) As this Section relates to temporary installations to be used during construction, temporary wiring methods can be of a class less than would be required for a permanent installation.

https://www.osha.gov/laws-regs/interlinking/standards/1926.405(a)(2)(i)

OSHA allows this to be a class less than the permanent works, which seems reasonable as this is only for temporary use

Mains switchgear, equipment and outlets however shall comply with the same standards as for a permanent installation.

(3) Although this work is temporary, it shall be particularly noted that temporary electrical installations shall be designed, installed, inspected, tested, altered and removed by Contractor’s Personnel that are qualified electricians, trained and certified for such operations in accordance with JSSS 1.18 [*Proper Placement of Contractor’s Personnel*] and that follow strict procedures prepared by the Contractor and specified in the Method Statement and Safety Plan.

(4) The Contractor shall take precautions against the risk of death or injury from electricity during construction work. Refurbishment work in existing buildings presents the greatest risk and all shall be planned, managed and monitored to ensure that workers are not exposed to risk from electricity.

(5) The temporary electrical installations and all equipment used shall be safe, regularly inspected and properly maintained.

(6) Temporary electrical installations shall be removed immediately upon completion of the work for which they are used.

6.7.2 Compliance Standards

Changed in 2.5 therefore for consistency to be changed everywhere;

By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*], for any items in this Section or relevant to the subject of this Section and which are not fully covered by JSSS, the Contractor shall take necessary measures for Temporary Electrical Installations complying with the technical requirements specified in OSHA PART 1926-Safety and Health Regulations for Construction, Subpart K-Electrical; 1926.405 Wiring Methods, Components and Equipment for General Use.

6.7.3 General Safety Requirements

The Contractor shall avoid accidents to workers engaged on electrical works and also those workers who are not electricians but who are carrying out other works, by taking appropriate measures including the following:

(1) Understanding the system

(a) Ensure that Contractor’s Personnel responsible for planning, managing or performing any part of the Works fully understand the electrical system on Site or inside any existing building where

(1) This Section contains safety requirements for the provision, use, relocation, repair and removal of temporary electrical power and lighting installations at the Site.

(2) As this Section relates to temporary installations to be used during construction, temporary wiring methods can be of a class less than would be required for a permanent installation.

Mains switchgear, equipment and outlets however shall comply with the same standards as for a permanent installation.

(3) Although this work is temporary, it shall be particularly noted that temporary electrical installations shall be designed, installed, inspected, tested, altered and removed by Contractor’s Personnel that are qualified electricians, trained and certified for such operations in accordance with JSSS 1.18 [*Proper Placement of Contractor’s Personnel*] and that follow strict procedures prepared by the Contractor and specified in the Method Statement and Safety Plan.

(4) The Contractor shall take precautions against the risk of death or injury from electricity during construction work. Refurbishment work in existing buildings presents the greatest risk and all shall be planned, managed and monitored to ensure that workers are not exposed to risk from electricity.

(5) The temporary electrical installations and all equipment used shall be safe, regularly inspected and properly maintained.

(6) Temporary electrical installations shall be removed immediately upon completion of the work for which they are used.

6.7.2 Compliance Standards

By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*], for any items in this Section or relevant to the subject of this Section and which are not fully covered by JSSS, the Contractor shall take necessary measures for Temporary Electrical Installations complying with the technical requirements specified in OSHA PART 1926-Safety and Health Regulations for Construction, Subpart K-Electrical; 1926.405 Wiring Methods, Components and Equipment for General Use.

6.7.3 General Safety Requirements

The Contractor shall avoid accidents to workers engaged on electrical works and also those workers who are not electricians but who are carrying out other works, by taking appropriate measures including the following:

(1) Understanding the system

(a) Ensure that Contractor’s Personnel responsible for planning, managing or performing any part of the Works fully understand the electrical system on Site or inside any existing building where

understand the electrical system on Site or inside any existing building where any work is to be carried out, to ensure that the integrity of the electrical system is not compromised and all workers remain safe.	any work is to be carried out, to ensure that the integrity of the electrical system is not compromised and all workers remain safe; and	any work is to be carried out, to ensure that the integrity of the electrical system is not compromised and all workers remain safe; and
(b) Ensure that relevant parts of existing electrical systems are isolated if there is any risk or the execution of any part of the Works by any tradesmen (JC140) is liable to disturb or damage the existing electrical system and expose ~~persons~~ workers to electrical danger.	(b) Ensure that relevant parts of existing electrical systems are isolated if there is any risk or if the execution of any part of the Works is liable to disturb or damage the existing electrical system and expose persons to electrical danger.	(b) Ensure that relevant parts of existing electrical systems are isolated if there is any risk or if the execution of any part of the Works is liable to disturb or damage the existing electrical system and expose persons to electrical danger.

NK1: The sentence (b) is long and difficult to understand. Can you simplify this sentence and also review terms?

JC140: electrician? Who?

NK1: tradesman は熟練工員、職人の意味であり、electrician(電気技師，電気工)を含みます。下記の英英辞典と OSHA の用語を参照願います。

A. in https://dictionary.cambridge.org/

1) “tradesmen” means someone who works in a trade that needs skill at using your hands, usually in the building industry.

2) “trade” means a job, especially one that needs special skill, that involves working with your hands: (‧She went to college to learn a trade.)　the people who work in a particular business or industry or in the same one:

3) “electrician” means a person who puts in, checks, and repairs electrical wires and electrical equipment

B. OSHA: Subpart K-Electrical

Qualified person: One familiar with the construction and operation of the equipment and the hazards involved.

(2) Portable electrical equipment	(2) Portable electrical equipment	(2) Portable electrical equipment
(a) Ensure that tools, plugs and cables designed for domestic use are not used for construction works. The Contractor shall use cordless tools, other suitable for external use under Site conditions. (JC141)	(a) Ensure that tools, plugs and cables designed for domestic use are not used for construction works; (b) The Contractor shall use cordless tools or other tools suitable for external use under Site conditions; and	(a) Ensure that tools, plugs and cables designed for domestic use are not used for construction works; (b) The Contractor shall use cordless tools or other tools suitable for external use under Site conditions; and

JC141: proposed to modify to “cordless tools or other suitable tools for external”

NK1: Modify it as indicated.

(b) Where cordless tools are not used and where so justified by available voltage, ensure that tools operate from a 110V centre tapped to earth (CTE) (JC141) supply system so that the maximum voltage to earth does not exceed 55V.	(c) Where cordless tools are not used and where so justified by available voltage, ensure that tools operate from a 110V centre tapped to earth (CTE) supply system so that the maximum voltage to earth does not exceed 55V.	(c) Where cordless tools are not used and where so justified by available voltage, ensure that tools operate from a 110V centre tapped to earth (CTE) supply system so that the maximum voltage to earth does not exceed 55V.

JC141: 分からないので確認してください。

Please check the CTE because I cannot understand its meaning.

NK1: （1） CTE は、変圧器の設置方式の一つで、移動式電動器具の安全な配電方式として一般的に使用されていると次に説明があります。

The CTE is one of earth systems in transforms and very common in electrical distribution systems and site safety operations explained in the following web:
https://www.gstransformers.com/technical/110v-centre-tap-earth-55v-0v-55v.html
移動式電動器具のための CTE 方式では、安全のために漏電遮断器が併用されていると記述が上の記事にあります。
CTE system for portable tools are usually installed with residual-current device (RCD) for safety reasons.

(2) BS の低電圧への変電に関する規定

BS 7671:2018 Requirements for Electrical Installations. IET Wiring Regulations(入手済)
411.8 Reduced low voltage systems　411.8.1 General
411.8.1.2 The nominal voltage of the reduced low voltage circuits shall not exceed 110 V AC rms between lines (three phase 63.5 V to earthed neutral, single phase55 V to earthed midpoint).

（3）HSE Safety Topics
https://www.hse.gov.uk/construction/safetytopics/systems.htm

Electricity - Systems in buildings, Portable electrical equipment
Tools, plugs and cables designed for DIY (do-it-yourself） and domestic use are not suitable for site conditions.
You should use cordless tools or those that operate from a 110V centre tapped to earth (CTE) supply system so that the maximum voltage to earth does not exceed 55V.
感電事故防止のために、低圧電圧を 3 相と単相で規定しています。内容は妥当です。
The Regulation specifies low voltage for 3 phases and single phase. I cannot understand perfectly, however the stipulation (b) is correct.

(c) ~~Regularly inspect power tools and take them out of service if they are damaged. Tools should be serviced by qualified electricians; makeshift repairs are prohibited.~~

NK1: (c) is common requirement, so (c) can be moved to (7). To MD; Can you confirm this moving?

(3) Residual current (trip) devices

(a) Where mains supply is used, the risk of injury is high if equipment, tools, leads, wires or cables are damaged or if there is a fault.

(b) Use residual current (trip) devices (RCD) to detect some faults in the electrical system and rapidly switch off the supply.

(c) RCDs shall be properly installed and enclosed; checked daily; treated with care; kept free of moisture and dirt; and protected against vibration and mechanical damage.

(d) ~~Electrical equipment and tools shall be checked for damage before every shift, have a visual inspection every week and have a combined inspection and test before first use on a site and then every month, records of these checks shall be kept.~~

NK1: (d) is common requirement, so (d) can be moved to (7). To MD, Can you confirm this moving?

NK1: Reference for RCD: 参考：漏電遮断器
https://ja.wikipedia.org/wiki/%E6%BC%8F%E9%9B%BB%E9%81%AE%E6%96%AD%E5%99%A8
漏電遮断器または漏電ブレーカー（Earth Leakage Circuit Breaker : ELCB・ELB・ECB、Ground-Fault Circuit Interrupter : GFCI、Residual Current Circuit Breaker : RCCB、Residual Current Device : RCD）とは、漏電による漏れ電流を検出して回路を自動的に遮断する機能をもつ遮断器である。 通常の配線用遮断器が過負荷や短絡による過電流から回路を保護しているのに対し、漏電遮断器は地絡による感電を防止する目的で回路に設けられる。ただし、殆どの製品では過電流遮断機能が付いている。

(4) Lighting systems

Protect cabling and bulbs against breakage. If a bulb breaks, the exposed filament may present a hazard. Have a system for checking bulbs regularly to maintain electrical safety and to keep the site well-lit.

(5) Temporary electrical systems ~~must~~ shall not be used in excess of intended loads or rated capacity whichever is less.

(6) Temporary electrical systems shall not be used for any purpose other than the intended original purpose.

(7) Electrical equipment and tools shall be checked for damage before every shift, have a visual inspection every week and have a combined inspection and test before first use on a site and then

(d) ~~Regularly inspect power tools and take them out of service if they are damaged. Tools should be serviced by qualified electricians; makeshift repairs are prohibited.~~

Moved to (7)_ below

(3) Residual current (trip) devices

(a) Where mains supply is used, the risk of injury is high if equipment, tools, leads, wires or cables are damaged or if there is a fault;

(b) Use residual current (trip) devices (RCD) to detect some faults in the electrical system and rapidly switch off the supply; and

(c) RCDs shall be properly installed and enclosed; checked daily; treated with care; kept free of moisture and dirt; and protected against vibration and mechanical damage.

(d) ~~Electrical equipment and tools shall be checked for damage before every shift, have a visual inspection every week and have a combined inspection and test before first use on a site and then every month, records of these checks shall be kept.~~

Moved to (8)_ below

(4) Lighting systems

Protect cabling and bulbs against breakage. If a bulb breaks, the exposed filament may present a hazard. Have a system for checking bulbs regularly to maintain electrical safety and to keep the site well-lit.

(5) Temporary electrical systems shall not be used in excess of intended loads or rated capacity whichever is less.

(6) Temporary electrical systems shall not be used for any purpose other than the intended original purpose.

Moved from above:

(7) Regularly inspect power tools and take them out of service if they are damaged. Tools should be serviced by qualified electricians; makeshift repairs are prohibited.

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(6) Temporary electrical systems shall not be used for any purpose other than the intended original purpose.

every month, records of these checks shall be kept.

NK1: (c) and (d) above are moved to (7).

6.7.4 Method statement for Temporary Electrical Installations

The Method Statement for temporary electrical installations (required by the Contract and JSSS 1.7 [*Contractor's Method Statements*] shall include a copy of the Laws and regulations of the Country and the power authority which supplies power to the Contractor in relation with relevant temporary electrical installations and shall show:

(1) Required Standards and voltages of electric wires and cables.

(2) Protective work for electric wires and cables.

(3) Electric diagram.

6.7.5 Responsible Personnel

(1) The Contractor shall post the name and contact information for the person in charge of managing and operating the temporary electrical installation.

(2) All other persons shall be prohibited from operating repairing or interfering with the temporary electrical installation unless otherwise instructed or approved by the HSO or person in change.

(3) ~~Unless otherwise agreed,~~ the HSO ~~or the same person in charge~~ shall be responsible for daily and periodical inspection and maintenance and for reporting the result of such inspections to ~~the HSO and~~ Engineer in the Monthly Safety Report.

NK1: May I know what is assumed by "Unless otherwise agreed".
NK1: The stipulation of the HSO's duty regarding inspection should be consistence with other Sections.
To MD; please review and modify them.

6.7.6 Inspection, Maintenance and Repair

The Contractor shall inspect the temporary electric facilities and perform all requisite maintenance, replacement and repair to ensure the continued and safe operation including the following:

(1) Daily inspection

(a) Prepare a daily inspection checklist of the temporary electric installations including the condition of associated buildings, enclosures, fences and the like;

(b) Inspect daily; and

(c) Record the inspection results.

(2) Periodical inspection

(a) Prepare periodical (weekly and monthly) inspection checklist including measurement of insulation resistance values of temporary electric installations and the operating status of protective devices against overcurrent, grounding fault, etc.;

(b) Inspect periodically; and

(8) Electrical equipment and tools shall be checked for damage before every shift, have a visual inspection every week and have a combined inspection and test before first use on a site and then every month, records of these checks shall be kept.

6.7.4 Method statement for Temporary Electrical Installations

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(1) Required Standards and voltages of electric wires and cables.

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(2) All other persons shall be prohibited from operating repairing or interfering with the temporary electrical installation unless otherwise instructed or approved by the HSO or person in change.

(3) ~~The HSO or the person in charge shall be responsible for daily and periodical inspection and maintenance and for reporting the result of such inspections to the HSO and Engineer in the Monthly Safety Report.~~

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The Contractor shall inspect the temporary electric facilities and perform all requisite maintenance, replacement and repair to ensure the continued and safe operation including the following:

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(b) Inspect daily; and

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(2) Periodical inspection

(a) Prepare periodical (weekly and monthly) inspection checklist including measurement of insulation resistance values of temporary electric installations and the operating status of protective devices against overcurrent, grounding fault, etc.;

(b) Inspect periodically; and

(7) Regularly inspect power tools and take them out of service if they are damaged. Tools should be serviced by qualified electricians; makeshift repairs are prohibited.

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(a) Prepare a daily inspection checklist of the temporary electric installations including the condition of associated buildings, enclosures, fences and the like;

(b) Inspect daily; and

(c) Record the inspection results.

(2) Periodical inspection

(a) Prepare periodical (weekly and monthly) inspection checklist including measurement of insulation resistance values of temporary electric installations and the operating status of

(c) Record the inspection results.

(3) Maintenance and repair

(a) As a result of inspection, carry any maintenance, repair or replacement if and as necessary;

(b) Stop operation of the temporary electric installations or affected parts thereof and prevent any further operation until maintenance, repair or replacement is completed; and

(c) Reinspect, the temporary electric installations or parts thereof, and after the HSO has declared same as “Safe for Use”, operation can then re-commence.

6.7.7 Safety Measures during the Work

The Contractor shall take the following safety measures when installing, moving, removing, repairing temporary electric facilities.

(1) Cabling/Wiring

(a) Carry out cabling/wiring work so that safety distances between cabling/wiring and any other cabling/wiring, posts, gantries, other structures, buildings, enclosures Contractor’s Equipment, vehicles and persons are maintained;

(b) If appropriate separation distances cannot be maintained, enclose cabling/wiring in insulated ducts, conduit or trunking;

(c) Locate cabling/wiring where it does not obstruct other works; and

(d) Always enclose cabling/wiring in insulated ducts, conduit or trunking in working areas or Operational Areas to avoid any risk of contact, damage or injury.

(2) Switchgear, Panels and Switches

(a) Enclose ~~S~~ switchgear, ~~P~~ panels and ~~S~~ switches in waterproof and lockable metal enclosures to suit the environmental conditions and of which shall be grounded; and

(b) Fuses and circuit breakers shall be suitable for their use and load capacity.

(3) Power Receiving Equipment and Transformers

(a) Power ~~R~~ receiving ~~E~~ equipment, ~~T~~ transformers and the like, shall be located in securely fenced or enclosed and locked compounds, enclosures or buildings from which entry by unauthorised persons shall be prohibited;

NK1: The terms above (2) and (3) are not defined in Chap.1 A1.1.2. Might they not be capitalized?

(b) Any work in such areas shall be designated as Dangerous Work and the provisions of JSSS 2.1.4 [*Further Requirements for Dangerous Work*] shall be applied; and

(c) All such places shall be clearly indicated as dangerous no entry areas with clear and obvious signage.

(4) Grounding (earthing)

(a) All temporary electric installations shall be grounded for each part to prevent the risk of electric shock due to electrical leakage; protective devices against overcurrent, grounding fault, etc.;

(b) Inspect periodically; and

(c) Record the inspection results.

(3) Maintenance and repair

(a) As a result of inspection, carry any maintenance, repair or replacement if and as necessary;

(b) Stop operation of the temporary electric installations or affected parts thereof and prevent any further operation until maintenance, repair or replacement is completed; and

(c) Reinspect, the temporary electric installations or parts thereof, and after the HSO has declared same as “Safe for Use”, operation can then re-commence.

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(b) If appropriate separation distances cannot be maintained, enclose cabling/wiring in insulated ducts, conduit or trunking;

(c) Locate cabling/wiring where it does not obstruct other works; and

(d) Always enclose cabling/wiring in insulated ducts, conduit or trunking in working areas or Operational Areas to avoid any risk of contact, damage or injury.

(2) Switchgear, Panels and Switches

(a) Enclose switchgear, panels and switches in waterproof and lockable metal enclosures to suit the environmental conditions and of which shall be grounded; and

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(c) All such places shall be clearly indicated as dangerous no entry areas with clear and obvious signage.

(4) Grounding (earthing)

part to prevent the risk of electric shock due to electrical leakage; and

(b) Grounding electrodes shall be highly conductive such as copper or steel.

(5) Relocation and Repair Work (JC142)

(a) Relocation and repair work to or in the vicinity of temporary electrical installations shall only be performed after the power supply has been turned off, isolation has been confirmed, confirmation that that ~~protective equipment~~ protective tube of electric wire for insulation is installed and no electricity is measured by electricity detection;

MD: Not sure of above meaning, do you mean PPE?

NK1: The protective equipment is not PPE but protective tube of electric wire as shown in the photo.

JC142: コントラクターの temporary electrical installation を言っているか、現場を通過している公共電線のことをいっているか、明確ではないので、仮設電線であることを明確にする。
It is not clear that the (5) above specify for the Contractor's temporary electrical installation or public electricity supply lines passing in the Site. It needs to specify the Contractor's temporary electrical installation.

NK1: 6.7.7 specifies "The Contractor shall take the following safety measures when installing, moving, removing, repairing temporary electric facilities."
It seems not need to specify but added temporary electrical installation.

(b) When re-energising temporary electric installations during or after any relocation or repair work, the Contractor shall ascertain in advance that there is no risk of electric shock to any persons engaged on or in the vicinity of the relocation or repair work; and

(c) When installation, relocation or repair work of temporary electric installations is completed, the facilities shall be operated only after testing and inspection of the installation by the HSO and after the HSO has declared same as "Safe for Use".

and

(b) Grounding electrodes shall be highly conductive such as copper or steel.

(5) Relocation and Repair Work of Temporary Electrical Installation

(a) Relocation and repair work to or in the vicinity of temporary electrical installations shall only be performed after the power supply has been turned off, isolation has been confirmed, confirmation that temporary protective casings have been installed over existing cables and no electricity is measured by electricity detection;

(b) When re-energising temporary electric installations during or after any relocation or repair work, the Contractor shall ascertain in advance that there is no risk of electric shock to any persons engaged on or in the vicinity of the relocation or repair work; and

(c) When installation, relocation or repair work of temporary electric installations is completed, the facilities shall be operated only after testing and inspection of the installation by the HSO and after the HSO has declared same as "Safe for Use".

(a) All temporary electric installations shall be grounded for each part to prevent the risk of electric shock due to electrical leakage; and

(b) Grounding electrodes shall be highly conductive such as copper or steel.

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(a) Relocation and repair work to or in the vicinity of temporary electrical installations shall only be performed after the power supply has been turned off, isolation has been confirmed, confirmation that temporary protective casings have been installed over existing cables and no electricity is measured by electricity detection;

(b) When re-energising temporary electric installations during or after any relocation or repair work, the Contractor shall ascertain in advance that there is no risk of electric shock to any persons engaged on or in the vicinity of the relocation or repair work; and

(c) When installation, relocation or repair work of temporary electric installations is completed, the facilities shall be operated only after testing and inspection of the installation by the HSO and after the HSO has declared same as "Safe for Use".

6.8 ELECTRIC AND GAS WELDING AND CUTTING

6.8.1 General

(1) This Section contains safety requirements for electric and gas, welding and cutting.

(2) Electric and Gas welding and cutting work shall be designated as Dangerous Work and the provisions of JSSS 2.1.4 [*Further Requirements for Dangerous Work*] shall be applied.

(3) Electric and Gas welding and cutting work shall only be performed, inspected and tested by Contractor's Personnel that are qualified welders, trained and certified for such operations in accordance with JSSS 1.16 [*Proper Placement of Contractor's Personnel*] and that follow strict procedures prepared by the Contractor and specified in the Method Statement and Safety Plan.

6.8.2 Compliance Standards

By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], for any

6.8 ELECTRIC AND GAS WELDING AND CUTTING

6.8.1 General

(1) This Section contains safety requirements for electric and gas, welding and cutting.

(2) Electric and Gas welding and cutting work shall be designated as Dangerous Work and the provisions of JSSS 2.1.5 [*Further Requirements for Dangerous Work*] shall be applied.

(3) Electric and Gas welding and cutting work shall only be performed, inspected and tested by Contractor's Personnel that are qualified welders, trained and certified for such operations in accordance with JSSS 1.18 [*Proper Placement of Contractor's Personnel*] and that follow strict procedures prepared by the Contractor and specified in the Method Statement and Safety Plan.

6.8.2 Compliance Standards

Changed in 2.5 therefore for consistency to be changed everywhere;

By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*],

6.8 ELECTRIC AND GAS WELDING AND CUTTING

6.8.1 General

(1) This Section contains safety requirements for electric and gas, welding and cutting.

(2) Electric and Gas welding and cutting work shall be designated as Dangerous Work and the provisions of JSSS 2.1.5 [*Further Requirements for Dangerous Work*] shall be applied.

(3) Electric and Gas welding and cutting work shall only be performed, inspected and tested by Contractor's Personnel that are qualified welders, trained and certified for such operations in accordance with JSSS 1.18 [*Proper Placement of Contractor's Personnel*] and that follow strict procedures prepared by the Contractor and specified in the Method Statement and Safety Plan.

6.8.2 Compliance Standards

By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*],

items in this Section or relevant to the subject of this Section and which are not fully covered by JSSS, the Contractor shall comply with the following technical requirements:

(1) OSHA PART 1926-Safety and Health Regulations for Construction, Subpart J - Welding and Cutting, 1926.351 Arc welding and cutting.

(2) OSHA PART 1926-Safety and Health Regulations for Construction, Subpart J- Welding and Cutting, 1926.351 Gas welding and cutting.

NK1: I think it is better to specify Section No. of OSHA to specify particular clauses in OSHA.

6.8.3 Electric Welding and Cutting

The Contractor shall take the following measures for the electric welding and cutting.

(1) Check measures before:

(a) Automatic voltage reduction device for reducing no load voltage to prevent ~~preventer of~~ ~~preventer of~~ electric shock is fitted and is functioning properly?

MD Do you mean ELCB?

NK1: Not ELCB. The term is replaced with voltage reduction device (VRD) recommended in OSHA 1910.254 (b)(3)(iv)
For a.c. welding under wet conditions or warm surroundings where perspiration is a factor, the use of reliable automatic controls for reducing no load voltage is recommended to reduce the shock hazard.

(b) Frame of welding machine is grounded?

(c) Grounding conductor is installed properly and working?

(d) There is no damage to welding cables?

(e) There is no damage to electrode holder, insulation of earth clamp or cable connections?

(f) Carry out all such further checks that are required by the manufacturer's official maintenance and repair manual.

If any items are found to be missing or defective, the Contractor shall prohibit use until it has been repaired or replaced and the equipment has been inspected, tested and certified as "Safe for Use" by HSO, before it can be used.

(2) Measures to be adopted during operation:

(a) Prevent the occurrence of stray currents by securely fixing the earth cable with an earth clamp to a suitable earth, close to the work location;

(b) Use the correct type and size of cables and never use alternatives such as tools or reinforcing bars;

(c) When not working, remove electrode from holder and turn off the welding machine; and

(d) Weld only in suitable environment and climatic conditions. Stop working outdoors during rainfall and take measures to prevent the welding machine, cables and accessories from getting wet.

for any items in this Section or relevant to the subject of this Section and which are not fully covered by JSSS, the Contractor shall take necessary measures for Electric and Gas Welding and Cutting complying with the technical requirements specified in the following standards:

(1) OSHA PART 1926-Safety and Health Regulations for Construction, Subpart J - Welding and Cutting, 1926.351 Arc welding and cutting.

(2) OSHA PART 1926-Safety and Health Regulations for Construction, Subpart J- Welding and Cutting, 1926.351 Gas welding and cutting.

6.8.3 Electric Welding and Cutting

The Contractor shall take the following measures for the electric welding and cutting:

(1) Check measures before:

(a) Automatic voltage reduction device for reducing no load voltage to prevent the shock hazard, is fitted and is functioning properly;

(b) Frame of welding machine is grounded;

(c) Grounding conductor is installed properly and working;

(d) There is no damage to welding cables;

(e) There is no damage to electrode holder, insulation of earth clamp or cable connections; and

(f) Carry out all such further checks that are required by the manufacturer's official maintenance and repair manual.

If any items are found to be missing or defective, the Contractor shall prohibit use until it has been repaired or replaced and the equipment has been inspected, tested and certified as "Safe for Use" by HSO, before it can be used.

(2) Measures to be adopted during operation:

(a) Prevent the occurrence of stray currents by securely fixing the earth cable with an earth clamp to a suitable earth, close to the work location;

(b) Use the correct type and size of cables and never use alternatives such as tools or reinforcing bars;

(c) When not working, remove electrode from holder and turn off the welding machine;

(d) Weld only in suitable environment and climatic conditions. Stop working outdoors during rainfall and take measures to prevent the welding machine, cables and accessories from getting wet;

(e) If any worker receives an electric shock, the Contractor shall stop

for any items in this Section or relevant to the subject of this Section and which are not fully covered by JSSS, the Contractor shall take necessary measures for Electric and Gas Welding and Cutting complying with the technical requirements specified in the following standards:

(1) OSHA PART 1926-Safety and Health Regulations for Construction, Subpart J - Welding and Cutting, 1926.351 Arc welding and cutting.

(2) OSHA PART 1926-Safety and Health Regulations for Construction, Subpart J- Welding and Cutting, 1926.351 Gas welding and cutting.

6.8.3 Electric Welding and Cutting

The Contractor shall take the following measures for the electric welding and cutting:

(1) Check measures before:

(a) Automatic voltage reduction device for reducing no load voltage to prevent the shock hazard, is fitted and is functioning properly;

(b) Frame of welding machine is grounded;

(c) Grounding conductor is installed properly and working;

(d) There is no damage to welding cables;

(e) There is no damage to electrode holder, insulation of earth clamp or cable connections; and

(f) Carry out all such further checks that are required by the manufacturer's official maintenance and repair manual.

If any items are found to be missing or defective, the Contractor shall prohibit use until it has been repaired or replaced and the equipment has been inspected, tested and certified as "Safe for Use" by HSO, before it can be used.

(2) Measures to be adopted during operation:

(a) Prevent the occurrence of stray currents by securely fixing the earth cable with an earth clamp to a suitable earth, close to the work location;

(b) Use the correct type and size of cables and never use alternatives such as tools or reinforcing bars;

(c) When not working, remove electrode from holder and turn off the welding machine;

(d) Weld only in suitable environment and climatic conditions. Stop working outdoors during rainfall and take measures to prevent the welding machine, cables and accessories from getting wet;

(e) If any worker receives an electric shock, the Contractor shall stop

(e) If ~~operator(s)~~ (JC143) workers working nearby receive an electric shock, the Contractor shall stop the work immediately, identify the cause, prohibit use of the equipment until it has been repaired or replaced and the equipment has been inspected, tested and certified as "Safe for Use" by HSO, before it can be used.

JC143: 付近の worker だったのでは。Is it workers working nearby?
NK1: Replaced with workers working nearby.

(f) Ensure that workers wear appropriate PPE including personal face protectors for welding and protective gloves as specified in JSSS 2.9 [*Personal Protective Equipment (PPE)*].

(g) Instruct all workers not to look directly at the electric arc with their naked eyes.

MD: will coordinate with JSSS 4.1 after that Section is reviewed:

(3) Periodical inspection of welding machines and welding equipment.

(a) Electric welding and cutting equipment shall be inspected and tested periodically in accordance with JSSS 4.1.7 [*Inspection and Maintenance of Construction Machine*] and JSSS 4.1.9[*Periodical Inspection*].

(b) The ~~automatic preventer of electric shock~~ voltage reduction device ~~preventer of~~ shall be regularly inspected and tested at least once every six months.

MD: Do you mean ELCB?:

NK1: Not ELCB. The term is replaced with voltage reduction device (VRD) as explained in (1)(a).

6.8.4 Gas Welding and Cutting

The Contractor shall take the following measures for gas welding and cutting.

(1) Check measures before:

(a) ~~Backfire prevention device~~ flashback arrestor to stop flame back up into the equipment or gas supply line is installed?

NK1: Backfire prevention device is term used in Japan. The following flashback arrestor mentioned in Wikipedia and ISO is used in JSSS.
flashback arrestor or flash arrestor is a gas safety device most commonly used in oxy-fuel welding and cutting to stop the flame or reverse flow of gas back up into the equipment or supply line. It protects the user and equipment from damage or explosions.
ISO 5175-1:2017 Gas welding equipment — Safety devices — Part 1: Devices incorporating a flame (flashback) arrestor.

(b) There is no damage to gas cylinders, regulators, ~~backfire prevention device~~ flashback arrestor, hose bands, hoses, blow pipes, tip nozzles, and other accessories and equipment?

(c) Gas cylinders, regulators and caps and other relevant accessories and equipment have been inspected periodically and certified by HSO as "Safe for Use".?

(d) Carry out all such further checks that are required by the manufacturer's official maintenance and repair manual.

If any items are found to be missing or defective, the Contractor shall prohibit use until it has been repaired or replaced and the

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the work immediately, identify the cause, prohibit use of the equipment until it has been repaired or replaced and the equipment has been inspected, tested and certified as "Safe for Use" by HSO, before it can be used;

(f) Ensure that workers wear appropriate PPE including personal face protectors for welding and protective gloves as specified in JSSS 2.9 [*PPE and First Aid*]; and

(g) Instruct all workers not to look directly at the electric arc with their naked eyes.

(3) Periodical inspection of welding machines and welding equipment.

(a) Electric welding and cutting equipment shall be inspected and tested periodically in accordance with JSSS 4.2 [*Inspection, Maintenance and Repair*] and JSSS 4.3 [*Safety Requirements*] and

(b) The voltage reduction device shall be regularly inspected and tested at least once every six months.

6.8.4 Gas Welding and Cutting

The Contractor shall take the following measures for gas welding and cutting.

(1) Check measures before:

(a) Flashback arrestor to stop flame back-up into the equipment or gas supply line is installed;

(b) There is no damage to gas cylinders, regulators, flashback arrestor, hose bands, hoses, blow pipes, tip nozzles, and other accessories and equipment;

(c) Gas cylinders, regulators and caps and other relevant accessories and equipment have been inspected periodically and certified by HSO as "Safe for Use"; and

(d) Carry out all such further checks that are required by the manufacturer's official maintenance and repair manual.

If any items are found to be missing or defective, the Contractor shall prohibit use until it has been repaired or replaced and the equipment

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the work immediately, identify the cause, prohibit use of the equipment until it has been repaired or replaced and the equipment has been inspected, tested and certified as "Safe for Use" by HSO, before it can be used;

(f) Ensure that workers wear appropriate PPE including personal face protectors for welding and protective gloves as specified in JSSS 2.9 [*PPE and First Aid*]; and

(g) Instruct all workers not to look directly at the electric arc with their naked eyes.

(3) Periodical inspection of welding machines and welding equipment.

(a) Electric welding and cutting equipment shall be inspected and tested periodically in accordance with JSSS 4.2 [*Inspection, Maintenance and Repair*] and JSSS 4.3 [*Safety Requirements*] and

(b) The voltage reduction device shall be regularly inspected and tested at least once every six months.

6.8.4 Gas Welding and Cutting

The Contractor shall take the following measures for gas welding and cutting.

(1) Check measures before:

(a) Flashback arrestor to stop flame back-up into the equipment or gas supply line is installed;

(b) There is no damage to gas cylinders, regulators, flashback arrestor, hose bands, hoses, blow pipes, tip nozzles, and other accessories and equipment;

(c) Gas cylinders, regulators and caps and other relevant accessories and equipment have been inspected periodically and certified by HSO as "Safe for Use"; and

(d) Carry out all such further checks that are required by the manufacturer's official maintenance and repair manual.

If any items are found to be missing or defective, the Contractor shall prohibit use until it has been repaired or replaced and the equipment

equipment has been inspected, tested and certified as “Safe for Use” by HSO, before it can be used.

(2) Handling of gas welding and cutting equipment

~~Workers~~ (JC144) Welders engaged in gas cutting and welding shall be aware of the following requirements:

JC144: Revised “Workers” to “Welders”
NK1: Modified as commented.

(a) Gas hoses and gas weld sets, shall not be damaged or worn and have no risk of gas leakage;

(b) Gas weld sets shall be turned off when not in use and shall not be left lying around;

(c) Gas pressure regulators shall not be operated during cutting or welding operation;

(d) Connections between cylinders, gas hoses and gas weld sets shall be securely tightened with appropriate connectors;

(e) When tip nozzle overheats, ~~backfire~~ flashback is likely to occur, therefore interrupt continuous working, from time to time and cool the nozzle by submerging in water whilst discharging oxygen at low pressure; and

(f) When finishing or interrupting work, completely close the container valves and vent gas in regulators.

(3) Handling of gas cylinders

~~Workers~~ (JC144) Welders and workers shall be trained to handle gas cylinders so that they are aware of the following requirements:

JC144: Replaced “Workers” with “Welders and workers”
NK1: Modified as commented.

(a) Not to place gas cylinders:

(i) Where there is insufficient ventilation.

(ii) Near to fires, flames, heat sources, electrical sparks or grinding sparks.

(iii) Near to Dangerous Goods or Hazardous Substances or near to Hazardous Areas.

(b) Handle gas cylinders with care and do not drop, throw or mishandle;

(c) Keep cylinders cool by shading and do not expose to direct sunlight;

(d) Position during storage and use so that there is no risk of falling;

(e) Seal cylinders when transporting;

(f) Place ~~empty acetylene containers upright~~ compressed gas cylinders in an upright position at all times except, if necessary, for short periods of time while cylinders are actually being hoisted or carried;

JC(NK): Replaced (f) with the following:
OSHA 1926.350 Gas welding and cutting (a) Transporting, moving, and storing compressed gas cylinders, (9)

has been inspected, tested and certified as “Safe for Use” by HSO, before it can be used.

(2) Handling of gas welding and cutting equipment

Welders engaged in gas cutting and welding shall be aware of the following requirements:

(a) Gas hoses and gas weld sets, shall not be damaged or worn and have no risk of gas leakage;

(b) Gas weld sets shall be turned off when not in use and shall not be left lying around;

(c) Gas pressure regulators shall not be operated during cutting or welding operation;

(d) Connections between cylinders, gas hoses and gas weld sets shall be securely tightened with appropriate connectors;

(e) When tip nozzle overheats, flashback is likely to occur, therefore interrupt continuous working, from time to time and cool the nozzle by submerging in water whilst discharging oxygen at low pressure; and

(f) When finishing or interrupting work, completely close the container valves and vent gas in regulators.

(3) Handling of gas cylinders

Workers and welders shall be trained to handle gas cylinders so that they are aware of the following requirements:

(a) Not to place gas cylinders:

(i) Where there is insufficient ventilation;

(ii) Near to fires, flames, heat sources, electrical sparks or grinding sparks; and

(iii) Near to Dangerous Goods or Hazardous Substances or near to Hazardous Areas.

(b) Handle gas cylinders with care and do not drop, throw or mishandle;

(c) Keep cylinders cool by shading and do not expose to direct sunlight;

(d) Position during storage and use so that there is no risk of falling;

(e) Seal cylinders when transporting;

(f) Place compressed gas cylinders upright at all times except while cylinders are actually being hoisted or carried;

has been inspected, tested and certified as “Safe for Use” by HSO, before it can be used.

(2) Handling of gas welding and cutting equipment

Welders engaged in gas cutting and welding shall be aware of the following requirements:

(a) Gas hoses and gas weld sets, shall not be damaged or worn and have no risk of gas leakage;

(b) Gas weld sets shall be turned off when not in use and shall not be left lying around;

(c) Gas pressure regulators shall not be operated during cutting or welding operation;

(d) Connections between cylinders, gas hoses and gas weld sets shall be securely tightened with appropriate connectors;

(e) When tip nozzle overheats, flashback is likely to occur, therefore interrupt continuous working, from time to time and cool the nozzle by submerging in water whilst discharging oxygen at low pressure; and

(f) When finishing or interrupting work, completely close the container valves and vent gas in regulators.

(3) Handling of gas cylinders

Workers and welders shall be trained to handle gas cylinders so that they are aware of the following requirements:

(a) Not to place gas cylinders:

(i) Where there is insufficient ventilation;

(ii) Near to fires, flames, heat sources, electrical sparks or grinding sparks; and

(iii) Near to Dangerous Goods or Hazardous Substances or near to Hazardous Areas.

(b) Handle gas cylinders with care and do not drop, throw or mishandle;

(c) Keep cylinders cool by shading and do not expose to direct sunlight;

(d) Position during storage and use so that there is no risk of falling;

(e) Seal cylinders when transporting;

(f) Place compressed gas cylinders upright at all times except while cylinders are actually being hoisted or carried;

"the Compressed gas cylinders shall be secured in an upright position at all times except, if necessary, for short periods of time while cylinders are actually being hoisted or carried"

(g) Do not place gas cylinders in the vicinity of lightning conductors or grounding rods for electrical equipment;

(h) Mark all gas cylinders as either full or empty, and separate from other cylinders in storage and before and during use; and

(i) When there is a risk of freezing, do not place gas cylinders in wet or humid places. When valves of cylinder or regulating valves freeze, thaw them out with hot water, do not flame or direct fire.

(4) Safety measures for gas welding and cutting work

(a) Ensure that all internal and external work areas are fully ventilated;

(b) When checking for gas leakage from the gas welding or cutting equipment, use a liquid detergent or similar, never use flames or fire.

(c) Provide adequate fire extinguishing equipment near the working place, always maintained and certified, suitably labelled, available and positioned so that it can be used immediately when necessary.

(d) Remove oil and dust adhering to the valve of gas cylinders.

(e) Ignition and digestion shall be accomplished only with oxygen supply valve closed.

(f) Ensure that workers wear appropriate PPE including personal face protectors for welding and protective gloves as specified in JSSS 2.9 [*Personal Protective Equipment (PPE)*].

(g) Instruct all workers not to look directly at the weld with their naked eyes.

(5) Periodical inspection of gas welding and cutting equipment.

DCI will coordinate with JSSS 4.1 after that Section is reviewed:

(a) Gas welding and cutting equipment shall be inspected and tested periodically in accordance with JSSS 4.1.7 [*Inspection and Maintenance of Construction Machine*] and JSSS 4.1.9 [*Periodical Inspection*].

6.8.5 Fire Prevention

The Contractor shall take all necessary measures to prevent fires caused by welding and cutting operations, including:

(1) When welding or cutting is carried out on/in containers previously filled with Dangerous Goods or Hazardous Material, the containers shall be thoroughly cleaned so that they are completely free from such Dangerous Goods or Hazardous Material before starting work.

(2) Welding or cutting work shall be carried out at place where there is a risk of causing fire either to adjacent buildings or to Contractor's Equipment, Goods, debris, waste or other materials, then fire prevention measures shall be adopted. This may include moving all

(g) Do not place gas cylinders in the vicinity of lightning conductors or grounding rods for electrical equipment;

(h) Mark all gas cylinders as either full or empty, and separate from other cylinders in storage and before and during use; and

(i) When there is a risk of freezing, do not place gas cylinders in wet or humid places. When valves of cylinder or regulating valves freeze, thaw them out with hot water, do not flame or direct fire.

(4) Safety measures for gas welding and cutting work:

(a) Ensure that all internal and external work areas are fully ventilated;

(b) When checking for gas leakage from the gas welding or cutting equipment, use a liquid detergent or similar, never use flames or fire;

(c) Provide adequate fire extinguishing equipment near the working place, always maintained and certified, suitably labelled, available and positioned so that it can be used immediately when necessary;

(d) Remove oil and dust adhering to the valve of gas cylinders;

(e) Ignition and digestion shall be accomplished only with oxygen supply valve closed;

(f) Ensure that workers wear appropriate PPE including personal face protectors for welding and protective gloves as specified in JSSS 2.9 [*PPE and First Aid*]; and

(g) Instruct all workers not to look directly at the weld with their naked eyes.

(5) Periodical inspection of gas welding and cutting equipment.

Gas welding and cutting equipment shall be inspected and tested periodically in accordance with JSSS 4.2 [*Inspection, Maintenance and Repair*] and JSSS 4.3 [*Safety Requirements*].

6.8.5 Fire Prevention

The Contractor shall take all necessary measures to prevent fires caused by welding and cutting operations, including:

(1) When welding or cutting is carried out on/in containers previously filled with Dangerous Goods or Hazardous Material, the containers shall be thoroughly cleaned so that they are completely free from such Dangerous Goods or Hazardous Material before starting work.

(2) Welding or cutting work shall be carried out at place where there is a risk of causing fire either to adjacent buildings or to Contractor's Equipment, Goods, debris, waste or other materials, then fire prevention measures shall be adopted. This may include moving all

(g) Do not place gas cylinders in the vicinity of lightning conductors or grounding rods for electrical equipment;

(h) Mark all gas cylinders as either full or empty, and separate from other cylinders in storage and before and during use; and

(i) When there is a risk of freezing, do not place gas cylinders in wet or humid places. When valves of cylinder or regulating valves freeze, thaw them out with hot water, do not flame or direct fire.

(4) Safety measures for gas welding and cutting work:

(a) Ensure that all internal and external work areas are fully ventilated;

(b) When checking for gas leakage from the gas welding or cutting equipment, use a liquid detergent or similar, never use flames or fire;

(c) Provide adequate fire extinguishing equipment near the working place, always maintained and certified, suitably labelled, available and positioned so that it can be used immediately when necessary;

(d) Remove oil and dust adhering to the valve of gas cylinders;

(e) Ignition and digestion shall be accomplished only with oxygen supply valve closed;

(f) Ensure that workers wear appropriate PPE including personal face protectors for welding and protective gloves as specified in JSSS 2.9 [*PPE and First Aid*]; and

(g) Instruct all workers not to look directly at the weld with their naked eyes.

(5) Periodical inspection of gas welding and cutting equipment.

Gas welding and cutting equipment shall be inspected and tested periodically in accordance with JSSS 4.2 [*Inspection, Maintenance and Repair*] and JSSS 4.3 [*Safety Requirements*].

6.8.5 Fire Prevention

The Contractor shall take all necessary measures to prevent fires caused by welding and cutting operations, including:

(1) When welding or cutting is carried out on/in containers previously filled with Dangerous Goods or Hazardous Material, the containers shall be thoroughly cleaned so that they are completely free from such Dangerous Goods or Hazardous Material before starting work.

(2) Welding or cutting work shall be carried out at place where there is a risk of causing fire either to adjacent buildings or to Contractor's Equipment, Goods, debris, waste or other materials, then fire prevention measures shall be adopted. This may include moving all

such Contractor's Equipment, Goods, debris, waste or other materials, from the work and taking other protective measures. (3) Welding or cutting work shall not be conducted near Dangerous Goods or Hazardous Substances or in or near to Hazardous Areas, for example places where combustible or inflammables paint is used, combustible materials or inflammables are present, or dust accumulates. NK1: I wonder if it is easy for the Contractor to see concrete examples such as the place where combustible or inflammables paint is used, combustible materials or inflammables are present, or dust accumulates. (4) Appropriate types and quantities of fire extinguisher shall be provided, near the working place, always maintained and certified, suitably labelled, available and positioned so that it can be used immediately when necessary. (5) Spotter(s) shall be provided at welding or cutting work place when there is risk of fire by the heat transmitted or sparks of welding or cutting getting into walls, floors, ceilings and so on. NK1: From the serious fatal fire accident of 5 dead and 40 injured in building construction site in Japan in 2018 shown in the following site, we want to add (5) referring to the OSHA Clause below. https://www.japantimes.co.jp/news/2018/07/27/national/five-killed-40-injured-huge-fire-construction-site-tokyo-suburb-tama/#.XqPSROR7l9A *§1926.352 Fire prevention.* *(f) When welding, cutting, or heating is performed on walls, floors, and ceilings, since direct penetration of sparks or heat transfer may introduce a fire hazard to an adjacent area, the same precautions shall be taken on the opposite side as are taken on the side on which the welding is being performed.*	such Contractor's Equipment, Goods, debris, waste or other materials, from the work and taking other protective measures. (3) Welding or cutting work shall not be conducted near Dangerous Goods or Hazardous Substances or in or near to Hazardous Areas. *Please refer to the definition of Hazardous Areas and note that there is no need to add the additional wording "for example places where combustible or inflammables paint is used, combustible materials or inflammables are present, or dust accumulates" as this is already covered by the definition.* (4) Appropriate types and quantities of fire extinguisher shall be provided, near the working place, always maintained and certified, suitably labelled, available and positioned so that it can be used immediately when necessary. (5) Spotter(s) shall be provided at areas where welding or cutting work is taking place when there is risk of fire by the heat transmitted or sparks of welding or cutting, getting into walls, floors, ceilings and the like. (6) When welding, cutting, or heating is performed on walls, floors, and ceilings, since direct penetration of sparks or heat transfer may introduce a fire hazard to an adjacent area, the same precautions shall be taken on the opposite side as are taken on the side on which the welding is being performed.	such Contractor's Equipment, Goods, debris, waste or other materials, from the work and taking other protective measures. (3) Welding or cutting work shall not be conducted near Dangerous Goods or Hazardous Substances or in or near to Hazardous Areas. (4) Appropriate types and quantities of fire extinguisher shall be provided, near the working place, always maintained and certified, suitably labelled, available and positioned so that it can be used immediately when necessary. (5) Spotter(s) shall be provided at areas where welding or cutting work is taking place when there is risk of fire by the heat transmitted or sparks of welding or cutting, getting into walls, floors, ceilings and the like. (6) When welding, cutting, or heating is performed on walls, floors, and ceilings, since direct penetration of sparks or heat transfer may introduce a fire hazard to an adjacent area, the same precautions shall be taken on the opposite side as are taken on the side on which the welding is being performed.

JICA Standard Safety Specification Preparation Study
D1 英文作成経緯表 6. Temporary Works (英文 R3 Issue 3)

2020.5.18 Issue 2
2020.6.16 R3 for Issue 3

JSSS in English Issue 2 (2020.5.18)	JICA Comments to Issue 2 (2020.6.8) JC: JICA Comments, NK: NK Reply and Actions	JSSS in English R3 for Issue 3 (2020.6.16) Red letters: Revised from Last Issue
Chapter 6. TEMPORARY WORKS	**Chapter 6. TEMPORARY WORKS**	**Chapter 6. TEMPORARY WORKS**
6.1 GENERAL REQUIREMENTS OF TEMPORARY WORKS	**6.1 GENERAL REQUIREMENTS OF TEMPORARY WORKS**	**6.1 GENERAL REQUIREMENTS OF TEMPORARY WORKS**
6.1.1 Design and Provision of Temporary Works Generally	6.1.1 Deseeding and Provision of Temporary Works Generally	6.1.1 Design and Provision of Temporary Works Generally
6.1.2 Method Statements	6.1.2 Method Statements	6.1.2 Method Statements
6.1.3 Monitoring Impact of Works on Other Properties	6.1.3 Monitoring Impact of Works on Other Properties	6.1.3 Monitoring Impact of Works on Other Properties
6.1.4 Compliance Standards	6.1.4 Compliance Standards	6.1.4 Compliance Standards
6.2 EARTHWORK SUPPORT	**6.2 EARTHWORK SUPPORT**	**6.2 EARTHWORK SUPPORT**
6.2.1 General	6.2.1 General	6.2.1 General
6.2.2 Planning and Design	6.2.2 Planning and Design	6.2.2 Planning and Design
6.2.3 Inspection and Monitoring	6.2.3 Inspection and Monitoring	6.2.3 Inspection and Monitoring
6.2.4 General Safety and Construction Requirements	6.2.4 General Safety and Construction Requirements	6.2.4 General Safety and Construction Requirements
6.2.5 Safety Measures for Shoring	6.2.5 Safety Measures for Shoring	6.2.5 Safety Measures for Shoring
6.2.6 Safety Measures for Ground Anchor Work	6.2.6 Safety Measures for Ground Anchor Work	6.2.6 Safety Measures for Ground Anchor Work
6.2.7 Adjacent Goods, Excavated Spoil and the like	6.2.7 Adjacent Goods, Excavated Spoil and the like	6.2.7 Adjacent Goods, Excavated Spoil and the like
6.3 COFFERDAMS	**6.3 COFFERDAMS**	**6.3 COFFERDAMS**
6.3.1 General	6.3.1 General	6.3.1 General
6.3.2 Planning and Design	6.3.2 Planning and Design	6.3.2 Planning and Design
6.3.3 Inspection and Monitoring	6.3.3 Inspection and Monitoring	6.3.3 Inspection and Monitoring
6.3.4 General Safety and Construction Requirements	6.3.4 General Safety and Construction Requirements	6.3.4 General Safety and Construction Requirements
6.3.5 Excessive and Sudden Rise in Water Level	6.3.5 Excessive and Sudden Rise in Water Level	6.3.5 Excessive and Sudden Rise in Water Level
6.3.6 Monitoring Water Level and Other Conditions	6.3.6 Monitoring Water Level and Other Conditions	6.3.6 Monitoring Water Level and Other Conditions
6.4 WALKWAYS, LADDERS AND STEPLADDERS	**6.4 WALKWAYS, LADDERS AND STEPLADDERS**	**6.4 WALKWAYS, LADDERS AND STEPLADDERS**
6.4.1 General	6.4.1 General	6.4.1 General
6.4.2 Walkways	6.4.2 Walkways	6.4.2 Walkways
6.4.3 Emergency Exits and Evacuation Routes	6.4.3 Emergency Exits and Evacuation Routes	6.4.3 Emergency Exits and Evacuation Routes
6.4.4 Vertical Access	6.4.4 Vertical Access	6.4.4 Vertical Access
6.4.5 Portable Ladders and Stepladders	6.4.5 Portable Ladders and Stepladders	6.4.5 Portable Ladders and Stepladders
6.4.6 Inspection	6.4.6 Inspection	6.4.6 Inspection
6.5 SCAFFOLDING	**6.5 SCAFFOLDING**	**6.5 SCAFFOLDING**
6.5.1 General	6.5.1 General	6.5.1 General
6.5.2 Compliance Standards	6.5.2 Compliance Standards	6.5.2 Compliance Standards
6.5.3 Notices to be Displayed on Scaffolds	6.5.3 Notices to be Displayed on Scaffolds	6.5.3 Notices to be Displayed on Scaffolds
6.5.4 Scaffold Platforms	6.5.4 Scaffold Platforms	6.5.4 Scaffold Platforms
6.5.5 Supported Scaffolds	6.5.5 Supported Scaffolds	6.5.5 Supported Scaffolds
6.5.6 Suspended Scaffolds	6.5.6 Suspended Scaffolds	6.5.6 Suspended Scaffolds
6.5.7 Mobile Scaffolds	6.5.7 Mobile Scaffolds	6.5.7 Mobile Scaffolds
6.5.8 Trestle Scaffolds	6.5.8 Trestle Scaffolds	6.5.8 Trestle Scaffolds
6.5.9 Scaffolding Assembly, Erection, Alteration and Dismantling Generally	6.5.9 Scaffolding Assembly, Erection, Alteration and Dismantling Generally	6.5.9 Scaffolding Assembly, Erection, Alteration and Dismantling Generally
6.5.10 General Inspection and Maintenance of Scaffolding	6.5.10 General Inspection and Maintenance of Scaffolding	6.5.10 General Inspection and Maintenance of Scaffolding
6.5.11 Mobile Elevating Work Platforms	6.5.11 Mobile Elevating Work Platforms	6.5.11 Mobile Elevating Work Platforms
6.6 ELEVATED ACCESS STRUCTURES	**6.6 ELEVATED ACCESS STRUCTURES**	**6.6 ELEVATED ACCESS STRUCTURES**
6.6.1 General	6.6.1 General	6.6.1 General
6.6.2 Design and Management Generally	6.6.2 Design and Management Generally	6.6.2 Design and Management Generally
6.6.3 Further Safety Requirements	6.6.3 Further Safety Requirements	6.6.3 Further Safety Requirements
6.6.4 Inspection and Maintenance	6.6.4 Inspection and Maintenance	6.6.4 Inspection and Maintenance
6.7 TEMPORARY ELECTRICAL INSTALLATIONS	**6.7 TEMPORARY ELECTRICAL INSTALLATIONS**	**6.7 TEMPORARY ELECTRICAL INSTALLATIONS**
6.7.1 General	6.7.1 General	6.7.1 General
6.7.2 Compliance Standards	6.7.2 Compliance Standards	6.7.2 Compliance Standards
6.7.3 General Safety Requirements	6.7.3 General Safety Requirements	6.7.3 General Safety Requirements
6.7.4 Method statement for Temporary Electrical Installations	6.7.4 Method statement for Temporary Electrical Installations	6.7.4 Method statement for Temporary Electrical Installations
6.7.5 Responsible Personnel	6.7.5 Responsible Personnel	6.7.5 Responsible Personnel
6.7.6 Inspection, Maintenance and Repair	6.7.6 Inspection, Maintenance and Repair	6.7.6 Inspection, Maintenance and Repair
6.7.7 Safety Measures during the Work	6.7.7 Safety Measures during the Work	6.7.7 Safety Measures during the Work
6.8 ELECTRIC AND GAS WELDING AND CUTTING	**6.8 ELECTRIC AND GAS WELDING AND CUTTING**	**6.8 ELECTRIC AND GAS WELDING AND CUTTING**
6.8.1 General	6.8.1 General	6.8.1 General

6. TEMPORARY WORKS

6.1 GENERAL REQUIREMENTS OF TEMPORARY WORKS

This Section 6.1 applies to all Temporary Works included in JSSS Chapter 6.

6.1.1 Design and Provision of **Temporary Works** Generally

Unless otherwise specified in the Particular Safety Specification, the Contractor shall take all necessary measures for the study, design, management, provision, safe use and safe removal of all Temporary Works as necessary to safely and systematically execute the Permanent Works and in accordance with JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*], JSSS 1.37 [*Design and Management of Temporary Works*] and the specified standards.

The Contractor shall comply with the requirements specified in the Contract for Temporary Works and:

(1) Provide Temporary Works which are fit for the purpose for which they are intended and fully in accordance with the JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*].

(2) Manage the design, use and removal of Temporary Works fully in accordance with JSSS 1.37 [*Design and Management of Temporary Works*].

(3) Maintain and repair all Temporary Works when in use to ensure the continued optimal and safe performance.

(4) Monitor all Temporary Works when in use and any affected Permanent Works, existing buildings, structures, ground or surfaces that may be affected by the Temporary Works through regular inspection and (where necessary and specified) with relevant instrumentation to ensure that the Temporary Works are performing safely, to the designed limits and intended purpose.

(5) The Contractor shall establish procedures whereby:

(a) Unauthorised modification of Temporary Works is not allowed;

(b) Unauthorised use of Temporary Works is not allowed;

(c) The HSO shall inspect all Temporary Works upon completion of erection and certify and label them as "Safe for Use" before any

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(1) Provide Temporary Works which are fit for the purpose for which they are intended and fully in accordance with the JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*].

(2) Manage the design, use and removal of Temporary Works fully in accordance with JSSS 1.37 [*Design and Management of Temporary Works*].

(3) Maintain and repair all Temporary Works when in use to ensure the continued optimal and safe performance.

(4) Monitor all Temporary Works when in use and any affected Permanent Works, existing buildings, structures, ground or surfaces that may be affected by the Temporary Works through regular inspection and (where necessary and specified) with relevant instrumentation to ensure that the Temporary Works are performing safely, to the designed limits and intended purpose.

(5) The Contractor shall ensure that~~establish procedures whereby~~:

(a) ~~Unauthorised m~~Modification of Temporary Works is not allowed unless it is authorized by HSO; (JC1)

JC1: unauthorised しているのは文脈から Contactor、not allowed されているのは Contractor？では誰が modification を authorise するのかという疑問が出てくる。主語を明確にした方が良い。
There is a question who authorize modification. The subject of the (a) sentence is not clear.
NK: Modified.

(b) Unauthorised use of Temporary Works is not allowed; (JC2)

JC2: 上記と同様に主語がはっきりするよう修正してください。
Ditto (JC1). Please modify to make clear the subject.
NK: Modified.

(c) The HSO shall inspect all Temporary Works upon completion of erection and certify and label them as "Safe for Use" before any

6. TEMPORARY WORKS

6.1 GENERAL REQUIREMENTS OF TEMPORARY WORKS

This Section 6.1 applies to all Temporary Works included in JSSS Chapter 6.

6.1.1 Design and Provision of **Temporary Works** Generally

Unless otherwise specified in the Particular Safety Specification, the Contractor shall take all necessary measures for the study, design, management, provision, safe use and safe removal of all Temporary Works as necessary to safely and systematically execute the Permanent Works and in accordance with JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*], JSSS 1.37 [*Design and Management of Temporary Works*] and the specified standards.

The Contractor shall comply with the requirements specified in the Contract for Temporary Works and:

(1) Provide Temporary Works which are fit for the purpose for which they are intended and fully in accordance with the JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*].

(2) Manage the design, use and removal of Temporary Works fully in accordance with JSSS 1.37 [*Design and Management of Temporary Works*].

(3) Maintain and repair all Temporary Works when in use to ensure the continued optimal and safe performance.

(4) Monitor all Temporary Works when in use and any affected Permanent Works, existing buildings, structures, ground or surfaces that may be affected by the Temporary Works through regular inspection and (where necessary and specified) with relevant instrumentation to ensure that the Temporary Works are performing safely, to the designed limits and intended purpose.

(5) The Contractor shall ensure that:

(a) Modification of Temporary Works is not allowed unless it is authorized by HSO;

(b) Unauthorised use of Temporary Works by any persons is not allowed;

(c) The HSO shall inspect all Temporary Works upon completion of erection and certify and label them as "Safe for Use" before any

use is allowed;

(d) The HSO shall regularly inspect Temporary Works and certify and label them appropriately to ensure the continuous safe use or, in the event that faults are discovered, certify them as "Not Safe for Use" and prevent access to the Temporary Works until repaired and re-inspected;

(e) The HSO shall inspect Temporary Works upon the completion of the required Permanent Works and before Temporary Works are dismantled, demolished and removed accompanied by the Contractor's Temporary Works specialist staff specified in JSSS 1.37 [Design and Management of Temporary Works] as appropriate, and certify that the Permanent Works are completed and the Temporary Works can be safely removed; and

(f) The HSO shall inspect after removal of the Temporary Works to ensure that removal has been completed properly and that no part of the Temporary Works remains, that any rectification of the Permanent Works is completed and all is left in safe order and condition.

(6) Safety Plan for Temporary Works

The Contractor shall include details of all Temporary Works in the Safety Plan to be submitted in accordance with JSSS 1.7 [*Contractor's Safety Plans*].

6.1.2 Method Statements

Refer to JSSS 1.9 [*Contractor's Method Statements*].

6.1.3 Monitoring Impact of Works on Other Properties

use is allowed;

(d) The HSO shall regularly inspect Temporary Works and certify and label them appropriately to ensure the continuous safe use or, in the event that faults are discovered, certify them as "Not Safe for Use" and prevent access to the Temporary Works until repaired and re-inspected;

(e) The HSO shall inspect Temporary Works upon the completion of the required Permanent Works and before Temporary Works are dismantled, demolished and removed accompanied by the Contractor's Temporary Works specialist staff specified in JSSS 1.37 [*Design and Management of Temporary Works*] as appropriate, and certify that the Permanent Works are completed and the Temporary Works can be safely removed; and

(f) The HSO shall inspect after removal of the Temporary Works to ensure that removal has been completed properly and that no part of the Temporary Works remains, that any rectification of the Permanent Works is completed and all is left in safe order and condition.

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6.1.3 Monitoring of Works and Surroundings~~Impact of Works on Other Properties~~ (JC3)

JC3: 1) モニタリングをコントラクーの責任の下に行わせるときに、コントラクターの助けになることは何か？2) それをユーザーガイドに記述しておく?
3) また岡本さんが15枚目で指摘している地下水位に発注者が関心を示すような場合の対処等もユーザーガイドに落とすか？
1) What helps the contractor when the monitoring is made under the responsibility of the Contractor?
2) Will it be mentioned in the user guide?
3) Are the countermeasures for changing of underground water level specified in the User Guide when the Employer has interest to the change as mentioned in pp 15 as commented by Mr. Okamoto?

NK: 1) 基本的に工事及び周囲に影響をを起こさない工法を請負者が取らなくてはならいこ。発注者が注意すべき懸念する事項を、請負者に注意することが助けになると考える。
Basically, the Contractor shall execute works without any influence to the works and other properties. It is helpful to the contractor that the Employer state the items to be paid attention by the Contractor.
2)User Guide の Issue 2 では、すでに次を提案している。
UG has drafted as copied below.
3) How to take countermeasures will not be mentioned in the UG unless the Employer want to direct the method.

Copy of User Guide (UG) Issue 2

JSSS 6.1.3 Monitoring Impact of Works on Other Properties

use is allowed;

(d) The HSO shall regularly inspect Temporary Works and certify and label them appropriately to ensure the continuous safe use or, in the event that faults are discovered, certify them as "Not Safe for Use" and prevent access to the Temporary Works until repaired and re-inspected;

(e) The HSO shall inspect Temporary Works upon the completion of the required Permanent Works and before Temporary Works are dismantled, demolished and removed accompanied by the Contractor's Temporary Works specialist staff specified in JSSS 1.37 [*Design and Management of Temporary Works*] as appropriate, and certify that the Permanent Works are completed and the Temporary Works can be safely removed; and

(f) The HSO shall inspect after removal of the Temporary Works to ensure that removal has been completed properly and that no part of the Temporary Works remains, that any rectification of the Permanent Works is completed and all is left in safe order and condition.

(6) Safety Plan for Temporary Works

The Contractor shall include details of all Temporary Works in the Safety Plan to be submitted in accordance with JSSS 1.7 [*Contractor's Safety Plans*].

6.1.2 Method Statements

Refer to JSSS 1.9 [*Contractor's Method Statements*].

6.1.3 Monitoring of Works and Surroundings

	The Contractor is required under this clause of JSSS, to monitor the Temporary Works to demonstrate that they are performing safely, to the designed limits and for the intended purpose. *The Contractor is further required under the same clause of JSSS "to monitor any vibration, settlement and other potentially damaging effects arising out of the execution of the Works to ascertain if these are causing any adverse effect to ground, buildings, structures and other properties, paved areas, roads, footpaths, fences, railways, waterways, drainage, utilities or any other property on the Site or outside the Site (collectively referred to in this Section as "other properties") to ensure that no damage or weakening is caused to such other properties."* *If there is a risk that the execution of the Works may cause any damage to any "other properties" (as referred to in JSSS 6.1.3) and if the Executing Agency considers that particular minimum requirements for monitoring equipment, locations and methods are helpful or necessary, then these shall be stated in the Particular Safety Specification and the requirements shall be described. The methods may include for example the inclusion of monitoring criteria to assist the Contractor in establishing his own procedures for monitoring to avoid any damage to other properties.* *If these particular minimum requirements are included, it is important also to state in the relevant clause in the Particular Safety Specification that the requirements are for assistance only and that they shall not in any way affect the Contractor's obligation to execute the Works without causing any damage to other properties.*	
(1) The Contractor shall monitor the Temporary Works to demonstrate that they are performing safely, to the designed limits and for the intended purpose.	(1) The Contractor shall monitor the Temporary Works to demonstrate that they are performing safely, to the designed limits and for the intended purpose. (2) For more details, refer to 2 章（の該当部分）(JC4)	(1) The Contractor shall monitor the Temporary Works to demonstrate that they are performing safely, to the designed limits and for the intended purpose. (2) For more details, refer to JSSS 2.1.7 [Monitoring and Records].
	JC4: Please specify the reference section of Chapter 2 regarding monitoring. NK: added and (3) to (10) below are deleted.	
(2) The Contractor shall also monitor any vibration, settlement and other potentially damaging effects arising out of the execution of the Works to ascertain if these are causing any adverse effect to ground, buildings, structures and other properties, paved areas, roads, footpaths, fences, railways, waterways, drainage, utilities or any other property on the Site or outside the Site (collectively referred to in this Section as "other properties") to ensure that no damage or weakening is caused to such other properties.	(3) The Contractor shall also monitor any vibration, settlement and other adverse effects~~potentially damaging effects~~ arising out of the execution of the Works to ascertain if these are causing any adverse effect to ground, buildings, structures and other properties, paved areas, roads, footpaths, fences, railways, waterways, drainage, utilities or any other property on the Site or outside the Site (collectively referred to in this Section as "other properties") to ensure that no damage or weakening is caused to such other properties. (JC5)	NK: The (3) to (10) below shall be deleted because they are moved to 2.1.7. (3) ~~*The Contractor shall also monitor any vibration, settlement and other adverse effects arising out of the execution of the Works to ascertain if these are causing any adverse effect to ground, buildings, structures and other properties, paved areas, roads, footpaths, fences, railways, waterways, drainage, utilities or any other property on the Site or outside the Site (collectively referred to in this Section as "other properties") to ensure that no damage or weakening is caused to such other properties.*~~
	JC5: 本設の内容も含まれるので、1 章の Safety Plan を論じている節にモニタリングの実施について簡潔に記述し、Annex1.2 においてもモニタリングに言及し、そのうえで、ここで記載されている詳細は 2 章に移してください（内容についてのコメントを反映したうえでお願いします）。 6.1.3 は（1）だけ残して、あとは安全管理一般の移設先をリファーするようお願いします。 The provisions of (2) to (9) hereunder are not only for TW but also permanent Works, for example, pile driving works for foundation of permanent structures. Therefore, they shall be moved to Chapter 2 2: GENERAL SAFETY MEASURES 2.1.7 Monitoring and Record. Please stipulate briefly execution of monitoring in the Section for the Safety Plan in Chapter 1 and Annex 1.2. Only (1) of 6.1.3 shall be left as it is and (2) will stipulate to refer to 2.1.7. NK: will add in Annex 1.2, moved to 2.1.7 and modified (2) above.	

(3) Monitoring shall be accomplished by the Contractor through regular inspection, measurement and survey and instrument monitoring and recording as determined by the nature and scope of the Works or as required by the Particular Safety Specification.

(4) Works that require monitoring shall include the following where any risk of damage is perceived by the HSO or Engineer:

(a) Excavation Works (including Blasting Works);

(a) Foundation Piling Works;

(b) Ground improvement;

(c) Temporary dewatering in underground;

(d) Temporary Works such as major items of Earthwork Support, Coffer Dams and the like; to demonstrate that they are performing safely, to the designed limits and for the intended purpose;

(e) Other parts of the Works required to evidence the Contractor's compliance with the Contract; and

(f) Other parts of the Works which may be specified in the Particular Safety Specification.

(5) The Contractor shall prepare a monitoring plan as a part of the Safety Plan for the above Works which shall describe:

(a) The Contractor's proposed maximum monitoring criteria for vibration, settlement and all other potential effects of the Works, which by the Contractor's own calculations will ensure that no damage or weakening is caused to other properties;

(b) The types, locations and numbers of monitoring instruments and other equipment;

(c) The measurement frequency and recording methods; and

(d) The countermeasures to be applied when the actual measured values are close to or exceed the various minimum, intermediate and maximum criteria.

(6) The Contractor shall:

(a) Provide and maintain all survey equipment, monitoring and recording equipment to provide comprehensive, accurate and contemporary or live data with records, showing the performance characteristics of the Temporary Works;

(b) Provide qualified staff to perform the monitoring;

(c) Maintain and calibrate the monitoring equipment as necessary

(4) Monitoring shall be accomplished by the Contractor through regular inspection, measurement, ~~and~~ survey, ~~and~~ instrument monitoring and recording as determined by the nature and scope of the Works, ~~or as~~ Contractor shall take additional monitoring measures if so required by the Particular Safety Specification. (JC 6)

JC6: ユーザーガイドで、PSS で規制値などを指定すべき場合において発注者が果たすべき役割を論じてください。(例えば EIA とか周辺住民との協議などで、騒音や粉じんなど一定の規制をしなければならないことがあるはずです。)
Please describe about the roles of the Employer when the Employer specifies the criteria of monitoring in the PSS. (For example, there might be some kinds of limitation of noise, dust, etc.)
NK: Modified as commented and will review PSS issue 2 regarding the JC6.

(5) Works that require monitoring shall include the following where any risk of damage is perceived by the HSO or Engineer:

(a) Earth ~~Excavation W~~works ~~(including Blasting Works)~~; (JC7)

JC7: 大規模盛土工の円弧滑り観測などもあるから earth works の方が適切。ただし、定義語でないので小文字にします。
Earth works is better than excavation works because monitoring for embankment will be made at the Site.
NK: modified as commented..

(b) Foundation Piling Works;

(c) Ground improvement;

(d) Temporary dewatering in underground;

(e) Temporary Works such as major items of Earthwork Support, Coffer Dams and the like; to demonstrate that they are performing safely, to the designed limits and for the intended purpose;

(f) Other parts of the Works required to evidence the Contractor's compliance with the Contract; and

(g) Other parts of the Works ~~which may be~~ specified in the Particular Safety Specification.

(6) The Contractor shall prepare a monitoring plan as a part of the Safety Plan for the above Works which shall describe:

(a) The Contractor's proposed ~~maximum~~ monitoring criteria for vibration, settlement and all other potential effects of the Works, which by the Contractor's own calculations will ensure that no damage or weakening is caused to other properties;

(b) The types, locations and numbers of monitoring instruments and other equipment;

(c) The measurement frequency and recording methods; and

(d) The countermeasures to be applied when the actual measured values are close to or exceed the various minimum, intermediate and maximum criteria.

(7) The Contractor shall:

(a) Provide and maintain all survey equipment, monitoring and recording equipment to provide comprehensive, accurate and contemporary or live data with records, showing the performance characteristics of the ~~Temporary~~ Works; (JC8)

(4) ~~*Monitoring shall be accomplished by the Contractor through regular inspection, measurement, and survey, and instrument monitoring and recording as determined by the nature and scope of the Works or as the Contractor shall take additional monitoring measures if so required by the Particular Safety Specification.*~~

(5) ~~*Works that require monitoring shall include the following where any risk of damage is perceived by the HSO or Engineer:*~~

(a) ~~*Excavation*~~ *Earth Works* ~~*(including Blasting Works);*~~

(b) ~~*Foundation Piling Works;*~~

(c) ~~*Ground improvement;*~~

(d) ~~*Temporary dewatering in underground;*~~

(e) ~~*Temporary Works such as major items of Earthwork Support, Coffer Dams and the like; to demonstrate that they are performing safely, to the designed limits and for the intended purpose;*~~

(f) ~~*Other parts of the Works required to evidence the Contractor's compliance with the Contract; and*~~

(g) *Other parts of the Works* ~~*which may be*~~ *specified in the Particular* ~~*Safety Specification.*~~

(6) ~~*The Contractor shall prepare a monitoring plan as a part of the Safety Plan for the above Works which shall describe:*~~

(a) *The Contractor's proposed* ~~*maximum*~~ *monitoring criteria for* ~~*vibration, settlement and all other potential effects of the Works, which by the Contractor's own calculations will ensure that no damage or weakening is caused to other properties;*~~

(b) ~~*The types, locations and numbers of monitoring instruments and other equipment;*~~

(c) ~~*The measurement frequency and recording methods; and*~~

(d) ~~*The countermeasures to be applied when the actual measured values are close to or exceed the various minimum, intermediate and maximum criteria.*~~

(7) ~~*The Contractor shall:*~~

(a) ~~*Provide and maintain all survey equipment, monitoring and recording equipment to provide comprehensive, accurate and contemporary or live data with records, showing the*~~ *performance characteristics of the* ~~*Temporary*~~ *Works;*

throughout the execution of the Works;

(d) Perform survey and monitoring on a regular basis throughout the execution of the Works;

(e) Confirm the occurrence and extent of any adverse impact of the Works execution by means of regular inspections of all other properties;

(f) Take the measures prescribed when necessary to comply with the Contractor's obligations, propose remedial measures and implement such measures after receiving the consent of the Engineer;

(g) Evaluate the measurement results and modify the monitoring criteria as necessary; and

(h) Submit an evaluation report if necessary with any changes to the Safety Plan for Works to the Engineer before proceeding with the Works.

(7) Requirements for instrumentation systems shall be as follows:

(a) The Contractor shall select instruments and measurement methods that meet the purpose of the measurement;

(b) The Contractor shall determine locations and numbers of measurement points which meet the purpose of measurement and need for safety management. The locations of measurement shall be where measurement can be continuously made throughout the period of works are provided;

(c) The instrumentation shall be regularly calibrated and protected against damage by the Contractor;

(d) The HSO and other relevant Contractor's Personnel shall monitor the data and take all necessary corrective action consequent to such monitoring to ensure the continued compliant and safe performance of all Temporary Works; and

(e) The Engineer shall be invited to attend the inspections and data collection to ensure the Contractor's compliance in accordance JSSS 1.10 [*Engineer's Safety Representative*], JSSS 1.11 [*Safety Compliance Instructions from the Engineer*] and JSSS 1.16 [*Joint Site Safety Inspections*].

(8) Management based on Monitoring and Inspection

(a) Management by Visual Inspection:

If and when the Contractor finds any abnormality through visual inspection, the Contractor shall take necessary measures in accordance with the degree of abnormality, including verification of inspection results through measurement, survey or added instrumentation and the implementation of urgent countermeasures.

(b) Management by Instrument Measurement:

JC8: このあたり 2 章に移すことになれば Temporary はいらないので削除してください。同様に、Works と Temporary Works の使い方について個々にご検討ください。

Please delete these parts because the (2) to (9) are moved to Chapter 2. When moving to Chapter 2, please delete "Temporary". Please pay attention to the use of Works and Temporary Works in each stipulation.

NK: we will do as commented.

(b) Provide qualified staff to perform the monitoring;

(c) Maintain and calibrate the monitoring instruments and equipment as necessary throughout the execution of the Works;

(d) Perform survey and monitoring on a regular basis throughout the execution of the Works;

(e) Confirm the occurrence and extent of any adverse effects~~impact~~ of the Works execution by means of regular inspections of all other properties;

(f) Take the measures prescribed when necessary to comply with the Contractor's obligations, propose remedial measures and implement such measures after receiving the consent of the Engineer;

(g) Evaluate the measurement results and modify the monitoring criteria as necessary; and

(h) Submit an evaluation report (if necessary) with any changes to the Safety Plan for Works to the Engineer before proceeding with the Works.

(8) Requirements for instrumentation systems shall be as follows:

(a) The Contractor shall select instruments and measurement methods that meet the purpose of the measurement;

(b) The Contractor shall determine locations and numbers of measurement points which meet the purpose of measurement and need for safety management. The locations of measurement shall be where measurement can be continuously made throughout the period of works are provided;

(c) The instrumentation shall be regularly calibrated and protected against damage by the Contractor;

(d) The HSO and other relevant Contractor's Personnel shall monitor the data and take all necessary corrective action consequent to such monitoring to ensure the continued compliant and safe performance of ~~all Temporary~~ the Works; and

(e) The Engineer shall be invited to attend the inspections and data collection to ensure the Contractor's compliance in accordance JSSS 1.10 [*Engineer's Safety Representative*], JSSS 1.11 [*Safety Compliance Instructions from the Engineer*] and JSSS 1.16 [*Joint Site Safety Inspections*].

(9) Management based on Monitoring and Inspection

(a) Management by Visual Inspection:

If and when the Contractor finds any irregularity ~~abnormality~~ through visual inspection, the Contractor shall take necessary measures in accordance with the degree of abnormality, including

~~(b) Provide qualified staff to perform the monitoring;~~

~~(c) Maintain and calibrate the monitoring instruments and equipment as necessary throughout the execution of the Works;~~

~~(d) Perform survey and monitoring on a regular basis throughout the execution of the Works;~~

~~(e) Confirm the occurrence and extent of any adverse~~ *effect* ~~impact of the Works execution by means of regular inspections of all other properties;~~

~~(f) Take the measures prescribed when necessary to comply with the Contractor's obligations, propose remedial measures and implement such measures after receiving the consent of the Engineer;~~

~~(g) Evaluate the measurement results and modify the monitoring criteria as necessary; and~~

~~(h) Submit an evaluation report if necessary with any changes to the Safety Plan for Works to the Engineer before proceeding with the Works.~~

~~(8) Requirements for instrumentation systems shall be as follows:~~

~~(a) The Contractor shall select instruments and measurement methods that meet the purpose of the measurement;~~

~~(b) The Contractor shall determine locations and numbers of measurement points which meet the purpose of measurement and need for safety management. The locations of measurement shall be where measurement can be continuously made throughout the period of works are provided;~~

~~(c) The instrumentation shall be regularly calibrated and protected against damage by the Contractor;~~

~~(d) The HSO and other relevant Contractor's Personnel shall monitor the data and take all necessary corrective action consequent to such monitoring to ensure the continued compliant and safe performance of~~ *all Temporary* ~~the~~ *Works; and*

~~(e) The Engineer shall be invited to attend the inspections and data collection to ensure the Contractor's compliance in accordance JSSS 1.10 [Engineer's Safety Representative], JSSS 1.11 [Safety Compliance Instructions from the Engineer] and JSSS 1.16 [Joint Site Safety Inspections].~~

~~(9) Management based on Monitoring and Inspection~~

~~(a) Management by Visual Inspection:~~

If and when the Contractor finds any irregularity ~~abnormality through visual inspection, the Contractor shall take necessary measures in accordance with the degree of abnormality, including verification of inspection results through measurement,~~

Unless otherwise specified in the Particular Safety Specification, the Contractor shall determine control limit values based initially upon the allowable displacement or stress in the design, then the following stepwise control values shall be established by the Contractor and necessary actions taken:

(i) Primary control value:

When this value is reached, the Contractor shall increase the incidence and degree of care over inspections and commence preparing countermeasures which will be implemented if and when the measurement value reaches the secondary control value and obtain the Engineer's consent for such countermeasures.

The Contractor shall submit the measured values on a weekly basis to the Engineer unless otherwise instructed by the Engineer.

(i) Secondary control value:

When this value is reached and unless otherwise instructed by the Engineer, the Contractor shall stop the relevant part of the Works and implement the countermeasures.

(ii) Control limit value:

When this value is reached, the Contractor shall immediately stop the relevant part of the Works, advise all affected persons, prohibit entry of any unauthorised persons to the affected area(s), take radical measures to prevent failure, review and revise the Method Statement and Safety Plan, and comply with the Engineer's Instructions before proceeding.

(9) Contract Compliance

Notwithstanding the requirements of this subclause of JSSS, the Contractor is reminded of his overall responsibility under the Contract in respect of damage to property.

The Contractor shall satisfy himself that the monitoring criteria and requirements specified above, or in other respective Chapters of JSSS and/or in the Particular Safety Specification, are sufficient to comply

verification of inspection results through measurement, survey or added instrumentation and the implementation of urgent countermeasures.

(b) Management by Instrument Measurement:

Unless otherwise specified in the Particular Safety Specification, the Contractor shall determine control limit values based initially upon the allowable displacement or stress in the design, then the following stepwise control values shall be established by the Contractor and necessary actions shall be taken as follows: (JC9)

JC9: この文章は今まで変更を加えていますが、もう少し！
Please add a little more though additions have already been made to this sentence.
"The Contractor shall provide the following three critical limits in its design of the Temporary Works, and shall take an appropriate action when any critical limit is being reached through the monitoring;"
NK: Added.

(i) Primary control value: (JC10)

JC10: Primary limit / Secondary limit / Control limit
NK: Modified as commented.

When this value is reached, (JC11) the Contractor shall increase the incidence and degree of care over inspections and commence preparing countermeasures which will be implemented if and when the measurement value reaches the secondary control value and obtain the Engineer's consent for such countermeasures.

JC11: When a value of measurement is reached to this limit,…
NK: Modified as commented.

The Contractor shall submit the measured values on a weekly basis to the Engineer unless otherwise instructed by the Engineer.

(ii) Secondary control value:

When this value is reached ~~and unless otherwise instructed by the Engineer~~, (JC12) the Contractor shall stop the relevant part of the Works and implement the countermeasures.

JC12: ditto.
NK: Modified as commented.

(iii) Control limit value:

When this value is reached,(JC13) the Contractor shall immediately stop the relevant part of the Works, advise all affected persons, prohibit entry of any unauthorised persons to the affected area(s), take radical measures to prevent failure, review and revise the Method Statement and Safety Plan, and comply with the Engineer's Instructions before proceeding.

JC13: ditto.

(10) Contract Compliance

Notwithstanding the requirements of this subclause of JSSS, the Contractor is reminded of his overall responsibility under the Contract in respect of damage to property.

~~survey or added instrumentation and the implementation of urgent countermeasures.~~

(b) ~~Management by Instrument Measurement:~~

~~Unless otherwise specified in the Particular Safety Specification, the Contractor shall determine control limit values based initially upon the allowable displacement or stress in the design, then the following stepwise control values shall be established by the~~ *Contractor and necessary actions shall be taken.* ~~as follows:~~

The Contractor shall provide the following three critical limits in its design of the Temporary Works, and shall take an appropriate action when any critical limit is being reached through the monitoring;

(i) *Primary* ~~control value:~~ *limit:*

~~When this value is reached~~, *When a value of measurement is reached to this limit, the Contractor shall increase the* ~~incidence and degree of care over inspections and commence preparing countermeasures which will be implemented if and when the measurement value reaches the secondary control value and obtain the Engineer's consent for such countermeasures.~~

~~The Contractor shall submit the measured values on a weekly basis to the Engineer unless otherwise instructed by the Engineer.~~

(ii) *Secondary* ~~control value:~~ *limit:*

~~When this value is reached and unless otherwise instructed by the Engineer,~~ *When a value of measurement is reached to this limit, the Contractor shall stop the relevant part of the* ~~Works and implement the countermeasures.~~

(iii) *Control limit* ~~value:~~

~~When this value is reached,~~ *When a value of measurement is reached to this limit, the Contractor shall immediately stop the relevant part of the Works, advise all affected* ~~persons, prohibit entry of any unauthorised persons to the affected area(s), take radical measures to prevent failure, review and revise the Method Statement and Safety Plan, and comply with the Engineer's Instructions before proceeding.~~

(10) ~~Contract Compliance~~

~~Notwithstanding the requirements of this subclause of JSSS, the Contractor is reminded of his overall responsibility under the Contract in respect of damage to property.~~

with his obligations under the Contract and he shall take any additional measures necessary to avoid damage to property.

6.1.4 Compliance Standards

(1) By reference to JSSS 1.37 [*Design and Management of Temporary Works*] and unless otherwise specified in the Particular Safety Specification, the Contractor shall comply with BS5975~~: 2019~~ Code of Practice for Temporary Works Procedures and the Permissible Stress Design of Falsework.

(2) In relation to Temporary Works, the Contractor shall also comply with:

(a) BS EN 12811-1 Temporary works equipment-Part 1: Scaffolds - Performance requirements and general design;

(b) BS EN 12812 Falsework. Performance requirements and general design; and

(c) Such other standards that are referred to in particular parts of JSSS.

The Contractor shall satisfy himself that the monitoring criteria and requirements specified above, or in other respective Chapters of JSSS and/or in the Particular Safety Specification, are sufficient to comply with his obligations under the Contract and he shall take any additional measures necessary to avoid damage to property.

6.1.4 Compliance Standards

(1) By reference to JSSS 1.37 [*Design and Management of Temporary Works*] and unless otherwise specified in the Particular Safety Specification, the Contractor shall comply with the Section 1 and Section 2 of BS5975~~: 2019~~ Code of Practice for Temporary Works Procedures and the Permissible Stress Design of Falsework as management standard with respect to design, erection, use and dismantling of Temporary Works. (JC14)

JC14: modified in accordance with JICA's comment on JSSS 1.37

(2) In relation to Temporary Works, the Contractor shall, subject to JSSS 1.4.~~6~~7, also comply with: (JC15)

~~(a) BS EN 12811-1 Temporary works equipment-Part 1: Scaffolds - Performance requirements and general design;~~

(a) (b) BS EN 12812 Falsework. Performance requirements and general design; ~~and~~

(b) (c) Such ~~other~~ standards that are referred to in particular parts of JSSS; and~~.~~

~~(b)~~(c) Other standards proposed by the Contractor to which the consent of the Engineer is provided.

JC15: 1) JSSS1.4.6 Specified Standards and Regulations に言及する(同等以上であれば他のスタンダード等の適用も可)
2) 引用していただいていた BS EN 12811 は 6.5 でも引用されているので不要です。
3) BS12812 は内容を検討し、様々な仮設においても関係があるのであれば、上記のような形で残してください(そうでなければ削除で結構です)。
4)また別表で取りまとめたように、Compliance Standard が記述されている節もあれば、ない節もあり、特に記述がない節のためにキャッチオールの規定が必要であると考えます。その趣旨で修正案の(c)の記述を入れてください。

1) To stipulate to refer to JSSS1.4.6 Specified Standards and Regulations (equivalent standards can be applied.)

2) BS EN 12811 is duplicatedly referred to in (a) here and 6.5, so deleted.

3) Please study the contents of BS12812. If it is related with various TW, please leave as it is, if not, (c) can be deleted.

4) As shown in the table (not attached here), there are chapters/sections which stipulate "Compliance Standard" and do not stipulate it. For chapters/sections which do not stipulate it, it needs catch all stipulation. Taking into consideration the above idea, please insert the revised (c).

NK: 1) Revised as modified.
2) Deleted as commented.
3) Deleted as stipulated for BS12812 specifies for false work excluding scaffoldings and duplicated with BS5975. The former is permissible stress design method and the latter is limit state design method.
4) This is specified I 1.4.5, so no addition I made..

1.4.5 Specified Standards

~~*The Contractor shall satisfy himself that the monitoring criteria and requirements specified above, or in other respective Chapters of JSSS and/or in the Particular Safety Specification, are sufficient to comply with his obligations under the Contract and he shall take any additional measures necessary to avoid damage to property.*~~

6.1.4 Compliance Standards

(1) By reference to JSSS 1.37 [*Design and Management of Temporary Works*] and unless otherwise specified in the Particular Safety Specification, the Contractor shall comply with the Section 1 and Section 2 of BS5975~~: 2019~~ Code of Practice for Temporary Works Procedures and the Permissible Stress Design of Falsework as management standard with respect to design, erection, use and dismantling of Temporary Works.

(2) In relation to Temporary Works, the Contractor shall, subject to JSSS 1.4.5 [Specified Standards], also comply with:

(a) Section 3: Falsework of BS5975: 2019 Code of Practice for Temporary Works Procedures and the Permissible Stress Design of Falsework; and

(b) Such ~~other~~ standards that are referred to in particular parts of JSSS.

	(1) Unless otherwise instructed by the Engineer, a reference to any standard (hereinafter deemed to include specified safety regulations or codes) shall mean a reference to the latest issued edition of that standard as at the Base Date of the Contract. *(2) Any standard specified in JSSS may be substituted with an equivalent alternative which, unless stated otherwise, shall mean that an alternative is acceptable but only after the Contractor has submitted a formal request with supporting particulars to the Engineer and has obtained the consent of the Engineer who shall give such consent only if, in his opinion, the alternative is internationally acceptable and that it provides an equivalent or higher standard than the standard specified.*	
6.2 EARTHWORK SUPPORT **6.2.1** General (1) Refer to JSSS Annex 1.1:[*Definitions and Abbreviations*] for the definition of Earthwork Support. (2) The Contractor shall maintain the structural integrity of ground, buildings, structures, roads, railways, waterways, services and surface paving and the like that can be affected by Excavation Works and shall provide and maintain whatever Earthwork Support is necessary to comply with this requirement and ensure the safety of all persons that are in, under or adjacent to any excavation and to avoid any damage to persons and property on or outside the Site. (3) Earthwork Support shall include for example the provision of: (c) Timberwork including sheeting, planking, strutting and support systems; (d) Steel sheet piling including shoring, strutting and support systems; (e) Specialist support systems such as diaphragm walling, steel pipe piling, contiguous piling, soldier piling and lagging, and the like; (f) Ground improvement, slope stabilisation, injection, ground freezing and the like; and (g) Ground Anchors	**6.2 EARTHWORK SUPPORT** **6.2.1 General** (1) Refer to JSSS Annex 1.1:[*Definitions and Abbreviations*] for the definition of Earthwork Support. (2) The Contractor shall maintain the structural integrity of existing buildings, structures, roads, railways, ground, substrata, surfaces, paving and the like ~~ground, buildings, structures, roads, railways, waterways, services and surface paving and the like~~ (JC16)that can be affected by c~~E~~arth ~~Excavation~~ w~~W~~orks (JC17) and shall provide and maintain whatever Earthwork Support is necessary to comply with this requirement and ensure the safety of all persons that are in, under or adjacent to any excavation and to avoid any damage to persons and property on or outside the Site. JC16: Modified to uniform the expressions with 6.2.2 onward. NK: modified as above. JC17: Earth Works でしょうか？ NK: revised to earth work. (3) Earthwork Support shall include for example the provision of: (a) Timberwork including sheeting, planking, strutting and support systems; (b) Steel sheet piling including shoring, strutting and support systems; (c) Specialist support systems such as diaphragm walling, steel pipe piling, contiguous piling, soldier piling and lagging, and the like; (d) Ground improvement, slope stabilisation, injection, ground freezing and the like; and (e) Ground Anchors (4) Without prejudice to the Contractor's overriding obligations as specified above, the requirements for providing Earthwork Support may be waived by the HSO for the following excavations which have been inspected at the Site by the HSO and judged by him to be safe, stable and free from any risk of movement or collapse: (a) Excavation in rock; and (b) Excavation less than 1.5 m deep.	**6.2 EARTHWORK SUPPORT** **6.2.1** General (1) Refer to JSSS Annex 1.1:[*Definitions and Abbreviations*] for the definition of Earthwork Support. (2) The Contractor shall maintain the structural integrity of existing buildings, structures, roads, railways, ground, substrata, surfaces, paving and the like ~~ground, buildings, structures, roads, railways, waterways, services and surface paving and the like~~ that can be affected by ~~Excavation Works~~ earth works and shall provide and maintain whatever Earthwork Support is necessary to comply with this requirement and ensure the safety of all persons that are in, under or adjacent to any excavation and to avoid any damage to persons and property on or outside the Site. (3) Earthwork Support shall include for example the provision of: (a) Timberwork including sheeting, planking, strutting and support systems; (b) Steel sheet piling including shoring, strutting and support systems; (c) Specialist support systems such as diaphragm walling, steel pipe piling, contiguous piling, soldier piling and lagging, and the like; (d) Ground improvement, slope stabilisation, injection, ground freezing and the like; and (e) Ground Anchors (4) Without prejudice to the Contractor's overriding obligations as specified above, the requirements for providing Earthwork Support may be waived by the HSO for the following excavations which have been inspected at the Site by the HSO and judged by him to be safe, stable and free from any risk of movement or collapse: To MD, The (4) above seems different from other parts as it stipulates "Without prejudice to the Contractor's overriding obligations as specified above". Is it necessary to mention this phrase? (a) Excavation in rock; and (b) Excavation less than 1.5 m deep.

(4) Without prejudice to the Contractor's overriding obligations as specified above, the requirements for providing Earthwork Support may be waived by the HSO for the following excavations which have been inspected at the Site by the HSO and judged by him to be safe, stable and free from any risk of movement or collapse:

(a) Excavation in rock; and

(b) Excavation less than 1.5 m deep.

(5) For sloping or benched sides to excavations (in lieu of Earthwork Support), refer to JSSS 7.2.1 (3) [*Excavation Work - Particular Safety Measures*].

6.2.2 Planning and Design

The Contractor shall design all Earthwork Support so that it is fit for the purpose for which it is intended and take account of all factors including:

(1) All relevant site data which may have been provided by the Employer in the Bidding Documents and any relevant site information that the Contractor has encountered or obtained during the execution of the Works, together with all necessary further information as to risks, contingencies and other circumstances which the Contractor shall be deemed to have obtained in accordance with GC 4.10 [*Site Data*].

(2) Ground water and potential of liquefaction, boiling or piping, heave and the like ~~and~~ for the design of and the prevention of any damaging effect upon excavations and Earthwork Support. (NK: Added.)

(3) The effect by the Earthwork Support on existing buildings, structures, roads, railways, ground, substrata, surfaces, paving and the like such as displacement, heave or groundwater fluctuation.

(4) The effect by vibration from site operations (e.g. piling) on existing buildings, structures, roads, railways, ground, substrata, surfaces, paving and the like. ~~or adjacent traffic or railways and the like.~~ (NK: modified.)

(5) Access and working space necessary to execute the Permanent Works.

6.2.3 Inspection and Monitoring

Refer to JSSS エラー！参照元が見つかりません。 [***Monitoring Impact of Works on Other Properties***].

Further requirements for work in this Section are stated below.

---

(5) For sloping or benched sides to excavations (in lieu of Earthwork Support), refer to JSSS 7.2.1 (3) [*Excavation Work - Particular Safety Measures*].

6.2.2 Planning and Design

The Contractor shall design all Earthwork Support so that it is fit for the purpose for which it is intended and take account of all factors including:

(1) All relevant site data ~~which may have been~~ provided by the Employer before or after the Base Date~~in the Bidding Documents~~ (JC18)and any relevant site information that the Contractor has encountered or obtained during the execution of the Works, together with all necessary further information as to risks, contingencies and other circumstances which ~~the Contractor shall be deemed to have obtained in accordance with GC 4.10 [*Site Data*]~~may affect the Works or their surroundings (i.e. existing buildings, structures, roads, railways, ground, substrata, surfaces, paving and the like).(JC19)

JC18: GC 4.10 says : The Employer shall similarly make available to the Contractor all such data which come into the Employer's possession after the Base Date.
NK: modified as revised.

JC19: 削除。4.10 は入札前の Site Data を言っている。ここは安全スペックなので不適当。Which the Contractor have obtained.では？
Deleted. GC 4.10 mentions Site Data before bidding. This is safety spec, so it may be not appropriate. How about to replace it with "Which the Contractor have obtained"?
NK: The proposed phrase has been stipulated in (1), so not added it.

(2) Ground~~-~~water and potential of liquefaction, boiling or piping, heave and the like ~~and~~ for the design of ~~and the prevention of any damaging effect upon excavations and~~ Earthwork Support. (NK: Added.) (JC20)

JC20: デザインの話なので、不要です.
This phrase is not necessary because (2) is spec. for design.
NK: Modified as commented.

(3) The effect by the c~~E~~arthwork ~~Support~~ on existing buildings, structures, roads, railways, ground, substrata, surfaces, paving and the like such as displacement, heave or groundwater fluctuation.

(4) The effect of~~by~~ vibration from site operations (e.g. piling) on existing buildings, structures, roads, railways, ground, substrata, surfaces, paving and the like. ~~or adjacent traffic or railways and the like.~~ (NK: modified.)

(5) Access and working space necessary to execute the Permanent Works.

6.2.3 Inspection and Monitoring

Refer to JSSS エラー！参照元が見つかりません。 [***Monitoring Impact of Works on Other Properties***] (JC21).

JC21: 2章に移動？ Shall this no. be replaced with Chapter 2?
NK: Leave as this as already specified in 6.1.3 referring to JSSS 2.1.7 [Monitoring and Records].

Further requirements for work in this Section are stated below.

---

(5) For sloping or benched sides to excavations (in lieu of Earthwork Support), refer to JSSS 7.2.1 (3) [*Excavation Work - Particular Safety Measures*].

6.2.2 Planning and Design

The Contractor shall design all Earthwork Support so that it is fit for the purpose for which it is intended and take account of all factors including:

(1) All relevant site data ~~which may have been~~ provided by the Employer before or after the Base Date ~~in the Bidding Documents~~ and any relevant site information that the Contractor has encountered or obtained during the execution of the Works, together with all necessary further information as to risks, contingencies and other circumstances which ~~the Contractor shall be deemed to have obtained in accordance with GC 4.10 [*Site Data*]~~ and may affect the Works or their surroundings (i.e. existing buildings, structures, roads, railways, ground, substrata, surfaces, paving and the like).

(2) Ground water and potential of liquefaction, boiling or piping, heave and the like ~~and~~ for the design of ~~and the prevention of any damaging effect upon excavations and~~ Earthwork Support.

(3) The effect by the Earthwork Support on existing buildings, structures, roads, railways, ground, substrata, surfaces, paving and the like such as displacement, heave or groundwater fluctuation.

(4) The effect by vibration from site operations (e.g. piling) on existing buildings, structures, roads, railways, ground, substrata, surfaces, paving and the like. ~~or adjacent traffic or railways and the like.~~ (NK: modified.)

(5) Access and working space necessary to execute the Permanent Works.

6.2.3 Inspection and Monitoring

Refer to JSSS エラー！参照元が見つかりません。 [~~***Monitoring Impact of Works on Other Properties***~~ ***Monitoring of Works and Surroundings***].

Further requirements for work in this Section are stated below.

(1) Visual Inspection and Monitoring

(a) The Contractor shall prepare a Visual Inspection Plan depending on the characteristics of the Site and the required Earthwork Support and carry out regular inspections based upon the content of the Plan; and

(b) Examples of inspection objects and inspection items are given in the following Table.

Table 6.2.1: Visual Inspection Plan

	Object	Inspection Items
1	Earthwork Support: Faces, sheeting and piling	Meander/horizontal displacement and vertical displacement along top. Crack, deflection and swelling. Water leakage, mud inflow. Opening of joints or gaps in Earthwork Support.
2	Earthwork Support: Piles, walings and strutting	Deflection, twist of struts and waling and other members. Settlement, floatation and twist of piles Vertical or horizontal displacement, of struts and waling and other members. Opening of joints or breakage of cross members, or breakage and loosening of bolts.
	Base of excavation	Water spring and ground water flow. Sand boiling. Heaving of the base. Liquefaction.
4	Neighbouring or adjacent ground, paving and roads	Cracks, collapse, subsidence of pavement or ground surfaces, Opening of joints in paving and kerbs
5	Neighbouring or adjacent buildings or structures	Cracks, weakening, subsidence, deformation and tilting of structures
6	Underground utilities	Displacement or leakage of or damage to underground utilities

(1) Visual Inspection and Monitoring

(a) The Contractor shall prepare a Visual Inspection Plan depending on the characteristics of the Site (JC22) and the required Earthwork Support and carry out regular inspections based upon the content of the Plan; and

JC22: この章だけでなく他の章でも Site という表現が出てきますが Site 以外の working area も含めるべきものと考えます。だとした場合に、それらを含む定義語を作るなどなんらかの工夫が全体を通して必要と考えます。

The term “Site” is used in this and other Chapters. We consider that the Site shall include working area of the Contractor such as precast concrete manufacturing plant, stores, labor camps, etc. outside of the Site. It is necessary to define a term that the Site includes such working area to use through the JSSS.

NK: GC 1.1.6.7 mentions

“Site” means the places where the Permanent Works are to be executed including storage and working areas and to which Plant and Materials are to be delivered, and any other places as may be specified in the Contract as forming part of the Site.

In order to avoid the case that the Contract does not specify other places in PC for GC 1.1.6.7, JSSS 1.22 shall include the following sentence to include the working area in the Site to apply JSSS to all places where the Contractor’s personnel work and live.

“(x) References to “the Site” in JSSS shall include any places for example, working areas, factories, stores, labor camps, etc. outside of the Site where necessary for the execution of the Contract.

To MD, please review the above and include it in Chapter 1.

(b) Examples of inspection objects and inspection items are given in the following Table.

Table 6.2.1: Visual Inspection Plan

	Object	Inspection Items
1	Earthwork Support: Faces, sheeting and piling	Meander/horizontal displacement and vertical displacement along top. Crack, deflection and swelling. Water leakage, mud inflow. Opening of joints or gaps in Earthwork Support.
2	Earthwork Support: Piles, walings and strutting	Deflection, ~~twist of~~deformation and abnormal sound of ~~–~~struts and waling and other members. Settlement, floatation and twist of piles Vertical or horizontal displacement, of struts and waling and other members. Opening of joints or breakage of cross members, or breakage and loosening of bolts.
	Base of excavation	Water spring and ground water flow. Sand boiling. Heaving of the base. Liquefaction.
4	Neighbouring or adjacent ground, paving and roads	Cracks, collapse, subsidence of pavement or ground surfaces, Opening of joints in paving and kerbs
5	Neighbouring or adjacent buildings or structures	Cracks, ~~weakening,~~ subsidence, deformation and tilting of structures
6	Underground utilities	Displacement or leakage of or damage to underground utilities

(1) Visual Inspection and Monitoring

(a) The Contractor shall prepare a Visual Inspection Plan depending on the characteristics of the Site and the required Earthwork Support and carry out regular inspections based upon the content of the Plan; and

(b) Examples of inspection objects and inspection items are given in the following Table.

Table 6.2.1: Visual Inspection Plan

	Object	Inspection Items
1	Earthwork Support: Faces, sheeting and piling	Meander/horizontal displacement and vertical displacement along top. Crack, deflection and swelling. Water leakage, mud inflow. Opening of joints or gaps in Earthwork Support.
2	Earthwork Support: Piles, walings and strutting	Deflection, ~~twist~~ deformation and abnormal sound of struts and waling and other members. Settlement, floatation and twist of piles Vertical or horizontal displacement, of struts and waling and other members. Opening of joints or breakage of cross members, or breakage and loosening of bolts.
	Base of excavation	Water spring and ground water flow. Sand boiling. Heaving of the base. Liquefaction.
4	Neighbouring or adjacent ground, paving and roads	Cracks, collapse, subsidence of pavement or ground surfaces, Opening of joints in paving and kerbs
5	Neighbouring or adjacent buildings or structures	Cracks, ~~weakening,~~ subsidence, deformation and tilting of structures
6	Underground utilities	Displacement or leakage of or damage to underground utilities

(2) Instrument Monitoring

(c) The Contractor shall prepare an Instrument Monitoring Plan depending on the characteristics of the Site, the ground conditions and the required Earthwork Support and carry out monitoring based upon the content of the Plan; and

(d) Examples of inspection objects and inspection items are given in the following Table.

Table 6.2.2: Instrument Monitoring Plan

	Object	Inspection Items
1	Earthwork Support: Faces, sheeting and piling	Displacement, stress of Earthwork Support Earth pressure and water pressure acting on Earthwork Support
2	Earthwork Support: Piles, walings and strutting	Axial force of walings, struts, other supports and ground anchors.
3	Base of Excavation	Displacement of base of excavation, Water pressure of ground water, rate of water inflow
4	Neighbouring or adjacent ground, paving and roads	Displacement of neighbouring or adjacent ground, Ground water level
5	Neighbouring or adjacent buildings or structures	Displacement; cracks, subsidence, deformation and tilting of structures
6	Underground utilities	Displacement or leakage of underground utilities

6.2.4 General Safety and Construction Requirements

(1) Materials and equipment to be used for Earthwork Support shall be appropriate for the width and depth of the excavation and free from damage or defects that might impair their proper function.

(2) Workers shall not be allowed to enter any excavation until Earthwork Support is installed prior to the work;

(3) Earthwork Support shall proceed progressively so that no excavated faces are left without support or at risk of weakening or collapse at any time.

(4) Excavation to a level greater than 60cm below the bottom of Earthwork Support shall not be allowed;

(2) Instrument Monitoring

(a) The Contractor shall prepare an Instrument Monitoring Plan depending on the characteristics of the Site, the ground conditions and the ~~required~~ (JC23) Earthwork Support and carry out monitoring ~~based upon the content of the Plan;~~ (JC24) and

JC23: Required は不要. Not necessary to mention “Required.”.
NK: deleted.

JC24: これは不要。Carry out monitoring で分かる.
This phase is not necessary as it can be understood by “Carry out monitoring”.

(b) Examples of inspection objects and inspection items are given in the following Table.

Table 6.2.2: Instrument Monitoring Plan

	Object	Inspection Items
1	Earthwork Support: Faces, sheeting and piling	Displacement, stress of Earthwork Support Earth pressure and water pressure acting on Earthwork Support
2	Earthwork Support: Piles, walings and strutting	Axial force of ~~walings,~~ (JC25) struts, other supports and ground anchors.
3	Base of Excavation	Displacement of base of excavation, Water pressure of ground water, rate of water inflow
4	Neighbouring or adjacent ground, paving and roads	Displacement of neighbouring or adjacent ground, Ground water level
5	Neighbouring or adjacent buildings or structures	Displacement; cracks, subsidence, deformation and tilting of structures
6	Underground utilities	Displacement or leakage of underground utilities

JC25: Waling には軸力ではなく曲げモーメントが発生するので不要.
Waling has bending moment but not axial force, so waling is deleted.
NK: deleted as commented.

6.2.4 General Safety and Construction Requirements

(1) Materials and equipment to be used for Earthwork Support shall be appropriate for the width and depth of the excavation and free from damage or defects that might impair their proper function.

(2) Workers shall not be allowed to enter any place of excavation until Earthwork Support is installed prior to the work;

(3) Earthwork Support shall proceed progressively so that no excavated faces are left without support or at risk of weakening or collapse at any time.

(4) Excavation to a level greater than 60cm below the planned bottom level of support when the support itself is not yet installed ~~greater than 60cm below the bottom of Earthwork Support shall not be allowed;~~(JC26)

JC26: 原文のままでは掘削作業が不可能。
The excavation by the original sentence cannot be made, so it is revised.

(2) Instrument Monitoring

(c) The Contractor shall prepare an Instrument Monitoring Plan depending on the characteristics of the Site, the ground conditions and the ~~required~~ Earthwork Support and carry out monitoring ~~based upon the content of the Plan~~; and

(d) Examples of inspection objects and inspection items are given in the following Table.

Table 6.2.2: Instrument Monitoring Plan

	Object	Inspection Items
1	Earthwork Support: Faces, sheeting and piling	Displacement, stress of Earthwork Support Earth pressure and water pressure acting on Earthwork Support
2	Earthwork Support: Piles, walings and strutting	Axial force of ~~walings,~~ struts, other supports and ground anchors.
3	Base of Excavation	Displacement of base of excavation, Water pressure of ground water, rate of water inflow
4	Neighbouring or adjacent ground, paving and roads	Displacement of neighbouring or adjacent ground, Ground water level
5	Neighbouring or adjacent buildings or structures	Displacement; cracks, subsidence, deformation and tilting of structures
6	Underground utilities	Displacement or leakage of underground utilities

6.2.4 General Safety and Construction Requirements

(1) Materials and equipment to be used for Earthwork Support shall be appropriate for the width and depth of the excavation and free from damage or defects that might impair their proper function.

(2) Workers shall not be allowed to enter any excavation until Earthwork Support is installed prior to the work;

(3) Earthwork Support shall proceed progressively so that no excavated faces are left without support or at risk of weakening or collapse at any time.

(4) Excavation to a level greater than 60cm below the planned bottom level of support when the support itself is not yet installed. ~~the bottom of Earthwork Support shall not be allowed;~~

(5) If temporary removal of individual members of Earthwork Support is necessary, safety measures shall be taken to ensure the safety of workers, such as installing additional temporary struts to support the additional loads imposed on parts of the system;

(6) When removing Earthwork Support, the Contractor shall prohibit anyone other than the workers engaged in the removal work to enter the working area and vicinity; and

(7) Backfilling and compaction of any excavation shall be performed in parallel with the removal of Earthwork Support.

6.2.5 Safety Measures for Shoring

(1) "Shoring" shall include waling, shoring, strutting and like support.

(2) Shoring shall be securely installed and fixed to Earthwork Support to prevent detachment and any movement or failure.

(3) All members acting in compression (excluding diagonal struts) shall be butt-jointed, and timber shoring shall be jointed with two or more doubling plates.

(4) Connecting parts of shoring or diagonal shoring or intersections~~,~~ shall be reinforced with backing plates and bolts (timber) and welding with reinforcing plates (steel).

(5) Struts shall be securely and rigidly fixed with intermediate piles, when the intermediate piles are provided.

(6) When shoring is fixed to or relies on an existing structure or building, the Contractor shall ascertain that the structure or building is able to withstand the applied load.

(7) Gaps between Earthwork Support and shoring shall be securely packed with suitable wedges.

(8) Connections of shoring shall be reinforced with bolted (timber) or welded (steel) stiffeners.

NK: revised as commented.

(5) If temporary removal of individual members of Earthwork Support is necessary, safety measures shall be taken to ensure the safety of workers, such as installing additional temporary struts to support the additional loads imposed on parts of the system;

(6) When removing Earthwork Support, the Contractor shall prohibit anyone other than the workers engaged in the removal work to enter the working area and vicinity; and

(7) Backfilling and compaction of any excavation shall be performed in parallel with the removal of Earthwork Support.

6.2.5 Safety Measures for Shoring

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(2) Shoring shall be securely installed and fixed to Earthwork Support to prevent detachment and any movement or failure.

(3) All members acting in compression (excluding diagonal struts) shall be butt-jointed, and timber shoring shall be jointed with two or more doubling plates.

(4) Connecting parts of shoring or diagonal shoring or intersections~~,~~ shall be reinforced with backing plates and bolts (timber) and welding with reinforcing plates (steel).

(5) Struts shall be securely and rigidly fixed with intermediate piles, when the intermediate piles are provided.

(6) When shoring is fixed to or relies on an existing structure or building, the Contractor shall ascertain that the structure or building is able to withstand the applied load.

(7) Gaps between Earthwork Support and shoring shall be securely packed with suitable wedges. (JC27)

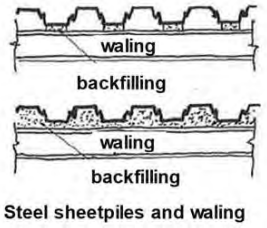
(8) Connections of shoring shall be reinforced with bolted (timber) or welded (steel) stiffeners.

JC27: 日本語版では「土留め壁と腹おこしの隙間は充填を行うこと。また、腹おこしと切りばりの接合部はスチフナー等で補強を行うこと。」としていましたが、意味が変わってしまっています(7と8の特に7がおかしい)。日本語に沿って正しく表現してください。

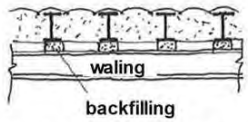
Japanese JSSS specifies "The gap between the earth retaining wall and the waling shall be filled. Also, the connection part of the strut and waling shall be reinforced with stiffeners." The meaning has been changed in the (7) and (8). Please revise them as specified as Japanese one.

NK: modified as commented referring the figures below.

To MD, please review and edit the modified (7) and (8).



Steel sheetpiles and waling



soilcement and H-steel piles and waling

(5) If temporary removal of individual members of Earthwork Support is necessary, safety measures shall be taken to ensure the safety of workers, such as installing additional temporary struts to support the additional loads imposed on parts of the system;

(6) When removing Earthwork Support, the Contractor shall prohibit anyone other than the workers engaged in the removal work to enter the working area and vicinity; and

(7) Backfilling and compaction of any excavation shall be performed in parallel with the removal of Earthwork Support.

6.2.5 Safety Measures for Shoring

(1) "Shoring" shall include waling, shoring, strutting and like support.

(2) Shoring shall be securely installed and fixed to Earthwork Support to prevent detachment and any movement or failure.

(3) All members acting in compression (excluding diagonal struts) shall be butt-jointed, and timber shoring shall be jointed with two or more doubling plates.

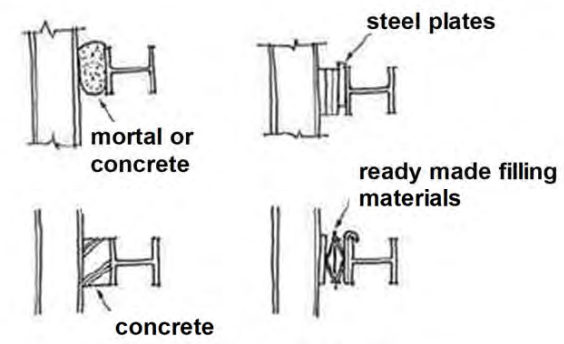
(4) Connecting parts of shoring or diagonal shoring or intersections~~,~~ shall be reinforced with backing plates and bolts (timber) and welding with reinforcing plates (steel).

(5) Struts shall be securely and rigidly fixed with intermediate piles, when the intermediate piles are provided.

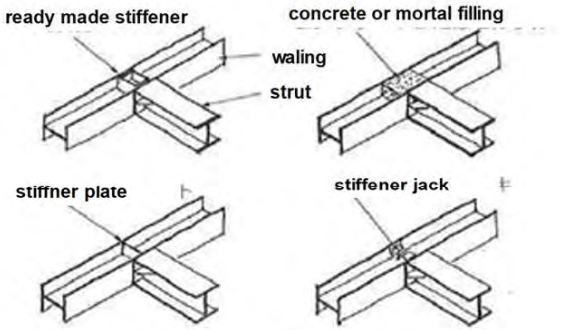
(6) When shoring is fixed to or relies on an existing structure or building, the Contractor shall ascertain that the structure or building is able to withstand the applied load.

(7) Gaps between ~~Earthwork Support and shoring shall be securely packed with suitable wedges.~~ earth retaining wall (steel sheet piles, H-shape steel piles and the like) and waling shall be filled with mortal, concrete, steel plates, suitable wedges.

(8) Connections ~~of shoring shall be reinforced with bolted (timber) or welded (steel) stiffeners~~ between struts and walings shall be reinforced with ready-made stiffeners, stiffener plates, concrete/mortal filling, stiffener jacks, etc.



Types of backfillig materials



reignforcement of connection part of waling and strut

6.2.6 Safety Measures for Ground Anchor Work

(1) Prevent anyone other than designated personnel from operating the boring machine.

(2) Prevent anyone (except those essential to the post-tensioning operations) from accessing behind the tensioning jack during tensioning to prevent any injury through breaking of the anchor tendon during tensioning.

(3) Check for any damage in the grout hoses and joints before commencing any grout injection.

6.2.7 Adjacent Goods, Excavated Spoil and the like

(1) When placing any **Goods, excavated spoil and the like** on the ground surface at the top and adjacent to any excavation, take measures to prevent it from falling.

(2) Do not place any **Goods, excavated spoil, backfill material and the like** where the weight exceeds the load considered in the design of the Earthwork Support.

6.2.6 Safety Measures for Ground Anchor Work

(1) ~~Prevent a~~Anyone other than designated personnel ~~from~~ shall not operate ~~operating~~ the boring machine.

(2) ~~Prevent~~ No one (except those essential to the post-tensioning operations) shall be permitted to be ~~anyone (except those essential to the post-tensioning operations) from accessing~~ behind the tensioning jack during tensioning to prevent any injury through breaking of the anchor tendon during tensioning.

(3) The Contractor shall check ~~Check for~~ any damage in the grout hoses and joints before commencing any grout injection.

6.2.7 Adjacent Goods, Excavated Spoil and the like

(1) When placing any Goods, excavated spoil and the like on the ground surface at the top and adjacent to any excavation, the Contractor shall take measures to prevent it from falling.

(2) The Contractor shall ~~Do~~ not place any Goods, excavated spoil, backfill material and the like where the weight exceeds the load

6.2.6 Safety Measures for Ground Anchor Work

(1) ~~Prevent a~~Anyone other than designated personnel ~~from operating~~ shall not operate the boring machine.

(2) ~~Prevent anyone (except those essential to the post-tensioning operations) from accessing~~ No one (except those essential to the post-tensioning operations) shall be permitted to be behind the tensioning jack during tensioning to prevent any injury through breaking of the anchor tendon during tensioning.

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	considered in the design of the Earthwork Support.	(2) The Contractor shall ~~Do~~ not place any Goods, excavated spoil, backfill material and the like where the weight exceeds the load considered in the design of the Earthwork Support.
6.3 COFFERDAMS **6.3.1** General (1) Refer to JSSS Annex 1.1:[*Definitions and Abbreviations*] for the definition of Cofferdam. (2) Cofferdams are generally constructed as earth dykes, caissons, steel sheet piling, double steel sheet piles, steel beam piles and the like.	**6.3 COFFERDAMS** **6.3.1 General** (1) Refer to JSSS Annex 1.1:[*Definitions and Abbreviations*] for the definition of Cofferdam. (2) Cofferdams are generally constructed as earth dykes, caissons, steel sheet piling, double steel sheet piles, steel pipe ~~beam~~. (JC28) piles and the like. JC28: 見たことがない。pipe なら判るが。 We don't know this. We know steel pipe piles. NK: revised as commented.	**6.3 COFFERDAMS** **6.3.1** General (1) Refer to JSSS Annex 1.1:[*Definitions and Abbreviations*] for the definition of Cofferdam. (2) Cofferdams are generally constructed as earth dykes, caissons, steel sheet piling, double steel sheet piles, steel ~~beam~~ pipe piles and the like.
6.3.2 Planning and Design Unless otherwise specified in the Particular Safety Specification, the Contractor shall design Cofferdams so that they are fit for the purpose for which they are intended and take account of all relevant factors including:	**6.3.2 Planning and Design** ~~Unless otherwise specified in the Particular Safety Specification,~~ (JC29) ~~t~~The Contractor shall design Cofferdams so that they are fit for the purpose for which they are intended and take account of all relevant factors including: JC29: かかる例外規定はここでは不要。Fit for purpose でない cofferdam を作ることが許されるのか？なお、土留めの Planning and Design のところにも、かかる例外規定はついていない。 It is not necessary to stipulate exceptional requirement here. Is permitted to construct cofferdams which is not fir for the purpose? There is no stipulation of such exception in Planning and Design of Earth Support. NK: deleted as commented.	**6.3.2** Planning and Design ~~Unless otherwise specified in the Particular Safety Specification, the~~ The Contractor shall design Cofferdams so that they are fit for the purpose for which they are intended and take account of all relevant factors including:
(1) All relevant site data which may have been provided by the Employer in the Bidding Documents and any relevant site information that the Contractor has encountered or obtained during the execution of the Works, together with all necessary further information as to risks, contingencies and other circumstances which the Contractor shall be deemed to have obtained in accordance with GC 4.10 [*Site Data*].	(1) All relevant site data which may have been provided by the Employer before or after the Base Date ~~in the Bidding Documents~~ and any relevant site information that the Contractor has encountered or obtained during the execution of the Works, together with all necessary further information as to risks, contingencies and other circumstances which may affect the Works. ~~or XXXX which the Contractor shall be deemed to have obtained in accordance with GC 4.10 [*Site Data*]~~. (JC29) JC29: Same comments as 6.2.2, copied below. *JC18: GC 4.10 says : The Employer shall similarly make available to the Contractor all such data which come into the Employer's possession after the Base Date.* NK: modified as commented above.	(1) All relevant site data which may have been provided by the Employer ~~in the Bidding Documents~~ before or after the Base Date and any relevant site information that the Contractor has encountered or obtained during the execution of the Works, together with all necessary further information as to risks, contingencies and other circumstances ~~which the Contractor shall be deemed to have obtained in accordance with GC 4.10 [*Site Data*]~~ which may affect the Works.
(2) The effect of any vibration from site operations (e.g. driven piling). (3) Access and working space necessary to execute the Works. (4) River discharge, water levels, tide levels, wave height, free board, seismic load, external force and any other relevant river, lake or marine conditions. (5) Marine traffic. (6) Avoidance of any damage by piling operations and the protection and improvement of the structural integrity of existing river or canals, banks, dykes and the like.	(2) The effect of any vibration from site operations (e.g. driven piling). (3) Access and working space necessary to execute the Works. (4) River discharge, water levels, tide levels, wave height, free board, seismic load, external force and any other relevant river, lake or marine conditions. (5) Marine traffic. (6) Avoidance of any damage by piling operations to and the protection ~~and improvement~~ (JC30) of the structural integrity of existing river or canals, banks, dykes and the like.	(2) The effect of any vibration from site operations (e.g. driven piling). (3) Access and working space necessary to execute the Works. (4) River discharge, water levels, tide levels, wave height, free board, seismic load, external force and any other relevant river, lake or marine conditions. (5) Marine traffic. (6) Avoidance of any damage by piling operations and the protection ~~and improvement~~ of the structural integrity of existing river or canals, banks, dykes and the like.

(7) Reduction of river cross sectional area, increased flow rates and protection and improvement of the structural integrity of existing river or canals, banks, dykes and the like.

(8) Effects of tides, wave action, flooding and the like, the consequent need for additional shoring and avoidance of loosening of shoring and joints.

(9) Provision of at least two safe escape routes from the working areas by means of ladders, stairs, etc. to evacuate in the case of any danger of collapse of or inundation in the Cofferdam.

(10) Provision of life-saving equipment including buoyancy jackets, lifebuoy, ropes and (where necessary) standby boats.

(11) Measures for avoiding water pollution from construction and dismantling of cofferdams.

(12) Measures for safe dismantling and removal.

6.3.3 Inspection and Monitoring

Further requirements for work in this Section are stated below.

(1) Visual Inspection and Monitoring

(a) The Contractor shall prepare a Visual Inspection Plan depending on the characteristics of the Cofferdam and carry out regular inspections based upon the content of the Plan; and

(b) Examples of Inspection Objects and Inspection items are given in the following Table.

Table 6.3.1: Visual Inspection Plan

	Object	Inspection Items
1	Cofferdam generally	Water seepage. Ability and capacity of pumping arrangements to maintain safe working conditions. Meander/horizontal displacement and vertical displacement along top. Crack, deflection and swelling. Opening of joints.
2	Piles, shoring and strutting	Deflection, twist of piles, struts and waling and other members. Opening of joints or breakage of piles, cross members, or breakage and loosening of bolts.
3	Base of excavation	Water spring and ground water flow. Sand boiling. Heaving of the base.
5	Neighbouring Properties or Structures on or outside the Site	Cracks, weakening, subsidence, deformation and tilting of structures

JC30: Should the Contactor consider even improvement?
NK: deleted as commented.

(7) Reduction of river cross sectional area, increased flow rates and protection ~~and improvement~~ (JC31) of the structural integrity of existing river or canals, banks, dykes and the like.

JC31: Same as above.
NK: deleted as commented.

(8) Effects of tides, wave action, flooding and the like, the consequent need for additional shoring and avoidance of loosening of shoring and joints.

(9) Provision of at least two safe escape routes from the working areas by means of ladders, stairs, etc. to evacuate in the case of any danger of collapse of or inundation in the Cofferdam.

(10) Provision of life-saving equipment including buoyancy jackets, lifebuoy, ropes and (where necessary) standby boats.

(11) Measures for avoiding water pollution from construction and dismantling of cofferdams.

(12) Measures for safe dismantling and removal.

6.3.3 Inspection and Monitoring

Refer to JSSS エラー! 参照元が見つかりません。 [*Monitoring Impact of Works on Other Properties*].

Further requirements for work in this Section are stated below.

(1) Visual Inspection and Monitoring

(a) The Contractor shall prepare a Visual Inspection Plan depending on the characteristics of the Cofferdam and carry out regular inspections based upon the content of the Plan; and

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	Object	Inspection Items
1	Cofferdam generally	Water seepage. Ability and capacity of pumping arrangements to maintain safe working conditions. Meander/horizontal displacement and vertical displacement along top. Crack, deflection and swelling. Opening of joints.
2	Piles, shoring and strutting	Deflection, ~~twist~~ deformation and abnormal sound of piles, struts and waling and other members. Opening of joints or breakage of piles, cross members, or breakage and loosening of bolts.
3	Base of excavation	Water spring and ground water flow. Sand boiling. Heaving of the base.
4	Neighbouring Properties or Structures on or outside the Site	Cracks, ~~weakening,~~ subsidence, deformation and tilting of structures

(7) Reduction of river cross sectional area, increased flow rates and protection ~~and improvement~~ of the structural integrity of existing river or canals, banks, dykes and the like.

(8) Effects of tides, wave action, flooding and the like, the consequent need for additional shoring and avoidance of loosening of shoring and joints.

(9) Provision of at least two safe escape routes from the working areas by means of ladders, stairs, etc. to evacuate in the case of any danger of collapse of or inundation in the Cofferdam.

(10) Provision of life-saving equipment including buoyancy jackets, lifebuoy, ropes and (where necessary) standby boats.

(11) Measures for avoiding water pollution from construction and dismantling of cofferdams.

(12) Measures for safe dismantling and removal.

6.3.3 Inspection and Monitoring

Refer to JSSS エラー! 参照元が見つかりません。 [~~*Monitoring Impact of Works on Other Properties*~~ ***Monitoring of Works and Surroundings***].

Further requirements for work in this Section are stated below.

(1) Visual Inspection and Monitoring

(a) The Contractor shall prepare a Visual Inspection Plan depending on the characteristics of the Cofferdam and carry out regular inspections based upon the content of the Plan; and

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Table 6.3.1: Visual Inspection Plan

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1	Cofferdam generally	Water seepage. Ability and capacity of pumping arrangements to maintain safe working conditions. Meander/horizontal displacement and vertical displacement along top. Crack, deflection and swelling. Opening of joints.
2	Piles, shoring and strutting	Deflection, ~~twist~~ deformation and abnormal sound of piles, struts and waling and other members. Opening of joints or breakage of piles, cross members, or breakage and loosening of bolts.
3	Base of excavation	Water spring and ground water flow. Sand boiling. Heaving of the base.
5	Neighbouring Properties or Structures on or	Cracks, ~~weakening,~~ subsidence, deformation and tilting of structures

(2) Instrument Monitoring

(c) The Contractor shall prepare an Instrument Monitoring Plan depending on the characteristics of the Site, the ground conditions and the required ~~Earthwork Support~~ Cofferdams and carry out ongoing monitoring based upon the content of the Plan; and.

(d) Examples of inspection objects and inspection items are given in the following Table.

Table 6.3.2: Instrument Monitoring Plan

	Object	Monitoring Items
1	Cofferdam Generally	Displacement, stress of Cofferdams Earth pressure and water pressure acting on Cofferdams
2	Shoring and strutting	Axial force of strut and other supports.
3	Base of Excavation	Displacement of base of excavation Water pressure of spring of water, water inflow
5	Neighbouring properties or structures on or outside the Site	Displacement, cracks,-subsidence, deformation and tilting of structures

6.3.4 General Safety and Construction Requirements

(1) Construct the Cofferdams with shoring by the same method stipulated in JSSS エラー！参照元が見つかりません。[*Safety Measures for Shoring*].

(2) Train all Contractor's Personnel who are to work on the construction, maintenance and removal of the Cofferdam or within the Cofferdam, so that they are aware of all risks and countermeasures including water leakage, adverse weather, severe waves or adverse river or marine conditions, so that they can work safely and when necessary, evacuate the working areas efficiently and safely.

(3) Display visible and clear warning notices of all hazards and advisory notices giving directions and information, including emergency contacts, emergency escape routes, directions to and locations of life-saving equipment, assembly areas, escape boats and the like.

(4) Implement measures to prevent collisions with marine or river traffic, including warning signs and lights during the night or in heavy rain mist or fog.

(5) Establish a system to confirm the safety of the Cofferdams, appoint a person-in-charge who shall be present at all times and shall be responsible for issuing an evacuation order if and when necessary.

(2) Instrument Monitoring

(a) The Contractor shall prepare an Instrument Monitoring Plan depending on the characteristics of the Site, the ground conditions and the ~~required Earthwork Support~~ Cofferdams and carry out ~~ongoing~~ monitoring ~~based upon the content of the Plan~~; and.

(b) Examples of inspection objects and inspection items are given in the following Table.

Table 6.3.2: Instrument Monitoring Plan

	Object	Monitoring Items
1	Cofferdam Generally	Displacement, stress of Cofferdams Earth pressure and water pressure acting on Cofferdams
2	Shoring and strutting	Axial force of strut and other supports.
3	Base of Excavation	Displacement of base of excavation Water pressure of spring of water, water inflow
4	Neighbouring properties or structures on or outside the Site	Displacement, cracks,-subsidence, deformation and tilting of structures

6.3.4 General Safety and Construction Requirements

(1) The Contractor shall c~~C~~onstruct the Cofferdams with shoring by the same method stipulated in JSSS エラー！参照元が見つかりません。 [*Safety Measures for Shoring*].

(2) The Contractor shall provide training to ~~Train~~ all Contractor's Personnel who are to work on the construction, maintenance and removal of the Cofferdam or within the Cofferdam, so that they are aware of all risks and countermeasures including water leakage, adverse weather, severe waves or adverse river or marine conditions, so that they can work safely and when necessary, evacuate the working areas efficiently and safely.

(3) The Contractor shall d~~D~~isplay visible and clear warning notices of all hazards and advisory notices giving directions and information, including emergency contacts, ~~emergency~~safe (JC32) escape routes, directions to and locations of life-saving equipment, assembly areas, escape boats and the like.

JC32: 6.3.2 (9)での書き方に合わせてください。
Please follow the writing method in 6.3.2 (9): *"(9) Provision of at least two safe escape routes from the working areas by means of ladders, stairs, etc. to evacuate in the case of any danger of collapse of or inundation in the Cofferdam."*
NK: modified as commented above.

(4) The Contractor shall i~~I~~mplement measures to prevent collisions with marine or river traffic, including warning signs and lights during the night or in heavy rain mist or fog.

(5) The Contractor shall e~~E~~stablish a system to confirm the safety of the Cofferdams, appoint a person-in-charge who shall be present at all

	outside the Site	

(2) Instrument Monitoring

(c) The Contractor shall prepare an Instrument Monitoring Plan depending on the characteristics of the Site, the ground conditions and the required Cofferdams and carry out ~~ongoing~~ monitoring ~~based upon the content of the Plan~~; and.

(d) Examples of inspection objects and inspection items are given in the following Table.

Table 6.3.2: Instrument Monitoring Plan

	Object	Monitoring Items
1	Cofferdam Generally	Displacement, stress of Cofferdams Earth pressure and water pressure acting on Cofferdams
2	Shoring and strutting	Axial force of strut and other supports.
3	Base of Excavation	Displacement of base of excavation Water pressure of spring of water, water inflow
4	Neighbouring properties or structures on or outside the Site	Displacement, cracks,-subsidence, deformation and tilting of structures

6.3.4 General Safety and Construction Requirements

(1) ~~Construct~~ The Contractor shall construct the Cofferdams with shoring by the same method stipulated in JSSS エラー！参照元が見つかりません。 [*Safety Measures for Shoring*].

(2) ~~Train~~ The Contractor shall provide training to all Contractor's Personnel who are to work on the construction, maintenance and removal of the Cofferdam or within the Cofferdam, so that they are aware of all risks and countermeasures including water leakage, adverse weather, severe waves or adverse river or marine conditions, so that they can work safely and when necessary, evacuate the working areas efficiently and safely.

(3) ~~Display~~ The Contractor shall display visible and clear warning notices of all hazards and advisory notices giving directions and information, including emergency contacts, ~~emergency~~ safe escape routes, directions to and locations of life-saving equipment, assembly areas, escape boats and the like.

(4) The Contractor shall ~~I~~implement measures to prevent collisions with marine or river traffic, including warning signs and lights during the night or in heavy rain mist or fog.

(5) The Contractor shall ~~E~~ establish a system to confirm the safety of the Cofferdams, appoint a person-in-charge who shall be present at all

(6) Evacuate Contractor's Personnel whenever there is any danger due to water leakage through or overtopping on Cofferdams or from the ground within the working area. (7) Implement repair and improvement measures to ensure the safety of Contractor's Personnel and prevent any personnel from re-entering the Cofferdam until it has been inspected by the HSO and certified by him to be "Safe for Use".	times and shall be responsible for issuing an evacuation order if and when necessary. (6) The Contractor shall e~~E~~vacuate Contractor's Personnel whenever there is any danger due to water leakage through or overtopping on Cofferdams or from the ground within the working area. (7) Whenever any defect is identified in the Cofferdam, the Contractor shall (JC33) i~~I~~mplement repair ~~and improvement measures~~ to ensure the safety of Contractor's Personnel and prevent any personnel from re-entering the Cofferdam until it has been inspected by the HSO and certified by him to be "Safe for Use". JC33: 表現がこれでよいかは別途検討するとして、何かを補う必要がある。 It is necessary to supplement some requirement in this (7) though this expression shall be examined proper or not separately.	times and shall be responsible for issuing an evacuation order if and when necessary. (6) The Contractor shall ~~E~~ evacuate Contractor's Personnel whenever there is any danger due to water leakage through or overtopping on Cofferdams or from the ground within the working area. (7) Whenever any defect is identified in the Cofferdam, the Contractor shall ~~I~~implement repair and improvement measures to ensure the safety of Contractor's Personnel and prevent any personnel from re-entering the Cofferdam until it has been inspected by the HSO and certified by him to be "Safe for Use".
6.3.5 Excessive and Sudden Rise in Water Level (1) The Contractor shall be aware of and assess any risk due to **excessive** and sudden rise in water level above the design basis for the highest water level and prepare for this as applicable in the Safety Plan. (2) The Safety Plan shall include procedures for monitoring water levels as described below. (a) Monitoring water levels with instruments and recording equipment at the Site and obtaining forecasting information of water levels; (b) Communications among persons in charge of monitoring of water levels, persons responsible for the works in the Cofferdams, the HSO and workers in the Cofferdam; (c) Instructions to Contractor's Personnel for evacuation; (d) Stop work in accordance with JSSS 1.13 [*HSO – Scope of Duties and Authority*]; and (e) Resume work when water level has subsided and after inspection and certification by the HSO that it is safe to do so.	**6.3.5 Excessive and Sudden Rise in Water Level** (1) The Contractor shall ~~be aware of and assess~~ analyse any risk due to sudden rise of water level and excessive ~~and sudden rise in~~ water level above the design basis for the highest water level and prepare for this as applicable in the Safety Plan. (2) The Safety Plan shall include procedures for monitoring water levels as described below. (a) Monitoring water levels with instruments and recording equipment at the Site and obtaining forecasting information of water levels; (b) Communications among persons in charge of monitoring of water levels, persons responsible for the works in the Cofferdams, the HSO and workers in the Cofferdam; (c) Instructions to Contractor's Personnel for evacuation; (d) Stop work in accordance with JSSS 1.13 [*HSO – Scope of Duties and Authority*]; and (e) Resume work when water level has subsided and after inspection and certification by the HSO that it is safe to do so.	**6.3.5** Excessive and Sudden Rise in Water Level (1) The Contractor shall ~~be aware of and assess~~ analyse any risk due to sudden rise of water level and excessive ~~and sudden rise in~~ water level above the design basis for the highest water level and prepare for this as applicable in the Safety Plan. (2) The Safety Plan shall include procedures for monitoring water levels as described below. (a) Monitoring water levels with instruments and recording equipment at the Site and obtaining forecasting information of water levels; (b) Communications among persons in charge of monitoring of water levels, persons responsible for the works in the Cofferdams, the HSO and workers in the Cofferdam; (c) Instructions to Contractor's Personnel for evacuation; (d) Stop work in accordance with JSSS 1.13 [*HSO – Scope of Duties and Authority*]; and (e) Resume work when water level has subsided and after inspection and certification by the HSO that it is safe to do so.
6.3.6 Monitoring Water Level and Other Conditions In addition to the requirements of JSSS 2.1.7 [*Monitoring and Records*], the Contractor shall monitor and keep records of all climatic, river and/or marine conditions in the direct vicinity of any Cofferdam including for example, the water level at various times throughout the day. The Contractor shall provide all instruments and facilities to obtain the data and submit reports to the Engineer on a daily basis and compile on weekly basis.	**6.3.6 Monitoring Water Level and Other Conditions** In addition to the requirements of JSSS 2.1.7 [*Monitoring and Records*], the Contractor shall monitor and keep records of all climatic, river and/or marine conditions in the direct vicinity of any Cofferdam including for example, the water level at various times throughout the day. The Contractor shall provide all instruments and facilities to obtain the data and submit reports to the Engineer on a daily basis and compile on weekly basis.	**6.3.6** Monitoring Water Level and Other Conditions In addition to the requirements of JSSS 2.1.7 [*Monitoring and Records*], the Contractor shall monitor and keep records of all climatic, river and/or marine conditions in the direct vicinity of any Cofferdam including for example, the water level at various times throughout the day. The Contractor shall provide all instruments and facilities to obtain the data and submit reports to the Engineer on a daily basis and compile on weekly basis.
6.4 WALKWAYS, LADDERS AND STEPLADDERS	**6.4 WALKWAYS~~, LADDERS AND STEPLADDERS~~** JC6/10: Title of 6.4 is proposed to revise above. NK: In the meeting of 6/10, JICA agreed that title would not be revise.	**6.4 WALKWAYS, LADDERS AND STEPLADDERS**
6.4.1 General (1) This Section comprises safety measures relating to the safe movement to and around the Site of all Contractor's Personnel, Employer's Personnel and all other persons that are entitled to be on the Site and	**6.4.1** General (1) This Section includes ~~comprises~~ safety measures relating to the safe movement to and around the Site of all Contractor's Personnel, Employer's Personnel and all other persons that are entitled to be on	**6.4.1** General (1) This Section includes ~~comprises~~ safety measures relating to the safe movement to and around the Site of all Contractor's Personnel, Employer's Personnel and all other persons that are entitled to be on

includes temporary walkways, bridges and ramps, portable ladders, stepladders and stairs.	the Site (JC34) with respect to ~~and includes~~ temporary walkways~~, bridges and ramps, portable ladders, stepladders and stairs~~. JC34: Site だけでよいのか？ Is it sufficient to specify only "the Site"? NK: We will define "the Site" in Chapter 1 for only JSSS as proposed below. *6.2.3 JC22: The term "Site" is used in this and other Chapters. We consider that the Site shall include working area of the Contractor such as precast concrete manufacturing plant, stores, labor camps, etc. outside of the Site. It is necessary to define a term that the Site includes such working area to use through the JSSS.* *NK: In order to avoid the case that the Contract does not specify other places in PC for GC 1.1.6.7, JSSS 1.22 shall include the following sentence to include the working area in the Site to apply JSSS to all places where the Contractor's personnel work and live.* *"(x) References to "the Site" in JSSS shall include any places for example, working areas, factories, stores, labor camps, etc. outside of the Site where necessary for the execution of the Contract.* NK: "the Site" in JSSS will be left as it is because the definition of the Site will be made as proposed above. (2) In this section, "walkways" shall mean route or passage for safe movement of pedestrians including walkway, bridge type walkway, ramp, portable ladders and stepladders. JC6/10: Meeting of JICA and NK was held on 6/10 and concluded regarding the term of walkways and passageways as follows: JC: There are terms of "Walkways" and Passageways" for access in JSSS and references as follows: a) JSSS 2.5.7 Temporary Access Around the Site defines as follows: (1) Walkways and Passageways For the purposes of interpretation: "Walkways" mean pedestrian footpaths at ground level or ramped for the use of Contractor's Personnel. "Passageways" are the same as walkways but are covered by a roof and maybe also have sides in order to protect all personnel from falling objects or adjacent activities. b) Japanese regulation translated to English is mentioned as Passage and Temporary Passage. c) NK noted as follows: footpath: way for the use of pedestrians (BS) walkway: a portion of a scaffold platform used only for access (OSHA) passageway: means of access to the structure of a building (OSHA) d) HSE Guidance HSG 150 Health and safety in construction uses term of walkways except passageway once. https://www.hse.gov.uk/pubns/priced/hsg150.pdf JICA want to use one consistent term in JSSS. JC6/10: As the results of discussion, the term for access in JSSS will be changed as follows: 1) Passageway and (Temporary) Walkways の用語につき検討した。その結果、HSE の Guidance HSG 150 Health and safety in construction をもとに、歩く人用の通路として walkways の用語を使用することとし、covered walkways や elevated walkways 等のように使用する。 2) 仮設通路（temporary walkways）の用語は使用しない。 3) 各章の通路の用語を統一し、walkways へ変更する。 1) The terms of Passageway and (Temporary) Walkways are discussed. The discussion result is "walkways" will be used in JSSS based on the use of "walkways" in the HSG 150 Health and safety in construction. The term of walkways is used for pedestrian. JSSS will use the phrases such as covered walkways, elevated walkways, etc. 2) The term of temporary walkways will not be used as all walkways in the Site are temporary during construction. 3) The term of passageways in JSSS will be replaced with walkways.	the Site with respect to ~~and includes~~ ~~temporary~~ walkways~~, bridges and ramps, portable ladders, stepladders and stairs~~. (2) In this Section, "walkways" shall mean route or passage for safe movement of pedestrians including walkway, bridge type walkway, covered walkways, ramp, ladders and stepladders. To MD, do we define "Walkways" in Chapter 1 Annex 1.1.2 as Walkways are used in many Chapters in JSSS.

(2) For temporary steps and staircase structures the requirements of JSSS エラー! 参照元が見つかりません。 [Scaffolding] shall apply.

(3) For Fall prevention from walkways, ladders and stepladders the requirements of JSSS 2.5 [*Fall Prevention*] shall apply.

(4) Details of the following shall be included in the Safety Plan required by JSSS 1.7 [*Contractor's Safety Plans*]:

(a) Locations and available periods of walkways to be provided;

(b) Drawings of walkway structures, indicating structure type, materials and main dimensions for bridge type walkways where the height and length is 10m or more;

(c) Types of temporary walls, barriers or other separation between walkways and working areas, roads or footpaths on or around the Site; and

(d) Locations of emergency exits and evacuation routes.

6.4.2 Walkways

The Contractor shall:

(1) Provide designated walkways to, in and around the various workplaces at the Site to ensure the safe and secure movement of all persons at all times.

(2) Provide and maintain clear signage so that all users are aware of the locations and routes.

(3) Provide and maintain adequate lighting except when portable lighting such as head torches, lanterns, hand-held torches or the like is provided for workers where considered necessary by the HSO.

NK6/10: Following the above, we will use the term of walkways instead of passageways and replace the latter with the former in other Chapters.

JC6/10: The meeting concluded regarding the use of portable ladders and step ladders as follows:

(2) 6.4.4 Vertical Access

1) Portable ladders 及び Step ladders の使用に関し、上記 HSG 150 及び HSG Brief Guide NDG455 Safe use of ladders and stepladders をもとに、固定はしご以外の移動はしご及び脚立を上下間の通路に原則使用しないことを規定する。

2) 移動はしご及び脚立の使用は、低リスクであることを条件とすることを規定する。

3) 6.4.4 (2) Portable ladders…の規定は削除とする

JC: On the basis of the HSG 150 and HSG Brief Guide NDG455 Safe use of ladders and stepladders https://www.hse.gov.uk/pubns/indg455.pdf, JICA want to specify as follows:

1) Portable ladders and step ladders shall not be used for access except fixed ladders in principle.

2) Portable ladders and step ladders may be used provided that the risk of use is low.

3) The provision of 6.4.4 (2) Portable ladders… shall be deleted.

NK6/10: Following the above, we will additionally specify the 1) and 2) above in 6.5.1. and delete 6.4.4 (2)

(2) For temporary steps and staircase structures the requirements of JSSS エラー! 参照元が見つかりません。 [Scaffolding] shall apply.

(3) For Fall prevention from walkways, ladders and stepladders the requirements of JSSS 2.5 [Fall Prevention] shall apply.

(4) Details of the following shall be included in the Safety Plan required by JSSS 1.7 [*Contractor's Safety Plans*]:

(a) Locations and available periods of walkways to be provided;

(b) Drawings of walkway structures, indicating structure type, materials and main dimensions for bridge type walkways where the height and length is 10m or more;

(c) Types of temporary walls, barriers or other separation between walkways and working areas, roads or footpaths on or around the Site; and

(d) Locations of emergency exits and evacuation routes.

~~6.4.2~~ ~~Walkways~~ (JC35)

JC35: 独立した6．4．2ではなく、6．4．1General の続きとして再構成してください。
Please include 6.4.2 in 6.4.1 as part of General.

NK: modified as commented.

The Contractor shall:

(1) Provide designated walkways to, in and around the various workplaces at the Site to ensure the safe and secure movement of all persons at all times.

(2) Provide and maintain clear signage so that all users are aware of the locations and routes.

(3) Portable ladders and stepladders other than fixed ladders shall not be used for walkways in principle. Portable ladders and stepladders may be used provided that the risk of their use is low.

(4) For temporary steps and staircase structures the requirements of JSSS エラー! 参照元が見つかりません。 [Scaffolding] shall apply.

(5) For Fall prevention from walkways, ladders and stepladders the requirements of JSSS 2.5 [*Fall Prevention*] shall apply.

(6) Details of the following shall be included in the Safety Plan required by JSSS 1.7 [*Contractor's Safety Plans*]:

(a) Locations and available periods of walkways to be provided;

(b) Drawings of walkway structures, indicating structure type, materials and main dimensions for bridge type walkways where the height and length is 10m or more;

(c) Types of temporary walls, barriers or other separation between walkways and working areas, roads or footpaths on or around the Site; and

(d) Locations of emergency exits and evacuation routes.

(7) The Contractor shall:

(a) Provide designated walkways to, in and around the various workplaces at the Site to ensure the safe and secure movement of all persons at all times.

(b) Provide and maintain clear signage so that all users are aware of the locations and routes.

(c) Provide and maintain adequate lighting. ~~except when portable~~

(4) Ensure that walkways have sufficient dimensions and load-bearing capability for the intended purpose.

(5) Ensure that there are no obstacles in walkways and that surfaces are level and safe, maintain all in a clean and orderly condition to avoid any falls, slips and injury.

(6) Ensure that temporary bridge type walkways shall have sufficient dimensions and load capability for the intended purpose.

(7) Ensure that ramps do not exceed a gradient of 30 degrees and that they are provided with handrails. Steeper gradients shall be provided with steps or staircases or ladders where appropriate.

(8) Ensure that ramps, steps and staircases have slip resistant surfaces and that they are provided with handrails and toe boards in accordance with JSSS 2.5.5 [*Handrails*] and JSSS 2.5.6 [*Toeboards*].

6.4.3 Emergency Exits and Evacuation Routes

The Contractor shall provide clear and illuminated signage so that all persons are made aware of the locations of emergency exits and of the locations and routes of emergency walkways, steps, ladders and the like for evacuation and maintain all such locations and routes in a clean, safe and readily available condition.

6.4.4 Vertical Access

The Contractor shall provide steps, stairs and ramps as means of providing safe access or egress from excavations or different working levels.

Steps and stairs ramps shall be constructed from:

(1) Scaffolding in accordance with JSSS エラー! 参照元が見つかりません。 [*Scaffolding*], provided with handrails and non-slip treads.

(2) Portable ladders in accordance with JSSS エラー! 参照元が見つかりません。 [*Portable Ladders and Stepladders*].

(3) Purpose made timber or metal ramps with plywood boarding and structural timber framing.

6.4.5 Portable Ladders and Stepladders

The Contractor shall comply with the following requirements regarding the use of portable ladders and stepladders:

(3) Provide and maintain adequate lighting ~~except when portable lighting such as head torches, lanterns, hand held torches or the like is provided for workers where considered necessary by the HSO~~.

(4) Ensure that walkways have sufficient dimensions and load-bearing capability for the intended purpose.

(5) Ensure that there are no obstacles in walkways and that surfaces are level and safe, maintain all in a clean and orderly condition to avoid any falls, slips and injury.

~~(6) Ensure that temporary bridge type walkways shall have sufficient dimensions and load capability for the intended purpose.~~

~~(7)~~(6) Ensure that walkways ~~ramps~~ do not exceed a gradient of 30 degrees ~~and that they are provided with handrails~~. Steeper gradients shall be provided with steps or staircases or ladders where appropriate.

~~(8)~~(7) Ensure that ramps, steps and staircases have slip resistant surfaces and that they are provided with handrails and toe boards in accordance with JSSS 2.5.5 [*Handrails*] and JSSS 2.5.6 [*Toeboards*].

6.4.2 Emergency Exits and Safe Escape ~~Evacuation~~ Routes

The Contractor shall provide clear and illuminated signage so that all persons are made aware of the locations of emergency exits and safe escape routes, ~~and of the locations and routes of emergency walkways, steps, ladders and the like for evacuation~~ (JC36) and maintain all such locations and routes in a clean, safe and readily available condition.

JC36: emergency walkway というものを特別に作るような誤解を与えないか？
The stipulation of emergency walkways give impression to specially construct emergency structures, so modified as above.
NK: modified as revised above.

6.4.3 Vertical Access

The Contractor shall provide steps, stairs and ramps as means of providing safe access or egress from excavations or different working levels.

Steps and stairs ramps shall be constructed from:

(1) Scaffolding in accordance with JSSS エラー! 参照元が見つかりません。 [*Scaffolding*], provided with handrails and non-slip treads.

(2) Portable ladders in accordance with JSSS エラー! 参照元が見つかりません。 [*Portable Ladders and Stepladders*].

(3) Purpose made timber or metal ramps with plywood boarding and structural timber framing.

JC6/10:.4.4 (2) Portable ladders…の規定は削除とする。
The provision of 6.4.4 (2) Portable ladders… shall be deleted.
NK: The first and second sentences mention about steps, stairs and ramps, so (2) is not related with those. We agreed to delete (2).
To MD, please review the sentences modified as they cannot be read smoothly.

6.4.4 Portable Ladders and Stepladders

~~lighting such as head torches, lanterns, hand held torches or the like is provided for workers where considered necessary by the HSO.~~

(d) Ensure that walkways have sufficient dimensions and load-bearing capability for the intended purpose.

(e) Ensure that there are no obstacles in walkways and that surfaces are level and safe, maintain all in a clean and orderly condition to avoid any falls, slips and injury.

(f) ~~Ensure that temporary bridge type walkways shall have sufficient dimensions and load capability for the intended purpose.~~

(g) Ensure that ~~ramps~~ walkways do not exceed a gradient of 30 degrees ~~and that they are provided with handrails~~. Steeper gradients shall be provided with steps or staircases or ladders where appropriate.

(h) Ensure that ramps, steps and staircases have slip resistant surfaces and that they are provided with handrails and toe boards in accordance with JSSS 2.5.5 [*Handrails*] and JSSS 2.5.6 [*Toeboards*].

6.4.2 Emergency Exits and ~~Evacuation~~ Safe Escape Routes

The Contractor shall provide clear and illuminated signage so that all persons are made aware of the locations of emergency exits and safe escape routes ~~of the locations and routes of emergency walkways, steps, ladders and the like for evacuation~~ and maintain all such locations and routes in a clean, safe and readily available condition.

6.4.3 Vertical Access

The Contractor shall provide steps, stairs and ramps as means of providing safe access or egress from excavations or different working levels.

Steps, ~~and~~ stairs and ramps shall be constructed ~~from~~ as follows:

(1) In ~~S~~ scaffolding in accordance with JSSS エラー! 参照元が見つかりません。 [*Scaffolding*], provided with handrails and non-slip treads.

(2) ~~Portable ladders in accordance with JSSS エラー! 参照元が見つかりません。 [*Portable Ladders and Stepladders*].~~

(3) From purpose-made-timber or metal ramps with plywood boarding and structural timber framing.

To MD, please review the sentences modified as they cannot be read smoothly.

6.4.4 Portable Ladders and Stepladders

(1) Portable ladders shall:

(a) Be of sound structure, clean and not contaminated by any slippery material;

(b) Be without visible signs of defect, damage, corrosion, and shall otherwise in safe condition;

(c) Be at least 30 cm wide;

(d) Have steps with an interval of 25cm to 35cm and evenly spaced; and

(e) Have slip-proof steps or have other measures to prevent slipping.

(2) Stepladders shall

(a) Be of sound structure, clean and not contaminated by any slippery material;

(b) Be without visible signs of defect, damage, corrosion, and shall otherwise in safe condition;

(c) Have an angle between the front rail and the floor not exceeding 75 degrees and for folding stepladders they shall be equipped with a lock (such as a spreader with lock) to secure the angle made by the front rail and the floor;

(d) Steps shall be non-slip and of sufficient size to ensure safe operation; and.

(e) Rails shall have non-slip feet or shoes.

(3) Use of ladders and stepladders

(Unless otherwise stated, the following requirements apply to both ladders and stepladders)

(a) Users shall read and follow all labels/markings on ladders, be aware of and never exceed the maximum load rating of a ladder and of the weight it is supporting, including the weight of any tools or equipment;

(b) Users shall avoid electrical hazards, always look for overhead power lines before handling ladders. Avoid using metal ladders near power lines or exposed energised electrical equipment;

(c) Ladders shall be inspected prior to use. If a ladder is damaged, it shall be removed from service and suitably tagged until repaired or discarded;

(d) Ladders shall only be placed on a stable, firm and sufficiently strong base giving level and safe support and so that the rungs or steps remain horizontal, as well as any loading placed on it;

(e) Ladders shall maintain an angle between foot and floor of L (horizontal length): H (height) = 1: 4 (75.5 degrees);

(f) Ladders shall have the top projecting at least 1 m over the landing floor;

(g) Ladders shall not be placed on boxes, or other unstable bases to obtain additional height and connected ladders to give greater height or reach shall not be allowed;

(h) Suspended ladders shall be anchored in a secure manner so that they cannot be displaced or swing;

The Contractor shall comply with the following requirements regarding the use of portable ladders and stepladders:

(1) Portable ladders shall:

(a) Be of sound structure, clean and not contaminated by any slippery material;

(b) Be without visible signs of defect, damage, corrosion, and shall otherwise in safe condition;

(c) Be at least 30 cm wide;

(d) Have steps with an interval of 25cm to 35cm and evenly spaced; and

(e) Have slip-proof steps or have other measures to prevent slipping.

(2) Stepladders shall

(a) Be of sound structure, clean and not contaminated by any slippery material;

(b) Be without visible signs of defect, damage, corrosion, and shall otherwise in safe condition;

(c) Have an angle between the front rail and the floor not exceeding 75 degrees and for folding stepladders they shall be equipped with a lock (such as a spreader with lock) to secure the angle made by the front rail and the floor;

(d) Steps shall be non-slip and of sufficient size to ensure safe operation; and.

(e) Rails shall have non-slip feet or shoes.

(3) Use of ladders and stepladders

~~(~~Unless otherwise required in the Contract~~stated~~, the ~~following~~ Contractor shall ensure with respect to use of ~~requirements apply to~~ both ladders and stepladders that:. ~~)~~

(a) Users shall read and follow all labels/markings on ladders or stepladders, be aware of and never exceed the maximum load rating of a ladder and of the weight it is supporting, including the weight of any tools or equipment;

(b) Users shall avoid electrical hazards, always look for overhead power lines before handling ladders. Avoid using metal ladders or stepladders near power lines or exposed energised electrical equipment;

(c) Ladders or stepladders shall be inspected prior to use. If a ladder or stepladder is damaged, it shall be removed from service and suitably tagged until repaired or discarded;

(d) Ladders or stepladders shall only be placed on a stable, firm and sufficiently strong base giving level and safe support and so that the rungs or steps remain horizontal, as well as any loading placed on it;

(e) Ladders shall maintain an angle between foot and floor of L (horizontal length): H (height) = 1: 4 (75.5 degrees); (JC37)

JC37: (e) to (k) only relate to ladders. Create a new (4) as “Additional Requirements for Use of Ladders”
はしごにのみ関係がある事項なので、新しく項目建てして分離してください。

The Contractor shall comply with the following requirements regarding the use of portable ladders and stepladders:

(1) Portable ladders shall:

(a) Be of sound structure, clean and not contaminated by any slippery material;

(b) Be without visible signs of defect, damage, corrosion, and shall otherwise in safe condition;

(c) Be at least 30 cm wide;

(d) Have steps with an interval of 25cm to 35cm and evenly spaced; and

(e) Have slip-proof steps or have other measures to prevent slipping.

(2) Stepladders shall

(a) Be of sound structure, clean and not contaminated by any slippery material;

(b) Be without visible signs of defect, damage, corrosion, and shall otherwise in safe condition;

(c) Have an angle between the front rail and the floor not exceeding 75 degrees and for folding stepladders they shall be equipped with a lock (such as a spreader with lock) to secure the angle made by the front rail and the floor;

(d) Steps shall be non-slip and of sufficient size to ensure safe operation; and.

(e) Rails shall have non-slip feet or shoes.

(3) Use of ladders and stepladders

Unless otherwise ~~stated~~ required in the Contract, the ~~following requirements apply to~~ Contractor shall ensure with respect to use of both ladders and stepladders that: ~~)~~

(a) Users shall read and follow all labels/markings on ladders or stepladders, be aware of and never exceed the maximum load rating of a ladder and of the weight it is supporting, including the weight of any tools or equipment;

(b) Users shall avoid electrical hazards, always look for overhead power lines before handling ladders or stepladders. Avoid using metal ladders or stepladders near power lines or exposed energised electrical equipment;

(c) Ladders or stepladders shall be inspected prior to use. If a ladder or stepladder is damaged, it shall be removed from service and suitably tagged until repaired or discarded;

(d) Ladders or stepladders shall only be placed on a stable, firm and sufficiently strong base giving level and safe support and so that the rungs or steps remain horizontal, as well as any loading placed on it;

(4) Additional Requirements for Use of ladders

The Contractor shall ensure with respect to use of ladders:

(a) Ladders shall maintain an angle between foot and floor of L (horizontal length): H (height) = 1: 4 (75.5 degrees);

(i) Ladders shall be secured before any use and prevented from slipping during use by:

(iv) Securing the side rails at or near the top and the bottom;

(v) Providing an effective anti-slip shoe or foot; and

(vi) Having another worker support the lower part of the ladder.

(j) No extendable ladder shall be used where its sections cannot be locked and which could therefore move while in use;

(k) Where a ladder or a series of ladders rise for a vertical height of 9 m or more above the base level, safe landing areas or rest platforms shall be provided at suitable intervals wherever possible;

(l) Every ladder shall be used in such a way that:

(vii) A secure handhold and secure support are always available to the user; and

(viii) The user can maintain a safe handhold when carrying a load unless, in the case of a step ladder, the maintenance of a handhold is not practicable when a load is carried, and a risk assessment has demonstrated that the use of a stepladder is justified because of the low risk and the short duration of use.

(4) Additional Requirements for Use of Stepladders

(m) Stepladders shall not be used for work at heights of 2m or more. The Contractor shall adopt other measures for work in excess of 2m such as or providing Scaffolding in accordance with JSSS エラー! 参照元が見つかりません。 [*Scaffolding*];

(n) Step ladders shall not be used as a single ladder or in a partially closed position;

NK: Separated to (4)

(f) Ladders shall have the top projecting at least 1 m over the landing floor;

(g) Ladders shall not be placed on boxes, or other unstable bases to obtain additional height and connected ladders to give greater height or reach shall not be allowed;

(h) Suspended ladders shall be anchored in a secure manner so that they cannot be displaced or swing;

(i) Ladders shall be secured before any use and prevented from slipping during use by:

(i) Securing the side rails at or near the top and the bottom;

(ii) Providing an effective anti-slip shoe or foot; and

(iii) Having another worker support the lower part of the ladder.

(j) No extendable ladder shall be used where its sections cannot be locked and which could therefore move while in use;

(k) Where a ladder or a series of ladders rise for a vertical height of 9 m or more above the base level, safe landing areas or rest platforms shall be provided at suitable intervals wherever possible;

(l) Every ladder shall be used in such a way that:

(i) ~~A secure handhold and secure support are always available to the user; and~~ (JC38)

JC38: Ladder に handhold はないと思います。 We think there is no handhold in ladders.
NK: Deleted as commented.

~~(iii)~~(ii) The user can maintain a safe handhold when carrying a load unless, in the case of a step ladder, the maintenance of a handhold is not practicable when a load is carried, and a risk assessment has demonstrated that the use of a stepladder is justified because of the low risk and the short duration of use. (JC39)

JC39: Stepladder のところに移動させてください。 Please move (ii) to (5) Stepladders.
NK: moved as commented.

To MD, the stipulation (ii) is a little different from following requirements given in Stepladders (pp 4/7) in HSE Brief Guide NDG455 Safe use of ladders and stepladders. Can you review the (ii) above and specify it in (5) (i).
When deciding if it is safe to carry out a particular task on a stepladder where you cannot maintain a handhold (eg to put a box on a shelf, hang wallpaper, install a smoke detector on a ceiling), this needs to be justified, taking into account:
the height of the task;
whether a handhold is still available to steady yourself before and after the task;

(4) Additional Requirements for Use of Stepladders

(a) Stepladders shall not be used for work at heights of 2m or more. The Contractor shall adopt other measures for work in excess of 2m such as or providing Scaffolding in accordance with JSSS エラー! 参照元が見つかりません。 [*Scaffolding*];

(b) Ladders shall have the top projecting at least 1 m over the landing floor;

(c) Ladders shall not be placed on boxes, or other unstable bases to obtain additional height and connected ladders to give greater height or reach shall not be allowed;

(d) Suspended ladders shall be anchored in a secure manner so that they cannot be displaced or swing;

(e) Ladders shall be secured before any use and prevented from slipping during use by:

(i) Securing the side rails at or near the top and the bottom;

(ii) Providing an effective anti-slip shoe or foot; and

(iii) Having another worker support the lower part of the ladder.

(f) No extendable ladder shall be used where its sections cannot be locked and which could therefore move while in use;

(g) Where a ladder or a series of ladders rise for a vertical height of 9 m or more above the base level, safe landing areas or rest platforms shall be provided at suitable intervals wherever possible;

(h) ~~Every ladder shall be used in such a way that:~~

(i) ~~A secure handhold and secure support are always available to the user; and~~

(ii) ~~The user can maintain a safe handhold when carrying a load unless, in the case of a step ladder, the maintenance of a handhold is not practicable when a load is carried, and a risk assessment has demonstrated that the use of a stepladder is justified because of the low risk and the short duration of use.~~

(5) Additional Requirements for Use of Stepladders

The Contractor shall ensure with respect to use of stepladders:

(a) Stepladders shall not be used for work at heights of 2m or more. The Contractor shall adopt other measures for work in excess of 2m such as or providing Scaffolding in accordance with JSSS エ

(o) Treads of stepladders shall have the correct sized area and slip resistant finish for safe working. (p) Restraint Clasps shall be securely locked before any use; (q) Stepladders shall not be placed on unstable or uneven surfaces; (r) Stepladders shall not be positioned in front of doors; (s) The top rung of a ladder or step of a step ladder shall not be used as a rung/step unless designed for that purpose; and (t) For use of Stepladders as a support for trestle Scaffolds refer to JSSS エラー! 参照元が見つかりません。 [*Scaffolding*]. **6.4.6** Inspection In accordance with JSSS 1.13 [*HSO - Scope of Duties and Authority*] the HSO shall regularly inspect all walkways, ladders and step ladders, ensure that same are safe and fit for the intended purpose and visibly certify each as "Safe for Use" or otherwise.	(b) Step ladders shall not be used as a single ladder or in a partially closed position; (c) Treads of stepladders shall have the correct sized area and slip resistant finish for safe working. (d) Restraint Clasps shall be securely locked before any use; (e) Stepladders shall not be placed on unstable or uneven surfaces; (f) Stepladders shall not be positioned in front of doors; (g) The top rung of a ladder or step of a step ladder shall not be used as a rung/step unless designed for that purpose; and (h) For use of Stepladders as a support for trestle Scaffolds refer to JSSS エラー! 参照元が見つかりません。 [*Scaffolding*]. **6.4.5 Inspection** In accordance with JSSS 1.13 [*HSO - Scope of Duties and Authority*] the HSO shall regularly inspect all walkways, ladders and step ladders, ensure that same are safe and fit for the intended purpose and visibly certify each as "Safe for Use" or otherwise.	ラー! 参照元が見つかりません。 [*Scaffolding*]; (b) Step ladders shall not be used as a single ladder or in a partially closed position; (c) Treads of stepladders shall have the correct sized area and slip resistant finish for safe working. (d) Restraint Clasps shall be securely locked before any use; (e) Stepladders shall not be placed on unstable or uneven surfaces; (f) Stepladders shall not be positioned in front of doors; (g) The top rung of a ladder or step of a step ladder shall not be used as a rung/step unless designed for that purpose; and (h) For use of Stepladders as a support for trestle Scaffolds refer to JSSS エラー! 参照元が見つかりません。 [*Scaffolding*]. (i) The user can maintain a safe handhold when carrying a load unless the maintenance of a handhold is not practicable when a load is carried, and a risk assessment has demonstrated that the use of a stepladder is justified because of the low risk and the short duration of use To MD, the stipulation (ii) is a little different from following requirements given in Stepladders (pp 4/7) in HSE Brief Guide NDG455 Safe use of ladders and stepladders. Can you review the (ii) above and specify it in (5) (i). **6.4.5** Inspection In accordance with JSSS 1.13 [*HSO - Scope of Duties and Authority*] the HSO shall regularly inspect all walkways, ladders and step ladders, ensure that same are safe and fit for the intended purpose and visibly certify each as "Safe for Use" or otherwise.
6.5 SCAFFOLDING **6.5.1 General** (1) This Section contains requirements for various types of Scaffolding including supported scaffolds (for example tube and coupler scaffolds and fabricated frame scaffolds), mobile scaffolds, suspended scaffolds trestle scaffolds and mobile elevating work platforms. (2) Not all types of Scaffolding are separately described in this Section and the requirements of this Section are therefore of general application. Requirements for any one type of Scaffolding shall also apply generally to all types and configurations unless otherwise stated or apparent from the wording and context. (3) All Scaffolding shall be designed, erected, tested, inspected, used, dismantled and removed by Contractor's Personnel that have been trained and certified for such operations in accordance with JSSS 1.18 [*Proper Placement of Contractor's Personnel*]. (4) All Scaffolding shall be carried out in compliance with the manufacturer's written instructions or the design of the Contractor. (5) The design, management, provision, safe use and safe removal of Scaffolding shall comply with the requirements of JSSS 6.1.1 [Design and Provision of Temporary Works Generally].	**6.5 SCAFFOLDING** **6.5.1 General** (1) This Section contains requirements for various types of Scaffolding including supported scaffolds (for example tube and coupler scaffolds and fabricated frame scaffolds), mobile scaffolds, suspended scaffolds trestle scaffolds and mobile elevating work platforms. (2) Not all types of Scaffolding are separately described in this Section and the requirements of this Section are therefore of general application. Requirements for any one type of Scaffolding shall also apply generally to all types and configurations unless otherwise stated or apparent from the wording and context. (3) All Scaffolding shall be designed, erected, tested, inspected, used, dismantled and removed by Contractor's Personnel that have been trained and certified for such operations in accordance with JSSS 1.18 [*Proper Placement of Contractor's Personnel*]. (4) All Scaffolding shall be carried out in compliance with the manufacturer's written instructions or the design of the Contractor. (5) The design, management, provision, safe use and safe removal of Scaffolding shall comply with the requirements of JSSS 6.1.1 [Design and Provision of Temporary Works Generally].	**6.5 SCAFFOLDING** **6.5.1 General** (1) This Section contains requirements for various types of Scaffolding including supported scaffolds (for example tube and coupler scaffolds and fabricated frame scaffolds), mobile scaffolds, suspended scaffolds trestle scaffolds and mobile elevating work platforms. (2) Not all types of Scaffolding are separately described in this Section and the requirements of this Section are therefore of general application. Requirements for any one type of Scaffolding shall also apply generally to all types and configurations unless otherwise stated or apparent from the wording and context. (3) All Scaffolding shall be designed, erected, tested, inspected, used, dismantled and removed by Contractor's Personnel that have been trained and certified for such operations in accordance with JSSS 1.18 [*Proper Placement of Contractor's Personnel*]. (4) All Scaffolding shall be carried out in compliance with the manufacturer's written instructions or the design of the Contractor. (5) The design, management, provision, safe use and safe removal of Scaffolding shall comply with the requirements of JSSS 6.1.1 [Design and Provision of Temporary Works Generally].

(6) Unless specified elsewhere in JSSS or in any of the compliance standards, all Scaffolding and Scaffold components shall be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load applied or transmitted to it.

(7) Scaffolds and Scaffold components shall not be loaded in excess of their maximum intended loads or rated capacities, whichever is less.

(8) Scaffolding shall not be used for any purpose other than the intended original purpose and for example shall never be used for hoisting loads. The Contractor shall provide other specific types of Contractor's Equipment (such as material hoists) for that purpose.

(9) Scaffolding shall be removed immediately upon completion of the work for which it is provided.

6.5.2 Compliance Standards

(1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], any items in this Section or relevant to the subject of this Section and which are not fully covered by JSSS, the Contractor shall comply with the technical requirements of any one of the following standards:

(a) OSHA PART 1926-Safety and Health Regulations for Construction, Subpart L-Scaffolds;

(b) ANSI/ASSP A10.8 – 2019 Scaffolding Safety Requirements equipment - Part 1: Scaffolds - Performance requirements and general design, USA; and

(c) BS EN12811-1:2003 Temporary works equipment - Part 1: Scaffolds - Performance requirements and general design, UK.

6.5.3 Notices to be Displayed on Scaffolds

(1) Following inspections by HSO, suitable signage shall be applied to Scaffolds clearly indicating for example:

(d) "Scaffold Complete and Safe For Use";

(e) "Scaffold Not Complete - Do Not Use"; and

(f) "Scaffold Not Safe For Use".

(2) When any Scaffold is to be used for loading of Goods, the Contractor shall display a notice indicating the maximum load capacity of each Scaffold.

(3) Scaffolds shall also be tagged with the names of the erector and the person responsible for inspection and maintenance of the Scaffold.

(4) All notices shall be clearly visible and in easy-to-see locations.

(6) Unless specified elsewhere in JSSS or in any of the compliance standards, all Scaffolding and Scaffold components shall be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load applied or transmitted to it.

(7) Scaffolds and Scaffold components shall not be loaded in excess of their maximum intended loads or rated capacities, whichever is less.

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(2) When any Scaffold is to be used for loading of Goods, the Contractor shall display a notice indicating the maximum load capacity of each Scaffold.

(3) Scaffolds shall also be ~~tagged~~posted (JC40)with the names of the erector and the person responsible for inspection and maintenance of the Scaffold.

JC40: 他の箇所でも post を使っているようですので統一してください。
Please use "post" to make consistent use as " post" is used in other places.
NK: Dictionary shows "tag" means to put a tag on something, and "post" means "to stick or pin a notice on wall" tag is used post.
To MD, please review JC40.

(4) All notices shall be clearly visible and in easy-to-see locations.

NK: moved from 6.5.9 and 6.5.10 after 6.5.3 following the comments JC47 and JC49.

(6) Unless specified elsewhere in JSSS or in any of the compliance standards, all Scaffolding and Scaffold components shall be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load applied or transmitted to it.

(7) Scaffolds and Scaffold components shall not be loaded in excess of their maximum intended loads or rated capacities, whichever is less.

(8) Scaffolding shall not be used for any purpose other than the intended original purpose and for example shall never be used for hoisting loads. The Contractor shall provide other specific types of Contractor's Equipment (such as material hoists) for that purpose.

(9) Scaffolding shall be removed immediately upon completion of the work for which it is provided.

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(a) OSHA PART 1926-Safety and Health Regulations for Construction, Subpart L-Scaffolds;

(b) ANSI/ASSP A10.8 – 2019 Scaffolding Safety Requirements equipment - Part 1: Scaffolds - Performance requirements and general design, USA; and

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(a) "Scaffold Complete and Safe For Use";

(b) "Scaffold Not Complete - Do Not Use"; and

(c) "Scaffold Not Safe For Use".

(2) When any Scaffold is to be used for loading of Goods, the Contractor shall display a notice indicating the maximum load capacity of each Scaffold.

(3) Scaffolds shall also be ~~tagged with~~ posted the names of the erector and the person responsible for inspection and maintenance of the Scaffold.

To MD, please review JC40.

(4) All notices shall be clearly visible and in easy-to-see locations.

6.5.4 Scaffolding Assembly, Erection, Alteration and Dismantling Generally

The Contractor shall take the following measures when assembling or erecting, ~~assembling~~, altering or dismantling operation on all types of Scaffolding:

(1) Scaffolding shall be assembled or erected, altered and dismantled only by competent personnel and the work should always be carried out under the direction of a competent Superintendent.

(2) Working areas where Scaffolding is being assembled or erected, altered and dismantled shall be designated as Dangerous Areas, and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any non - authorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(3) During erection of Scaffolding 2m high and above, boarded areas shall be provided for safe temporary storage of Scaffolding tubes, couplings, fittings or components and other materials and equipment.

(4) All workers engaged in the assembly or erection, alteration and dismantling of any Scaffolding shall be provide with PFAS and ensure that such workers use this.

(5) Scaffold boards shall each be securely fixed at a sufficient number of points to provide constant support with no movement or dislocation and no gaps that may create a dropping hazard.

(6) When moving Scaffold boards, ensure that they are securely supported in at least three (3) locations, the length of any projection from supports shall be at least 10cm and not exceeding one-eighteenth of the length of the Scaffold boards.

(7) When stacking the timber sole plate or runners ensure that they are stacked in the longitudinal direction, over supports and with 20 cm overlaps.

6.5.5 ~~General~~ Inspection and Maintenance of Scaffolding

Further to the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the Contractor shall comply with the following:

(1) Every Scaffold from which a person could fall 2m or more shall be thoroughly examined by the HSO (or his delegated assistant):

(a) Before it is brought into use;

(b) After any substantial alteration or extension;

(c) At least once in every 7 days; and

(d) Whenever it has been exposed to adverse climatic conditions, earthquake or other factors which may have affected its safety.

(2) A written record of the examination and regular inspections with details of any repair measures shall be prepared and kept by the HSO.

(3) The examinations and regular inspections shall include:

(a) Check that the Scaffold is provided and used in accordance with the Method Statement, Safety Plan and its design;

(b) Condition of working platforms and of any damage to fixings;

6.5.4 Scaffold Platforms

Scaffold platforms shall comply with the following:

(1) Each platform on all working levels of Scaffolding shall be fully planked or decked between the front uprights and the handrail supports as follows:

(a) Platforms shall be of adequate size and strength and with true dimension and no twist or bending, no splits, holes or damage;

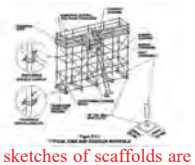
(b) Each platform unit shall be installed so that the space between adjacent units and the space between the platform and the uprights is no more than 2.5 cm wide, except where the Contractor can demonstrate that a wider space is necessary;

(c) Where the Contractor makes the demonstration provided for in paragraph (b) above, the platform shall be planked or decked as fully as possible and the remaining open space between the platform and the uprights shall not exceed 24 cm; and

(d) The requirement to provide full planking or decking does not apply to platforms used solely as walkways or solely by the workers performing Scaffold erection or dismantling. In these situations, only the planking that the Contractor establishes is necessary to provide safe working conditions is required.

6.5.4 Scaffold Platforms (JC41)

JC41: このあたりはスケッチを入れないとやっぱり理解できません。本スペック作成後の課題としたいと思います。
Provisions here cannot be understood without showing sketches of platforms. We propose to consider the sketches after preparation of JSSS.



NK: The provisions in 6.5 are based on OSHA Subpart L. The sketches of scaffolds are shown in OSHA. Users of JSSS can refer to sketches in OSHA. Therefore, may not be necessary to include in JSSS.

Scaffold platforms shall comply with the following:

(1) Each platform on all working levels of Scaffolding shall be fully planked or decked between the front uprights and the handrail supports as follows:

(a) Platforms shall be of adequate size and strength and with true dimension and no twist or bending, no splits, holes or damage;

(b) Each platform unit shall be installed so that the space between adjacent units and the space between the platform and the uprights is no more than 2.5 cm wide, except where the Contractor can demonstrate that a wider space is necessary;

(c) Where the Contractor makes the demonstration provided for in paragraph (b) above, the platform shall be planked or decked as fully as possible and the remaining open space between the platform and the uprights shall not exceed 24 cm; and

(d) The requirement to provide full planking or decking does not apply to platforms used solely as walkways or solely by the workers performing Scaffold erection or dismantling. In these situations, only the planking that the Contractor establishes is necessary to provide safe working conditions is required.

(2) Except as may be provided separately for individual types of Scaffold, Scaffold platforms and walkways shall be at least 45 cm wide.

(c) Condition and any loosening at the fastening, connecting and mounting, portions of standards, ledgers, brackets, and the like;

(d) Condition and any damage and corrosion of couplings, fittings, clamps and accessories;

(e) Conditions and any damage of ~~F~~ fall prevention facilities ~~are intact and secure~~;

(f) Condition of mountings and presence of toe boards;

(g) Condition of bases, screw jacks, castors, brakes, sole plates and the like and ensure there is no movement or settlement;

(h) Condition of mountings and presence of diagonal bracings, stays, anchors, ties and other bracing, support or reinforcement materials; and

(i) Condition of mountings and presence of posts, standards, ledgers and transoms.

(4) The Contractor shall carry out all necessary remedial and repair work necessary to rectify any deterioration, defect or damage and shall if necessary stop the use of the Scaffolding until such work has been properly completed, re-inspected and re-certified as “Safe for Use” by the HSO.

6.5.6 Scaffold Platforms

Scaffold platforms shall comply with the following:

(1) Each platform on all working levels of Scaffolding shall be fully planked or decked between the front uprights and the handrail supports as follows:

(a) Platforms shall be of adequate size and strength and with true dimension and no twist or bending, no splits, holes or damage;

(b) Each platform unit shall be installed so that the space between adjacent units and the space between the platform and the uprights is no more than 2.5 cm wide, except where the Contractor can demonstrate that a wider space is necessary;

(c) Where the Contractor makes the demonstration provided for in paragraph (b) above, the platform shall be planked or decked as fully as possible and the remaining open space between the platform and the uprights shall not exceed 24 cm; and

(d) The requirement to provide full planking or decking does not apply to platforms used solely as walkways or solely by the workers performing Scaffold erection or dismantling. In these situations, only the planking that the Contractor establishes is necessary to provide safe working conditions is required.

(2) Except as may be provided separately for individual types of Scaffold, Scaffold platforms and walkways shall be at least 45 cm wide.

Where scaffolds must be used in areas that the Contractor can demonstrate are so narrow that platforms and walkways cannot be at least 45 cm wide, such platforms and walkways shall be as wide as feasible, and the workers on those platforms and walkways shall be protected from fall hazards by the use of handrails and/or personal fall arrest systems.

(3) Except as provided separately for individual types of Scaffold, the front edge of all platforms shall not be more than 36 cm from the face of the work, unless handrails are erected along the front edge and/or personal fall arrest systems are used to protect the workers from falling.

(4) Further requirements to those specified above, shall comply with the provisions of OSHA Subpart L-Scaffolds, 1926.451 General requirements, (b) Scaffold platform construction.

6.5.5 Supported Scaffolds

(1) General

(a) Scaffolds with a height to base width (including outrigger supports, if used) ratio of more than four to one (4:1) shall be restrained from tipping by guying, tying, bracing, or equivalent means;

(b) Poles, legs, posts, frames, and uprights shall bear on base plates and mud sills or other adequate firm foundation;

(c) Footings shall be level, sound, rigid, and capable of supporting the loaded Scaffolding without settling or displacement;

(d) Poles, legs, posts, frames, and uprights shall be plumb and braced to prevent swaying and displacement;

(e) When moving platforms to the next level, the existing platform shall be left undisturbed until the new bearers or end frames have been set in place and braced prior to receiving the new platforms; and

(f) Further requirements to those specified above, shall comply with the provisions of OSHA Subpart L-Scaffolds, 1926.451 General requirements, (c) Criteria for supported Scaffolds.

(2) Tube and Coupler Scaffolds

(a) Transverse bracing forming an “X” across the width of the Scaffold shall be installed at the Scaffold ends and at least at every third set of posts horizontally (measured from only one end) and every fourth runner vertically;

(b) On straight run Scaffolds, longitudinal bracing across the inner and outer rows of posts shall be installed diagonally in both directions, and shall extend from the base of the end posts upward to the top of the Scaffold at approximately a 45 degree angle;

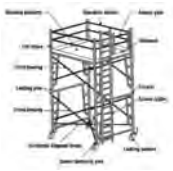
Where scaffolds must be used in areas that the Contractor can demonstrate are so narrow that platforms and walkways cannot be at least 45 cm wide, such platforms and walkways shall be as wide as feasible, and the workers on those platforms and walkways shall be protected from fall hazards by the use of handrails and/or personal fall arrest systems.

(3) Except as provided separately for individual types of Scaffold, the front edge of all platforms shall not be more than 36 cm from the face of the work, unless handrails are erected along the front edge and/or personal fall arrest systems are used to protect the workers from falling.

(4) Further requirements to those specified above, shall comply with the provisions of OSHA Subpart L-Scaffolds, 1926.451 General requirements, (b) Scaffold platform construction.

6.5.5 Supported Scaffolds (JC42)

JC42: スケッチがないと？ Same as JC41.



(1) General

(a) Scaffolds with a height to base width (including outrigger supports, if used) ratio of more than four to one (4:1) shall be restrained from tipping by guying, tying, bracing, or equivalent means;

(b) Poles, legs, posts, frames, and uprights shall bear on base plates and mud sills or other adequate firm foundation;

(c) Footings shall be level, sound, rigid, and capable of supporting the loaded Scaffolding without settling or displacement;

(d) Poles, legs, posts, frames, and uprights shall be plumb and braced to prevent swaying and displacement;

(e) When moving platforms to the next level, the existing platform shall be left undisturbed until the new bearers or end frames have been set in place and braced prior to receiving the new platforms; and

(f) Further requirements to those specified above, shall comply with the provisions of OSHA Subpart L-Scaffolds, 1926.451 General requirements, (c) Criteria for supported Scaffolds.

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(a) Transverse bracing forming an “X” across the width of the Scaffold shall be installed at the Scaffold ends and at least at every third set of posts horizontally (measured from only one end) and every fourth runner vertically;

(b) On straight run Scaffolds, longitudinal bracing across the inner and outer rows of posts shall be installed diagonally in both directions, and shall extend from the base of the end posts upward to the top of the Scaffold at approximately a 45 degree angle;

(c) Where conditions preclude the attachment of bracing to posts,

(2) Except as may be provided separately for individual types of Scaffold, Scaffold platforms and walkways shall be at least 45 cm wide.

Where scaffolds must be used in areas that the Contractor can demonstrate are so narrow that platforms and walkways cannot be at least 45 cm wide, such platforms and walkways shall be as wide as feasible, and the workers on those platforms and walkways shall be protected from fall hazards by the use of handrails and/or personal fall arrest systems.

(3) Except as provided separately for individual types of Scaffold, the front edge of all platforms shall not be more than 36 cm from the face of the work, unless handrails are erected along the front edge and/or personal fall arrest systems are used to protect the workers from falling.

(4) Further requirements to those specified above, shall comply with the provisions of OSHA Subpart L-Scaffolds, 1926.451 General requirements, (b) Scaffold platform construction.

6.5.7 Supported Scaffolds

(1) General

(a) Scaffolds with a height to base width (including outrigger supports, if used) ratio of more than four to one (4:1) shall be restrained from tipping by guying, tying, bracing, or equivalent means;

(b) Poles, legs, posts, frames, and uprights shall bear on base plates and mud sills or other adequate firm foundation;

(c) Footings shall be level, sound, rigid, and capable of supporting the loaded Scaffolding without settling or displacement;

(d) Poles, legs, posts, frames, and uprights shall be plumb and braced to prevent swaying and displacement;

(e) When moving platforms to the next level, the existing platform shall be left undisturbed until the new bearers or end frames have been set in place and braced prior to receiving the new platforms; and

(f) Further requirements to those specified above, shall comply with the provisions of OSHA Subpart L-Scaffolds, 1926.451 General requirements, (c) Criteria for supported Scaffolds.

(2) Tube and Coupler Scaffolds

(a) Transverse bracing forming an “X” across the width of the Scaffold shall be installed at the Scaffold ends and at least at every third set of posts horizontally (measured from only one end) and every fourth runner vertically;

(b) On straight run Scaffolds, longitudinal bracing across the inner and outer rows of posts shall be installed diagonally in both

(c) Where conditions preclude the attachment of bracing to posts, bracing shall be attached to the runners as close to the post as possible;

(d) Bearers shall be installed transversely between posts, and when coupled to the posts, shall have the inboard coupler bear directly on the runner coupler. When the bearers are coupled to the runners, the couplers shall be as close to the posts as possible;

(e) Runners shall be installed along the length of the Scaffold, located on both the inside and outside posts at level;

(f) Couplers shall be of a structural metal, such as drop-forged steel, malleable iron, or structural grade aluminium, the use of grey cast iron is prohibited; and

(g) Further requirements to those specified above, shall comply with the provisions of OSHA Subpart L-Scaffolds, 1926.452 Additional requirements applicable to specific types of Scaffolds, (b) Tube and coupler Scaffolds.

(3) Fabricated Frame Scaffolds

(a) Frames and panels shall be braced by cross, horizontal, or diagonal braces, or combination thereof, which secure vertical members together laterally. The cross braces shall be of such length as will automatically square and align vertical members so that the erected Scaffold is always plumb, level, and square. All brace connections shall be secured;

(b) Frames and panels shall be joined together vertically by coupling or stacking pins or equivalent means;

(c) Where uplift can occur, which would displace Scaffold end frames or panels, the frames or panels shall be locked together vertically by pins or equivalent means;

(d) Brackets used to support cantilevered loads shall:

(iii) Be seated with side-brackets parallel to the frames and end-brackets at 90 degrees to the frames;

(iv) Not be bent or twisted from these positions; and

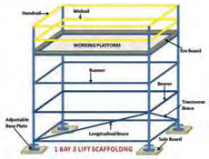
(v) Be used only to support personnel, unless the Scaffold has been designed for other loads.

(e) Further requirements to those specified above, shall comply with the provisions of OSHA Subpart L-Scaffolds, 1926.452 Additional requirements applicable to specific types of Scaffolds, (c) Fabricated frame Scaffolds.

bracing shall be attached to the runners as close to the post as possible;

(d) Bearers shall be installed transversely between posts, and when coupled to the posts, shall have the inboard coupler bear directly on the runner coupler. When the bearers are coupled to the runners, the couplers shall be as close to the posts as possible; (JC43)

JC43: Figure?



(e) Runners shall be installed along the length of the Scaffold, located on both the inside and outside posts at level;

(f) Couplers shall be of a structural metal, such as drop-forged steel, malleable iron, or structural grade aluminium, the use of grey cast iron is prohibited; and

(g) Further requirements to those specified above, shall comply with the provisions of OSHA Subpart L-Scaffolds, 1926.452 Additional requirements applicable to specific types of Scaffolds, (b) Tube and coupler Scaffolds.

(3) Fabricated Frame Scaffolds

(a) Frames and panels shall be braced by cross, horizontal, or diagonal braces, or combination thereof, which secure vertical members together laterally. The cross braces shall be of such length as will automatically square and align vertical members so that the erected Scaffold is always plumb, level, and square. All brace connections shall be secured;

(b) Frames and panels shall be joined together vertically by coupling or stacking pins or equivalent means;

(c) Where uplift can occur, which would displace Scaffold end frames or panels, the frames or panels shall be locked together vertically by pins or equivalent means; (JC44)

JC44: どんな場合でも鉛直に繋いでいるのではないでしょうか。
Are connections of parts of scaffold made vertically in any cases?

NK: Explanation of necessity of this requirement stipulated in OSHA 1926.452(c)(4) is made in the following place:
https://www.4safenv.state.nv.us/sites/default/files/assets/docs/NV%20OSHA%20INTERP/scaffold%20pins.pdf

Uplift may be occurred by mobile equipment, wind, monsoonal events, earthquakes, etc., so it is required to ensure the locking mechanism by lock pins.

Other website below shows the lock pins in photo:
https://slideplayer.com/slide/5842232/19/images/48/Additional+Specific+Requirements.jpg

(c) is left as it is.

(d) Brackets used to support cantilevered loads shall:

(i) Be seated with side-brackets parallel to the frames and end-brackets at 90 degrees to the frames;

directions, and shall extend from the base of the end posts upward to the top of the Scaffold at approximately a 45 degree angle;

(c) Where conditions preclude the attachment of bracing to posts, bracing shall be attached to the runners as close to the post as possible;

(d) Bearers shall be installed transversely between posts, and when coupled to the posts, shall have the inboard coupler bear directly on the runner coupler. When the bearers are coupled to the runners, the couplers shall be as close to the posts as possible;

(e) Runners shall be installed along the length of the Scaffold, located on both the inside and outside posts at level;

(f) Couplers shall be of a structural metal, such as drop-forged steel, malleable iron, or structural grade aluminium, the use of grey cast iron is prohibited; and

(g) Further requirements to those specified above, shall comply with the provisions of OSHA Subpart L-Scaffolds, 1926.452 Additional requirements applicable to specific types of Scaffolds, (b) Tube and coupler Scaffolds.

(3) Fabricated Frame Scaffolds

(a) Frames and panels shall be braced by cross, horizontal, or diagonal braces, or combination thereof, which secure vertical members together laterally. The cross braces shall be of such length as will automatically square and align vertical members so that the erected Scaffold is always plumb, level, and square. All brace connections shall be secured;

(b) Frames and panels shall be joined together vertically by coupling or stacking pins or equivalent means;

(c) Where uplift can occur, which would displace Scaffold end frames or panels, the frames or panels shall be locked together vertically by pins or equivalent means;

6.5.6 Suspended Scaffolds

(1) General

(a) Suspended Scaffolds comprise working platforms suspended from upper levels for example with ropes, cables or chains and all necessary support framing, with or without hoisting equipment; and

(b) Further requirements to those specified above for suspended Scaffolds, shall comply with the provisions of OSHA, Subpart L-Scaffolds, 1926.451 [General requirements] and 1926.452 [Additional requirements applicable to specific types of Scaffolds].

(2) The following safety measures shall apply to interior hung Scaffolds which are suspended from roof structures, ceiling beams or other structural members.–

(a) Capacity: of interior hung Scaffolds:

(i) Each Scaffold and Scaffold component except as provided (ii) below shall be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load applied or transmitted to it; and

(ii) Each suspension rope, including connecting hardware, used on non-adjustable suspension Scaffolds shall be capable of supporting, without failure, at least 6 times the maximum intended load applied or transmitted to that rope.

(b) Construction: of interior hung Scaffolds:

(i) Overhead supporting members (roof structure, ceiling beams, or other structural members) shall be inspected and checked for strength before the Scaffold is erected; and

(ii) Suspension ropes and cables shall be connected to the overhead supporting members by shackles, clips, thimbles, or other means that meet equivalent criteria (e.g. strength, durability).

(c) Inspection:

(i) Scaffolds shall be inspected before every work shift and If any abnormality is found, the work shall be stopped; and

(ii) Wire ropes, chains, hooks and shackles used in the Scaffolds shall be inspected before every work shift in accordance with JSSS 5.4.1 [Hoisting and Rigging Equipment]. If any abnormality is found, they shall be replaced.

(ii) Not be bent or twisted from these positions; and

(iii) Be used only to support personnel, unless the Scaffold has been designed for other loads.

(e) Further requirements to those specified above, shall comply with the provisions of OSHA Subpart L-Scaffolds, 1926.452 Additional requirements applicable to specific types of Scaffolds, (c) Fabricated frame Scaffolds.

6.5.6 Suspended Scaffolds

(1) General

(a) Suspended Scaffolds comprise working platforms suspended from upper levels for example with ropes, cables or chains and all necessary support framing, with or without hoisting equipment; and

(b) Further requirements to those specified above for suspended Scaffolds, shall comply with the provisions of OSHA, Subpart L-Scaffolds, 1926.451 [General requirements] and 1926.452 [Additional requirements applicable to specific types of Scaffolds].

(2) The following safety measures shall apply to interior hung Scaffolds which are suspended from roof structures, ceiling beams or other structural members.–

(a) Capacity: of interior hung Scaffolds:

(i) Each Scaffold and Scaffold component except as provided (ii) below shall be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load applied or transmitted to it; and

(ii) Each suspension rope, including connecting hardware, used on non-adjustable suspension Scaffolds shall be capable of supporting, without failure, at least 6 times the maximum intended load applied or transmitted to that rope.

(b) Construction: of interior hung Scaffolds:

(i) Overhead supporting members (roof structure, ceiling beams, or other structural members) shall be inspected and checked for strength before the Scaffold is erected; and

(ii) Suspension ropes and cables shall be connected to the overhead supporting members by shackles, clips, thimbles, or other means that meet equivalent criteria (e.g. strength, durability).

(c) Inspection:

(i) Scaffolds shall be inspected before every work shift and ~~i~~If any abnormality is found, the work shall be stopped; and

(ii) Wire ropes, chains, hooks and shackles used in the Scaffolds shall be inspected before every work shift in accordance with JSSS 5.4.1 [Hoisting and Rigging Equipment]. If any abnormality is found, they shall be replaced.

(d) Prohibited activity

(d) Brackets used to support cantilevered loads shall:

(iv) Be seated with side-brackets parallel to the frames and end-brackets at 90 degrees to the frames;

(v) Not be bent or twisted from these positions; and

(vi) Be used only to support personnel, unless the Scaffold has been designed for other loads.

(e) Further requirements to those specified above, shall comply with the provisions of OSHA Subpart L-Scaffolds, 1926.452 Additional requirements applicable to specific types of Scaffolds, (c) Fabricated frame Scaffolds.

6.5.8 Suspended Scaffolds

(1) General

(a) Suspended Scaffolds comprise working platforms suspended from upper levels for example with ropes, cables or chains and all necessary support framing, with or without hoisting equipment; and

(b) Further requirements to those specified above for suspended Scaffolds, shall comply with the provisions of OSHA, Subpart L-Scaffolds, 1926.451 [General requirements] and 1926.452 [Additional requirements applicable to specific types of Scaffolds].

(2) The following safety measures shall apply to interior hung Scaffolds which are suspended from roof structures, ceiling beams or other structural members.–

(a) Capacity: of interior hung Scaffolds:

(i) Each Scaffold and Scaffold component except as provided (ii) below shall be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load applied or transmitted to it; and

(ii) Each suspension rope, including connecting hardware, used on non-adjustable suspension Scaffolds shall be capable of supporting, without failure, at least 6 times the maximum intended load applied or transmitted to that rope.

(b) Construction: of interior hung Scaffolds:

(i) Overhead supporting members (roof structure, ceiling beams, or other structural members) shall be inspected and checked for strength before the Scaffold is erected; and

(ii) Suspension ropes and cables shall be connected to the overhead supporting members by shackles, clips, thimbles, or other means that meet equivalent criteria (e.g. strength, durability).

(c) Inspection:

(i) Scaffolds shall be inspected before every work shift and ~~i~~if any abnormality is found, the work shall be stopped; and

(ii) Wire ropes, chains, hooks and shackles used in the Scaffolds shall be inspected before every work shift in accordance with JSSS 5.4.1 [Hoisting and Rigging

(d) Prohibited activity

The use of any ladders or stepladders on suspended Scaffolds shall be prohibited.

6.5.7 Mobile Scaffolds

(1) Mobile Scaffolds shall be braced by cross, horizontal, or diagonal braces, or combination thereof, to prevent racking or collapse of the Scaffold and to secure vertical members together laterally so as to automatically square and align the vertical members. Scaffolds shall be plumb, level, and squared. All brace connections shall be secured.

(2) Scaffold casters and wheels shall be locked with positive wheel and/or wheel and swivel locks, or equivalent means, to prevent movement of the Scaffold while the Scaffold is used in a stationary manner.

(3) Manual force used to move the Scaffold shall be applied as close to the base as practicable, but not more than 1.5 m above the supporting surface.

(4) Power systems used to propel mobile Scaffolds shall be designed for such use. Forklifts, trucks, similar motor vehicles or add-on motors shall not be used to propel Scaffolds unless the Scaffold is designed for such propulsion systems.

(5) Scaffolds shall be stabilised to prevent tipping during movement.

(6) Platforms shall not extend outward beyond the base supports of the Scaffold unless outrigger frames or equivalent devices are used to ensure stability.

(7) Where levelling of the Scaffold is necessary, screw jacks or equivalent means shall be used.

(8) Caster stems and wheel stems shall be pinned or otherwise secured in Scaffold legs or adjustment screws.

(9) Safety measures shall be applied before relocating the Scaffolds:

(a) Check the floor surface in advance to prevent the Scaffold from overturning due to any irregularities or obstructions;

(b) Move the Scaffold only after releasing brakes on all castors;

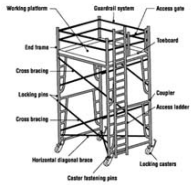
(c) Do not move the Scaffold when any workers or Goods are on the Scaffold;

(d) Ensure that there are no obstructions in the route including any

The use of any ladders or stepladders on suspended Scaffolds shall be prohibited.

6.5.7 Mobile Scaffolds (JC45)

JC45: Sketch?



(1) Mobile Scaffolds shall be braced by cross, horizontal, or diagonal braces, or combination thereof, to prevent racking or collapse of the Scaffold and to secure vertical members together laterally so as to automatically square and align the vertical members. Scaffolds shall be plumb, level, and squared. All brace connections shall be secured.

(2) Scaffold casters and wheels shall be locked with positive wheel and/or wheel and swivel locks, or equivalent means, to prevent movement of the Scaffold while the Scaffold is used in a stationary manner.

(3) Manual force used to move the Scaffold shall be applied as close to the base as practicable, but not more than 1.5 m above the supporting surface.

(4) Power systems used to propel mobile Scaffolds shall be designed for such use. Forklifts, trucks, similar motor vehicles or add-on motors shall not be used to propel Scaffolds unless the Scaffold is designed for such propulsion systems.

(5) Scaffolds shall be stabilised to prevent tipping during movement. (JC46)

JC46: 動かすときに必要な措置は(9)で書かれている印象です。ここに敢えて類似の内容を記載する必要はあるでしょうか。内容が違うようであれば、教えてください。
It seems measures when moving scaffold are specified in (9). Is there a necessity to stipulate in (5) separately from (9)? If contents are different, please explain it.
NK: (5) is deleted as same contents as (9).

(6) Platforms shall not extend outward beyond the base supports of the Scaffold unless outrigger frames or equivalent devices are used to ensure stability.

(7) Where levelling of the Scaffold is necessary, screw jacks or equivalent means shall be used.

(8) Caster stems and wheel stems shall be pinned or otherwise secured in Scaffold legs or adjustment screws.

(9) Safety measures shall be applied before relocating the Scaffolds:

(a) Check the floor surface in advance to prevent the Scaffold from overturning due to any irregularities or obstructions;

(b) Move the Scaffold only after releasing brakes on all castors;

(c) Do not move the Scaffold when any workers or Goods are on the Scaffold;

(d) Ensure that there are no obstructions in the route including any

Equipment]. If any abnormality is found, they shall be replaced.

(d) Prohibited activity

The use of any ladders or stepladders on suspended Scaffolds shall be prohibited.

6.5.9 Mobile Scaffolds

(1) Mobile Scaffolds shall be braced by cross, horizontal, or diagonal braces, or combination thereof, to prevent racking or collapse of the Scaffold and to secure vertical members together laterally so as to automatically square and align the vertical members. Scaffolds shall be plumb, level, and squared. All brace connections shall be secured.

(2) Scaffold casters and wheels shall be locked with positive wheel and/or wheel and swivel locks, or equivalent means, to prevent movement of the Scaffold while the Scaffold is used in a stationary manner.

(3) Manual force used to move the Scaffold shall be applied as close to the base as practicable, but not more than 1.5 m above the supporting surface.

(4) Power systems used to propel mobile Scaffolds shall be designed for such use. Forklifts, trucks, similar motor vehicles or add-on motors shall not be used to propel Scaffolds unless the Scaffold is designed for such propulsion systems.

(5) ~~Scaffolds shall be stabilised to prevent tipping during movement.~~

(6) Platforms shall not extend outward beyond the base supports of the Scaffold unless outrigger frames or equivalent devices are used to ensure stability.

(7) Where levelling of the Scaffold is necessary, screw jacks or equivalent means shall be used.

(8) Caster stems and wheel stems shall be pinned or otherwise secured in Scaffold legs or adjustment screws.

(9) Safety measures shall be applied before relocating the Scaffolds:

(a) Check the floor surface in advance to prevent the Scaffold from overturning due to any irregularities or obstructions;

Scaffold;

(d) Ensure that there are no obstructions in the route including any overhead obstructions; and

(e) Do not allow any persons other than workers engaged in the relocation to enter the moving areas of the Scaffold or in the vicinity.

(10) Prohibited activity

Use of the Scaffolds shall be prohibited for the following:

(a) Use as a support for lifting Goods, debris or waste materials or for dropping same;

(b) Use for the purpose of providing a barrier by covering with sheet material with the risk of collapse due to exposure to wind;

(c) Use for work of grit blasting or water jetting, where the reaction force can destabilise the Scaffold or workers on the Scaffold; and

(d) Use as floor to support mobile ladders, stepladders, trestles.

(11) Further requirements to those specified above shall comply with the provisions of OSHA Subpart L-Scaffolds, 1926.452 Additional requirements applicable to specific types of scaffolds, (w) Mobile scaffolds.

6.5.8 Trestle Scaffolds

(1) Trestle Scaffolds can comprise:

(a) Special proprietary type free-standing trestle platforms; or
(b) Scaffold boards or lightweight staging boards supported on stepladders or other tripod type portable ladders.

(2) For requirements on Stepladders refer to JSSS 6.4.5[*Portable Ladders and Stepladders*].

(3) The following safety measures shall apply:

(a) The distance between the centre lines of the supporting stepladders shall not exceed 1.8m, width of the Scaffold boards shall be at least 45 cm;
(b) Scaffold boards shall not be placed any higher than the second highest rung or step of the ladder supporting the platform;
(c) If timber Scaffold boards are used, the overlap between boards shall be at least 20cm; and
(d) The length of projection of the platform from the end support shall be at least 10cm and not more than one-eighteenth of the length of the boards.

6.5.9 Scaffolding Assembly, Erection, Alteration and Dismantling Generally

The Contractor shall take the following measures when assembling or erecting, assembling, altering or dismantling operation on all types of Scaffolding:

(1) Scaffolding shall be assembled or erected, altered and dismantled only by competent personnel and the work should always be carried out under the direction of a competent Superintendent.

overhead obstructions; and

(e) Do not allow any persons other than workers engaged in the relocation to enter the moving areas of the Scaffold or in the vicinity.

(10) Prohibited activity

Use of the Mobile Scaffolds shall be prohibited for the following:

(a) Use as a support for lifting Goods, debris or waste materials or for dropping same;

(b) Use for the purpose of providing a barrier by covering with sheet material with the risk of collapse due to exposure to wind;

(c) Use for work of grit blasting or water jetting, where the reaction force can destabilise the Scaffold or workers on the Scaffold; and

(d) Use as floor to support mobile ladders, stepladders, trestles.

(11) Further requirements to those specified above shall comply with the provisions of OSHA Subpart L-Scaffolds, 1926.452 Additional requirements applicable to specific types of scaffolds, (w) Mobile scaffolds.

6.5.8 Trestle Scaffolds

(1) Trestle Scaffolds can comprise:

(a) Special proprietary type free-standing trestle platforms; or
(b) Scaffold boards or lightweight staging boards supported on stepladders or other tripod type portable ladders.

(2) For requirements on Stepladders refer to JSSS 6.4.5[*Portable Ladders and Stepladders*].

(3) The following safety measures shall apply:

(e) The distance between the centre lines of the supporting stepladders shall not exceed 1.8m, width of the Scaffold boards shall be at least 45 cm;
(f) Scaffold boards shall not be placed any higher than the second highest rung or step of the ladder supporting the platform;
(g) If timber Scaffold boards are used, the overlap between boards shall be at least 20cm; and
(h) The length of projection of the platform from the end support shall be at least 10cm and not more than one-eighteenth of the length of the boards.

6.5.9 Scaffolding Assembly, Erection, Alteration and Dismantling Generally (JC47)

JC47: 6.5.3 の次に移動させてください。 Please move 6.5.9 after 6.5.3.
NK: moved after 6.5.3 and made it 6.5.4 as commented.

The Contractor shall take the following measures when assembling, ~~or~~ erecting, ~~assembling,~~ altering or dismantling operation on all types of Scaffolding:

(1) Scaffolding shall be assembled or erected, altered and dismantled only by competent personnel and the work should always be carried out under the direction of a competent Superintendent.

(2) Working areas where Scaffolding is being assembled or erected, altered and dismantled shall be designated as Dangerous Areas, and the Contractor shall enclose the working area with temporary

(b) Move the Scaffold only after releasing brakes on all castors;

(c) Do not move the Scaffold when any workers or Goods are on the Scaffold;

(d) Ensure that there are no obstructions in the route including any overhead obstructions; and

(e) Do not allow any persons other than workers engaged in the relocation to enter the moving areas of the Scaffold or in the vicinity.

(10) Prohibited activity

Use of the Mobile Scaffolds shall be prohibited for the following:

(a) Use as a support for lifting Goods, debris or waste materials or for dropping same;

(b) Use for the purpose of providing a barrier by covering with sheet material with the risk of collapse due to exposure to wind;

(c) Use for work of grit blasting or water jetting, where the reaction force can destabilise the Scaffold or workers on the Scaffold; and

(d) Use as floor to support mobile ladders, stepladders, trestles.

(11) Further requirements to those specified above shall comply with the provisions of OSHA Subpart L-Scaffolds, 1926.452 Additional requirements applicable to specific types of scaffolds, (w) Mobile scaffolds.

6.5.10 Trestle Scaffolds

(1) Trestle Scaffolds can comprise:

(c) Special proprietary type free-standing trestle platforms; or
(d) Scaffold boards or lightweight staging boards supported on stepladders or other tripod type portable ladders.

(2) For requirements on Stepladders refer to JSSS 6.4.5[*Portable Ladders and Stepladders*].

(3) The following safety measures shall apply:

(i) The distance between the centre lines of the supporting stepladders shall not exceed 1.8m, width of the Scaffold boards shall be at least 45 cm;
(j) Scaffold boards shall not be placed any higher than the second highest rung or step of the ladder supporting the platform;
(k) If timber Scaffold boards are used, the overlap between boards shall be at least 20cm; and
(l) The length of projection of the platform from the end support shall be at least 10cm and not more than one-eighteenth of the length of the boards.

~~**6.5.9 Scaffolding Assembly, Erection, Alteration and Dismantling Generally**~~

~~The Contractor shall take the following measures when assembling or erecting, assembling, altering or dismantling operation on all types of Scaffolding:~~

(2) Working areas where Scaffolding is being assembled or erected, altered and dismantled shall be designated as Dangerous Areas, and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any non - authorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(3) During erection of Scaffolding 2m high and above, boarded areas shall be provided for safe temporary storage of Scaffolding tubes, couplings, fittings or components and other materials and equipment.

(4) All workers engaged in the assembly or erection, alteration and dismantling of any Scaffolding shall be provide with PFAS and ensure that such workers use this.

(5) Scaffold boards shall each be securely fixed at a sufficient number of points to provide constant support with no movement or dislocation and no gaps that may create a dropping hazard.

(6) When moving Scaffold boards, ensure that they are securely supported in at least three (3) locations, the length of any projection from supports shall be at least 10cm and not exceeding one-eighteenth of the length of the Scaffold boards.

(7) When stacking the timber sole plate or runners ensure that they are stacked in the longitudinal direction, over supports and with 20 cm overlaps.

6.5.10 General Inspection and Maintenance of Scaffolding

Further to the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the Contractor shall comply with the following:

(1) Every Scaffold from which a person could fall 2m or more shall be thoroughly examined by the HSO (or his delegated assistant):

(a) Before it is brought into use;

(b) After any substantial alteration or extension;

(c) At least once in every 7 days; and

(d) Whenever it has been exposed to adverse climatic conditions, earthquake or other factors which may have affected its safety.

(2) A written record of the examination and regular inspections with details of any repair measures shall be prepared and kept by the HSO.

(3) The examinations and regular inspections shall include:

(a) Check that the Scaffold is provided and used in accordance with the Method Statement, Safety Plan and its design;

(b) Condition of working platforms and of any damage to fixings;

(c) Condition and any loosening at the fastening, connecting and mounting, portions of standards, ledgers, brackets, and the like;

(d) Condition and any damage and corrosion of couplings, fittings, clamps and accessories;

fences or barriers, prevent entry of any non - authorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(3) During erection of Scaffolding 2m high and above, boarded areas shall be provided for safe temporary storage of Scaffolding tubes, couplings, fittings or components and other materials and equipment.

(4) All workers engaged in the assembly or erection, alteration and dismantling of any Scaffolding shall be provide with PFAS and ensure that such workers use this.

(5) Scaffold boards shall each be securely fixed at a sufficient number of points to provide constant support with no movement or dislocation and no gaps that may create a dropping hazard.

(6) When moving Scaffold boards, ensure that they are securely supported in at least three (3) locations, the length of any projection from supports shall be at least 10cm and not exceeding one-eighteenth of the length of the Scaffold boards.

(7) When stacking the timber sole plate or runners ensure that they are stacked in the longitudinal direction, over supports and with 20 cm overlaps.

6.5.10 ~~General~~ Inspection and Maintenance of Scaffolding (JC48, JC49)

JC48: General は不要. "General" is not necessary.

JC49: 上記と同様に.5.3 の次に移動させてください。
Please move 6.5.10 to after (6.)5.3.
NK: moved after 6.5.3 and made it 6.5.5 as commented.

Further to the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the Contractor shall comply with the following:

(1) Every Scaffold from which a person could fall 2m or more shall be thoroughly examined by the HSO (or his delegated assistant):

(a) Before it is brought into use;

(b) After any substantial alteration or extension;

(c) At least once in every 7 days; and

(d) Whenever it has been exposed to adverse climatic conditions, earthquake or other factors which may have affected its safety.

(2) A written record of the examination and regular inspections with details of any repair measures shall be prepared and kept by the HSO.

(3) The examinations and regular inspections shall include:

(a) Check that the Scaffold is provided and used in accordance with the Method Statement, Safety Plan and its design;

(b) Condition of working platforms and of any damage to fixings;

(c) Condition and any loosening at the fastening, connecting and mounting, portions of standards, ledgers, brackets, and the like;

(d) Condition and any damage and corrosion of couplings, fittings, clamps and accessories;

~~(1) Scaffolding shall be assembled or erected, altered and dismantled only by competent personnel and the work should always be carried out under the direction of a competent Superintendent.~~

~~(2) Working areas where Scaffolding is being assembled or erected, altered and dismantled shall be designated as Dangerous Areas, and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any non - authorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].~~

~~(3) During erection of Scaffolding 2m high and above, boarded areas shall be provided for safe temporary storage of Scaffolding tubes, couplings, fittings or components and other materials and equipment.~~

~~(4) All workers engaged in the assembly or erection, alteration and dismantling of any Scaffolding shall be provide with PFAS and ensure that such workers use this.~~

~~(5) Scaffold boards shall each be securely fixed at a sufficient number of points to provide constant support with no movement or dislocation and no gaps that may create a dropping hazard.~~

~~(6) When moving Scaffold boards, ensure that they are securely supported in at least three (3) locations, the length of any projection from supports shall be at least 10cm and not exceeding one-eighteenth of the length of the Scaffold boards.~~

~~(7) When stacking the timber sole plate or runners ensure that they are stacked in the longitudinal direction, over supports and with 20 cm overlaps.~~

~~**6.5.10 General Inspection and Maintenance of Scaffolding**~~

~~Further to the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*] the Contractor shall comply with the following:~~

~~(1) Every Scaffold from which a person could fall 2m or more shall be thoroughly examined by the HSO (or his delegated assistant):~~

~~(a) Before it is brought into use;~~

~~(b) After any substantial alteration or extension;~~

~~(c) At least once in every 7 days; and~~

~~(d) Whenever it has been exposed to adverse climatic conditions, earthquake or other factors which may have affected its safety.~~

~~(2) A written record of the examination and regular inspections with details of any repair measures shall be prepared and kept by the HSO.~~

~~(3) The examinations and regular inspections shall include:~~

~~(a) Check that the Scaffold is provided and used in accordance with the Method Statement, Safety Plan and its design;~~

mounting, portions of standards, ledgers, brackets, and the like;

(d) Condition and any damage and corrosion of couplings, fittings, clamps and accessories;

(e) Fall prevention facilities are intact and secure;

(f) Condition of mountings and presence of toe boards;

(g) Condition of bases, screw jacks, castors, brakes, sole plates and the like and ensure there is no movement or settlement;

(h) Condition of mountings and presence of diagonal bracings, stays, anchors, ties and other bracing, support or reinforcement materials; and

(i) Condition of mountings and presence of posts, standards, ledgers and transoms.

(4) The Contractor shall carry out all necessary remedial and repair work necessary to rectify any deterioration, defect or damage and shall if necessary stop the use of the Scaffolding until such work has been properly completed, re-inspected and re-certified as "Safe for Use" by the HSO.

6.5.11 Mobile Elevating Work Platforms

This Subclause specifies requirements for mobile elevating work platforms (also known as aerial lifts) including extendable boom platforms, articulating boom platforms, vertical towers and a combination of any such devices.

(1) The following safety measures shall apply for placing and operating mobile elevating work platforms:

(a) Only trained Contractor's Personnel, certified as such by the HSO shall be permitted to operate in accordance with JSSS 1.18 [Proper Placement of Contractor's Personnel];

(b) All operation shall be carried out in accordance with the manufacturer's written instructions;

(c) Mobile elevating work platforms shall never be used beyond the load limit specified by the manufacturer, which shall also be clearly displayed on the equipment; and

(d) Safety devices shall not be switched off or isolated.

(2) Measures before operation of mobile elevating work platform:

(a) Designate operation as "Dangerous Work" and in accordance with JSSS 2.3 [*Prohibition of Entry - Dangerous Work*], demarcate work areas and take measures to prevent entry to unauthorised personnel;

(b) Place a Spotter to guide the mobile elevating work platform in accordance with JSSS 2.4 [*Spotters, Flagmen and the like*];

(e) Fall prevention facilities are intact and secure; (JC50)

JC50: ここだけ文章になっているようですので他の項目とスタイル(平仄)を合わせてください。
The style of (e) is different from others, please revise it same with others.
NK: revised as commented.

(f) Condition of mountings and presence of toe boards;

(g) Condition of bases, screw jacks, castors, brakes, sole plates and the like and ensure there is no movement or settlement;

(h) Condition of mountings and presence of diagonal bracings, stays, anchors, ties and other bracing, support or reinforcement materials; and

(i) Condition of mountings and presence of posts, standards, ledgers and transoms.

(4) The Contractor shall carry out all necessary remedial and repair work necessary to rectify any deterioration, defect or damage and shall if necessary stop the use of the Scaffolding until such work has been properly completed, re-inspected and re-certified as "Safe for Use" by the HSO.

6.5.11 Mobile Elevating Work Platforms

This Subclause (JC51) specifies requirements for mobile elevating work platforms (also known as aerial lifts) including extendable boom platforms, articulating boom platforms, vertical towers and a combination of any such devices.

JC51: Subclause でよいですか？念のための確認です。
Please confirm if "Subclause" is correct? This is only for confirmation.
To MD, do we use Chapter 1, Section 1.1, Subsection 1.1.1 or Clause 1.1.1?
Please confirm these.

(1) The following safety measures shall apply for placing and operating mobile elevating work platforms:

(a) Only trained Contractor's Personnel, certified as such by the HSO shall be permitted to operate in accordance with JSSS 1.18 [Proper Placement of Contractor's Personnel];

(b) All operation shall be carried out in accordance with the manufacturer's written instructions;

(c) Mobile elevating work platforms shall never be used beyond the load limit specified by the manufacturer, which shall also be clearly displayed on the equipment; and

(d) Safety devices shall not be switched off or isolated.

(2) Measures before operation of mobile elevating work platform:

(a) Designate operation as "Dangerous Work" and in accordance with JSSS 2.3 [*Prohibition of Entry - Dangerous Work*], demarcate work areas and take measures to prevent entry to unauthorised personnel;

(b) Place a Spotter to guide the mobile elevating work platform in accordance with JSSS 2.4 [*Spotters, Flagmen and the like*];

(c) Determine signals in accordance with JSSS 2.4.5 [*Signals*], and

(b) ~~Condition of working platforms and of any damage to fixings;~~

(c) ~~Condition and any loosening at the fastening, connecting and mounting, portions of standards, ledgers, brackets, and the like;~~

(d) ~~Condition and any damage and corrosion of couplings, fittings, clamps and accessories;~~

(e) ~~Conditions and any damage of F fall~~ ~~prevention facilities are intact and secure~~;

(f) ~~Condition of mountings and presence of toe boards;~~

(g) ~~Condition of bases, screw jacks, castors, brakes, sole plates and the like and ensure there is no movement or settlement;~~

(h) ~~Condition of mountings and presence of diagonal bracings, stays, anchors, ties and other bracing, support or reinforcement materials; and~~

(i) ~~Condition of mountings and presence of posts, standards, ledgers and transoms.~~

(4) ~~The Contractor shall carry out all necessary remedial and repair work necessary to rectify any deterioration, defect or damage and shall if necessary stop the use of the Scaffolding until such work has been properly completed, re-inspected and re-certified as "Safe for Use" by the HSO.~~

6.5.11 Mobile Elevating Work Platforms

This ~~Subclause~~ Subsection specifies requirements for mobile elevating work platforms (also known as aerial lifts) including extendable boom platforms, articulating boom platforms, vertical towers and a combination of any such devices.

To MD, do we use Chapter 1, Section 1.1, Subsection 1.1.1 or Clause 1.1.1?
Please confirm these.

(1) The following safety measures shall apply for placing and operating mobile elevating work platforms:

(a) Only trained Contractor's Personnel, certified as such by the HSO shall be permitted to operate in accordance with JSSS 1.18 [Proper Placement of Contractor's Personnel];

(b) All operation shall be carried out in accordance with the manufacturer's written instructions;

(c) Mobile elevating work platforms shall never be used beyond the load limit specified by the manufacturer, which shall also be clearly displayed on the equipment; and

(d) Safety devices shall not be switched off or isolated.

(2) Measures before operation of mobile elevating work platform:

(a) Designate operation as "Dangerous Work" and in accordance with JSSS 2.3 [*Prohibition of Entry - Dangerous Work*],

(c) Determine signals in accordance with JSSS 2.4.5 [*Signals*], and

(d) Determine in advance the appropriate working speed limit for the mobile elevating work platform according to the height of the working platform and the length of the boom, etc. and ensure that the operator never drives the equipment in excess of this limit.

(3) Measures at locating mobile elevating work platform:

(a) The parking brakes of vehicle shall be set;

(b) Wheel chocks shall be installed before using the mobile elevating work platforms on an incline, provided they can be safely installed;

(c) When outriggers are used, they shall be positioned on pads or a solid surface; and

(d) Lift controls shall be tested each day prior to use to determine that such controls are in safe working condition.

(4) Measures at operation on mobile elevating work platform:

(a) Workers shall always stand firmly on the floor of the basket/working platform, and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position;

(b) Workers shall use PPE including PFRS;

(c) Workers shall be prohibited from taking dangerous actions such as moving from the working platform/basket to neighbouring structure, standing on and working from handrail;

(d) When the mobile elevating work platform has both platform (upper) and lower controls, the upper controls shall be in or beside the platform within easy reach of the operator. Lower controls shall provide for overriding the upper controls. Controls shall be plainly marked as to their function. Lower level controls shall not be operated unless permission has been obtained from the worker in the lift, except in case of emergency;

(e) When leaving the operating position and when work is not continuing or stopped the operator of the mobile elevating work platform shall:

(i) Put the working platform in the lowest position;

(ii) Stop the prime engine/motor; and

(iii) Apply the parking brake securely and ensure the equipment is securely parked.

(f) Stop work at a height of 2 m or more in case of adverse weather in accordance with JSSS 2.7 [*Adverse Weather Requirements*].

(d) Determine in advance the appropriate working speed limit for the mobile elevating work platform according to the height of the working platform and the length of the boom, etc. and ensure that the operator never drives the equipment in excess of this limit.

(3) Measures at locating mobile elevating work platform:

(a) The parking brakes of vehicle shall be set;

(b) Wheel chocks shall be installed before using the mobile elevating work platforms on an incline, provided they can be safely installed;

(c) When outriggers are used, they shall be positioned on pads or a solid surface; and

(d) Lift controls shall be tested each day prior to use to determine that such controls are in safe working condition.

(4) Measures at operation on mobile elevating work platform:

(a) Workers shall always stand firmly on the floor of the basket/working platform, and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position;

(b) Workers shall use PPE including PFRS; (JC52)

JC52: PFRS 等を要求するのは、日本での慣行だと思います。OSHA や HSE でそこまで要求していないのであれば、削除していただいてよいと思います。
I think it's a Japanese practice to request to use PFRS, etc. If OSHA and/or HSE do not request this, (b) can be deleted.
NK: JSSS 2.5FALL PREVENTION stipulates measures, it is not necessary to specify (b) particularly for Mobile Elevating Work Platforms. (b) is deleted.

(c) Workers shall be prohibited from taking dangerous actions such as moving from the working platform/basket to neighbouring structure, standing on and working from handrail;

(d) When the mobile elevating work platform has both platform (upper) and lower controls, the upper controls shall be in or beside the platform within easy reach of the operator. Lower controls shall provide for overriding the upper controls. Controls shall be plainly marked as to their function. Lower level controls shall not be operated unless permission has been obtained from the worker in the lift, except in case of emergency;

(e) When leaving the operating position and when work is ~~not continuing or~~ (JC53) stopped the operator of the mobile elevating work platform shall:

JC53: 肯定と否定が一つの文で入っていてわかりにくい。
(e) above is difficult to understood because affirmation and denial are in one sentence, so deleted the phrase.
NK: deleted as commented.

(i) Put the working platform in the lowest position;

(ii) Stop the prime engine/motor; and

(iii) Apply the parking brake securely and ensure the equipment is securely parked.

(f) Stop work at a height of 2 m or more in case of adverse weather in accordance with JSSS 2.7 [*Adverse Weather Requirements*].

(5) Measures of moving mobile elevating work platform

demarcate work areas and take measures to prevent entry to unauthorised personnel;

(b) Place a Spotter to guide the mobile elevating work platform in accordance with JSSS 2.4 [*Spotters, Flagmen and the like*];

(c) Determine signals in accordance with JSSS 2.4.5 [*Signals*], and

(d) Determine in advance the appropriate working speed limit for the mobile elevating work platform according to the height of the working platform and the length of the boom, etc. and ensure that the operator never drives the equipment in excess of this limit.

(3) Measures at locating mobile elevating work platform:

(a) The parking brakes of vehicle shall be set;

(b) Wheel chocks shall be installed before using the mobile elevating work platforms on an incline, provided they can be safely installed;

(c) When outriggers are used, they shall be positioned on pads or a solid surface; and

(d) Lift controls shall be tested each day prior to use to determine that such controls are in safe working condition.

(4) Measures at operation on mobile elevating work platform:

(a) Workers shall always stand firmly on the floor of the basket/working platform, and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position;

(b) ~~Workers shall use PPE including PFRS;~~

(c) Workers shall be prohibited from taking dangerous actions such as moving from the working platform/basket to neighbouring structure, standing on and working from handrail;

(d) When the mobile elevating work platform has both platform (upper) and lower controls, the upper controls shall be in or beside the platform within easy reach of the operator. Lower controls shall provide for overriding the upper controls. Controls shall be plainly marked as to their function. Lower level controls shall not be operated unless permission has been obtained from the worker in the lift, except in case of emergency;

(e) When leaving the operating position and when work is ~~not continuing or~~ stopped the operator of the mobile elevating work platform shall:

(i) Put the working platform in the lowest position;

(ii) Stop the prime engine/motor; and

(5) Measures of moving mobile elevating work platform

(a) Mobile elevating work platform shall not be moved when the boom is elevated in a working position with workers in the basket, except for equipment which is specifically designed for this type of operation; and

(b) Before moving the mobile elevating work platform for travel, the boom(s) shall be inspected to see that it is properly cradled and outriggers are in stowed position.

(6) Inspection and maintenance of mobile elevating work platform

(c) Carry out inspection in accordance with JSSS 4.2 [*Requirements Generally*]; and

(d) Carry out maintenance, repair and installation/removal of the working platform in accordance with JSSS 4.2.2 [*Defects and Repair During Operation*], JSSS 4.3.3 [*Safety Measures During Cleaning, Inspection and Maintenance*] and JSSS 4..3.6 [*Safety Measures During Connection of Attachments*].

(7) Prohibition of use for other purposes

Mobile elevating work platforms shall not be used for any purpose other than the intended original purpose and for example shall never be used for hoisting loads.

6.6 ELEVATED ACCESS STRUCTURES

6.6.1 General

Elevated Access Structures act as temporary access, parking, working and/or storage areas which also accommodate Contractor's Equipment, Goods and temporary facilities as necessary to permit the construction operations to be performed from these structures on the underlying or adjacent working area(s) within the Site.

6.6.2 Design and Management Generally

(1) The design, management, provision, safe use and safe removal of Elevated Access Structures shall comply with the requirements of JSSS 6.1.1[*Design and Provision of Temporary Works Generally*].

(2) For related JSSS requirements, refer to the following and other related parts of JSSS including:

(a) JSSS 1.35 [Contractor's Equipment, Temporary Works, Safety Equipment and PPE]; and

(a) Mobile elevating work platform shall not be moved when the boom is elevated in a working position with workers in the basket, except for equipment which is specifically designed for this type of operation; and

(b) Before moving the mobile elevating work platform for travel, the boom(s) shall be inspected to see that it is properly cradled and outriggers are in stowed position.

(6) Inspection and maintenance of mobile elevating work platform

(a) Carry out inspection in accordance with JSSS 4.2 [*Requirements Generally*]; and

(b) Carry out maintenance, repair and installation/removal of the working platform in accordance with JSSS 4.2.2 [*Defects and Repair During Operation*], JSSS 4.3.3 [*Safety Measures During Cleaning, Inspection and Maintenance*] and JSSS 4..3.6 [*Safety Measures During Connection of Attachments*].

(7) Prohibition of use for other purposes

Mobile elevating work platforms shall not be used for any purpose other than the intended original purpose and for example shall never be used for hoisting loads.

6.6 ELEVATED ACCESS STRUCTURES

6.6.1 General

Elevated Access Structures act as temporary access, parking, working and/or storage areas which also accommodate Contractor's Equipment, Goods and temporary facilities as necessary to permit the construction operations to be performed from these structures on the underlying or adjacent working area(s) within the Site. (JC54)

JC54: 他の節との表現の横並びをとりたい。This Section contains requirements of XXXX of Elevated Access Structure which act as…とか。

The above sentence is to be modified as same style in other Sections like "This Section contains requirements of XXXX of Elevated Access Structure which act as…".

NK: modified as commented.
To MD, please review the comment and sentence modified.

6.6.2 Design and Management Generally

(1) The design, management, provision, safe use and safe removal of Elevated Access Structures shall comply with the requirements of JSSS 6.1.1[*Design and Provision of Temporary Works Generally*].

(2) For related JSSS requirements, refer to the following and other related parts of JSSS including:

(a) JSSS 1.35 [Contractor's Equipment, Temporary Works, Safety Equipment and PPE]; and

(iii) Apply the parking brake securely and ensure the equipment is securely parked.

(f) Stop work at a height of 2 m or more in case of adverse weather in accordance with JSSS 2.7 [*Adverse Weather Requirements*].

(5) Measures of moving mobile elevating work platform

(a) Mobile elevating work platform shall not be moved when the boom is elevated in a working position with workers in the basket, except for equipment which is specifically designed for this type of operation; and

(b) Before moving the mobile elevating work platform for travel, the boom(s) shall be inspected to see that it is properly cradled and outriggers are in stowed position.

(6) Inspection and maintenance of mobile elevating work platform

(c) Carry out inspection in accordance with JSSS 4.2 [*Requirements Generally*]; and

(d) Carry out maintenance, repair and installation/removal of the working platform in accordance with JSSS 4.2.2 [*Defects and Repair During Operation*], JSSS 4.3.3 [*Safety Measures During Cleaning, Inspection and Maintenance*] and JSSS 4..3.6 [*Safety Measures During Connection of Attachments*].

(7) Prohibition of use for other purposes

Mobile elevating work platforms shall not be used for any purpose other than the intended original purpose and for example shall never be used for hoisting loads.

6.6 ELEVATED ACCESS STRUCTURES

6.6.1 General

~~Elevated Access Structures act as temporary access, parking, working and/or storage areas which also accommodate Contractor's Equipment, Goods and temporary facilities as necessary to permit the construction operations to be performed from these structures on the underlying or adjacent working area(s) within the Site.~~

This Section includes safety measures relating to Elevated Access Structure which act as act as temporary access, parking, working and/or storage areas which also accommodate Contractor's Equipment, Goods and temporary facilities as necessary to permit the construction operations to be performed from these structures on the underlying or adjacent working area(s) within the Site.

To MD, please review the comment and sentence modified.

6.6.2 Design and Management Generally

(1) The design, management, provision, safe use and safe removal of Elevated Access Structures shall comply with the requirements of JSSS 6.1.1[*Design and Provision of Temporary Works Generally*].

(2) For related JSSS requirements, refer to the following and other related parts of JSSS including:

(a) JSSS 1.35 [Contractor's Equipment, Temporary Works, Safety

(b) JSSS 1.37 [Design and Management of Temporary Works].

(3) Erection and Removal of Elevated Access Structures

The Contractor shall:

(a) Designate any working areas where any Elevated Access Structures are being erected, altered or removed as Dangerous Areas and enclose the working area where possible with temporary fences or barriers, prevent entry of any unauthorised personnel or prevent vessels from entering in the case of offshore or marine works and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work];*

(b) Use of Measures to prevent Vehicles from falling;

The Contractor shall provide and fix continuous “W” Section, heavy duty commercial type galvanised steel crash barriers of suitable strength and height (minimum 1.5m) with posts, fixings and fittings, to the entire perimeter of all Elevated Access Structures where they are used by vehicles or Contractor’s Equipment, to prevent such vehicles or Contractor’s Equipment from falling where there is any risk.

The Contractor shall also provide steel angle or channel kerbs welded to the surface of the decking in locations where vehicles or Contractor’s Equipment are working or parking to prevent the vehicles or Contractor’s Equipment accidentally moving and colliding with the crash barrier.

All crash barriers and kerbs shall be painted in black and yellow bands to show them as a hazard.

(c) Use of Measures to prevent collision with Marine Vessels;

(b) JSSS 1.37 [Design and Management of Temporary Works].

(3) Erection and Removal of Elevated Access Structures

The Contractor shall:

(a) Designate any working areas where any Elevated Access Structures are being erected, altered or removed as Dangerous Areas and enclose the working area where possible with temporary fences or barriers, prevent entry of any unauthorised personnel or prevent vessels from entering in the case of offshore or marine works and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work];*

(b) Use of Measures to prevent Vehicles from falling;

The Contractor shall provide and fix continuous “W” Section, heavy duty commercial type galvanised steel crash barriers of suitable strength and height (minimum 1.5m) with posts, fixings and fittings, to the entire perimeter of all Elevated Access Structures where they are used by vehicles or Contractor’s Equipment, to prevent such vehicles or Contractor’s Equipment from falling where there is any risk.

The Contractor shall also provide steel angle or channel kerbs welded to the surface of the decking in locations where vehicles or Contractor’s Equipment are working or parking to prevent the vehicles or Contractor’s Equipment accidentally moving and colliding with the crash barrier.

All crash barriers and kerbs shall be painted in black and yellow bands to show them as a hazard. (JC55)

JC55: 全延長にガードレールを付けるというのは過剰な要求です。
殆どの場合はチャンネルなどの鋼材を取り付けていると思うので、その方向で修正をお願いします。

It is excessive requirement to provide guardrails its entire perimeter. In most cases, I think that steel materials such as channels are provided at the sites. Please modify the sentence in that direction above.

NK: modified as commented.

To MD: I referred to the photos below for this clause (b). I agreed to JC55 comment. Contractor’s Equipment will not run in high speed on the structure, so heavy duty crush barriers seems excessive. As steel angle or channel kerbs are provided for vehicles not to fall, move, and collide, so handrails are to be specified for workers not to fall. Please review the modified sentence.

http://www.taisenk.co.jp/pc_koudai.html#results



(c) Use of Measures to prevent collision with Marine Vessels;

Equipment and PPE]; and

(b) JSSS 1.37 [Design and Management of Temporary Works].

(3) Erection and Removal of Elevated Access Structures

The Contractor shall:

(a) Designate any working areas where any Elevated Access Structures are being erected, altered or removed as Dangerous Areas and enclose the working area where possible with temporary fences or barriers, prevent entry of any unauthorised personnel or prevent vessels from entering in the case of offshore or marine works and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work];*

(b) Use of Measures to prevent Vehicles from falling;

The Contractor shall provide and fix handrails specified in JSSS 2.5.5 [Handrails] ~~continuous “W” Section, heavy duty commercial type galvanised steel crash barriers of suitable strength and height (minimum 1.5m) with posts, fixings and fittings~~, to the ~~entire~~ perimeter of ~~all~~ Elevated Access Structures ~~where they are used by vehicles or Contractor’s Equipment,~~ to prevent workers ~~such vehicles or Contractor’s Equipment~~ from falling where there is any risk.

The Contractor shall also provide steel angle or channel kerbs welded to the surface of the decking in locations where vehicles or Contractor’s Equipment are working or parking to prevent the vehicles or Contractor’s Equipment from falling, accidentally moving and colliding with ~~the crash barrier~~ handrails.

All ~~crash barriers and~~ kerbs shall be painted in black and yellow bands to show them as a hazard.

(c) Use of Measures to prevent collision with Marine Vessels;

For offshore work, the Contractor shall provide all necessary warning signs, audible alarms, beacons and lighting and serve all

For offshore work, the Contractor shall provide all necessary warning signs, audible alarms, beacons and lighting and serve all notices to the marine or other relevant authorities as necessary to ensure that all shipping, boats and other vessels are aware of changes to navigation due to the presence of any Elevated Access Structures and that all risk of collision is avoided.

6.6.3 Further Safety Requirements

The Contractor shall take all necessary measures to ensure the safe provision, use and removal of Elevated Access Structures, including but not restricted to the following:

(1) Provide warning notices clearly showing the maximum safe working load in clearly visible locations.

(2) Ensure that the Contractor, together with any other parties considered collectively, NEVER exceed the maximum safe working load.

(3) Provide any further signs containing user information or other mandatory usage requirements such as speed limits and markings all as necessary to demarcate roadways and walkways, working, storage, parking and other areas.

(4) Designate all work to and on any Elevated Access Structures and during use, as Dangerous Work and take all further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(5) Provide walkways in accordance with JSSS **エラー！参照元が見つかりません。** [*Walkways*],

(6) Provide adequate lighting to ensure the safety of Contractor's Equipment, equipment of other parties, vehicles and persons in transit or whilst working.

(7) (for offshore work) Provide rescue and lifesaving equipment to be used in the event that any persons fall into the sea, including a rescue tender and life belts or the like.

(8) Provide PFAS or PFRS to workers where appropriate including those engaged in the construction and removal of the Elevated

For offshore work, the Contractor shall provide all necessary warning signs, audible alarms, beacons and lighting and serve all notices to the marine or other relevant authorities as necessary to ensure that all shipping, boats and other vessels are aware of changes to navigation due to the presence of any Elevated Access Structures and that all risk of collision is avoided.

6.6.3 Further Safety Requirements

The Contractor shall take all necessary measures to ensure the safe provision, use and removal of Elevated Access Structures, including but not restricted to the following:

(1) Provide warning notices clearly showing the maximum safe working load in clearly visible locations.

(2) Ensure that the Contractor, together with any other parties considered collectively, NEVER exceed the maximum safe working load. (JC56)

JC56: 作業構台はかなり大掛かりな作業場であり、異なるチームが同時に作業することもあるのではないでしょうか。その時、安全上の留意事項がこれだけでよいのでしょうか？(そのために具体的に何をすべきかを書いてください)
誰か特定の人間が責任をもつ、又は作業計画で確認する、と言ったことは必要ないでしょうか？

The Elevated Access Structures is a fairly large working area, and different teams may work at the same time. For such working conditions, are the safety requirements specified here sufficient? (Please stipulate some concrete requirements what the Contractor shall do.) For example someone shall take responsibility for the safety, safety shall be confirmed by the Method Statement, and so on.

NK: Responsibility of safety by HSO is specified in 6.1.1 (5). Most requirements are specified in 6.1, so two particular requirements are added in (10) and (11).

(3) Provide any further signs containing user information or other mandatory usage requirements such as speed limits and markings all as necessary to demarcate roadways and walkways, working, storage, parking and other areas.

(4) Designate all work to and on any Elevated Access Structures and during use, as Dangerous Work and take all further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(5) Provide walkways in accordance with JSSS **エラー！参照元が見つかりません。** [*Walkways*],

(6) Provide adequate lighting to ensure the safety of Contractor's Equipment, equipment of other parties, vehicles and persons in transit or whilst working.

(7) (for offshore work) Provide rescue and lifesaving equipment to be used in the event that any persons fall into the water ~~sea~~, including a rescue tender and life belts or the like.

(8) Provide PFAS or PFRS to workers where appropriate including

notices to the marine or other relevant authorities as necessary to ensure that all shipping, boats and other vessels are aware of changes to navigation due to the presence of any Elevated Access Structures and that all risk of collision is avoided.

6.6.3 Further Safety Requirements

The Contractor shall take all necessary measures to ensure the safe provision, use and removal of Elevated Access Structures, including but not restricted to the following:

(1) Provide warning notices clearly showing the maximum safe working load in clearly visible locations.

(2) Ensure that the Contractor, together with any other parties considered collectively, NEVER exceed the maximum safe working load.

(3) Provide any further signs containing user information or other mandatory usage requirements such as speed limits and markings all as necessary to demarcate roadways and walkways, working, storage, parking and other areas.

(4) Designate all work to and on any Elevated Access Structures and during use, as Dangerous Work and take all further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(5) Provide walkways in accordance with JSSS **エラー！参照元が見つかりません。** [*Walkways*],

(6) Provide adequate lighting to ensure the safety of Contractor's Equipment, equipment of other parties, vehicles and persons in transit or whilst working.

(7) (for offshore work) Provide rescue and lifesaving equipment to be used in the event that any persons fall into the water ~~sea~~, including a rescue tender and life belts or the like.

(8) Provide PFAS or PFRS to workers where appropriate including those engaged in the construction and removal of the Elevated Access Structures.

Access Structures.

(9) Prevent any accident or collision by ensuring that all Contractor's Personnel that may be working on Elevated Access Structures and any Employer's personnel and other persons that may be present on such structures are fully informed about the work that may be in progress from time to time, including transportation and delivery of Goods and of the measures and any precautions that must be complied with.

6.6.4 Inspection and Maintenance

Further to the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*] the Contractor shall comply with the following:

(1) Every Elevated Access Structure shall be thoroughly examined by the HSO:

(a) Before it is brought into use;

(b) After any substantial alteration or extension;

(c) At least once in every 7 days; and

(d) Whenever it has been exposed to adverse climatic conditions, heavy seas, earthquake or other factors which may have affected its safety.

(2) A written record of the examination and regular inspections and details of any repair measures shall be prepared by the HSO.

(3) The examination and regular inspections shall include:

(a) Check if the Elevated Access Structure is provided and used in accordance with the Method Statement, Safety Plan and its design;

(b) Check items include:

(i) The structural condition of the Elevated Access Structure and of any deterioration, defect, damage or settlement;

(ii) Fall prevention and all other safety requirements and facilities are intact and fully operational; and

(iii) All other requirements of this Section are still being complied with.

(4) The Contractor shall carry out all necessary remedial and repair work necessary to rectify any deterioration, defect or damage and shall if necessary stop the use of the Elevated Access Structure until such work has been properly completed, re-inspected and re-certified as "Safe for Use" by the HSO.

those engaged in the construction and removal of the Elevated Access Structures.

(9) Prevent any accident or collision by ensuring that all Contractor's Personnel that may be working on Elevated Access Structures and any Employer's personnel and other persons that may be present on such structures are fully informed about the work that may be in progress from time to time, including transportation and delivery of Goods and of the measures and any precautions that must be complied with.

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Further to the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*] the Contractor shall comply with the following:

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(3) The examination and regular inspections shall include:

(a) Check if the Elevated Access Structure is provided and used in accordance with the Method Statement, Safety Plan and its design;

(b) Check items include:

(i) The structural condition of the Elevated Access Structure and of any deterioration, defect, damage or settlement;

(ii) Fall prevention and all other safety requirements and facilities are intact and fully operational; and

(iii) All other requirements of this Section are still being complied with.

(4) The Contractor shall carry out all necessary remedial and repair work necessary to rectify any deterioration, defect or damage and shall if necessary stop the use of the Elevated Access Structure until such work has been properly completed, re-inspected and re-certified as "Safe for Use" by the HSO.

(9) Prevent any accident or collision by ensuring that all Contractor's Personnel that may be working on Elevated Access Structures and any Employer's personnel and other persons that may be present on such structures are fully informed about the work that may be in progress from time to time, including transportation and delivery of Goods and of the measures and any precautions that must be complied with.

(10) Hold coordination meeting to secure the safety of workers among different teams before they work at the same time on the Elevated Access Structures.

(11) Instruct safety measures to workers when different teams work at same time on the Elevated Access Structures at general morning meetings, pre-work meetings, TBM;

6.6.4 Inspection and Maintenance

Further to the requirements of JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*] the Contractor shall comply with the following:

(1) Every Elevated Access Structure shall be thoroughly examined by the HSO:

(a) Before it is brought into use;

(b) After any substantial alteration or extension;

(c) At least once in every 7 days; and

(d) Whenever it has been exposed to adverse climatic conditions, heavy seas, earthquake or other factors which may have affected its safety.

(2) A written record of the examination and regular inspections and details of any repair measures shall be prepared by the HSO.

(3) The examination and regular inspections shall include:

(a) Check if the Elevated Access Structure is provided and used in accordance with the Method Statement, Safety Plan and its design;

(b) Check items include:

(i) The structural condition of the Elevated Access Structure and of any deterioration, defect, damage or settlement;

(ii) Fall prevention and all other safety requirements and facilities are intact and fully operational; and

(iii) All other requirements of this Section are still being complied with.

(4) The Contractor shall carry out all necessary remedial and repair work necessary to rectify any deterioration, defect or damage and shall if necessary stop the use of the Elevated Access Structure until such work has been properly completed, re-inspected and re-certified as "Safe for Use" by the HSO.

6.7 TEMPORARY ELECTRICAL INSTALLATIONS

6.7.1 General

(1) This Section contains safety requirements for the provision, use, relocation, repair and removal of temporary electrical power and lighting installations at the Site.

(2) As this Section relates to temporary installations to be used during construction, temporary wiring methods can be of a class less than would be required for a permanent installation.

Mains switchgear, equipment and outlets however shall comply with the same standards as for a permanent installation.

(3) Although this work is temporary, it shall be particularly noted that temporary electrical installations shall be designed, installed, inspected, tested, altered and removed by Contractor's Personnel that are qualified electricians, trained and certified for such operations in accordance with JSSS 1.18 [*Proper Placement of Contractor's Personnel*] and that follow strict procedures prepared by the Contractor and specified in the Method Statement and Safety Plan.

(4) The Contractor shall take precautions against the risk of death or injury from electricity during construction work. Refurbishment work in existing buildings presents the greatest risk and all shall be planned, managed and monitored to ensure that workers are not exposed to risk from electricity.

6.7 TEMPORARY ELECTRICAL INSTALLATIONS

6.7.1 General

(1) This Section contains safety requirements for the provision, use, relocation, repair and removal of temporary electrical power and lighting installations at the Site.

(2) As this Section relates to temporary installations to be used during construction, temporary wiring methods can be of a class less than would be required for a permanent installation. (JC57)

Mains switchgear, equipment and outlets however shall comply with the same standards as for a permanent installation.

JC57: もう少し厳格に specify してください。出所となっている原典には、何か定義があったのではないでしょうか。
Please specify more strictly. The source of this stipulation may have definition.
NK: The source is OSHA 1926.405 Wiring methods, components, and equipment for general use. (a) Wiring methods. (2) Temporary wiring (i) Scope copied below.

(i) Scope. The provisions of paragraph (a)(2) of this section apply to temporary electrical power and lighting wiring methods which may be of a class less than would be required for a permanent installation.
Except as specifically modified in paragraph (a)(2) of this section, all other requirements of this subpart for permanent wiring shall apply to temporary wiring installations.
Temporary wiring shall be removed immediately upon completion of construction or the purpose for which the wiring was installed.
NK: JSSS cannot specify temporary wiring in detail and also class of permanent installation. To avoid confusion at the site, we delete (2).

(3) Although this work is temporary, it shall be particularly noted that temporary electrical installations shall be designed, installed, inspected, tested, altered and removed by Contractor's Personnel that are qualified electricians, trained and certified for such operations in accordance with JSSS 1.18 [*Proper Placement of Contractor's Personnel*] and that follow strict procedures prepared by the Contractor and specified in the Method Statement and Safety Plan.

(4) The Contractor shall take precautions against the risk of death or injury from electricity during construction work. Refurbishment work in existing buildings presents the greatest risk and all shall be planned, managed and monitored to ensure that workers are not exposed to risk from electricity.(JC58)

JC58: In particular, when executing refurbishment work of existing buildings where greater risk exist, the Contractor shall (この後に 3.1.2 (d)にあるような具体的な内容をもってくる)。

Please specify concrete stipulation after "In particular, when executing refurbishment work of existing buildings where greater risk exist, the Contractor shall" as specified in JSSS 3.1.2 (d) copied below.

（参照 3.12(d)の記述）(reference: 3.1.2 (d))
Provide and use cable avoidance tools such as Cable Locator, and locate the location, route or position on ground surfaces, walls and floors of Underground or Concealed Services, mark routes with paint and/or wooden pegs or barriers and clear signage and ensure that no unauthorised work take place within the area.
NK: Modified as commented.
To MD, please review the comment and revisions.

6.7 TEMPORARY ELECTRICAL INSTALLATIONS

6.7.1 General

(1) This Section contains safety requirements for the provision, use, relocation, repair and removal of temporary electrical power and lighting installations at the Site.

(2) ~~As this Section relates to temporary installations to be used during construction, temporary wiring methods can be of a class less than would be required for a permanent installation.~~

~~Mains switchgear, equipment and outlets however shall comply with the same standards as for a permanent installation.~~

(3) Although this work is temporary, it shall be particularly noted that temporary electrical installations shall be designed, installed, inspected, tested, altered and removed by Contractor's Personnel that are qualified electricians, trained and certified for such operations in accordance with JSSS 1.18 [*Proper Placement of Contractor's Personnel*] and that follow strict procedures prepared by the Contractor and specified in the Method Statement and Safety Plan.

(4) The Contractor shall take precautions against the risk of death or injury from electricity during construction work. In particular, when executing refurbishment work of existing buildings where greater risk exists, the Contractor shall locate the location, route or position on ground surfaces, walls and floors of Underground or Concealed Services, mark routes with paint and/or wooden pegs or barriers and clear signage and ensure that no unauthorised work take place within the area in accordance with JSSS 3.1 [UNDERGROUND AND CONCEALED SERVICES], 3.1.2 [Preparation and Work Planning]. ~~Refurbishment work in existing buildings presents the greatest risk and all shall be planned, managed and monitored to ensure that workers are not exposed to risk from electricity.~~

To MD, please review the comment and revisions.

(5) The temporary electrical installations and all equipment used shall be safe, regularly inspected and properly maintained.

(6) Temporary electrical installations shall be removed immediately upon completion of the work for which they are used.

6.7.2 Compliance Standards

By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*], for any items in this Section or relevant to the subject of this Section and which are not fully covered by JSSS, the Contractor shall take necessary measures for Temporary Electrical Installations complying with the technical requirements specified in OSHA PART 1926-Safety and Health Regulations for Construction, Subpart K-Electrical; 1926.405 Wiring Methods, Components and Equipment for General Use.

6.7.3 General Safety Requirements

The Contractor shall avoid accidents to workers engaged on electrical works and also those workers who are not electricians but who are carrying out other works, by taking appropriate measures including the following:

(1) Understanding the system

(a) Ensure that Contractor's Personnel responsible for planning, managing or performing any part of the Works fully understand the electrical system on Site or inside any existing building where any work is to be carried out, to ensure that the integrity of the electrical system is not compromised and all workers remain safe; and

(b) Ensure that relevant parts of existing electrical systems are isolated if there is any risk or if the execution of any part of the Works is liable to disturb or damage the existing electrical system and expose persons to electrical danger.

(2) Portable electrical equipment

(a) Ensure that tools, plugs and cables designed for domestic use are not used for construction works;

(b) The Contractor shall use cordless tools or other tools suitable for external use under Site conditions; and

(c) Where cordless tools are not used and where so justified by available voltage, ensure that tools operate from a 110V centre tapped to earth (CTE) supply system so that the maximum voltage to earth does not exceed 55V.

(5) The temporary electrical installations and all equipment used shall be safe, regularly inspected and properly maintained.

(6) Temporary electrical installations shall be removed immediately upon completion of the work for which they are used.

6.7.2 Compliance Standards

By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*], for any items in this Section or relevant to the subject of this Section and which are not fully covered by JSSS, the Contractor shall take necessary measures for Temporary Electrical Installations complying with the technical requirements specified in OSHA PART 1926-Safety and Health Regulations for Construction, Subpart K-Electrical; 1926.405 Wiring Methods, Components and Equipment for General Use.

6.7.3 General Safety Requirements

The Contractor shall avoid accidents to workers engaged on electrical works and also those workers who are not electricians but who are carrying out other works, by taking appropriate measures including the following:

(1) Understanding the system

(a) Ensure that Contractor's Personnel responsible for planning, managing or performing any part of the Works fully understand the electrical system on Site (JC59) or inside any existing building where any work is to be carried out, to ensure that the integrity of the electrical system is not compromised and all workers remain safe; and

JC59: Site だけでよいのか？ Is it sufficient to specify "Site" only?
NK: As replied to JC22, the Site will be defined to include the working areas in Chapter 1.

(b) Ensure that relevant parts of existing electrical systems are isolated ~~if there is any risk or~~ if the execution of any part of the Works ~~is liable~~ may ~~to~~ disturb or damage the existing electrical system and expose persons to electrical danger.

(2) Portable electrical equipment

(a) The Contractor shall ~~E~~ensure that tools, plugs and cables designed for domestic use are not used for construction works unless necessity to use them are justified and accepted by HSO;

(b) The Contractor shall use cordless tools or other tools suitable for ~~external use under~~ the Site conditions; and

(c) Where cordless tools are not used and where so justified by available voltage, the Contractor shall ensure that tools operate from a 110V centre tapped to earth (CTE) supply system (JC60) so that the maximum voltage to earth does not exceed 55V.

JC60: 220V の特高電圧を使用する tool が多いと思います。現在の記述だと 110V にしか対応できないので、220V にも対応できる記述に修正してください。
There are lots of tools operated with 220V. (c) stipulates only use of tools operated with 110V. Please revise (c) so that tools of 220V can be used.
NK: (c)は英国の HSE の規定をもとに作成しています。
OSHA を参考に追記します

(5) The temporary electrical installations and all equipment used shall be safe, regularly inspected and properly maintained.

(6) Temporary electrical installations shall be removed immediately upon completion of the work for which they are used.

6.7.2 Compliance Standards

By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*], for any items in this Section or relevant to the subject of this Section and which are not fully covered by JSSS, the Contractor shall take necessary measures for Temporary Electrical Installations complying with the technical requirements specified in OSHA PART 1926-Safety and Health Regulations for Construction, Subpart K-Electrical; 1926.405 Wiring Methods, Components and Equipment for General Use.

6.7.3 General Safety Requirements

The Contractor shall avoid accidents to workers engaged on electrical works and also those workers who are not electricians but who are carrying out other works, by taking appropriate measures including the following:

(1) Understanding the system

(a) The Contractor shall ~~E~~ ensure that Contractor's Personnel responsible for planning, managing or performing any part of the Works fully understand the electrical system on Site or inside any existing building where any work is to be carried out, to ensure that the integrity of the electrical system is not compromised and all workers remain safe; and

(b) The Contractor shall ~~E~~ ensure that relevant parts of existing electrical systems are isolated ~~if there is any risk or~~ if the execution of any part of the Works ~~is liable to~~ may disturb or damage the existing electrical system and expose persons to electrical danger.

(2) Portable electrical equipment

(a) The Contractor shall ~~E~~ ensure that tools, plugs and cables designed for domestic use are not used for construction works unless necessity to use them are justified and accepted by HSO;

(b) The Contractor shall use cordless tools or other tools suitable for ~~external use under~~ the Site conditions; and

~~(c) Where cordless tools are not used and where so justified by available voltage, the Contractor shall ensure that tools operate from a 110V centre tapped to earth (CTE) supply system so that the maximum voltage to earth does not exceed 55V.~~

(c) Where cordless tools are not used, the Contractor shall select cord- and plug-connected tools at first which are operated with the maximum voltage to earth does not exceed 50V/55V.

(d) Where cordless tools are not used and cord- and plug-connected tools mentioned in (c) above are not used, the Contractor shall select cord- and plug-connected tools which are operated as stipulated below;

（前回の検討経緯書に記載を以下にコピーします。）

（3）HSE Safety Topics

https://www.hse.gov.uk/construction/safetytopics/systems.htm

Electricity - Systems in buildings, Portable electrical equipment

Tools, plugs and cables designed for DIY (do-it-yourself） and domestic use are not suitable for site conditions.

You should use cordless tools or those that operate from a 110V centre tapped to earth (CTE) supply system so that the maximum voltage to earth does not exceed 55V.

HSE, Electrical safety and you, A brief guide

https://www.hse.gov.uk/pubns/indg231.pdf

Reduce the voltage

One of the best ways of reducing the risk of injury when using electrical equipment is to limit the supply voltage to the lowest needed to get the job done, such as

- where electrically powered tools are used, battery-operated ones are safest; or

- portable tools designed to be run from a 110 volt centre-tapped-to-earth supply are readily available

ネット情報に次があります。

英国では電圧230V の工具からの感電は致命的なものになるため、建設現場で230V を変圧器で減圧させ 110V の電源で使う工具しか使用できない。とあります。http://www.monotsukuri.net/nvq/nvq_08.pdf

安衛則 333 条漏電による感電の防止で、次を規定している。

「電動機械器具」で、対地電圧が150V をこえる移動式若しくは可搬式のもの…については、漏電による感電の危険を防止するため、当該電動機械器具が接続される電路に、当該電路の定格に適合し、感度が良好であり、かつ、確実に作動する感電防止用漏電しや断装置を接続しなければならない。

２　事業者は、前項に規定する措置を講ずることが困難なときは、電動機械器具の金属製外わく、電動機の金属製外被等の金属部分を、次に定めるところにより接地して使用しなければならない。

OSHA は次のように規定している。

Subpart K, 1926.404 Wiring design and protection. (f) Grounding. (7) Supports, enclosures, and equipment to be grounded

(iv) Equipment connected by cord and plug.

Under any of the conditions described in paragraphs (f)(7)(iv)(A) through (f)(7)(iv)(C) of this section, exposed noncurrent-carrying metal parts of cord- and plug-connected equipment which may become energized shall be grounded:

(A) If in a hazardous (classified) location (see §1926.407).

(B) If operated at over 150 volts to ground, except for guarded motors and metal frames of electrically heated appliances if the appliance frames are permanently and effectively insulated from ground.

(C) If the equipment is one of the types listed in paragraphs (f)(7)(iv)(C)(1) through (f)(7)(iv)(C)(5) of this section. However, even though the equipment may be one of these types, it need not be grounded if it is exempted by paragraph (f)(7)(iv)(C)(6).

(1) Hand held motor-operated tools;

(2) Cord- and plug-connected equipment used in damp or wet locations or by employees standing on the ground or on metal floors or working inside of metal tanks or boilers;

(3) Portable and mobile X-ray and associated equipment;

(4) Tools likely to be used in wet and/or conductive locations; and

(5) Portable hand lamps.

(6) Tools likely to be used in wet and/or conductive locations need not be grounded if supplied through an isolating transformer with an ungrounded secondary of not over 50 volts. Listed or labeled portable tools and appliances protected by a system of double insulation, or its equivalent, need not be grounded. If such a system is employed, the equipment shall be distinctively marked to indicate that the tool or appliance utilizes a system of double insulation.

NK: (c) is specified based on HSE. Japanese regulation and OSHA specify as above and they are almost same.

Under any of the conditions described in paragraphs (i) through (iii) below, exposed noncurrent-carrying metal parts of cord- and plug-connected tools shall be grounded:

(i) If in a hazardous (classified) location stipulated in OSHA §1926.407 Hazardous (classified) locations.

(ii) If operated at over 150V to ground, except for guarded motors and metal frames of electrically heated appliances if the appliance frames are permanently and effectively insulated from ground.

(iii) If the equipment is one of the types listed in paragraphs i) through v) below. ~~However, even though the equipment may be one of these types, it need not be grounded if it is exempted by paragraph vi) below.~~

i) Hand held motor-operated tools;

ii) Cord- and plug-connected equipment used in damp or wet locations or by workers standing on the ground or on metal floors or working inside of metal tanks or boilers;

iii) Portable and mobile X-ray and associated equipment;

iv) Tools likely to be used in wet and/or conductive locations; and

v) Portable hand lamps.

~~vi) Tools likely to be used in wet and/or conductive locations need not be grounded if supplied through an isolating transformer with an ungrounded secondary of not over 50V. Listed or labeled portable tools and appliances protected by a system of double insulation, or its equivalent, need not be grounded. If such a system is employed, the equipment shall be distinctively marked to indicate that the tool or appliance utilizes a system of double insulation.~~

(3) Residual current (trip) devices

(a) Where mains supply is used, the risk of injury is high if equipment, tools, leads, wires or cables are damaged or if there is a fault;

(b) Use residual current (trip) devices (RCD) to detect some faults in the electrical system and rapidly switch off the supply; and

(c) RCDs shall be properly installed and enclosed; checked daily; treated with care; kept free of moisture and dirt; and protected against vibration and mechanical damage.

(4) Lighting systems

Protect cabling and bulbs against breakage. If a bulb breaks, the exposed filament may present a hazard. Have a system for checking bulbs regularly to maintain electrical safety and to keep the site well-lit.

(5) Temporary electrical systems shall not be used in excess of intended loads or rated capacity whichever is less.

(6) Temporary electrical systems shall not be used for any purpose other than the intended original purpose.

(7) Regularly inspect power tools and take them out of service if they are damaged. Tools should be serviced by qualified electricians; makeshift repairs are prohibited.

(8) Electrical equipment and tools shall be checked for damage before every shift, have a visual inspection every week and have a combined inspection and test before first use on a site and then every month, records of these checks shall be kept.

6.7.4 Method statement for Temporary Electrical Installations

The Method Statement for temporary electrical installations (required by the Contract and JSSS 1.7 [*Contractor's Method Statements*] shall include a copy of the Laws and regulations of the Country and the relevant authority which supplies power to the Contractor in relation with relevant temporary electrical installations and shall show:

If stipulates both requirements in UK and OSHA will confuse because different voltage limits such as 110V/50V and 150V/50V in UK and OSHA/japan, respectively.
(c) is replaced with new one based on HSE and (d) is added referring OSHA.
Some sentences may not be necessary as shown with deletion line.

(3) Residual current (trip) devices

(a) ~~Where mains supply is used, the risk of injury is high if equipment, tools, leads, wires or cables are damaged or if there is a fault~~Ensure that equipment, tools, leads, wires or cables are free of defect or damage, in particular when mains supply is used.; (JC61)

JC61: 原文はスペックの requirement の記述になっていない。
The (a) is not the style of requirement in specification, so modified.
NK: modified as commented.

(b) Use residual current (trip) devices (RCD) to detect some faults in the electrical system and rapidly switch off the supply; and

(c) RCDs shall be properly installed and enclosed; checked daily; treated with care; kept free of moisture and dirt; and protected against vibration and mechanical damage.

(4) Lighting systems

Protect cabling and bulbs against breakage. If a bulb breaks, the exposed filament may present a hazard. Have a system for checking bulbs regularly to maintain electrical safety and to keep the site well-lit.

(5) Temporary electrical systems shall not be used in excess of intended loads or rated capacity whichever is less.

(6) Temporary electrical systems shall not be used for any purpose other than the intended original purpose.

(7) Regularly inspect power tools and take them out of service if they are damaged. Tools should be serviced by qualified electricians; makeshift repairs are prohibited.

(8) ~~Electrical equipment and tools shall be checked for damage before every shift, have a visual inspection every week and have a combined inspection and test before first use on a site and then every month, records of these checks shall be kept.~~(JC62)

JC62: English is too rough to understand.
Since Inspection, Maintenance and Repair are elaborated in JSSS6.7.6, (8) may be deleted.
NK: deleted as commented.

6.7.4 Method statement for Temporary Electrical Installations

The Method Statement for temporary electrical installations (required by the Contract and JSSS 1.7 [*Contractor's Method Statements*] shall include a copy of (JC63) the Laws and regulations of the Country and the relevant authority which supplies power to the Contractor in relation with relevant temporary electrical installations and shall show:

JC63: 全文をコピーするのか？shall make reference to とかでいいのでは？
Shall all document be copied all? It may be possible to specify "shall make reference to".
NK: modified as commented.

---

(3) Residual current (trip) devices

(a) ~~Where mains supply is used, the risk of injury is high if equipment, tools, leads, wires or cables are damaged or if there is a fault~~Ensure that equipment, tools, leads, wires or cables are free of defect or damage, in particular when mains supply is used;

(b) Use residual current (trip) devices (RCD) to detect some faults in the electrical system and rapidly switch off the supply; and

(c) RCDs shall be properly installed and enclosed; checked daily; treated with care; kept free of moisture and dirt; and protected against vibration and mechanical damage.

(4) Lighting systems

Protect cabling and bulbs against breakage. If a bulb breaks, the exposed filament may present a hazard. Have a system for checking bulbs regularly to maintain electrical safety and to keep the site well-lit.

(5) Temporary electrical systems shall not be used in excess of intended loads or rated capacity whichever is less.

(6) Temporary electrical systems shall not be used for any purpose other than the intended original purpose.

(7) Regularly inspect power tools and take them out of service if they are damaged. Tools should be serviced by qualified electricians; makeshift repairs are prohibited.

(8) ~~Electrical equipment and tools shall be checked for damage before every shift, have a visual inspection every week and have a combined inspection and test before first use on a site and then every month, records of these checks shall be kept.~~

6.7.4 Method statement for Temporary Electrical Installations

The Method Statement for temporary electrical installations (required by the Contract and JSSS 1.7 [*Contractor's Method Statements*] ~~shall include a copy of~~ shall make reference to the Laws and regulations of the Country and the relevant authority which supplies power to the Contractor in relation with relevant temporary electrical installations and shall show:

(1) Required Standards and voltages of electric wires and cables.

(2) Protective work for electric wires and cables.

(3) Electric diagram.

6.7.5 Responsible Personnel

(4) The Contractor shall post the name and contact information for the person in charge of managing and operating the temporary electrical installation.

(5) All other persons shall be prohibited from operating repairing or interfering with the temporary electrical installation unless otherwise instructed or approved by the HSO or person in change.

6.7.6 Inspection, Maintenance and Repair

The Contractor shall inspect the temporary electric facilities and perform all requisite maintenance, replacement and repair to ensure the continued and safe operation including the following:

(1) Daily inspection

(a) Prepare a daily inspection checklist of the temporary electric installations including the condition of associated buildings, enclosures, fences and the like;

(b) Inspect daily; and

(c) Record the inspection results.

(2) Periodical inspection

(a) Prepare periodical (weekly and monthly) inspection checklist including measurement of insulation resistance values of temporary electric installations and the operating status of protective devices against overcurrent, grounding fault, etc.;

(b) Inspect periodically; and

(c) Record the inspection results.

(3) Maintenance and repair

(a) As a result of inspection, carry any maintenance, repair or replacement if and as necessary;

(b) Stop operation of the temporary electric installations or affected parts thereof and prevent any further operation until maintenance, repair or replacement is completed; and

(c) Reinspect, the temporary electric installations or parts thereof, and after the HSO has declared same as “Safe for Use”, operation can then re-commence.

6.7.7 Safety Measures during the Work

The Contractor shall take the following safety measures when installing, moving, removing, repairing temporary electric facilities.

(1) Cabling/Wiring

(1) Required Standards and voltages of electric wires and cables.

(2) Protective work for electric wires and cables.

(3) Electric diagram.

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The Contractor shall take the following safety measures when installing, moving, removing, repairing temporary electric facilities.

(1) Cabling/Wiring

(a) Carry out cabling/wiring work so that safety distances between cabling/wiring and any other cabling/wiring, posts, gantries,

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(b) If appropriate separation distances cannot be maintained, enclose cabling/wiring in insulated ducts, conduit or trunking;

(c) Locate cabling/wiring where it does not obstruct other works; and

(d) Always enclose cabling/wiring in insulated ducts, conduit or trunking in working areas or Operational Areas to avoid any risk of contact, damage or injury.

(2) Switchgear, Panels and Switches

(a) Enclose switchgear, panels and switches in waterproof and lockable metal enclosures to suit the environmental conditions and of which shall be grounded; and

(b) Fuses and circuit breakers shall be suitable for their use and load capacity.

(3) Power Receiving Equipment and Transformers

(a) Power receiving equipment, transformers and the like, shall be located in securely fenced or enclosed and locked compounds, enclosures or buildings from which entry by unauthorised persons shall be prohibited;

(b) Any work in such areas shall be designated as Dangerous Work and the provisions of JSSS 2.1.4 [*Further Requirements for Dangerous Work*] shall be applied; and

(c) All such places shall be clearly indicated as dangerous no entry areas with clear and obvious signage.

(4) Grounding (earthing)

(a) All temporary electric installations shall be grounded for each part to prevent the risk of electric shock due to electrical leakage; and

(b) Grounding electrodes shall be highly conductive such as copper or steel.

(5) Relocation and Repair Work of Temporary Electrical Installation

(a) Relocation and repair work to or in the vicinity of temporary electrical installations shall only be performed after the power supply has been turned off, isolation has been confirmed, confirmation that temporary protective casings have been installed over existing cables and no electricity is measured by electricity detection;

(b) When re-energising temporary electric installations during or after any relocation or repair work, the Contractor shall ascertain in advance that there is no risk of electric shock to any persons engaged on or in the vicinity of the relocation or repair work; and

(c) When installation, relocation or repair work of temporary electric installations is completed, the facilities shall be operated only after testing and inspection of the installation by the HSO and after the HSO has declared same as "Safe for Use".

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6.8 ELECTRIC AND GAS WELDING AND CUTTING

6.8.1 General

(1) This Section contains safety requirements for electric and gas, welding and cutting.

(2) Electric and Gas welding and cutting work shall be designated as Dangerous Work and the provisions of JSSS 2.1.5 [*Further Requirements for Dangerous Work*] shall be applied.

(3) Electric and Gas welding and cutting work shall only be performed, inspected and tested by Contractor's Personnel that are qualified welders, trained and certified for such operations in accordance with JSSS 1.18 [*Proper Placement of Contractor's Personnel*] and that follow strict procedures prepared by the Contractor and specified in the Method Statement and Safety Plan.

6.8.2 Compliance Standards

By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*], for any items in this Section or relevant to the subject of this Section and which are not fully covered by JSSS, the Contractor shall take necessary measures for Electric and Gas Welding and Cutting complying with the technical requirements specified in the following standards:

(1) OSHA PART 1926-Safety and Health Regulations for Construction, Subpart J - Welding and Cutting, 1926.351 Arc welding and cutting.

(2) OSHA PART 1926-Safety and Health Regulations for Construction, Subpart J- Welding and Cutting, 1926.351 Gas welding and cutting.

6.8.3 Electric Welding and Cutting

The Contractor shall take the following measures for the electric welding and cutting:

(3) Check measures before:

(a) Automatic voltage reduction device for reducing no load voltage to prevent the shock hazard, is fitted and is functioning properly;

(b) Frame of welding machine is grounded;

(c) Grounding conductor is installed properly and working;

(d) There is no damage to welding cables;

(e) There is no damage to electrode holder, insulation of earth clamp or cable connections; and

(f) Carry out all such further checks that are required by the manufacturer's official maintenance and repair manual.

If any items are found to be missing or defective, the Contractor shall prohibit use until it has been repaired or replaced and the equipment has been inspected, tested and certified as "Safe for Use" by HSO, before it can be used.

(4) Measures to be adopted during operation:

(a) Prevent the occurrence of stray currents by securely fixing the earth cable with an earth clamp to a suitable earth, close to the work location;

(b) Use the correct type and size of cables and never use alternatives such as tools or reinforcing bars;

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(2) Measures to be adopted during operation:

(a) Prevent the occurrence of stray currents by securely fixing the earth cable with an earth clamp to a suitable earth, close to the work location;

(b) Use ~~the correct type and size of cables~~ cables of correct type and size and never use alternatives such as tools or reinforcing bars;

To MD, please review the above comment.

(c) When not working, remove electrode from holder and turn off the welding machine;

(d) Weld only in suitable environment and climatic conditions. Stop working outdoors during rainfall and take measures to prevent the welding machine, cables and accessories from getting wet;

(e) If any worker receives an electric shock, the Contractor shall stop the work immediately, identify the cause, prohibit use of the equipment until it has been repaired or replaced and the equipment has been inspected, tested and certified as "Safe for Use" by HSO, before it can be used;

(f) Ensure that workers wear appropriate PPE including personal face protectors for welding and protective gloves as specified in JSSS 2.9 [*PPE and First Aid*]; and

(g) Instruct all workers not to look directly at the electric arc with their naked eyes.

(5) Periodical inspection of welding machines and welding equipment.

(h) Electric welding and cutting equipment shall be inspected and tested periodically in accordance with JSSS 4.2 [*Inspection, Maintenance and Repair*] and JSSS 4.3 [*Safety Requirements*] and

(i) The voltage reduction device shall be regularly inspected and tested at least once every six months.

6.8.4 Gas Welding and Cutting

The Contractor shall take the following measures for gas welding and cutting.

(1) Check measures before:

(j) Flashback arrestor to stop flame back-up into the equipment or gas supply line is installed;

(k) There is no damage to gas cylinders, regulators, flashback arrestor, hose bands, hoses, blow pipes, tip nozzles, and other accessories and equipment;

(l) Gas cylinders, regulators and caps and other relevant accessories and equipment have been inspected periodically and certified by HSO as "Safe for Use"; and

(m) Carry out all such further checks that are required by the manufacturer's official maintenance and repair manual.

If any items are found to be missing or defective, the Contractor shall prohibit use until it has been repaired or replaced and the equipment has been inspected, tested and certified as "Safe for Use" by HSO, before it can be used.

(2) Handling of gas welding and cutting equipment

Welders engaged in gas cutting and welding shall be aware of the following requirements:

JC64: "Use cables of correct type and size" seems more correct. Well, it' up to MD's judgement.
To MD, please review the above comment.

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JC65: No similar text is provided in the Electric welding above. Delete this or add a similar text in the Electric welding.

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(2) Handling of gas welding and cutting equipment

~~Welders engaged in gas cutting and welding shall be aware of the following requirements:~~

(a) Gas hoses and gas weld sets, shall not be damaged or worn and have no risk of gas leakage;

(b) Gas weld sets shall be turned off when not in use and shall not be left lying around;

(c) Gas pressure regulators shall not be operated during cutting or welding operation;

(d) Connections between cylinders, gas hoses and gas weld sets shall be securely tightened with appropriate connectors;

(e) When tip nozzle overheats, flashback is likely to occur, therefore interrupt continuous working, from time to time and cool the nozzle by submerging in water whilst discharging oxygen at low pressure; and

(f) When finishing or interrupting work, completely close the container valves and vent gas in regulators.

(3) Handling of gas cylinders

Workers and welders shall be trained to handle gas cylinders so that they are aware of the following requirements:

(a) Not to place gas cylinders:

(i) Where there is insufficient ventilation;

(ii) Near to fires, flames, heat sources, electrical sparks or grinding sparks; and

(iii) Near to Dangerous Goods or Hazardous Substances or near to Hazardous Areas.

(b) Handle gas cylinders with care and do not drop, throw or mishandle;

(c) Keep cylinders cool by shading and do not expose to direct sunlight;

(d) Position during storage and use so that there is no risk of falling;

(e) Seal cylinders when transporting;

(f) Place compressed gas cylinders upright at all times except while cylinders are actually being hoisted or carried;

(g) Do not place gas cylinders in the vicinity of lightning conductors or grounding rods for electrical equipment;

(h) Mark all gas cylinders as either full or empty, and separate from other cylinders in storage and before and during use; and

(i) When there is a risk of freezing, do not place gas cylinders in wet

NK: deleted.

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(f) Place compressed gas cylinders upright at all times except while cylinders are actually being hoisted or carried;

(g) Do not place gas cylinders in the vicinity of lightning conductors or grounding rods for electrical equipment;

(h) Mark all gas cylinders as either full or empty, and separate them from each other ~~cylinders~~ in storage ~~and before~~ and during use; (JC66) and

JC66: 充填済のものと空のものを別々に分けておく、ということならば、こういう表現にならないか？
In storage と during use は理解できるが、before というのはよくわからない。
Before というのは実質的には in storage に含まれるのではないでしょうか？

Does it become this sentence if full and empty cylinders are separated?
"In storage" and "during use" can be understood, but "before" cannot be understood.
Does the "Before" practically mean including "in storage".
To MD, please review the comment above and sentence modified.

(i) When there is a risk of freezing, do not place gas cylinders in wet

(a) Gas hoses and gas weld sets, shall not be damaged or worn and have no risk of gas leakage;

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(g) Do not place gas cylinders in the vicinity of lightning conductors or grounding rods for electrical equipment;

(h) Mark all gas cylinders as either full or empty, and separate them from each other ~~cylinders~~ in storage ~~and before~~ and during use; and

or humid places. When valves of cylinder or regulating valves freeze, thaw them out with hot water, do not flame or direct fire.

(4) Safety measures for gas welding and cutting work:

(a) Ensure that all internal and external work areas are fully ventilated;

(b) When checking for gas leakage from the gas welding or cutting equipment, use a liquid detergent or similar, never use flames or fire;

(c) Provide adequate fire extinguishing equipment near the working place, always maintained and certified, suitably labelled, available and positioned so that it can be used immediately when necessary;

(d) Remove oil and dust adhering to the valve of gas cylinders;

(e) Ignition and digestion shall be accomplished only with oxygen supply valve closed;

(f) Ensure that workers wear appropriate PPE including personal face protectors for welding and protective gloves as specified in JSSS 2.9 [*PPE and First Aid*]; and

(g) Instruct all workers not to look directly at the weld with their naked eyes.

(5) Periodical inspection of gas welding and cutting equipment.

Gas welding and cutting equipment shall be inspected and tested periodically in accordance with JSSS 4.2 [*Inspection, Maintenance and Repair*] and JSSS 4.3 [*Safety Requirements*].

6.8.5 Fire Prevention

The Contractor shall take all necessary measures to prevent fires caused by welding and cutting operations, including:

(1) When welding or cutting is carried out on/in containers previously filled with Dangerous Goods or Hazardous Material, the containers shall be thoroughly cleaned so that they are completely free from such Dangerous Goods or Hazardous Material before starting work.

(2) Welding or cutting work shall be carried out at place where there is a risk of causing fire either to adjacent buildings or to Contractor's Equipment, Goods, debris, waste or other materials, then fire prevention measures shall be adopted. This may include moving all such Contractor's Equipment, Goods, debris, waste or other materials, from the work and taking other protective measures.

(3) Welding or cutting work shall not be conducted near Dangerous Goods or Hazardous Substances or in or near to Hazardous Areas.

(4) Appropriate types and quantities of fire extinguisher shall be provided, near the working place, always maintained and certified, suitably labelled, available and positioned so that it can be used immediately when necessary.

(5) Spotter(s) shall be provided at areas where welding or cutting work is

or humid places. When valves of cylinder or regulating valves freeze, thaw them out with hot water, do not flame or direct fire.

(4) Safety measures for gas welding and cutting work:

(a) Ensure that all internal and external work areas are fully ventilated;

(b) When checking for gas leakage from the gas welding or cutting equipment, use a liquid detergent or similar, never use flames or fire;

(c) Provide adequate fire extinguishing equipment near the working place, always maintained and certified, suitably labelled, available and positioned so that it can be used immediately when necessary;

(d) Remove oil and dust adhering to the valve of gas cylinders;

(e) Ignition and digestion shall be accomplished only with oxygen supply valve closed;

(f) Ensure that workers wear appropriate PPE including personal face protectors for welding and protective gloves as specified in JSSS 2.9 [*PPE and First Aid*]; and

(g) Instruct all workers not to look directly at the weld with their naked eyes.

(5) Periodical inspection of gas welding and cutting equipment.

Gas welding and cutting equipment shall be inspected and tested periodically in accordance with JSSS 4.2 [*Inspection, Maintenance and Repair*] and JSSS 4.3 [*Safety Requirements*].

6.8.5 Fire Prevention

The Contractor shall take all necessary measures to prevent fires caused by welding and cutting operations (JC66), including:

JC66: Operation と work と何もないのと、混じっている印象です。統一をお願いします。
It seems that operation, work and nothing are mixed, please make consistent term be used.
NK: The term of "work" will be consistently used but "operation" is not used.

(1) When welding or cutting work is carried out on/in containers previously filled with Dangerous Goods or Hazardous Material, the containers shall be thoroughly cleaned so that they are completely free from such Dangerous Goods or Hazardous Material before starting work.

(2) When ~~W~~welding or cutting work is ~~shall be~~ carried out at place where there is a risk of causing fire either to adjacent buildings or to Contractor's Equipment, Goods, debris, waste or other materials, then fire prevention measures shall be adopted. This may include moving all such Contractor's Equipment, Goods, debris, waste or other materials, from the work and taking other protective measures.

(3) Welding or cutting work shall not be conducted near Dangerous Goods or Hazardous Substances or in or near to Hazardous Areas.

(4) A sufficient number of fire extinguishers of ~~A~~appropriate types ~~and quantities of fire extinguisher~~ shall be provided, near the working place, always maintained and certified, suitably labelled, available and positioned so that it can be used immediately when necessary.

(i) When there is a risk of freezing, do not place gas cylinders in wet or humid places. When valves of cylinder or regulating valves freeze, thaw them out with hot water, do not flame or direct fire.

(4) Safety measures for gas welding and cutting work:

(a) Ensure that all internal and external work areas are fully ventilated;

(b) When checking for gas leakage from the gas welding or cutting equipment, use a liquid detergent or similar, never use flames or fire;

(c) Provide adequate fire extinguishing equipment near the working place, always maintained and certified, suitably labelled, available and positioned so that it can be used immediately when necessary;

(d) Remove oil and dust adhering to the valve of gas cylinders;

(e) Ignition and digestion shall be accomplished only with oxygen supply valve closed;

(f) Ensure that workers wear appropriate PPE including personal face protectors for welding and protective gloves as specified in JSSS 2.9 [*PPE and First Aid*]; and

(g) Instruct all workers not to look directly at the weld with their naked eyes.

(5) Periodical inspection of gas welding and cutting equipment.

Gas welding and cutting equipment shall be inspected and tested periodically in accordance with JSSS 4.2 [*Inspection, Maintenance and Repair*] and JSSS 4.3 [*Safety Requirements*].

6.8.5 Fire Prevention

The Contractor shall take all necessary measures to prevent fires caused by welding and cutting ~~operations~~ works, including:

(1) When welding or cutting work is carried out on/in containers previously filled with Dangerous Goods or Hazardous Material, the containers shall be thoroughly cleaned so that they are completely free from such Dangerous Goods or Hazardous Material before starting work.

(2) When welding or cutting work ~~shall~~ be is carried out at place where there is a risk of causing fire either to adjacent buildings or to Contractor's Equipment, Goods, debris, waste or other materials, then fire prevention measures shall be adopted. This may include moving all such Contractor's Equipment, Goods, debris, waste or other materials, from the work and taking other protective measures.

(3) Welding or cutting work shall not be conducted near Dangerous Goods or Hazardous Substances or in or near to Hazardous Areas.

(4) A sufficient number of fire extinguishers of ~~A~~ appropriate types ~~and quantities of fire extinguisher~~ shall be provided, near the working

taking place when there is risk of fire by the heat transmitted or sparks of welding or cutting, getting into walls, floors, ceilings and the like. (6) When welding, cutting, or heating is performed on walls, floors, and ceilings, since direct penetration of sparks or heat transfer may introduce a fire hazard to an adjacent area, the same precautions shall be taken on the opposite side as are taken on the side on which the welding is being performed.	(5) Spotter(s) shall be provided at areas where welding or cutting work is taking place when there is risk of fire by the heat transmitted or sparks of welding or cutting, getting into walls, floors, ceilings and the like. (6) When welding, cutting, or heating is performed on walls, floors, and ceilings, since direct penetration of sparks or heat transfer may introduce a fire hazard to an adjacent area, the same precautions mentioned in this JSSS 6.8.5 –shall be taken on the opposite side as are taken on the side on which the welding is being performed.	place, always maintained and certified, suitably labelled, available and positioned so that it can be used immediately when necessary. (5) Spotter(s) shall be provided at areas where welding or cutting work is taking place when there is risk of fire by the heat transmitted or sparks of welding or cutting, getting into walls, floors, ceilings and the like. (6) When welding, cutting, or heating work is performed on walls, floors, and ceilings, since direct penetration of sparks or heat transfer may introduce a fire hazard to an adjacent area, the same precautions mentioned in this JSSS 6.8.5 shall be taken on the opposite side as are taken on the side on which the welding work is being performed.

検討経緯書

7 Excavation Works

JSSS in Japanese （Provisional Final Version R1 12/19）	English Translation（R0 12/15）	English (R1_12/30)
		8 Excavations 8.1 General 8.2 Safety Measures to be considered in Excavation Planning 8.3 Safety Measures for Excavation Works 8.3.1 Placement of Personnel 8.3.2 Safety Measures before Excavation 8.3.3 Safety Measures during Excavation 8.4 Manual Excavation Works 8.5 Mechanical Excavation Works 8.6 Trench Excavation 8.6.1 General 8.6.3 Safety Measures during Trench Excavation
8 土工工事 **8.1 一般事項** (1) 本章では、明り掘削及び発破作業について規定する。明り掘削にはトレンチ掘削を含むものとする。 (2) 用語の定義 トレンチ掘削とは、ガス管や上下水道管等を敷設するために行われる掘削の深さが幅よりも大きいものをいう。一般的に幅が 4.6m(15feet)以下の掘削をいう。 (3) 請負者は、盛土工事に関しては、本仕様書の掘削作業の規定に準拠して、安全措置を講じなければならない。 (4) 請負者は、道路上で土工事の作業を行う場合は、2.2.2 [道路占用時の措置]及び 2.4.1[監視員、誘導員の配置]に規定の措置を講じなければならない。 (5) 請負者は、埋設物がある場所での掘削工事に関しては、本仕様書 3.1[地下埋設物]に規定の措置を講じなければならない。	**8. Excavations *(Excavation Works)*** **8.1 General** (1) This chapter stipulates open excavations and blasting excavations. Open excavations include trench excavations. (2) Definitions Trench excavation means excavation performed for laying gas pipes and water /sewage pipes etc. which has the depth larger than the width. In general, excavation is less than 4.6m (15feet) wide. (3) The Contractor shall take safety measures for the embankment work conforming to the provisions for excavation work in this Specification. (4) When the contractor performs earthwork work on the road, the Contractor shall take the measures prescribed in 2.2.3 [Measures for Road Occupation] and 2.4 [Spotters, Flagmen and the Like]. (5) The Contractor shall take the measures prescribed in 3.1 [Underground Services] for excavation work where there is any underground service.	**8 Excavations** **8.1 General** (1) This Chapter stipulates open excavations and blasting excavations. Open excavations include trench excavations. (2) Definitions Trench excavation means excavation performed for laying gas pipes and water /sewage pipes, etc. which depth is larger than its width. In general, excavation width is less than 4.6m (15feet). *To MD; BS alternative (3.1.2.2): horizontal or slightly inclined long, narrow open excavation, usually with vertical sides.* (3) The Contractor shall take safety measures for the embankment works conforming to the provisions for excavation work in JSSS. (4) When the Contractor performs excavation work on the road, the Contractor shall take the measures specified in JSSS 2.2.3 [Measures for Road Occupation] and 2.4 [Spotters, Flagmen and the Like]. (5) The Contractor shall take the measures specified in JSSS 3.1 [Underground Services] for excavation work where there is underground services.
8.2 掘削工事の計画における安全上の留意事項 (1) 地形、表土、土質、地質の状態を考慮した安全な掘削の順序、掘削の位置及び掘削土砂の運搬の方法等を計画すること。 (2) 掘削の高さ、のり勾配、段切りの計画 掘削の高さ、勾配(sloping)、段切り(benching)は、本契約で別途に定めがない限り、地山の形状、地質・土質等に応じて以下の基準に準拠しなければならない。 OSHA Subpart P―Excavations, § 1926.652 Requirements for	**8.2 Safety Points to be considered in Excavation Planning** For safe execution of excavation work, the Contractor shall: (1) Plan the safe excavation sequence, excavation location and method of transporting excavated soil in consideration of topography, topsoil, soil and geological conditions. (2) Unless otherwise specified in the Contract, excavation depth, sloping, and benching shall comply with the following standards depending on the shape, geology and soil quality of the ground.	**8.2 Safety Measures to be considered in Excavation Planning** For the safe execution of excavation works, the Contractor shall: (1) Plan the safe excavation sequence, excavation location and method of transporting excavated materials taking into consideration of topography, topsoil, soil and geological conditions of the Site; (2) Unless otherwise specified in the Contract, excavation height, sloping, and benching shall comply with the following standards depending on the shape, soil and geological conditions of the Site; OSHA Subpart P—Excavations §1926.652 Requirements for protective systems. (b) Design of sloping and benching systems.

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protective systems. (b) Design of sloping and benching systems. (3) 仮設工事の掘削の土留め工 本仕様書 7.2[土留め工]、7.2.1[一般](2)「土質に見合った勾配を保って掘削できる場合を除き、掘削の深さが 1.5mを超える場合には、原則として、土留め工を施すものとする。」に従い、土留工を計画すること。 (4) 地山の含水、湧水を考慮した適切な排水工を施し、作業場所を乾いた状態に保持して掘削すること。 (5) れんが壁、コンクリートブロツク塀、擁壁等の建設物に近接する箇所で掘削の作業を行なう場合において、これらの損壊等により作業者に危険を及ぼすおそれのあるときは、本契約で別途に定められたとおりに補強すること。 (6) 掘削箇所の上部に存在する浮き石、立木等により、作業員又は建設機械に危険が及ぶ恐れがあり、本契約に定めがない場合は次の措置を講じること。 (a) 浮き石等の除去、落石防護柵等の設置等の対策についてエンジニアと協議すること。 (b) 協議の結果、施工方法を含む安全措置についてエンジニアに提案し、その指示に従うこと。	OSHA Subpart P—Excavations §1926.652 Requirements for protective systems. (b) Design of sloping and benching systems. (3) Earth retaining for excavation of temporary work (a) Except in the case as specified in 7.2.1[Earth Retaining Work] (2), where the excavation depth exceeds 1.5m, the earth retaining work shall be planned in general. (b) For trench excavation, plan according to the provisions in 8.6 [Trench excavation]. (4) Execute excavation with appropriate drainage of the water content and spring water of the ground by eliminating the influence of those water as much as possible. (5) If excavation work is performed near a structure such as brick / concrete block wall or earth retaining wall, and when there is a risk of danger to the worker due to a damage to the structure, reinforce the structure concerned as stipulated separately in the Contract. (6) If fragmented rocks, standing trees, etc. existing above the excavation area may pose a danger to workers or construction equipment, take the following measures unless otherwise specified in the Contract. (a) Consult with the Engineer about measures such as removal of fragmented rocks and installation of rock fall protection fences etc. **(b)** Based on the result of discussions, propose safety measures including construction methods to the Engineer and follow the instructions.	(3) Earth retaining for excavation of temporary works In accordance with JSSS 7.2.1[Earth Retaining Work] (2), the earth retaining shall be planned in principle to be provided for the excavation of depth exceeds 1.5m; (4) Execute excavation under dry condition by providing appropriate drainage to drain the water contained in the ground and spring water at the Site; (5) When excavation work is performed near structures such as brick wall, concrete block wall, earth retaining wall, and there is a risk of danger to the workers by the damage to the structures by the excavation work, reinforce the structures concerned as stipulated separately in the Contract; (6) If loose rocks, standing trees, etc. existing above the excavation area may pose a danger to workers or construction equipment, take the following measures unless otherwise specified in the Contract; (a) Consult with the Engineer about measures such as removal of loose rocks, installation of rockfall protection fences, etc.; and (b) Based on the consultation with the Engineer, propose safety measures including construction methods to the Engineer and take actions in accordance with the Engineer's instruction.
8.3 掘削作業の安全措置 **8.3.1 要員の配置** (1) 深さ 1.5m以上の掘削作業を行うときは、本仕様書 1.8[請負者の要員の適正配置]に従い作業主任を配置しなければならない。 (2) 本仕様書 2.4[監視員、誘導員の配置]に従い、必要に応じて監視員を配置すること。但し、下記の場所においては必ず配置すること。 (a) 道路に隣接した場所又は道路内 (b) 本仕様書 3[地下埋設物・架空線等上空施設一般]に規定の架空線等上空施設近くの場所 (c) 次の掘削作業箇所 (i) 建物、その他の施設等に隣接する場所 (ii) 見通しの悪い場所、崖縁 (iii) 土石等の落下崩壊のおそれのある場所 (iv) 掘削機械、運搬機械が、作業員と近接して掘削作業を行う場所	**8.3 Safety Measures for Excavation Work** **8.3.1 Placement of Personnel** (1) When excavating at a depth of 1.5m or more, an Operation Leader shall be assigned in accordance with this Specification 1.8 [Proper Placement of Contractor's Personnel]. (2) In accordance with this Specification 2.4 [Spotters, Flagmen and the Like], spotters shall be assigned as necessary. However, be sure to place them at the following locations. (a) Places adjacent to or on the road (b) Places near overhead facilities such as stipulated in this Specification 3 [Existing Underground and Overhead Services] (c) Following excavation locations (i) Places adjacent to buildings, other facilities, etc. (ii) Places with poor visibility, cliff edges (iii) Places where there is a risk of falling or collapsing rocks or soil	**8.3 Safety Measures for Excavation Works** **8.3.1 Placement of Personnel** (1) When excavating ground at depth of 1.5m or more, an Operation Leader shall be assigned in accordance with JSSS 1.8 [Proper Placement of Contractor's Personnel]. (2) In accordance with JSSS 2.4 [Spotters, Flagmen and the Like], spotters shall be assigned as necessary. They shall be surely placed at the following locations: (a) Places adjacent to or on the road; (b) Places near overhead facilities such as stipulated in JSSS 3 [Existing Underground and Overhead Services]; (c) Following excavation locations; (i) Places adjacent to buildings, other facilities, etc.; (i) Places with poor visibility and cliff edges; (ii) Places where there is risk of falling or collapsing of rocks or soil; and (iii) Places where excavation and transporting equipment perform excavation works close to workers.

JSSS in Japanese（Provisional Final Version R1 12/19）	English Translation（R0 12/15）	English (R1_12/30)
	(iv) Where excavation and transporting equipment perform excavation work in close proximity to workers	
8.3.2 掘削作業前の安全措置 請負者は、掘削作業を行なうときは、次の措置を講じなければならない。 (1) その日の作業を開始する前、降雨後及び地震の後、地山の崩壊又は土石の落下による作業員の危険を防止するため、点検者を指名して、作業箇所及びその周辺の地山について点検を行わせること。 (2) 浮石及びき裂の有無及び状態並びに含水、湧水及び凍結の状態の変化を点検し、異常がある場合は安全措置が講じること。安全措置が講じられた後でなければ、作業を行なわないこと。 (3) 掘削場所への昇降場所には、本仕様書 7.4.2[通路の設定]に従い、階段、傾斜路等の設備を設けること。 (4) 埋設物は、3.1[埋設物一般]に従い、適切に支持又は防護するとともに、状況に応じて埋設物の位置、注意事項を明確に標示し、防護柵を設ける等の措置を講じること。 (5) 作業者及び建設機械・運搬車両の掘削箇所での転落を防ぐため、本仕様書 2.3[立入禁止の措置]に準拠し、立入防止施設（柵、仮囲い等）、警告のための旗・看板等を設置すること。 (6) 掘削する箇所の下部において、掘削土砂・岩石の落下により第 3 者、作業員、建設機械等に危険を及ぼすおそれのある場合は、次の措置を講じること。 (a) 危険個所の特定、本仕様書 2.3[立入禁止の措置]に従い立入防止施設（柵、仮囲い等）、警告看板の設置等を行うこと。 (b) 落下する岩等を受けることのできる防護柵等を設置すること。 (7) 落石等に対する危険予防措置 (a) 掘削面からの緩んだ岩や土砂の落下による危険から作業員を守るために、緩んだ岩等を除去するとともに、適切な防護措置を講ずること。 (b) 掘削により土石が落下するおそれがあるときは、あらかじめ、土止め支保工を設け、防護網を張り、労働者の立入りを禁止する等当該危険を防止するための措置を講じること。	**8.3.2 Safety Measures before Excavation** When performing excavation work, the Contractor shall: (1) Appoint an inspector and inspect the work site and surrounding ground in order to prevent danger of workers due to collapse of ground or fall of debris before starting work for the day, after rainfall and after an earthquake. (2) Check for fragmented rocks and cracks, and changes in water content, spring water and freezing conditions, and take safety measures if there are any abnormalities, and allow no work to start unless safety measures have been taken. (3) Install facilities such as stairs and ramps as a means of access or egress from the excavation site in accordance with 7.4.2 [Setting of Passage] in this Specification. (4) Support or protect the underground services appropriately in accordance with 3.1 [Existing Underground and Overhead Services], and take measures, according to the situation, such as indicating clearly the location and precautions of the underground service and providing protective fences. (5) In order to prevent workers and construction equipment / transport vehicles from falling at the excavation site, in accordance with this Specification 2.3 [Prohibition of Entry], install entry prevention facilities (fences, temporary enclosures, etc.), warning flags, and signs, etc. (6) Take the following measures when there is a risk of danger to third parties, workers, construction equipment, etc. due to fall of excavated soil / rock at the bottom of the excavation site. (a) Install fall prevention fences for excavated soil (b) Install protective fences that can catch falling rocks, etc. (c) Identify dangerous locations, install entry prevention facilities (fences, temporary enclosures, etc.), warning signs, etc. in accordance with this Specification 2.3 [Prohibition of Entry] (7) Risk prevention measures against falling rocks (a) In order to protect workers from the dangers of loose rocks and soil falling from the excavated surface, remove the loose rocks and take appropriate protective measures. **(b)** When there is a risk of debris falling due to excavation, take measures to prevent such dangers, such as setting up an earth	**8.3.2 Safety Measures before Excavation** When performing excavation works, the Contractor shall: (1) Appoint a person in charge of inspector and inspect the excavation work site and surrounding ground to prevent danger of workers by the collapse of ground or fall of soil/rock before starting work for the day and after rainfall/earthquake; (2) Check of existence of loose rocks on and cracks in the excavation work site and surrounding ground, and change in water content of ground, spring water and freezing condition, and take safety measures if there are any abnormalities, and prohibit to start the work unless safety measures have been taken; (3) Install facilities such as stairs and ramps as means of access or egress from the excavation site in accordance with JSSS 7.4.2 [Setting of Passage]; (4) Provide support or protection for the underground services appropriately in accordance with 3.1 [Existing Underground and Overhead Services], and take measures, according to the situation, such as indicating clearly the location and precautions of the underground service and providing protective fences; (5) To prevent workers and construction equipment/transport vehicles from their falling at the excavation site, in accordance with JSSS 2.3 [Prohibition of Entry], install entry prevention facilities (fences, temporary enclosures, etc.), warning flags, and signs, etc.; (6) Take the following measures when there is a risk of danger to third parties, workers, construction equipment, etc. by the fall of excavated soil/rock at the lower parts (bottom)of the excavation site; (a) Identify dangerous locations, install entry prevention facilities such as fences, temporary enclosures, warning signs, etc. in accordance with JSSS 2.3 [Prohibition of Entry]; and (b) Install protective fences that can catch falling rocks, etc. (7) Risk prevention measures against falling rocks (a) To protect workers from the dangers of falling of loose rocks and soils from the excavated surface, remove the loose rocks, etc. and take appropriate protective measures; and (b) When there is a risk of falling of loose rocks/soils due to the excavation, take measures such as provision of earth retaining and protective net beforehand, and prohibiting workers from entering in the excavation site.

JSSS in Japanese （Provisional Final Version R1 12/19）	English Translation（R0 12/15）	English (R1_12/30)
	retaining support and a protective net, and prohibiting workers from entering.	
8.3.3 掘削作業中の安全措置 (1) 法肩付近に土砂又は機材等を置かないこと。 (2) 掘削中に、崩落等の発生の可能性があると判断されたときは、全ての必要な安全措置が実施されるまで作業を中止し、危険にさらされる作業員を掘削現場から退出させること。 (3) 仮設の掘削工事で埋め戻しが必要な箇所は、作業が完了した後は出来るだけ速やかに埋め戻すこと。 (4) 明り掘削の作業を行なう場所については、当該作業を安全に行なうため必要な照度を保持すること。	**8.3.3 Safety Measures during Excavation** During excavation work, the Contractor shall: (1) Not place excavated soil or equipment near the shoulder. (2) When it is judged that there is a possibility of collapsing during excavation, suspend the operation until all necessary safety measures are implemented, and remove workers at risk from the excavation site. (3) Refill the temporary excavated areas that need to be backfilled as soon as possible after the work is completed. **(4)** For places where open excavation work is performed, maintain the necessary illuminance to perform the work safely.	**8.3.3 Safety Measures during Excavation** During the excavation works, the Contractor shall: (1) Not place excavated soil or equipment near the shoulder of excavated slopes; (2) When it is judged that there is a possibility of collapsing of ground during excavation, suspend the operation until all necessary safety measures are implemented, and remove workers at risk from the excavation site. (3) Backfill the temporary excavated areas that need to be filled as soon as possible after the work is completed. (4) For places where open excavation work is performed, maintain the necessary illuminance to perform the work safely.
8.4 人力掘削 **8.4.1 人力掘削作業上の安全事項** 請負者は、人力掘削を行う場合は、以下の安全事項を遵守して作業を行わなければならない。 (1) 垂直又は垂直に近く切り立つ掘削面・地盤、既設構造物の基礎の下の地盤の掘削（すかし掘り）をしないこと。 (2) 2 名以上で同時に掘削作業を行うときは、相互に十分な間隔を保つこと。 (3) 浮石を割る、又は起こすときは、石の安定と転がる方向を見定めて作業すること。 (4) てこ（lever）を使うときは、あらかじめ動かすものに適した長さと強さを有するものを選ぶこと。	**8.4 Manual Excavation** **8.4.1 Safety Points for Manual Excavation Work** The Contractor shall comply with the following safety matters when performing manual excavation work. (1) Excavation of the excavated surface / ground that stands vertically or close to the vertical, or the ground under the foundation of existing structures shall not be permitted. (2) When two or more workers perform manual excavation work at the same time, keep a sufficient distance from each other. (3) When cracking or raising a fragmented rock, pay attention with the stability of the stone and its rolling direction. (4) When using a lever for raising a rock, choose one that has a length and strength appropriate for the object.	**8.4 Manual Excavation Works** The Contractor shall perform manual excavation works complying with the following safety measures: (1) Excavation of the excavated surface/ground that stands vertically or close to the vertical, or the ground under the foundation of existing structures shall not be permitted; (2) When two or more workers perform manual excavation work at the same time, keep sufficient distance from each other; (3) When breaking or removing loose rock, pay attention to the stability of the rock and its falling direction; and (4) When using a lever for removing a rock, choose one that has appropriate length and strength for the work.
8.5 機械掘削 請負者は、機械掘削作業にあたり、掘削作業に従事する機械(以下、「機械」という。）の運転者及び作業員の安全に関し、次の措置を講じなければならない。 (1) 本仕様書 2.3[立入禁止の措置]に従い、機械の作業により作業員に危険がおよぶ場所への立入りを禁止し、見やすい箇所にその旨を標示するとともに、立入防止施設（柵、仮囲い等）または監視人を配置すること。 (2) 本仕様書 4.2.3[建設機械の運用時の安全措置]、4.2.4[建設機械の用途外使用の制限]及び次の(3)以降に規定の安全措置を講ずること。 (3) 機械の運転者は、次の事項を遵守し機械を運転すること。 (a) 作業範囲付近の他の作業員の位置に絶えず注意し、機械を運転すること。	**8.5 Mechanical Excavation** The Contractor shall take the following measures for the safety of operators of excavating equipment (hereinafter referred to as “equipment”) and workers engaged in excavation work. (1) In accordance with this Specification 2.3 [Prohibition of Entry], prohibit workers from entering the places where workers are in danger due to machine work by placing a notice of “No Entry” at easy-to-see locations, installing entry prevention facilities (fences, temporary enclosures, etc.) and placing a spotter. (2) Take the safety measures prescribed in 4.2.3 [Safety Measures in Operation], 4.2.4 [Restriction to Operate Construction Equipment for Other Use] and (3) to (4) below.	**8.5 Mechanical Excavation Works** The Contractor shall take the following measures for the safety of operators of excavating equipment (hereinafter referred to as “equipment”) and workers engaged in the mechanical excavation works with the equipment: (1) In accordance with JSSS 2.3 [Prohibition of Entry], prohibit workers from entering the places where workers are in danger due to the mechanical excavation works by placing notices of “No Entry” at easy-to-see locations, installing entry prevention facilities (fences, temporary enclosures, etc.) and placing spotters. (2) Take the safety measures prescribed in JSSS 4.2.3 [Safety Measures in Operation], 4.2.4 [Restriction to Operate Construction Equipment for Other Use] and (3) to (4) below. (3) The operators shall operate the equipment following the following rules: (a) Operate the equipment with paying attention always to the

JSSS in Japanese （Provisional Final Version R1 12/19）	English Translation（R0 12/15）	English (R1_12/30)
(b) 機械を後進させるときは、後方に作業員がいないことを確認し、誘導員の指示に従い後進すること。 (c) 作業後は、掘削作業中の斜面及び崩れやすい地盤に機械を置かないこと。 (d) 機械のバケットは、他の機械の運転席の上を通過させないこと。 (4) 作業員は、次の事項を遵守し作業すること。 (a) 土砂を積込み中のバケット等の下に入らないこと。 (b) 土砂の積込み、降ろし作業中のダンプトラックに近づかないこと	(3) The operators shall operate the equipment observing the following rules. (a) Operate the equipment with constant attention to the position of other workers near the working range. (b) When moving the equipment backward, make sure that there are no workers behind and follow the instructions of the flagman. (c) After work, do not place the equipment on the slope where excavation is in progress or on the ground that tends to collapse. (d) The bucket shall not pass over the operator's seat of another equipment. (4) Workers other than operators shall work observing the following rules. (a) Do not enter under the bucket that is loading soil etc. (b) Keep away from the dump truck that is loading or unloading soil etc.	position of workers near the working range; (b) When moving the equipment backward, make sure that there are no workers behind and follow the instructions of the flagman; (c) After the work, do not park the equipment on the slope where excavation is in progress or on the ground that has a possibility to collap. (d) The bucket shall not pass over the operator's seat of another equipment. (4) Workers shall work follow the following rules. (a) Not enter under the bucket that is loading materials; and (b) Keep away from dump trucks under loading or unloading materials.
トレンチ掘削 **8.5.1 一般事項** 請負者は、トレンチ掘削における掘削面の崩壊による作業員への危険を防止するため次の措置を講じなければならない。 (1) トレンチ掘削を行うときには、掘削の深さが 1.5mを超える場合には、特に理由がない限り土留め工を施すこと。 (2) 1.5m 未満の深さのトレンチ掘削においては、次に例示するような土留め工を設置しなければならない。 (a) 簡易土留め（トレンチボックス・トレンチシールド） (b) 軽量鋼矢板土留め (c) 油圧式アルミニウム支保工、木材支保工	**8.6 Trench Excavation** **8.6.1 General** The Contractor shall take the following measures to prevent danger to workers due to the collapse of the excavation surface during trench excavation. (1) When performing trench excavation with a depth of 1.5m or more, in accordance with the provisions of (2) of this specification 7.2 [Earth Retaining Works] and 7.2.1 [General], earth retaining work shall be installed unless any particular reason exists. (2) For trench excavation with a depth of less than 1.5m, one of protective systems exampled below shall be installed. (a) Simple earth retaining (Trench box, Trench shield) (b) Lightweight sheet pile earth retaining (c) Aluminum hydraulic shoring, Timber shoring	**8.6 Trench Excavation** **8.6.1 General** The Contractor shall take the following measures to prevent danger to workers due to the collapse of the excavation surface during trench excavation. (1) When performing trench excavation with depth of 1.5m or more, earth retaining shall be provided unless any particular reason exists; and (2) For trench excavation with a depth of less than 1.5m, protective systems such as exampled below shall be installed; (a) Simple earth retaining (Trench box, Trench shield); (b) Lightweight sheet pile earth retaining; and (c) Aluminum hydraulic shoring, Timber shoring.
8.6.2 トレンチ掘削中の安全上の措置 (1) トレンチ掘削用土留め工の部材は、掘削幅、深さに適し、土留めの機能を損なうような破損や欠陥のないものを使用すること。 (2) 既成品の土留め工の部材の場合、当該部材の製造者の作成したマニュアルに従い使用すること。 (3) 請負者の設計による土留め工の場合、設計図及び施工手順図にもとづき設置すること。 (4) 地山の崩壊、掘削箇所に近接する構造物の倒壊等から作業員を保護できる十分な強度を持つ土留め工を設置すること。 (5) 土留め工が作業に先行して設置されるまで掘削するトレンチ内に作業員を立ち入らせないこと。 (6) 土留め工の下端から 60cm 以上の掘削は行わないこと。	**8.6.2 Safety Measures during Trench Excavation** (1) Materials and equipment used for protective systems shall be appropriate for the width and depth of the trench and free from damage or defects that might impair their proper function. (2) Manufactured materials used for protective systems shall be used in a manner that is consistent with the recommendations of the manufacturer. (3) For earth retaining work by the Contractor's design, it shall be installed based on the design drawing and construction procedure drawing. (4) Install earth retaining works with sufficient strength to protect workers from collapse of the ground and structures near the excavation site. (5) Do not allow workers to enter the trench until the earth retaining work is installed prior to the work.	**8.6.3 Safety Measures during Trench Excavation** (1) Materials and equipment to be used for earth retaining systems shall be appropriate for the width and depth of the trench and free from damage or defects that might impair their proper function; (2) Manufactured (prefabricated) materials for earth retaining systems shall be used in accordance with the instructions and recommendations given in the manual of the manufacturer; (3) The earth retaining system designed by the Contractor shall be provided in accordance with the design and construction procedure drawings; (4) Earth retaining system with sufficient strength shall be provided to protect workers from collapse of the ground in and structures near the excavation site; (5) Workers shall not be allowed to enter the trench until the earth retaining system is installed prior to the work;

JSSS in Japanese（Provisional Final Version R1 12/19）	English Translation（R0 12/15）	English (R1_12/30)
(7) 作業のために一時的に土留め工の部材を取り外す必要があるときは、土留め工に作用する荷重を負担する仮部材を取り付けるなどの措置を講じること。 (8) 土留め工を取り外すときは、当該場所及び付近に取外し作業に従事する作業員以外の者を立ち入らせないこと。 (9) 掘削場所の埋戻しは、掘削場所から土留め工を取り外す作業と並行して行うこと。	(6) Excavation to a level greater than 60cm below the bottom of the system shall not be allowed. (7) If temporary removal of individual members is necessary, safety measures shall be taken to ensure the safety of workers, such as installing temporary members to carry the loads imposed on the support system. (8) When removing the earth retaining work, do not allow anyone other than the workers engaged in the removal work to enter the area and the vicinity. (9) Backfilling of the trench shall be performed in parallel with the removal the earth retaining work.	(6) Excavation to a level greater than 60cm below the bottom of the earth retaining system shall not be allowed; (7) If temporary removal of individual members of the earth retaining system is necessary, safety measures shall be taken to ensure the safety of workers, such as installing temporary members to hold the loads imposed on the system; (8) When removing the earth retaining system, not allow anyone other than the workers engaged in the removal work to enter the area and the vicinity; and (9) Backfilling of the trench shall be performed in parallel with the removal of the earth retaining system.

JSSS in Japanese（R2 Prov final 12/28）	JSSS in English（R0 1/3）	JSSS in English（R1 1/8）
		8 Excavation 8.7 Blasting Excavation 8.7.1 General 8.7.2 Personnel for Blasting Works 8.7.3 Preparation of Plan 8.7.4 Measures to Workers and Residents 8.7.5 Measures of Handling Explosives 8.7.6 Test Blasting 8.7.7 Monitoring for Impact to Surrounding Buildings 8.7.8 Measures of Blasting Work 8.7.9 Measures after Blasting
8 土工工事 **8.7 発破掘削** **8.7.1 一般事項** (1) 本節では、請負者の要員及び第 3 者の発破掘削作業にかかわる安全措置について規定する。発破作業自体にかかる計画については method statement に記載する。 (2) 本節の 8.7.3[計画書の作成]及び 8.7.4[作業員及び周辺住民への措置]は、明り掘削に対してのみ適用する。 (3) 本仕様書で使用する用語の定義は次である。 (a) 火薬類とは、火薬、爆薬、雷管等の火工品をいう。 (b) 危険区域（exclusion zone）とは、発破を行うとき、許可された作業員以外の者の立入りを禁止する地域をいう。 (4) 請負者は、発破掘削作業に伴う火薬類の取扱い（購入、運搬、貯蔵、使用、不要火薬類の処分等）は、当該国の法律、本契約で別途定める事項及び本仕様書に規定する事項を遵守して、行わなくてはならない。 (5) 請負者は当該国の法律、本契約、本仕様書に規定がない事項は、BS 5607 : Code of practice for the safe use of explosives in the construction industry を参照し、必要な措置をとらなくてはならない。 (6) 請負者は発破作業とそれに伴う火薬類の取扱いに伴う必要な許認可を取得するための一切の手続きを実施するものとし、発注者は許認可の取得に必要な協力を行うこととする。	**8 Excavation** **8.7 Blasting Excavation** **8.7.1 General** (1) This section stipulates safety measures for the Contractor's personnel and third parties regarding blasting work. The blasting operation plan shall be described in the relevant method statement. (2) 8.7.3 [Preparation of Plan] and 8.7.4 [Measures for workers and local residents] in this section apply only to open excavation works. (3) The term used in this Specification means as follows: (a) "explosives" mean any explosive, blasting agent and blasting supplies such as detonator etc. (b) "exclusion zone" means an area where, when blasting, no one except authorized workers is allowed to enter. (4) The Contractor shall deal with explosives associated with blasting work (purchase, transport, storage, use, disposal of unnecessary explosives, etc.) in compliance with the Laws of the Country and the provisions separately stipulated in the Contract and this Specification. (5) For items not stipulated in the Laws, the Contract nor this Specification, the Contractor shall take the necessary measures referring to the UK BS 5607: Code of practice for the safe use of explosives in the construction industry. (6) The Contractor shall carry out all procedures for obtaining the necessary approvals for the blasting work and the handling of explosives associated therewith, and the Employer shall perform the necessary cooperation for obtaining the approvals.	**8 Excavation** **8.7 Blasting Excavation** **8.7.1 General** (1) This Section stipulates safety measures for the Contractor's personnel and third parties regarding blasting works. The blasting operation plan shall be described in the relevant Method Statement. (2) JSSS 8.7.3 [Preparation of Plan] and 8.7.4 [Measures for workers and residents] in this section shall apply only to the open excavation works. (3) The terms used in JSSS means as follows: (a) "explosives" mean any explosive, blasting agent and blasting supplies such as detonator, etc. *(BS 5607: 3.24 explosive article, substance or mixture of substances that is manufactured to produce a practical effect by explosion)* (b) "exclusion zone" means an area where, when blasting, no one except authorized workers is allowed to enter. *(BS 5607: 3.22 exclusion zone, zone from which all site personnel and the public are excluded)* (4) The Contractor shall deal with explosives associated with blasting work (purchase, transport, storage, use, disposal of unnecessary explosives, etc.) in compliance with the Laws of the Country and the provisions stipulated in the Contract and JSSS. (5) For items not stipulated in the Laws, the Contract and JSSS, the Contractor shall take the necessary measures referring to BS 5607: Code of practice for the safe use of explosives in the construction industry. (6) The Contractor shall take all procedures for obtaining the necessary permission for the blasting work and the handling of explosives associated therewith, and the Employer shall extend the necessary cooperation to the Contractor for obtaining the permission.

JSSS in Japanese（R2 Prov final 12/28）	JSSS in English（R0 1/3）	JSSS in English（R1 1/8）
8.7.2 発破作業の要員 請負者は発破作業の要員に関し、次の措置を行わなくてはならない。 (1) 発破作業の作業員の配置 請負者は、発破作業を行うときは、発破担当エンジニア（explosive engineer）、発破技士（shotfirer）を、本仕様書 1.8 [請負者の要員の適正配置]に従い、配置しなければならない。 (2) 発破作業の作業員の責務と要件 (a) 発破担当エンジニアは、発破作業の計画・設計を行い、作業の主導及び安全管理を行うこと。発破担当エンジニアは、請負者が当該業務の知識、経験、能力がある(competent)と認める者であること。 (b) 発破技士は、火薬類の保管、運搬、貯蔵、発破の作業及び現場の安全管理を行うこと。発破技士は、当該国の法律で規定がある場合、発破業務の有資格者、規定が無い場合は、請負者が発破業務の知識、経験、能力がある(competent)と認める者であること。 (3) 安全教育と指導 発破作業に従事する作業員に以下の事項に関する知識が備わっていることを確保すること。また必要に応じて、関連の教育訓練を実施すること。 (a) 発破による危険の性質 (b) 発破作業での不安全状態と不安全行動 (c) 発破作業の手順 (d) 発破時の退避と退避解除の手順 (e) 火薬類の不発発生時の安全対策 (f) 緊急時対応	**8.7.2 Personnel for Blasting Work** The Contractor shall take the following measures regarding blasting personnel: (1) Placement of personnel for blasting works For blasting work, the Contractor shall assign explosive engineers and shotfirers in accordance with 1.8 [Proper Placement of Contractor's Personnel] of this Specification. (2) Responsibilities and requirement of personnel for blasting works (a) The explosive engineer shall plan the blasting work, lead the work and perform the safety management of the work. The explosive engineer shall be one that the Contractor recognizes knowledgeable, experienced, and competent in the blasting works. (b) The shotfirer shall perform safekeeping, transportation and storage of explosives, and perform blasting work and site safety management. The shotfirer shall be qualified for blasting work if required by the Laws of the Country, otherwise, the Contractor shall be deemed knowledgeable, experienced, and competent in blasting work. (3) Safety education and guidance The Contractor shall ensure that personnel engaged in blasting works have knowledge of the following, if required conduct related education and training: (a) Nature of hazards by blasting (b) Unsafe states and unsafe behaviors in blasting work (c) Procedure of blasting work (d) Procedures for evacuation and canceling evacuation at the time of blasting (e) Safety measures when a misfire occurred (f) Emergency response	**8.7.2 Personnel for Blasting Works** The Contractor shall take the following measures regarding blasting personnel: (1) Placement of personnel for blasting works For blasting work, the Contractor shall assign explosive engineer and shotfirers in accordance with JSSS 1.8 [Proper Placement of Contractor's Personnel]. (2) Responsibilities and requirement of personnel for blasting works (a) The explosive engineer shall plan the blasting works, lead the works and perform the safety management of the works. The explosive engineer shall be one whom the Contractor recognizes knowledgeable, experienced, and competent in the blasting works. (b) The shotfirer shall perform safekeeping, transportation and storage of explosives, and perform blasting work and site safety management. The shotfirer shall be qualified for blasting work if required by the Laws of the Country, otherwise, the Contractor shall be one whom the Contractor recognizes knowledgeable, experienced, and competent in the blasting works. (3) Safety education and guidance The Contractor shall ensure that personnel engaged in blasting works have knowledge of the followings, if required conduct related education and training: (a) Nature of hazards by blasting; (b) Unsafe states and unsafe behaviors in blasting work; (c) Procedure of blasting work; (d) Procedures for evacuation and return after evacuation at the time of blasting; (e) Safety measures when misfire of explosives occurred; and (f) Emergency response *(actions)*.
8.7.3 計画書の作成 請負者は、発破作業を行うときは、本仕様書 1.3［安全衛生にかかわる計画書］に規定の事項に加え、次の安全上の措置について安全計画書に記述する。 (1) 発破作業のリスク分析と対策 (2) 火薬類の輸送、保管、使用及び処分時の安全措置 (3) 発破作業時の作業員・周辺住民への安全措置 (4) 危険区域の決定 (5) 発破作業の影響がある区域、建物、構造物の特定 (6) 法律又は契約において規定される発破作業時の制約要因（振動、騒音等）を考慮した対策	**8.7.3 Preparation of Plan** The Contractor shall, when performing blasting work, describe the following safety measures in the safety plan in addition to the items prescribed 1.6 [Contractor's Safety Plan] of this Specification. (1) Risk analysis and countermeasures related to blasting work (2) Safety measures for transportation, storage, use and disposal of explosives (3) Safety measures for workers and local residents during blasting works (4) Determination of exclusion zone (5) Identification of area, buildings and structures affected by blasting work (6) Measures that take into account constraints (vibrational acceleration, etc.)	**8.7.3 Preparation of Plan** The Contractor shall, when performing blasting work, describe the following safety measures in the safety plan in addition to the items prescribed in JSSS 1.6 [Contractor's Safety Plan]. (1) Risk analysis and countermeasures in blasting works; (2) Safety measures for transportation, safekeeping, use and disposal of explosives; (3) Safety measures for workers and residents during blasting works; (4) Determination of exclusion zone; (5) Identification of area, buildings and structures affected by blasting work;

JSSS in Japanese（R2 Prov final 12/28）	JSSS in English（R0 1/3）	JSSS in English（R1 1/8）
(7) 試験発破 (8) 周辺の建物等への発破の振動による影響のモニタリング (9) 発破担当エンジニア、発破技士の識別方法 (10) 発破時の監視員の配置 (11) 周辺住民への発破作業の開始日時の通知、発破作業直前の周知方法 (12) 危険区域からの作業員の発破前の退避方法 (13) 発破時に用いる警報システム (14) 不発の火薬類の処理 (15) 発破に関する法的及び管理目的で必要な記録の一覧表	during blasting work specified by Laws or the Contract (7) Test blasting (8) Monitoring the impact of blasting vibration on surrounding buildings (9) Identifying method of explosive engineers and shotfirers from other workers (10) Placement of spotters at the time of blasting (11) Notification of the start date and time of blasting work to the local residents around the site, method of notice immediately before blasting (12) Evacuation method of workers from exclusion zone before blasting (13) Warning system for giving warning at the time of blasting (14) Treating misfired explosives (15) List of records related to blasting required for legal and administrative purposes	(6) Measures for constraints such as vibration, noises, etc. to be taken into account during blasting works required by Laws or the Contract; (7) Test blasting; (8) Monitoring method of the impact by blasting vibration to the surrounding buildings; (9) Identifying method of the explosive engineer and shotfirers from other workers; (10) Placement of Spotters at the time of blasting; (11) Method of notification of the start date and time of blasting work to the residents around the site, and notice immediately before blasting; (12) Evacuation method of workers from exclusion zone before blasting; (13) Warning system at the time of blasting; (14) Treating procedures and method of misfired explosives (The plan for the treating procedure of misfired explosives shall be prepared referring to BS5607: Code of practice for the safe use of explosives in the construction industry, 10.5 Misfires.); and (15) List of records related to blasting required legally and administratively.
8.7.4 作業員及び周辺住民への措置 (1) 周辺住民への発破作業の周知 発注者が行う関係官庁、周辺住民・建物所有者への発破作業の作業内容、安全対策等を説明する説明会のために、発注者から要請があった場合は、請負者は発注者に協力すること。 周辺住民への発破作業の開始日時の予定を通知し、発破作業前には作業の開始を周知すること。 (2) 作業員及び周辺住民への危害防止の措置 発破作業による作業員及び周辺住民への危害の防止のため、次の措置を講じること。 (a) 掘削、小割、岩塊除去等の発破による飛び石や周辺地山・岩石の崩落・転落防止のため、過装薬禁止、飛散防止対策等の措置を実施すること。 (b) 危険区域を定め立札・赤旗等で明示し、危険区域内への発破作業員以外の作業員の立入りを禁止すること。 (c) 危険区域境には発破時刻、サイレン符号その他の注意事項を示した掲示板を立てること。 (d) 退避場所を設定し、これを作業員に周知すること。 (e) 発破技士と監視員との連絡・通信機器をそろえ、適宜機器の点検を行うこと。 (f) 点火のときには、危険区域の境界に監視員を配置し、全ての作業員の退避を確認した後に点火を行うこと。	**8.7.4 Measures to Workers and Local Residents** (1) Dissemination of blasting work to local residents The Contractor shall cooperate with the Employer when requested by the Employer for a briefing session conducted by the Employer explaining the work contents, safety measures, etc. of the blasting work to the local residents, related authorities and building owners. The Contractor shall notify the public around the site of the schedule of the start of blasting work, and shall also inform the start of the work before the actual blasting. (2) Measures to prevent harm to workers and the local residents The Contractor shall take the following measures to prevent harm to workers and the local residents due to blasting work: (a) Implement measures such as prohibition of overloading and prevention of scattering in order to prevent the flying rocks and collapse of surrounding rocks from blasting for excavation, splitting, and rock removal. (b) Define dangerous areas and indicate them with signs, red flags, etc., and prohibit the entry of workers other than workers for blasting work and third parties into the area. (c) Place a bulletin board showing the blasting time, siren code and other precautions at the boundary of dangerous area. (d) Establish evacuation area and disseminate it to workers.	**8.7.4 Measures to Workers and Residents** (1) Dissemination of blasting work to residents The Contractor shall cooperate with the Employer when requested by the Employer for briefing conducted by the Employer explaining the work contents, safety measures, etc. of the blasting works to the related authorities, residents and building owners. The Contractor shall notify the residents around the site of the planned schedule of the start of blasting work, and also inform them of the start of the work before the actual blasting. (2) Measures to prevent risks to workers and the residents The Contractor shall take the following measures to prevent harm to workers and the residents by the blasting work: (a) Implement measures such as prohibition of overloading and prevention of scattering to prevent the flying rocks and collapse of surrounding rocks by blasting for excavation, splitting, and rock removal. (b) Define dangerous areas and indicate them with signs, red flags, etc., and prohibit the entry of workers other than workers for blasting work into the area. (c) Place bulletin boards showing the blasting time, siren code and other precautions at the boundary of dangerous area. (d) Establish evacuation area and disseminate it to workers. (e) Provide communication equipment between the shotfirer and the Spotter, and check appropriately the equipment. (f) Firing shall be performed after the Spotters assigned have confirmed that all workers evacuated.

JSSS in Japanese（R2 Prov final 12/28）	JSSS in English（R0 1/3）	JSSS in English（R1 1/8）
(g) 発破作業は、可能な限り昼間に実施すること。	(e) Prepare communication equipment between the shotfirer and the spotter, and check the equipment as appropriate. (f) Firing shall be performed after the spotters assigned have confirmed that all workers evacuated. (g) Insofar as possible, surface blasting shall be performed during in the daytime.	(g) Insofar as possible, blasting in the open excavation works shall be performed during in the daytime.
8.7.5 火薬類の取り扱い上の措置 (1) 火薬庫での貯蔵 現場で火薬類を貯蔵する火薬庫は、次の事項を遵守すること。 (a) 現場に火薬庫を建設するときは、当該国の法律に従い建設すること。 (b) 火薬庫の倉庫番は、当該国の法律に従い適切な人員を配置すること。 (c) 火薬庫の出納した火薬類の種類、数量、出納の年月日時刻、出納者を記録し、出納記録の内容を確認し、保存すること。 (d) エンジニアの指示があるときには、出納記録を提出すること。 その他の安全上の留意事項については、BS 5607: Code of practice for the safe use of explosives in the construction industry, 9.3 Storage を参照し、必要な措置を講じること。 (2) 火薬類の運搬 現場の火薬庫から発破作業現場に火薬類を運搬する場合には、当該国の法律を遵守するとともに、BS5607: Code of practice for the safe use of explosives in the construction industry, 9.4 Transport of explosives on site を参照し、必要な措置を講じること。 (3) 発破作業現場 発破作業現場では、次の事項を遵守すること。 (a) 火薬庫から発破作業現場へ運搬する火薬量は、発破作業日の消費見込数量を大きく越えないこと。 (b) 発破作業現場に火薬類を翌日以降の発破作業のために在置しないこと。 (c) 当日使用しなかった火薬類は火薬庫へ返却すること。 (4) 火薬類の取扱い 火薬類の取扱いは、次の事項を遵守して行うこと。 (a) 爆薬、雷管等を叩いたり、投げ出したり、取り落としたりすることのないように慎重に取扱うこと。 (b) 火薬類の収納容器は木その他電気不良導体で作られた頑丈なもので、内面に鉄類が現れない構造とすること。 (c) 爆薬と雷管は別々に異なった施錠可能な容器に収納すること。 (d) 火薬類の収納容器は衝撃等に対して安全なものとすること。	**8.7.5 Measures of Handling Explosives** (1) Storage at the explosive magazine A magazine that stores explosives on site shall be as follows: (a) The explosive magazine shall be constructed at the site in accordance with the Laws. (b) Appropriate number of personnel shall be assigned as the warehousemen for the explosive magazine in accordance with the Laws. (c) The Contractor shall record the type and inventory and use of all explosives, the date and time with the personnel concerned, and confirm the contents of the record, and retain the record. (d) The Contractor shall record the inventory and use of all explosives and, when instructed, submit the record to the Engineer For other safety matters, the Contractor shall take necessary measures referring to the UK BS 5607: Code of practice for the safe use of explosives in the construction industry. (2) Transportation of explosives When transporting explosives from the explosive magazine at the site to the blasting site, the Contractor shall comply with the Laws and take necessary measures referring to BS5607: Code of practice for the safe use of explosives in the construction industry. (3) The Contractor shall comply with the following matters: (a) The number/quantity of explosives to be transported from the explosive magazine to the blasting site shall not greatly exceed the expected consumption on the day. (b) No extra explosives shall not be kept at the blasting work site for blasting work of the next day. (c) Explosives not used on the day shall be returned to the explosive magazine. (4) Handling explosives The Contactor shall comply with the following rules for handing explosives.	**8.7.5 Measures of Handling Explosives** (1) Storage of explosives at the explosive store The explosive store that stores explosives in the Site shall be as follows: (a) The explosive store shall be constructed in the Site in accordance with the Laws. (b) Appropriate number of personnel shall be assigned as the explosive storekeeper for the explosive store in accordance with the Laws. (c) The Contractor shall record the types and quantities of explosives received and issued at the explosive store, the date and time of received and issued, and the personnel concerned, and check the records and keep the records. (d) The Contractor shall submit the records to the Engineer when the Engineer requests. For other safety measures, the Contractor shall take necessary measures referring to BS 5607: Code of practice for the safe use of explosives in the construction industry, 9.3 Storage. (2) Transportation of explosives When transporting explosives from the explosive store at the Site to the blasting site, the Contractor shall comply with the Laws and take necessary measures referring to BS5607: Code of practice for the safe use of explosives in the construction industry, 9.4 Transport of explosives on site. (3) Quantity of explosives at the blasting site (a) The quantity of explosives to be transported from the explosive store to the blasting site shall not greatly exceed the expected quantity of consumption on the day. (b) No extra explosives shall be kept at the blasting work site for blasting work of the next day. (c) Explosives not used on the day shall be returned to the explosive store. (4) Handling of explosives The Contactor shall handle the explosives as follows: (a) Handle explosives and detonators with extreme care so that they are not hit, thrown or dropped; (b) The container for explosives should be sturdily made of wood or

JSSS in Japanese（R2 Prov final 12/28）	JSSS in English（R0 1/3）	JSSS in English（R1 1/8）
(e) 火薬類の運搬、貯蔵、取扱い作業中の場所及び火薬類の貯蔵場所及び周辺では、喫煙、マッチ・ライター・火炎の使用、火花の出る作業等を禁止し、必要な場所にその旨の表示をすること。 (5) 数量の管理 火薬類の数量管理は、次の事項を遵守して行うこと。 (a) 発破技士は、発破の都度、年月日時刻、受入、消費、残りの数量、発破孔数、装てん方法について記録すること。 (b) 発破作業の担当者は、発破作業記録を検査確認すること。 (c) 請負者は記録を保存し、エンジニアの指示があるときには記録を提出すること。 (6) エンジニアに対する通知 エンジニアへの通知は、次の事項を遵守して行うこと。 (a) 火薬類の現場への搬入通知は遅くとも搬入予定の前日の正午までにエンジニアへ書面で通知すること。 (b) 発破作業の実施通知は遅くとも前日の正午までにエンジニアへ書面で通知すること。 (c) 毎週金曜日午前中までに翌週の搬入発破作業の予定をエンジニアへ書面で通知すること。	(a) Handle explosives and detonators with extreme care so that they are not hit, thrown, or dropped. (b) The container for explosives should be sturdily made of wood and other poor conducting conductors and be structured so that metals such as iron do not appear on the inner surface. (c) Explosives and detonators shall be stored in separate lockable containers. (d) The containers for explosives shall be safe against impacts, etc. (e) Smoking, use of matches, lighters, flames, sparking, etc. shall be prohibited in areas where explosives are being transported, stored and handled. Place a notice board where necessary. (5) Quantity management of explosives The Contractors shall manage explosives quantity as follows: (a) The shotfirer shall record the blasting date and time, receipt, consumption, remaining quantity, number of blast holes, and loading method. (b) The explosive engineer shall check the blasting work record. (c) The Contractor shall keep the records and submit to the Engineer when instructed. (6) Notice to the Engineer The Contractor shall give notice to the Engineer as follows: (a) Notification of bringing explosives into the site shall be given to the Engineer at least by noon the day before the scheduled arriving. (b) Notification of execution of blasting shall be given to the Engineer in writing by noon the day before at the latest. (c) Notification of the next week's blasting schedule shall be given to the Engineer by Friday morning	non-conducting materials and metals such as iron do not appear on its inner surface. (c) Explosives and detonators shall be separately stored in lockable containers. (d) The containers for explosives shall be safe against impacts, etc. (e) Smoking, use of matches, lighters, flames, sparking, etc. shall be prohibited in areas where explosives are being transported, stored and handled. Place notice boards where necessary. (5) Records of blasting and explosives The Contractors shall manage explosives quantity as follows: (a) The shotfirer shall make blasting work records to show the date and time of each blasting, receipt, consumption, remaining quantity of explosives of the day, number of blast holes and loading method of the blasting. (b) The explosive engineer shall check the blasting work records. (c) The Contractor shall keep the records and submit to the Engineer when instructed. (6) Notice to the Engineer The Contractor shall give notice to the Engineer as follows: (a) Notification of transportation of explosives into the Site shall be given to the Engineer at least by noon the day before the scheduled date of the arriving of explosives. (b) Notification of execution of blasting shall be given to the Engineer in writing by noon the day before at the latest. (c) Notification of the next week's blasting schedule shall be given to the Engineer by Friday morning.
8.7.6 試験発破 請負者は、次の目的のために本仕様書 8.7.3[計画書の作成]で規定の計画に従い試験発破を行ない、試験発破の結果に応じ、安全計画書を変更しなくてはならない。 (1) 発破に影響を与える発破地点の岩質・地形の特性等を確認すること。 (2) 計画した発破方法、火薬量、飛散防止措置の妥当性を確認すること。 (3) 発破による請負者の要員、発注者の要員、周辺住民、現場内及び隣接する既設の構造物・地盤の安全を確認すること。 (4) 発破による振動値が、契約で別途規定する又はエンジニアが指示する周辺の建物等への発破による許容振動値以下であることを確認すること。	**8.7.6 Test Blasting** The Contractor shall perform the test blasting in accordance with the plan provided in 8.7.3 [Preparation of Plan] for the following purposes, and modify the safety plan according to the result of the test blasting. (1) Confirm the characteristics of rock and topography at the blasting site that would affect blasting. (2) Confirm the suitability of the planned blasting method, explosive amount, and scattering prevention measures. (3) Confirm the safety of Contractor’s personnel, Employer’s personnel, local residents, existing on-site and adjacent structures and grounds due to blasting.	**8.7.6 Test Blasting** The Contractor shall perform the test blasting in accordance with the plan provided in 8.7.3 [Preparation of Plan] for the following purposes, and modify the safety plan according to the result of the test blasting: (1) Confirm the characteristics of rock and topography at the blasting site that would affect blasting; (2) Confirm the suitability of the planned blasting method, explosive amount, and scattering prevention measures; (3) Confirm the safety of Contractor’s personnel, Employer’s personnel, residents, existing on-site and adjacent structures and grounds due to blasting; and (4) Confirm that the vibration value due to blasting is lower than the allowable vibration value due to blasting of nearby buildings, etc.

JSSS in Japanese（R2 Prov final 12/28）	JSSS in English（R0 1/3）	JSSS in English（R1 1/8）
	(4) Confirm that the vibration value due to blasting is below the allowable vibration value due to blasting of nearby buildings etc. specified separately in this Contract or instructed by the Engineer.	specified in the Contract or instructed by the Engineer.
8.7.7 周辺の建物等への影響のモニタリング 請負者は、本契約で別途規定する又はエンジニアが指示する周辺の建物等への発破による振動の影響を測定するために、次の計測によるモニタリングを行わなければならない。 (1) モニタリング計画の作成 (a) 発破の振動による影響を測定するモニタリング計画を作成し、安全衛生計画書に含めること。 (b) モニタリングの方法、計測機器、計測地点、計測の頻度、記録方法を計画すること。 (c) 計測の結果、振動値が、本契約で別途規定する又はエンジニアが指示する許容振動値に近い場合及び許容振動値以上の場合の対策を計画すること。 (d) 本契約で別途規定がない限り、計測は毎発破作業毎に実施し、エンジニアが振動値は計画とおりであると判断した後は 3 日間隔、その後は 7 日間隔、1 ヵ月以降は 1 ヶ月間隔で実施することを計画すること。 (2) 計測の実施と評価 (a) 本契約で別途規定の仕様に従い次を行うこと。 (i) 計測機器の準備、据え付けと計測 (ii) 振動計測結果の評価 (b) 計測機器は試験発破の実施前にキャリブレーションを行うこと。 (c) 次の発破の前までに評価書及び必要に応じ発破計画の変更をエンジニアへ提出すること。	**8.7.7 Monitoring for Impact on Surrounding Buildings** The Contractor shall perform monitoring by the following measurement in order to measure the effect of vibration caused by blasting to surrounding buildings etc. specified separately in this Contract or instructed by the Engineer (1) Preparation of monitoring plan (a) Develop a monitoring plan to measure the impact of blasting vibrations and include it in the safety plan. (b) Plan monitoring methods, equipment, points, frequency of measurement, and recording methods. (c) Plan countermeasures for the case that the vibration value measured is close to or higher than the allowable vibration value specified separately in the Contract or instructed by the Engineer. (d) Unless otherwise specified in the Contract, plan to perform measurement at each blasting operation at first, and every 3 days after the Engineer judges that the vibration value is as planned, then every 7 days, and after 1 month elapsed, plan to perform at monthly intervals. (2) Implementation and evaluation of measurement (a) Perform the followings in accordance with the specifications separately stipulated in the Contact: (i) Preparation and installation of measuring equipment, and implementation of measurement (ii) Evaluation of vibration measurement results (b) Calibrate the measurement equipment before test blasting. (c) Submit the evaluation report and if necessary, any changes to the blast plan to the Engineer before the next blast.	**8.7.7 Monitoring for Impact to Surrounding Buildings** The Contractor shall perform monitoring with the following measurement to measure the effect of vibration caused by blasting to the surrounding buildings, etc. specified in the Contract or instructed by the Engineer: (1) Preparation of monitoring plan (a) Develop a monitoring plan to measure the impact of blasting vibrations and include it in the safety plan; (b) Plan monitoring methods, equipment, locations, frequency of measurement, and recording methods; (c) Plan countermeasures for the case that the vibration value measured is close to or higher than the allowable vibration value specified in the Contract or instructed by the Engineer; and (d) Unless otherwise specified in the Contract, plan to perform measurement at each blasting operation at first, and every 3 days after the Engineer judges that the vibration value is as planned, then every 7 days, and after 1 month elapsed, plan to perform at monthly intervals. (2) Implementation and evaluation of measurement (a) Perform the followings in accordance with the specifications stipulated in the Contact: (i) Preparation and installation of measuring equipment, and implementation of measurement; and (ii) Evaluation of vibration measurement results; (b) Calibrate the measurement equipment before test blasting; and (c) Submit the evaluation report and if necessary, any changes to the blasting plan to the Engineer before the next blasting.
8.7.8 発破作業時の措置 (1) 発破作業員の識別措置 発破作業の作業員には、他の作業員と識別出来る腕章、保護帽の標示等の措置を講じること。 (2) せん孔作業の留意事項 (a) せん孔では、前回の発破孔は使用しないこと。 (b) せん孔作業中に不発の火薬類が発見された場合は、せん孔を中止し、8.7.3 [計画書の作成](14)で計画した不発の火薬類の処理手順、	**8.7.8 Measures of Blasting Work** (1) Measures to identify blasting workers For blasting workers, measures shall be taken such as armbands and marks on the protective caps that can be distinguished from other workers. (2) Points to consider on drilling work (a) No drilling shall be allowed using any hole of previous blasting (b) If an unexploded charge is found during the drilling operation, the	**8.7.8 Measures of Blasting Work** (1) Measures to identify blasting workers For blasting workers, measures shall be taken such as armbands and marks on the safety helmets that can be distinguished from other workers. (2) Measures in drilling work (a) No drilling shall be allowed using any hole of previous blasting; (b) If misfired explosive is found during the drilling operation, the drilling shall be stopped and the misfired explosive shall be

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及び 8.7.9[発破作業後の措置](2)[不発の火薬類の処理]に基づき不発の火薬類を処置すること。 (3) 装てん作業の留意事項 (a) 電気雷管を結線するまでは、短絡を保持すること。また電灯線・動力線その他漏電のおそれのあるものに近づけないこと。 (b) 装てん中は、付近でせん孔その他の作業をしないこと。 (c) 装てん前に孔をよく掃除して小石等を残さないこと。 (d) 装てんしなかった爆薬・雷管は、火薬庫へ返納すること。 装てん作業の安全上のその他の留意点については、BS5607: Code of practice for the safe use of explosives in the construction industry, 10 Safety when using explosives に準ずること。 (4) 雷管の取り扱い上の留意事項 (a) 電気雷管の発破作業の留意事項 (i) 母線は切断、損傷がないことを確認し、導通を確認すること。 (ii) 結線もれ、結線ちがい等がないように点検すること。 (iii) 電気雷管発破を行う時には迷走電流がないことを確認すること。 (iv) 無線通信施設、レーダー、移動式を含む無線電話等の近傍の現場で、高周波放射(radio-frequency radiation)による電気雷管の危険がある場合は、本契約で別途規定がない限り、電気雷管を使用しないこと。 (v) 電気雷管への悪影響がないことが保証されない携帯電話の発破作業場所への持ち込みを禁止すること。 (vi) 雷探知機を発破作業場所の近傍に設置し、落雷の危険がある時は発破作業を中止し、発破作業員は安全な場所に退避すること。 電気雷管の発破作業のその他の安全上の留意点については、BS5607: Code of practice for the safe use of explosives in the construction industry, 10.4.3 Electric detonators に準ずること。 (b) 非電気雷管の発破作業の留意事項 (i) ショックチューブを切断したり傷つけたりしないこと。 (ii) 点火前には結線を目視でチェックし、結線漏れや間違いの無いことを必ず点検すること。 (5) 発破の点火作業の留意事項 (a) 点火位置は、爆破の程度に応じて隔離した安全な場所とすること。 (b) 発破器は安全衛生計画書に基づき適切に保管すること。また、点火するとき以外はハンドルを発破器から取り外しておくこと。 (c) 発破器と母線との連結は、点火直前に行うこと。 (6) 発破作業時の留意事項 既設の構造物の近くで行なう発破作業は、本契約で別途定める所有者へ	drilling shall be discontinued and the unexploded charge shall be re-fired in accordance with the procedure planned in 8.7.3 [Preparation of Plan] and 8.7.7 [Measures after Blasting] (2) [Measure for Unexploded Charges]. (3) Points to consider on loading work (a) Electric detonator leg wires shall be kept short-circuited until they are connected into the circuit for firing. Also, keep detonators away from electric light lines, power lines, and other items that may cause electric leakage. (b) While loading, no activity including drilling shall be permitted in the vicinity. (c) Before loading, thoroughly clean the holes and do not leave any pebbles. (d) Explosives and detonators not loaded shall be returned to the explosive magazine. For other safety matters for loading work, the Contractor shall conform to the UK BS 5607: Code of practice for the safe use of explosives in the construction industry, 10 Safety when using explosives. (4) Points to consider for handling detonators (a) Points of blasting work using electric detonators (i) Check that the bus wire is not cut or damaged, and check for continuity. (ii) Check that there are no forgotten wire connection or false wire connection. (iii) Make sure there are no stray electric current when using electric detonators. (iv) If there is a danger of electric detonators due to radio-frequency radiation at a site near a radio communication facility, radar, wireless telephone including mobile type, do not use an electric blasting unless otherwise specified in the Contract. (v) Prohibit bringing into the blasting areas any mobile phone that is not guaranteed that it will not adversely affect the electric detonators. (vi) Install a lightning detector near the blasting area, stop blasting work when there is a risk of lightning strike, and evacuate workers to a safe place. For other safety matters for blasting with electric detonator, the Contractor shall conform to the UK BS 5607: Code of practice for the safe use of explosives in the construction industry, 10.4.3 Electric	treated in accordance with the procedure planned in 8.7.3 [Preparation of Plan] and 8.7.7 [Measures after Blasting] (2) [Treatment of misfired explosives]. (3) Measures in loading work (a) Electric detonator's leg wires shall be kept short-circuited until they are connected into the circuit for firing. Keep detonators away from electric light lines, power lines, and other items that may cause electric leakage. (b) While loading, no activity including drilling shall be permitted in the vicinity. (c) Before loading, thoroughly clean the holes and do not leave any pebbles, etc. (d) Explosives and detonators not used shall be returned to the explosive magazine. For other safety measures for loading work, the Contractor shall take safety measures referring to BS 5607: Code of practice for the safe use of explosives in the construction industry, 10 Safety when using explosives. (4) Measures in handling detonators (a) Measures of blasting work using electric detonators (i) Check if the bus wire is not cut or damaged, and check its continuity. (ii) Check if there are no forgotten wire connection or false wire connection. (iii) Make sure there are no stray electric current when using electric detonators. (iv) If there is danger of electric detonators due to radio-frequency radiation at a site near radio communication facility, radar, wireless telephone including mobile type, do not use electric detonators unless otherwise specified in the Contract. (v) Prohibit bringing into the blasting areas any mobile phone that is not guaranteed that it will not adversely affect the electric detonators. (vi) Install a lightning detector near the blasting area, stop blasting work when there is a risk of lightning strike, and evacuate workers to a safe place. For other safety matters for blasting with electric detonator, the Contractor shall take safety measures referring to BS 5607: Code of practice for the safe use of explosives in the construction industry, 10.4.3 Electric detonators. (b) Measures of blasting using non-electric detonators (i) Do not cut or damage the shock tube; and (ii) Before firing, check the connections visually and make sure that there are no forgotten or false connection. (5) Measures in ignition

JSSS in Japanese（R2 Prov final 12/28）	JSSS in English（R0 1/3）	JSSS in English（R1 1/8）
の通知、使用者や所有者の退避のほか、発破に伴う飛石の飛散防止措置等必要な安全対策を行ったうえで、作業を実施すること。	detonators. (b) Points of blasting using non-electric detonators (i) Do not cut or damage the shock tube. (ii) Before firing, check the connections visually and make sure that there are no forgotten or false connection. (5) Points to consider for ignition work (a) Ignition shall be made at a safe place isolated according to the degree of the blast. (b) The blasting machine shall be properly stored according to the safety plan. Also, the handle shall be removed from the blasting machine except when igniting. (c) The connection between the blasting machine and the bus wire shall be made immediately before ignition. (6) Point to consider for blasting work The blasting work performed near the existing structures shall be carried out with the necessary safety measures separately specified in the Contract such as prevention of flying stones from the blasting in addition to notifying the owner, evacuation of the user and the owner of the structures concerned.	(a) Ignition shall be made at a safe place isolated according to the degree of the blast. (b) The shotfiring apparatus shall be properly stored according to the safety plan. The handle shall be removed from the shotfiring apparatus except when igniting. (c) The connection between the shotfiring apparatus and the bus wire shall be made just before ignition. (6) Measures at blasting near existing structures The blasting near existing structures shall be carried out taking the necessary safety measures specified in the Contract such as prevention of flying stones from the blasting site in addition to notifying of blasting to their owners, evacuation of the users and owners of the structures concerned.
8.7.9 発破終了後の措置 (1) 発破終了後の現場の安全の確認 発破作業後の岩盤および周辺の岩盤の崩落・崩壊の危険の有無を検査し、安全と認めるまで、発破技士以外の作業員は発破場所及びその付近に立ち入らないこと。 (2) 不発の火薬類の処理 点火後、装てんされた火薬類が爆発しないとき、又は装てんされた火薬類が爆発したことの確認が困難であるときは、次の事項を含む安全衛生計画書に規定の不発の火薬類の処理に従い、処理を行うこと。なお、不発の火薬類の処理の計画は、BS5607: Code of practice for the safe use of explosives in the construction industry, 10.5 Misfires を参照して作成されたものであること。 (a) 不発の火薬類の処理が必要なときは、直ちに発破器からハンドル等の点火スイッチ及び発破母線を取り外すこと。 (b) 発破母線を短絡又は接地させること。 (c) 請負者の発破担当エンジアへ報告し、指示を受けること。 (d) 発破技士及びその他認められた者以外の発破現場への立入りを禁止すること。発破現場への立入りは、計画で規定している不発発生からの経過時間以降とすること。	**8.7.9 Measures after Blasting** (1) Confirmation of safety of blasting area after blasting Until the shotfirer has inspected rocks at the blasting site and the surroundings for the danger of falling or collapsing and judged its safety satisfactorily, workers other than the shotfirer shall not enter the blasting site or its vicinity. (2) Disposal of misfired explosives If, after ignition, the loaded explosives did not explode, or if it is difficult to confirm the explosion, dispose of the misfired explosives specified in the safety plan, including following measures. The plan for the disposal of misfired explosives shall be prepared with reference to BS5607: Code of practice for the safe use of explosives in the construction industry, 10.5 Misfires. (a) When it is necessary to dispose of misfired explosives, immediately remove the ignition switch such as the handle and the bus wire from the blasting machine. (b) Short-circuit or ground the bus wire. (c) Report to the explosive engineer for instructions.	**8.7.9 Measures after Blasting** (1) Confirmation of safety of blasting area after blasting Until the shotfirer has inspected rocks at and surrounding of the blasting site to check the danger of falling or collapsing of rocks and judged its safety, workers other than the shotfirer shall not enter the blasting site or its vicinity. (2) Treatment of misfired explosives If, after ignition, the loaded explosives did not explode, or if it is difficult to confirm the explosion, the misfired explosives shall be treated as planned in the safety plan including the following measures: (a) When it is necessary to treat misfired explosives, immediately remove the shotfiring apparatus such as the handle and the bus wire from the shotfiring apparatus. (b) Making short-circuit or grounding the bus wires. (c) Report to the explosive engineer for instructions. (d) Prohibit anyone other than the shotfirer and other authorized personnel from entering the blasting site. The entering to the blasting site shall be made after the elapsed time from the occurrence of misfire specified in the plan. (e) Clearly indicate the presence of misfired explosives and install fences etc., to prevent anyone other than the shotfirer and the authorized person from approaching to the site.

JSSS in Japanese（R2 Prov final 12/28）	JSSS in English（R0 1/3）	JSSS in English（R1 1/8）
(e) 不発の火薬類の存在を明示し、認められた者以外が現場に近づかないよう柵等を設置すること。 (f) 不発の原因の特定、不発の火薬類の対処の決定を適切な手順で行うこと。 (g) 不発の火薬類の記録をとること。 (h) 不発の火薬類が処理されるまでは、当該現場及びその付近において、不発の火薬類処理のための削孔作業等以外の作業を行わないこと。	(d) Prohibit anyone other than the shotfirer and other authorized personnel from entering the blasting site. Access to the blasting site shall be after the elapsed time from the occurrence of misfire specified in the plan. (e) Clearly indicate the presence of misfired explosives and install fences etc., to prevent anyone other than the authorized person from approaching the site. (f) Appropriate procedures shall be taken to identify the cause of the misfire and to determine the handling of the misfired explosive. (g) Keep records of misfired explosives. (h) Until disposal of misfired explosives is completed, no work shall be permitted other than drilling etc. for the disposal of misfired explosives at or near the site.	(f) Appropriate procedures shall be taken to identify the cause of the misfire and to determine the handling of the misfired explosive. (g) Keep records of misfired explosives. (h) Until treatment of the misfired explosives is completed, no work shall be permitted other than drilling, etc. for the treatment of misfired explosives at or near the site.

JICA Standard Safety Specification Preparation Study
7. EXCAVATION WORK (English R2 for Issue 2)

2019.12.19&2020.1.8 Japanese Final
2020.1.20 NK Issue 1
2020.2.13 JICA Comments
2020.3.10 NK English R2

JSSS in Japanese (2019/12/19&2020/1/8)	JSSS in English Issue 1 （2020/1/20）	JICA Comments (2020/2/13) JC: JICA Comments in blue letters on sentence underlined MM: Minutes of Meeting on 2020/2/20 NK: NK actions	JSSS in English R2 for Issue 2 （2020/3/10） Sentences marked yellow color / red letters are added or modified ones from the last version.
8. 土工工事 8.1 一般事項 8.2 掘削工事の計画における安全上の留意事項 8.3 掘削作業の安全措置 8.3.1 要員の配置 8.3.2 掘削作業における安全措置 8.4 人力掘削の安全措置 8.5 機械掘削の安全措置 8.6 トレンチ掘削の安全措置 8.6.1 一般事項 8.6.2 トレンチ掘削における安全措置 8.7 発破掘削 8.7.1 一般事項 8.7.2 発破作業の要員 8.7.3 計画書の作成 8.7.4 作業員及び周辺住民への措置 8.7.5 火薬類の取り扱い上の措置 8.7.6 試験発破 8.7.7 周辺建物等への影響のモニタリング 8.7.8 発破作業時の措置 8.7.9 発破終了後の措置	**8.1 GENERAL** 8.1.1 Scope **8.2 PARTICULAR SAFETY MEASURES FOR EXCAVATION WORKS** 8.2.1 General 8.2.2 Safety Measures before Commencing Excavation Work 8.2.3 Safety Measures during Excavation Works **8.3 MANUAL EXCAVATION WORKS** 8.3.1 General **8.4 EXCAVATION BY BLASTING** 8.4.1 Scope 8.4.2 Definitions 8.4.3 Compliance Standards 8.4.4 Personnel for Blasting Works 8.4.5 Blasting Safety Plan 8.4.6 Information to Workers and Neighbouring Residents 8.4.7 Handling and Storing of Explosives 8.4.8 Test Blasting 8.4.9 Monitoring Impact on Adjacent Buildings and Structures 8.4.10 Particular Safety Measures for Blasting Work 8.4.11 Measures after Blasting	MM: 2020/02/20 第 44 回会議議事録 2. 英文第 8 章土工工事 英文第 8 章土工工事に対する JICA のコメントについて検討した。NK は、次の事項を含めコメントへの対応を行い、英文第 2 案を作成する。 (1) トレンチ掘削に関する規定を和文にもとづき追記する。 (2) 深さ 1.5m 以上の掘削では、原則土留め工を設置することを規定する。 (3) 第 4 章請負者の機器に、土工工事の機械の安全に関する規定は含めるとしているが、掘削特有の規定は第 8 章に規定する。 (4) OSHA に準じると規定した事項では、OSHA のエッセンスを規定するよう追記を行う。 (5) 発破掘削の規定に、発注者による振動や変位の許容値の規定、モニタリングの場所建物等の規定、エンジニアの関与を追記する。 (6) Test blasting の実施は、default として規定することとし英文とおりとする。 3. 英文 JSSS での要求事項の規定方法 (1) 和文では工種毎に要求事項を規定しているが、英文の第 1 案では、各工種の要求事項を汎用化して一つの章にまとめて規定している。英文の第 2 案では、汎用化した規定を残すとともに、特有の要求事項がある場合は、それを各章で規定する。 (2) 英文の“unless otherwise specified in the Contract”の記述は、規定の内容に応じ“as specified in the Contract (see Annex 1.3)”へ変更する。 (3) Method Statement 及び Safety Plan のエンジニアへの提出は、第 1 章に規定していることから、各章では、作業に特有の作成すべき内容を規定することとし、提出については規定しない。 (4) HSO は、安全に関する全責任を取るが、安全計画で規定の安全措置を現場の担当者が実行しているかを点検する責務を行うとの考えから、英文の“The HSO shall inspect work area before starting work…”は、“The Contractor shall …”へ変更する。 (5) JSSS の規定は、Reader friendly な記述に努める。 **MM: 2020/02/20 Minutes of Meeting** As for Chapter 8 (re-numbered as Chapter 7) Excavation Work, the following directions were given. NK will response them in making the English version Issue 2 in addition to the comments for the Issue 1. **2. Chapter8 Excavation Work** (1) Provisions regarding Trench Excavation” will be added based on the Japanese version. (2) It shall be stipulated that the excavation of 1.5 m or more shall be provided with earth retaining in principle. (3) In Issue 1, provisions in Chapter 4 state regarding safety matters for excavation equipment, however, the provisions specific for equipment for the excavation works shall be stipulated in Chapter 7.	**7.1 GENERAL** 7.1.1 Scope **7.2 PARTICULAR SAFETY MEASURES FOR EXCAVATION WORKS** 7.2.1 General 7.2.2 Safety Measures before Commencing Excavation Work 7.2.3 Safety Measures during Excavation Works **7.3 MANUAL EXCAVATION WORKS** **7.4 MECHANICAL EXCAVATION WORK** **7.5 TRENCH EXCAVATION** 7.5.1 General 7.5.2 Safety Measures during Trench Excavation **7.6 EXCAVATION BY BLASTING** 7.6.1 Scope 7.6.2 Definitions 7.6.3 Compliance Standards 7.6.4 Personnel for Blasting Works 7.6.5 Blasting Safety Plan 7.6.6 Risk prevention of Workers and Neighbouring Residents 7.6.7 Handling and Storing of Explosives 7.6.8 Trial Blasting 7.6.9 Monitoring Impact on Adjacent Buildings and Structures 7.6.10 Particular Safety Measures for Blasting Work 7.6.11 Measures after Blasting

		(4) The essence of OSHA shall be added for clauses which are referring to relevant provisions of OSHA (5) In the Excavation by Blasting, the provisions on allowable values of vibration and displacement, on monitoring locations, buildings, etc., and on the involvement of the Engineers will be added. (6) Test blasting is to be defined as default and the provisions in English version will be adopted as they are. **3. Ways to stipulate requirements in JSSS** (1) JSSS in Japanese specifies requirements in other chapter for each work. JSSS issue 1 in English has generalized and specifies requirements in one chapter and not specifies in other chapter for each work. JICA requests to leave the generalized requirements in one chapter and specify particular requirement in each work when there is specific requirement related with each work. (2) The expression of "unless otherwise specified in the Contract" is superseded with "as specified in the Contract (see Annex 1.3)" according to the contents of stipulations. (3) As submittals of Method Statement and Safety Plan are already stipulated in Chapter 1, thus in other chapters, submittal of those will not be specified repeatedly. However, specify what needs to be specific to the work concerned. (4) The HSO take all responsibility for safety. The HSO's duty is to review and check whether the safety activities are taken at the site by the Site staff in charge of construction (the Contractor) in accordance with the Safety Plan and manage safety at the Site. From this concept, "The HSO shall inspect work area before starting work…" is to be revised to "The Contractor shall …" (5) Provisions of JSSS shall be Reader-friendly description as much as possible.	
8 土工工事 **8.1 一般事項** (1) 本章では、明り掘削及び発破作業について規定する。明り掘削にはトレンチ掘削を含むものとする。**→E8.1.1(1)に規定済み**（トンネル掘削を除外し、トレンチ掘削には触れていない。） (2) 用語の定義 トレンチ掘削とは、ガス管や上下水道管等を敷設するために行われる掘削の深さが幅よりも大きいものをいう。一般的に幅が 4.6m（15feet）以下の掘削をいう。**→規定なし。**→7.5 に追記する (3) 請負者は、盛土工事に関しては、本仕様書の掘削作業の規定に準拠して、安全措置を講じなければならない。**→E8.2.1(1)に規定済み** (4) 請負者は、道路上で土工工事の作業を行う場合は、2.2.2 [道路占用時の措置]及び 2.4.1[監視員、誘導員の配置]に規定の措置を講じなければならない。**→規定なし。**（全体的に規定済みであるため。）→規定しない。	**8.1 GENERAL** **8.1.1. Scope** (1) This Chapter specifies the safety requirements for surface excavation work (excluding tunnelling) which shall include excavation of all types and using all methods including manual excavation, machine excavation and excavation by Blasting together with all associated embankment filling, backfilling and Earthwork Support.	**8.1 GENERAL** **8.1.1. Scope** This Chapter specifies the safety requirements for surface excavation work (excluding tunnelling) which shall include excavation of all types and using all methods including manual excavation, machine excavation and excavation by Blasting ~~together with all associated embankment filling, backfilling and Earthwork Support.~~ JC: 盛土の話は不要。earthwork support については仮設に記載があるので不要。 トレンチの話は復活させてください。なぜトレンチだけ議論するのかという意見はあると思いますが、関連した事故が多いという事実に鑑みここだけは特別に復活させてください。OSHA との重複があっても構いません。 Embankment is not necessary to stipulate. Earthwork support, too because it is stipulated in Chapter 4. Reinstate "Trench Excavation". There may be opinions that why only trench excavations must be stipulated,	**7.1 GENERAL** **7.1.1 Scope** This Chapter specifies the safety requirements for surface excavation work (excluding tunnelling) which shall include excavation of all types and using all methods including manual excavation, machine excavation and excavation by Blasting. JC1 NK1 NK2

(5) 請負者は、埋設物がある場所での掘削工事に関しては、本仕様書 3.1[地下埋設物]に規定の措置を講じなければならない。→**規定なし。**（同上）→規定しない。

8.2 掘削工事の計画における安全上の留意事項

(1) 地形、表土、土質、地質の状態を考慮した安全な掘削の順序、掘削の位置及び掘削土砂の運搬の方法等を計画すること。→**E8.2.1 (1)/(2)に規定済み（表現修正）**

(2) 掘削の高さ、のり勾配、段切りの計画

掘削の高さ、勾配(sloping)、段切り(benching)は、本契約で別途に定めがない限り、地山の形状、地質・土質等に応じて以下の基準に準拠しなければならない。

OSHA Subpart P—Excavations,§1926.652 Requirements for protective systems. (b) Design of sloping and benching systems. →**E8.2.1(3)に規定済み**

(3) 仮設工事の掘削の土留め工

本仕様書 7.2[土留め工]、7.2.1[一般](2)「土質に見合った勾配を保って掘削できる場合を除き、掘削の深さが 1.5mを超える場合には、原則として、土留め工を施すものとする。」に従い、土留工を計画すること。→**E8.2.1(4)に規定済み （1.5m の規定を追加する。）**

(4) 地山の含水、湧水を考慮した適切な排水工を施し、作業場所を乾いた状態に保持して掘削すること。

→**規定なし。**→Issue 6 の 1.23.2 に次の規定あり。
The Contractor shall keep all areas of the Site, all newly exposed ground surfaces, excavated areas and/or excavations for structures, piling, trenches, pits, shafts, tunnels and the like, free from surface water and ground water at all times and by whatever means are necessary to ensure: →本款を参照し追記する。

(5) れんが壁、コンクリートブロック塀、擁壁等の建設物に近接する箇所で掘削の作業を行なう場合において、これらの損壊等により作業者に危険を及ぼすおそれのあるときは、本契約で別途に定められたとおりに補強すること。→**E8.2.1(7)に規定済み（対象を拡大。Annex 1.3 に規定。）**

(6) 掘削箇所の上部に存在する浮き石、立木等により、作業員又は建設機械に危険が及ぶ恐れがあり、本契約に定めがない場合は次の措置を講じること。

→**規定なし。**（2.6 [飛来落下の防止措置]に移動すべき内容）→追記する。

8.2 PARTICULAR SAFETY MEASURES FOR EXCAVATION WORKS

8.2.1. General

(1) The Contractor shall plan all excavation work so that it can be executed in a safe and methodical manner.

(2) Unless otherwise specified in the Contract, the Contractor shall be responsible for choosing manual or machine excavation, selecting types of Contractor's Equipment, types of TW, Earthwork Support, spoil removal, storage and handling, controlling ground and surface water, forming embankments and cuttings and the like, in conformity with GC 4.10.

(3) Unless otherwise specified in the Contract, requirements for sloping sides and benching to sides of excavations shall comply with the technical requirements of OSHA Subpart P—Excavations §1926.652 Requirements for protective systems, (b) only, also dependent on the shape, nature the soil, hydraulic and geological conditions of the Site.

(4) Earthwork Support

In accordance with JSSS 7.2 [Earthwork Support] the Contractor shall be responsible for preserving the structural integrity of all sides and soffits of excavations and shall provide whatever Earthwork Support may be necessary to achieve this.

(5) The Contractor shall execute all Excavation Works and associated filling, backfilling and support work without causing any damage to or weakening of surrounding subsurface conditions or ground bearing capability, any existing foundations,

however, based on the fact that there have been so many accidents related with trench excavation, we request to stipulate in JSSS, even there may be duplication with OSHA.

NK: Deleted as commented. Provisions for Trench Excavation will be reinstated in 7.5.

8.2 PARTICULAR SAFETY MEASURES FOR EXCAVATION WORKS

8.2.1. General

(1) The Contractor shall plan all excavation work so that it can be executed in a safe and methodical manner.

(2) Unless otherwise specified in the Contract, the Contractor shall be responsible for choosing manual or machine excavation, selecting types of Contractor's Equipment, types of TW, Earthwork Support, spoil removal, storage and handling, controlling ground and surface water, forming embankments and cuttings and the like~~,~~ taking account of all the conditions of the Site ~~in conformity with GC 4.10~~.

(3) Unless otherwise specified in the Contract, requirements for sloping sides and benching to sides of excavations shall comply with the technical requirements of OSHA Subpart P—Excavations §1926.652 Requirements for protective systems, (b) only, also dependant on the shape, nature the soil, hydraulic and geological conditions of the Site.

(4) Earthwork Support

In accordance with JSSS 7.2 [*Earthwork Support*] the Contractor shall be responsible for preserving the structural integrity of all sides and soffits of excavations and shall provide ~~whatever Earthwork Support may be necessary to achieve this.~~

JC: 日本語版 8.2(3)にある「土質に見合った勾配を保って掘削できる場合を除き、掘削の深さが 1.5mを超える場合には、原則として、土留め工を施すものとする。」という記述が抜けているので復活させて下さい。

Please reinstate the provision in 8.2 (3) of Japanese version "In accordance with JSSS 7.2.1[Earth Retaining Work] (2), the earth retaining shall be planned in principle to be provided for the excavation of depth exceeds 1.5m;".

NK: added as right.

(5) The Contractor shall execute all Excavation Works and associated filling, backfilling and support work without causing any damage to or weakening of surrounding subsurface

7.2 PARTICULAR SAFETY MEASURES FOR EXCAVATION WORKS

7.2.1. General

(1) The Contractor shall plan all excavation work so that it can be executed in a safe and methodical manner.

(2) Unless otherwise specified in the Contract, the Contractor shall be responsible for choosing manual or machine excavation, selecting types of Contractor's Equipment, types of TW, Earthwork Support, spoil removal, storage and handling, controlling ground and surface water, forming embankments and cuttings and the like taking account of all the conditions of the Site.

(3) Unless otherwise specified in the Contract, requirements for sloping sides and benching to sides of excavations shall comply with the technical requirements of OSHA Subpart P—Excavations §1926.652 Requirements for protective systems, (b) only, also dependant on the shape, nature the soil, hydraulic and geological conditions of the Site.

(4) ~~Earthwork Support~~ In accordance with JSSS 7.2 [*Earthwork Support*] the Contractor shall be responsible for preserving the structural integrity of all sides and soffits of excavations and shall provide earthwork support for the excavation of depth exceeds 1.5m in principle unless it is possible to excavate with a slope suitable for the soil condition.

(5) In accordance with JSSS 1.23 [Emergency Response Plan?], 1.23.2, the Contractor shall. execute excavation under dry condition by providing appropriate drainage to drain surface water and water contained in the ground and spring water at the Site.

(6) The Contractor shall execute all Excavation Works and associated filling, backfilling and

(a) 浮き石等の除去、落石防護柵等の設置等の対策についてエンジニアと協議すること。

(b) 協議の結果、施工方法を含む安全措置についてエンジニアに提案し、その指示に従うこと。

8.3 掘削作業の安全措置

8.3.1 要員の配置

(1) 深さ 1.5m 以上の掘削作業を行うときは、本仕様書 1.8[請負者の要員の適正配置]に従い作業主任を配置しなければならない。**→規定なし。**（作業主任は、1.16 [要員の配置]で規定済み。）

(2) 本仕様書 2.4[監視員、誘導員の配置]に従い、必要に応じて監視員を配置すること。但し、下記の場所においては必ず配置すること。**→規定なし。（不要。必要ならば 2.4 [監視員等の配置]**

(a) 道路に隣接した場所又は道路内**→規定なし。**

(b) 本仕様書 3[地下埋設物・架空線等上空施設一般]に規定の架空線等上空施設近くの場所**→規定なし。**

(c) 次の掘削作業箇所

(i) 建物、その他の施設等に隣接する場所**→規定なし。**

(ii) 見通しの悪い場所、崖縁**→規定なし。**

(iii) 土石等の落下崩壊のおそれのある場所**→規定なし。**

(iv) 掘削機械、運搬機械が、作業員と近接して掘削作業を行う場所**→規定なし。**

8.3.2 掘削作業における安全措置

請負者は、掘削作業を行なうときは、次の措置を講じなければならない。

(1) その日の作業を開始する前、降雨後及び地震の後、地山の崩壊又は土石の落下による作業員の危険を防止するため、点検者を指名して、作業箇所及びその周辺の地山について点検を行わせること。浮石及びき裂の有無及び状態並びに含水、湧水及び凍結の状態の変化を点検し、異常がある場合は安全措置が講じること。安全措置が講じられた後でなければ、作業を行なわないこと。**→E8.2.2(1)/(2)に規定済み**（最終的な責任者は HSO という立場。）JICA コメントに従い変更。

structures, buildings, roads, paved areas or the like, either on or adjacent to the Site and unless otherwise specified in the Contract, the Contractor shall take all necessary measures to prevent the occurrence of such damage or weakening by designing and providing permanent or temporary supports and reinforcement to such foundations, structures, buildings, roads or paved and obtain the prior consent of the Engineer before commencing Excavation Works.

8.2.2. Safety Measures before Commencing Excavation Works

(1) The HSO shall inspect the excavation work area and surrounding areas before starting work each day and after adverse climatic conditions or earthquake to ensure that there are:

(a) No potentially unsafe areas where there may be any risk of Landslide;

conditions or ground bearing capability, any existing foundations, structures, buildings, roads, paved areas or the like, either on or adjacent to the Site and ~~unless otherwise specified~~ as specified in the Contract (see ~~Annex 1.~~3 Particular Safety Specification~~)~~, the Contractor shall take all necessary measures to prevent the occurrence of such damage or weakening by designing and providing permanent or temporary supports and reinforcement to such foundations, structures, buildings, roads or paved and obtain the prior consent of the Engineer before commencing Excavation Works.

JC: 日本語版 8.2(5)では「本契約で別途に定められたとおりに補強する」であり、ニュアンスが全く異なる。Annex1.3 で、発注者が requirement を定めるという書き方にして下さい。

The provision of 8.2 (5) of Japanese version mentions “as stipulated separately in the Contract”. The nuance of English version is completely different. Please modify it as the Employer determines the requirement.

NK: is modified as right.

NK: added (7) of JSSS in English as right.

8.2.2. Safety Measures before Commencing Excavation Works

(1) The ~~HSO~~ Contractor shall inspect the excavation work area and surrounding areas before starting work each day and after adverse climatic conditions or earthquake to ensure that there are;

MM3.(4) : HSO は、安全に関する全責任を取るが、安全計画で規定の安全措置を現場の担当者が実行しているかを点検する責務を行うとの考えから、英文の“The HSO shall inspect work area before starting work…”は、“The Contractor shall …”へ変更する。

The HSO take all responsibility for safety. The HSO’s duty is to review and check whether the safety activities are taken at the site by the Site staff in charge of construction (the Contractor) in accordance with the Safety Plan and manage safety at the Site.

From this concept, “The HSO shall inspect work area before starting work…” is to be revised to “The Contractor

support work without causing any damage to or weakening of surrounding subsurface conditions or ground bearing capability, any existing foundations, structures, buildings, roads, paved areas or the like, either on or adjacent to the Site, and ~~unless otherwise specified~~ as specified in the Contract (see ~~Annex 1.~~3 Particular Safety Specification~~)~~, the Contractor shall take all necessary measures to prevent the occurrence of such damage or weakening by designing and providing permanent or temporary supports and reinforcement to such foundations, structures, buildings, roads or paved and obtain the prior consent of the Engineer before commencing Excavation Works.

(7) If loose rocks, standing trees, etc. existing above the excavation area may pose a danger to workers or construction equipment, take the following measures unless otherwise specified in the Contract;

(a) Consult with the Engineer about measures such as removal of loose rocks, installation of rockfall protection fences, etc.; and

(b) Based on the consultation with the Engineer, propose safety measures including construction methods to the Engineer and take actions in accordance with the Engineer’s instruction.

7.2.2. Safety Measures before Commencing Excavation Works

(1) The Contractor shall inspect the excavation work area and surrounding area before starting work each day and after adverse climatic conditions or earthquake to ensure that the following items meet the criteria of allowable values and counter measures determined by the Contractor and given in the Contract (see the Particular Safety Specification) to avoid adverse effects to surrounding areas and buildings by excavation:

	(b) No loose rock or boulders which may be at risk of falling; (c) No cracks in the excavation work area and the surrounding area; (d) No changes in ground water level, surface or any spring water; and (e) No deleterious effect due to freezing conditions.	shall …" NK: Revised as commented here and also other clauses. JC: 掘削の範囲内においてはコントラクターが責任を持つが、掘削の範囲外に及ぼす各種の影響は、契約書で許容値あるいは対策が発注者から示されなければならない。そういう前提で記述をしてください。 The premise is that the allowable effect and countermeasures shall be given by the Employer for surrounding areas outside of excavation. The provision shall be made on the premise. NK: The clause is modified as right. (a) ~~No~~ potentially unsafe areas where there may be any risk of landslide; (b) ~~No~~ loose rocks or boulders which may be at risk of falling; (c) ~~No~~ cracks in the excavation work area and the surrounding area; (d) ~~No~~ changes in ground water level, surface or any spring water; and (e) ~~No~~ deleterious effect due to freezing conditions. JC: 「No ～」といった書き方は過剰。cracks にしても、水位にしても、絶対にダメという話になると工事をすることができなくなるため、記述を変更してください。 The expression "No something" is excessive. Those (for example no cracks, no change of water level) make works impossible to perform.	(a) ~~No~~ Potentially unsafe areas where there may be any risk of landslide; (b) ~~No~~ Loose rocks or boulders which may be at risk of falling; (c) ~~No~~ Cracks in the excavation work area and the surrounding area; (d) ~~No~~ Changes in ground water level, surface or any spring water; and (e) ~~No~~ Deleterious effect due to freezing conditions.
(2) 掘削場所への昇降場所には、本仕様書 7.4.2[通路の設定]に従い、階段、傾斜路等の設備を設けること。→**規定なし。**（他との重複）→7.2.2 へ追記する。 (3) 埋設物は、3.1[埋設物一般]に従い、適切に支持又は防護するとともに、状況に応じて埋設物の位置、注意事項を明確に標示し、防護柵を設ける等の措置を講じること。→**規定なし。**（他との重複）→7.2.2 へ追記する。 (4) 作業者及び建設機械・運搬車両の掘削箇所での転落を防ぐため、本仕様書 2.3[立入禁止の措置]に準拠し、立入防止施設（柵、仮囲い等）、警告のための旗・看板等を設置すること。→**規定なし。**（他との重複）→7.2.2 へ追記する。 (5) 掘削作業を行なう箇所において、地山の崩壊又は土石の落下により作業員に危険を及ぼすおそれのあるときは、あらかじめ、土止め支保工を設け、防護網を張り、作業員の立入りを禁止する等当該危険を防止するための措置を講じること。→**規定なし。**（他との重複）→7.2.2 へ追記する。 (6) 掘削する箇所の下部において、掘削土砂・岩石の落下により第三者、作業員に危険を及ぼすおそれ	(2) As a consequence of such inspections the HSO may prohibit the continuation of any affected work, take necessary corrective measures and make any necessary amendment to the Safety Plan and instruct all Contractor's Personnel of any revised safety measures before work is allowed to commence and continue in order to ensure their continued safety.	NK: The conditions are changed to relate to the criteria (in (1) above) given in the Contract as right. (2) As a consequence of such inspections the HSO may prohibit the continuation of any affected work, take necessary corrective measures and make any necessary amendment to the Safety Plan and instruct all Contractor's Personnel of any revised safety measures before work is allowed to commence and continue in order to ensure their continued safety. MM: as mentioned MM 3.(1) mentioned in the first line above. NK: added requirements in Japanese JSSS as right.	(2) As a consequence of such inspections the HSO may prohibit the continuation of any affected work, take necessary corrective measures and make any necessary amendment to the Safety Plan and instruct all Contractor's Personnel of any revised safety measures before work is allowed to commence and continue in order to ensure their continued safety. (3) Install facilities such as stairs and ramps as means of access or egress from the excavation site in accordance with JSSS 7.4.2 [Setting of Passage]; (4) Provide support or protection for the underground services appropriately in accordance with 3.1 [Existing Underground and Overhead Services], and take measures, according to the situation, such as indicating clearly the location and precautions of the underground service and providing protective fences; (5) Prevent workers and construction equipment/transport vehicles from their falling at the excavation site, in accordance

のあるときは、次の措置を講じること。→**規定なし。**（他との重複）→7.2.2 へ追記する。

(a) 危険個所の特定、本仕様書 2.3[立入禁止の措置]に従い立入防止施設（柵、仮囲い等）、警告看板の設置等を行うこと。→**規定なし。**（他との重複→7.2.2 へ追記する。）

(b) 落下する岩等を受けることのできる防護柵等を設置すること。→**規定なし。**（他との重複）→7.2.2 へ追記する。

(7) 掘削作業中の安全措置→**E8.2.3 に規定済み**

(a) 法肩付近に土砂又は機材等を置かないこと。→**E8.2.3 (1)に規定済み**

(b) 掘削中に、崩落等の発生の可能性があると判断されたときは、全ての必要な安全措置が実施されるまで作業を中止し、危険にさらされる作業員を掘削現場から退出させること。→**E8.2.3 (2)に規定済み**

(c) 仮設の掘削工事で埋め戻しが必要な箇所は、作業が完了した後は出来るだけ速やかに埋め戻すこと。→**E8.2.3 (3)に規定済み**

(d) 明り掘削の作業を行なう場所については、当該作業を安全に行なうため必要な照度を保持すること。→**E8.2.3 (4)に規定済み**

8.2.3. Safety Measures during Excavation Works

During the Excavation Works, the Contractor shall:

(1) Not place excavated spoil, filling or Contractor's Equipment near the vertical edge of excavated surfaces.

(2) Stop the excavation work where ground collapse is possible during excavation, evacuate all Contractor's Personnel, implement all necessary safety measures, prohibit Contractor's Personnel from recommencing work until all safety measures have been taken.

(3) Backfill and compact excavated areas that require such backfill as soon as possible after the Permanent Work is completed.

(4) For places where open excavation work is performed, maintain the necessary illuminance to perform the work safely.

8.2.3. Safety Measures during Excavation Works

During the Excavation Works, the Contractor shall:

(1) Not place excavated spoil, filling or Contractor's Equipment near the vertical edge of excavated surfaces.

(2) Stop the excavation work where ground collapse is possible during excavation, evacuate all Contractor's Personnel, implement all necessary safety measures, prohibit Contractor's Personnel from recommencing work until all safety measures have been taken.

(3) Backfill and compact excavated areas that require such backfill as soon as possible after the Permanent Work is completed.

(4) For places where open excavation work is performed, maintain the necessary illuminance to perform the work safely.

8.3 MANUAL EXCAVATION WORKS

with JSSS 2.3 [Prohibition of Entry], install entry prevention facilities (fences, temporary enclosures, etc.), warning flags, and signs, etc.;

(6) Take the following measures when there is a risk of danger to third parties, workers, construction equipment, etc. by the fall of excavated soil/rock at the lower parts (bottom) of the excavation site;

(a) Identify dangerous locations, install entry prevention facilities such as fences, temporary enclosures, warning signs, etc. in accordance with JSSS 2.3 [Prohibition of Entry]; and

(b) Install protective fences that can catch falling rocks, etc.

(7) Risk prevention measures against falling rocks

(a) To protect workers from the dangers of falling of loose rocks and soils from the excavated surface, remove the loose rocks, etc. and take appropriate protective measures; and

(b) When there is a risk of falling of loose rocks/soils due to the excavation, take measures such as provision of earth retaining and protective net beforehand, and prohibiting workers from entering in the excavation site.

7.2.3 Safety Measures during Excavation Works

During the Excavation Works, the Contractor shall:

(1) Not place excavated spoil, filling or Contractor's Equipment near the vertical edge of excavated surfaces.

(2) Stop the excavation work where ground collapse is possible during excavation, evacuate all Contractor's Personnel, implement all necessary safety measures, prohibit Contractor's Personnel from recommencing work until all safety measures have been taken.

(3) Backfill and compact excavated areas that require such backfill as soon as possible after the Permanent Work is completed.

(4) For places where open excavation work is performed, maintain the necessary illuminance to perform the work safely.

7.3 MANUAL EXCAVATION WORKS

8.4 人力掘削の安全措置

請負者は、人力掘削を行う場合は、以下の安全事項を遵守して作業を行わなければならない。

(1) 垂直又は垂直に近く切り立つ掘削面・地盤、既設構造物の基礎の下の地盤の掘削（すかし掘り）をしないこと。→E8.3.1 (1)に規定済み

(2) 2 名以上で同時に掘削作業を行うときは、相互に十分な間隔を保つこと。→E8.3.1 (2)に規定済み

(3) 浮石を割る、又は起こすときは、石の安定と転がる方向を見定めて作業すること。→E8.3.1 (3)に規定済み

(4) てこ（leverage）を使うときは、あらかじめ動かすものに適した長さと強さを有するものを選ぶこと。→E8.3.1 (4)に規定済み

8.5 機械掘削の安全措置 →規定なし。（他との重複）

請負者は、機械掘削作業にあたり、掘削作業に従事する機械(以下、「機械」という。) の運転者及び作業員の安全に関し、次の措置を講じなければならない。→規定なし。（他との重複）→7.4 へ追記する。

(1) 本仕様書 2.3[立入禁止の措置]に従い、機械の作業により作業員に危険がおよぶ場所への立入りを禁止し、見やすい箇所にその旨を標示するとともに、立入防止施設（柵、仮囲い等）または監視人を配置すること。→規定なし。→7.4 へ追記する。

(2) 本仕様書 4.2.3[建設機械の運用時の安全措置]、4.2.4[建設機械の用途外使用の制限]及び次の(3)以降に規定の安全措置を講ずること。→規定なし。→7.4 へ追記する。

(3) 機械の運転者は、次の事項を遵守し機械を運転すること。

8.3. MANUAL EXCAVATION WORKS

8.3.1. General

During manual excavation works, the Contractor shall:

(1) Not permit any excavation without providing Earthwork Support to all vertical surfaces.

(2) Maintain sufficient distance between workers.

(3) When breaking or removing loose rock, pay attention to the stability of the rock and the direction of its fall.

(4) When using a lever for removing rock, select equipment that has appropriate length and strength for the work.

~~**8.3.1 General**~~

During manual excavation works, the Contractor shall:

(1) Not permit any excavation without providing Earthwork Support to all vertical surfaces.

(2) Maintain sufficient distance between workers.

(3) When breaking or removing loose rock, pay attention to the stability of the rock and the direction of its fall.

(4) When using a lever for removing rock, select equipment that has appropriate length and strength for the work.

JC: 8.2.1 (4) のコメントの記載があれば、不要の筈です。 少なくともこの記載ぶりではわずかな掘削でも土留めが必要となるので過剰です。 ちなみに「すかし掘り」のことを言っていた筈ですがそうなっていません。

(a) This expression is excessive because it means that earth retaining is required regardless of the depth. (b) Originally, the Japanese version intended to prohibit to excavate under the existing foundation etc.

NK: For (a), the clause is modified as right.
For (b), a new clause (2) is added from 8.4.1 (1) of Japanese version.

NK: as mentioned MM 3. (1) mentioned in the first line above, added 7.4 MECHANICAL EXCAVATION WORK to specify requirements in Japanese JSSS as right.

During manual excavation works, the Contractor shall:

(1) Not permit any excavation of depth exceeds 1.5m in principle without providing Earthwork Support to all vertical surfaces as specified in 7.2.1 [General] (4).

(2) Not permit excavation of the excavated surface/ground that stands vertically or close to the vertical, and excavation of the ground under the foundation of existing structures

(3) Maintain sufficient distance between workers.

(4) When breaking or removing loose rock, pay attention to the stability of the rock and the direction of its fall.

(5) When using a lever for removing rock, select equipment that has appropriate length and strength for the work.

7.4 MECHANICAL EXCAVATION WORK

The Contractor shall take the following measures for the safety of operators of excavating equipment (hereinafter referred to as “equipment”) and workers engaged in the mechanical excavation works with the equipment:

(1) In accordance with JSSS 2.3 [Prohibition of Entry], prohibit workers from entering the places where workers are in danger due to the mechanical excavation works by placing notices of “No Entry” at easy-to-see locations, installing entry prevention facilities (fences, temporary enclosures, etc.) and placing Spotters.

(2) Take the safety measures prescribed in JSSS 4.2.3 [Safety Measures in Operation], 4.2.4 [Restriction to Operate Construction Equipment for Other Use] and (3) to (4) below.

(3) The operators shall operate the equipment

(a) 作業範囲付近の他の作業員の位置に絶えず注意し、機械を運転すること。→**規定なし。**→7.4 へ追記する。 (b) 機械を後進させるときは、後方に作業員がいないことを確認し、誘導員の指示に従い後進すること。→**規定なし。**→7.4 へ追記する。 (c) 作業後は、掘削作業中の斜面及び崩れやすい地盤に機械を置かないこと。→**規定なし。**→7.4 へ追記する。 (d) 機械のバケットは、トラックの運転席の上を通過させないこと。→**規定なし。**→7.4 へ追記する。 (4) 作業員は、次の事項を遵守し作業すること。 (a) 土砂を積込み中のバケット等の下に入らないこと。→**規定なし。**→7.4 へ追記する。 (b) 土砂の積込み、降ろし作業中のダンプトラックに近づかないこと。→**規定なし。**→7.4 へ追記する。			following the following rules: (a) Operate the equipment with paying attention always to the position of workers near the working range; (b) When moving the equipment backward, make sure that there are no workers behind and follow the instructions of the Spotters; (c) After the work, do not park the equipment on the slope where excavation is in progress or on the ground that has a possibility to collapse. (d) The bucket of equipment shall not pass over the operator's seat of another equipment. (4) Workers shall work follow the following rules. (a) Not enter under the bucket of equipment that is loading materials; and (b) Keep away from dump trucks under loading or unloading materials.
8.6 トレンチ掘削の安全措置→規定なし。(トレンチ掘削のみを取り上げることの理由なし。)→7.5 を追加する。 **8.6.1 一般事項** 請負者は、トレンチ掘削における掘削面の崩壊による作業員への危険を防止するため次の措置を講じなければならない。→**規定なし。**→7.5 を追加する。 (1) トレンチ掘削を行うときには、掘削の深さが 1.5mを超える場合には、特に理由がない限り土留め工を施すこと。→**規定なし。**→7.5 を追加する。 (2) 1.5m 未満の深さのトレンチ掘削においては、次に例示するような土留め工を設置しなければならない。→**規定なし。**→7.5 を追加する。 (a) 簡易土留め(トレンチボックス・トレンチシールド)→**規定なし。** (b) 軽量鋼矢板土留め→**規定なし。**→7.5 を追加する。 (c) 油圧式アルミニウム支保工、木材支保工→**規定なし。**→7.5 を追加する。 **8.6.2 トレンチ掘削における安全措置→規定なし。→7.5 を追加する。**		NK: as mentioned MM 3. (1) mentioned in the first line above, 7.5 TRENCH EXCAVATION to specify requirements in Japanese JSSS is added as right.	**7.5 TRENCH EXCAVATION** **7.5.1. General** The Contractor shall take the following measures to prevent danger to workers due to the collapse of the excavation surface during trench excavation. Trench excavation means excavation performed for laying gas pipes and water /sewage pipes, etc. which depth is larger than its width. In general, excavation width is less than 4.6m (15feet). (1) When performing trench excavation with depth of 1.5m or more, earth retaining shall be provided unless any particular reason exists; and (2) For trench excavation with a depth of less than 1.5m, protective systems such as exampled below shall be installed; (a) Simple earth retaining (Trench box, Trench shield); (b) Lightweight sheet pile earth retaining; and (c) Aluminum hydraulic shoring, Timber shoring. **7.5.2 Safety Measures during Trench Excavation**

(1) トレンチ掘削用土留め工の部材は、掘削幅、深さに適し、土留めの機能を損なうような破損や欠陥のないものを使用すること。→**規定なし。**→7.5 を追加する。 (2) 既成品の土留め工の部材の場合、当該部材の製造者の作成したマニュアルに従い使用すること。→**規定なし。**→7.5 を追加する。 (3) 請負者の設計による土留め工の場合、設計図及び施工手順図にもとづき設置すること。→**規定なし。**→7.5 を追加する。 (4) 地山の崩壊、掘削箇所に近接する構造物の倒壊等から作業員を保護できる十分な強度を持つ土留め工を設置すること。→**規定なし。**→7.5 を追加する。 (5) 土留め工が作業に先行して設置されるまで掘削するトレンチ内に作業員を立ち入らせないこと。→**規定なし。**→7.5 を追加する。 (6) 土留め工の下端から 60cm 以上の掘削は行わないこと。→**規定なし。**→7.5 を追加する。 (7) 作業のために一時的に土留め工の部材を取り外す必要があるときは、土留め工に作用する荷重を負担する仮部材を取り付けるなどの措置を講じること。→**規定なし。**→7.5 を追加する。 (8) 土留め工を取り外すときは、当該場所及び付近に取外し作業に従事する作業員以外の者を立ち入らせないこと。→**規定なし。**→7.5 を追加する。 (9) 掘削場所の埋戻しは、掘削場所から土留め工を取り外す作業と並行して行うこと。→**規定なし。**→7.5 を追加する。			(1) Materials and equipment to be used for earth retaining systems shall be appropriate for the width and depth of the trench and free from damage or defects that might impair their proper function; (2) Manufactured (prefabricated) materials for earth retaining systems shall be used in accordance with the instructions and recommendations given in the manual of the manufacturer; (3) The earth retaining system designed by the Contractor shall be provided in accordance with the design and construction procedure drawings; (4) Earth retaining system with sufficient strength shall be provided to protect workers from collapse of the ground in and structures near the excavation site; (5) Workers shall not be allowed to enter the trench until the earth retaining system is installed prior to the work; (6) Excavation to a level greater than 60cm below the bottom of the earth retaining system shall not be allowed; (7) If temporary removal of individual members of the earth retaining system is necessary, safety measures shall be taken to ensure the safety of workers, such as installing temporary members to hold the loads imposed on the system; (8) When removing the earth retaining system, not allow anyone other than the workers engaged in the removal work to enter the area and the vicinity; and (9) Backfilling of the trench shall be performed in parallel with the removal of the earth retaining system.
8.7 発破掘削	**8.4. EXCEPTION BY BLASTING**	**8.4. EXCEPTION BY BLASTING** JC: Blasting は安全規定の塊みたいなものであるので、BS 5607 を引用するなら(OSHA でもよい)、思い切って項目を全面的にフォローし内容も参考にしてよいのではないか。さらに第三者の構造物に対する許容値について MTR M&W を参考にすることを推奨する。 何故そのように推奨するかといえば、コントラクター任せになっているように思える記述が多いためです。本来発破については具体的な規定が契約に含まれるべきなので、そういった規定がどこかにあります(あるべき)ということを前提とした書きぶりにしてください。 As Blasting is soul of safety specification, it seems better	**7.6 EXCEPTION BY BLASTING**

8.7.1 一般事項

(1) 本節では、請負者の要員及び第三者の発破掘削作業にかかわる安全措置について規定する。

発破作業自体にかかる計画については、施工計画書(Method Statement)に記載する。**→E8.4.1 (1)/(2)に規定済み**

(2) 本節の 8.7.3[計画書の作成]及び 8.7.4[作業員及び周辺住民への措置]は、明り掘削に対してのみ適用する。**→規定なし。** →明り掘削のみを7.6.1(1)へ追記する。

(3) 本仕様書で使用する用語の定義は次である。

(a) 火薬類とは、火薬、爆薬、雷管等の火工品をいう。**→E8.4.2 (2)に規定済み**

(b) 危険区域(exclusion zone)とは、発破を行うとき、許可された作業員以外の者の立入りを禁止する地域をいう。**→E8.4.2 (3)に規定済み**

8.4.1. Scope

(1) This Section specifies safety measures in connection with excavation in rock that cannot be undertaken using conventional excavation techniques and which, following the Engineer's Instruction or consent, shall be undertaken by Blasting with Explosives.

(2) The Blasting Works plan shall be described in the relevant Method Statement.

(3) This Section applies particularly to Blasting Works where there may be any risk of injury or damage to persons and property on adjacent areas due to the use of Explosives either within or outside the Site.

8.4.2. Definitions

Definitions of terms for the purpose of this Chapter are as follows.

(1) "Blasting" means blowing-up or breaking apart solid rock with the use of Explosives.

(2) "Explosives" means mean any substance or mixture of substances that is manufactured to produce an explosive effect and which term includes any explosion explosive, Blasting agent and Blasting supplies such as detonators, cords and detonating equipment.

to specify all items as mentioned in BS 5607 (OSHA) if referred to those. In addition, advise to refer to the allowable values influenced to structures of 3rd parties specified in Hongkong MTR M&W.

The reason why advice above is given is that there are many descriptions in JSSS Issue 1 which leave the Contractor decide. Fundamentally (originally), concrete requirements for the blasting shall be included in the Contract. Therefore, it needs to describe JSSS indicating that there are or should be such requirements.

NK: Basic requirement is that the Contractor shall execute the blasting works in accordance with the Law of the Country. The safety is the Contractor's responsibility. The concrete requirements mean influence to structures of 3rd parties, NK agree to specify the acceptable values by the Employer if so determined by the Employer, however principally GC request no influence and damage by the Works. NK will study the comments given below and specify as requested by JC. NK request JICA to review the revised JSSS in right.

8.4.1. Scope

(1) This Section specifies safety measures in connection with excavation in rock that cannot be undertaken using conventional excavation techniques and which, following the Engineer's Instruction or consent, shall be undertaken by Blasting with Explosives.

NK: added in open in right because 8.4 specifies excluding underground excavation with blasting.

JC: 何故キャピタル－ 定義語なのか(**B**lasting with **E**xplosives) 8.4.2 (1), (2) 参照。Why are they written in capital letters? Are they defined? See 8.4.2 (1), (2).

NK: They are defined in 8.4.2. NK will ask MD the reason of definition.

(2) The Blasting Works plan shall be described in the relevant Method Statement.

(3) This Section applies particularly to Blasting Works where there may be any risk of injury or damage to persons and property on adjacent areas due to the use of Explosives either within or outside the Site.

NK: There are two terms in 7.6: "Blasting Works" and "Blasting works". Tentatively, "Blasting works" is used in right because "excavation work" is used in 7.1 and "Blasting" is defined in 8.4.2. (To MD: Please confirm the term.)

8.4.2. Definitions

Definitions of terms for the purpose of this Chapter are as follows.

(1) "**Blasting**" means blowing-up or breaking apart solid rock with the use of Explosives.

(2) "**Explosives**" means mean any substance or mixture of substances that is manufactured to produce an explosive effect and which term includes any explosion explosive, Blasting

7.6.1. Scope

(1) This Section specifies safety measures in connection with excavation in rock in open that cannot be undertaken using conventional excavation techniques and which, following the Engineer's Instruction or consent, shall be undertaken by Blasting with Explosives.

(2) The Blasting ~~Works~~ works plan shall be described in the relevant Method Statement.

(3) This Section applies particularly to Blasting ~~Works~~ works where there may be any risk of injury or damage to persons and property on adjacent areas due to the use of Explosives either within or outside the Site.

7.6.2. Definitions

Definitions of terms for the purpose of this Chapter are as follows.

(1) "**Blasting**" means blowing-up or breaking apart solid rock with the use of Explosives.

(2) "**Explosives**" means mean any substance or mixture of substances that is manufactured to produce an explosive effect and which term includes any explosion explosive, Blasting agent and Blasting supplies such as detonators, cords and detonating equipment.

(4) 請負者は、発破掘削作業に伴う火薬類の取扱い（購入、運搬、貯蔵、使用、不要火薬類の処分等）は、当該国の法律、本契約で別途定める事項及び本仕様書に規定する事項を遵守して、行わなくてはならない。**→規定なし。**（総則で法律等に従うことは前提として規定している。）

(5) 請負者は当該国の法律、本契約、本仕様書に規定がない事項は、BS 5607: Code of practice for the safe use of explosives in the construction industry を参照し、必要な措置を講じなくてはならない。**→E8.4.3 (1)に規定済み**

(6) 請負者は、発破作業とそれに伴う火薬類の取扱いに伴う必要な許認可を取得するための一切の手続きを実施するものとし、発注者は許認可の取得に必要な協力を行うこととする。**→E8.4.3 (2)に規定済み**

8.7.2 発破作業の要員

請負者は、発破作業の要員に関し、次の措置を講じなくてはならない。

(1) 発破作業の作業員の配置

発破作業を行うときは、発破担当エンジニア（explosive engineer）、発破技士(shotfirer)を、本仕様書 1.8[請負者の要員の適正配置]に従い、配置すること。**→E8.4.4 (1)に規定済み**

(2) 発破作業の作業員の責務と要件**→E8.4.4 (2)に規定済み（competent については削除している）**

(3) "Exclusion Zone" means an area from which all unauthorised Contractor's Personnel, unauthorised Employer's Personnel and any other unauthorised persons or the general public are prohibited to enter due to the risk of their being affected by the Blasting operations. Unauthorised personnel in this context shall have the same meaning as that stated in Section 2.3 [Prohibition of Entry – Dangerous Work] Clause 2.3.1 (c).

8.4.3. Compliance Standards

(1) By reference to JSSS 1.4 [JSSS - Laws and Reference Standards], the Contractor shall comply with the requirements of this Chapter, read jointly with and including the further technical requirements of BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry.

(2) The Contractor shall obtain the necessary permits, licenses or approvals for Blasting work and the handling and storage of Explosives associated therewith. The Employer, at the request of the Contractor, shall provide such reasonable assistance to allow the Contractor to obtain properly such permits, licenses or approvals in accordance with GC 2.2 [Permits, Licences or Approvals].

8.4.4. **Personnel for Blasting Works**

(1) Further to the requirements of JSSS 1.16 [Proper Placement of Contractor's Personnel], the Contractor shall assign the following personnel for Blasting Works:

(a) Explosive Engineer; and

(b) Shotfirer(s)

(2) Responsibilities and requirement of personnel for Blasting Works:

(a) The Explosive Engineer shall plan the Blasting Works, lead the Blasting Works at Site and perform the safety management of the Blasting Works;

agent and Blasting supplies such as detonators, cords and detonating equipment.

(3) "**Exclusion Zone**" means an area from which all unauthorised Contractor's Personnel, unauthorised Employer's Personnel and any other unauthorised persons or the general public are prohibited to enter due to the risk of their being affected by the Blasting operations. Unauthorised personnel in this context shall have the same meaning as that stated in Section 2.3 [*Prohibition of Entry – Dangerous Work*] Clause 2.3.1 (c).

8.4.3. Compliance Standards

(1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], the Contractor shall comply with the requirements of this Chapter, read jointly with and including the further requirements of BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry.

(2) The Contractor shall obtain the necessary permits, licenses or approvals for Blasting work and the handling and storage of Explosives associated therewith. The Employer, at the request of the Contractor, shall provide such reasonable assistance to allow the Contractor to obtain properly such permits, licenses or approvals ~~in accordance with GC 2.2 [*Permits, Licences or Approvals*]~~.

JC: Referencing to GC2.2 is not necessary here.
NK: The reference is deleted.

8.4.4. Personnel for Blasting Works

(1) Further to the requirements of JSSS 1.16 [*Proper Placement of Contractor's Personnel*], the Contractor shall assign the following personnel for Blasting Works:

(a) Explosive Engineer; and

(b) Shotfirer(s)

JC: It seems that capital and lowercase letters are used without rules.

NK: Unless a word is defined, it will be written with lowercase. The above is modified as right because of itemisation. Hereinafter, "explosive engineer" and "shotfirer" are used only by lowercase letters.

(2) Responsibilities and requirement of personnel for Blasting Works:

(a) The explosive engineer shall plan the

(3) "**Exclusion Zone**" means an area from which all unauthorised Contractor's Personnel, unauthorised Employer's Personnel and any other unauthorised persons or the general public are prohibited to enter due to the risk of their being affected by the Blasting operations. Unauthorised personnel in this context shall have the same meaning as that stated in Section 2.3 [*Prohibition of Entry – Dangerous Work*] Clause 2.3.1 (c).

7.6.3. Compliance Standards

(1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], the Contractor shall comply with the requirements of this Chapter, read jointly with and including the further requirements of BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry.

(2) The Contractor shall obtain the necessary permits, licenses or approvals for Blasting work and the handling and storage of Explosives associated therewith. The Employer, at the request of the Contractor, shall provide such reasonable assistance to allow the Contractor to obtain properly such permits, licenses or approvals.

7.6.4. Personnel for Blasting Works

(1) Further to the requirements of JSSS 1.16 [*Proper Placement of Contractor's Personnel*], the Contractor shall assign the following personnel for Blasting ~~Works~~ works:

(a) Explosive engineer; and

(b) Shotfirer(s)

(2) Responsibilities and requirement of personnel for Blasting ~~Works~~ works:

(a) The explosive engineer shall plan the Blasting ~~Works~~ works, lead the Blasting ~~Works~~ works at Site and perform the safety management of the

(a) 発破担当エンジニアは、発破作業の計画・設計を行い、作業の主導及び安全管理を行うこと。発破担当エンジニアは、請負者が当該業務の知識、経験、能力がある()と認める者であること。

(b) 発破技士は、火薬類の保管、運搬、貯蔵、発破の作業及び現場の安全管理を行うこと。発破技士は、当該国の法律で規定がある場合、発破業務の有資格者、規定が無い場合は、請負者が発破業務の知識、経験、能力がある(competent)と認める者であること。

(3) 安全教育と指導

発破作業に従事する作業員に以下の事項に関する知識が備わっていることを確保すること。また必要に応じて、関連の教育訓練を実施すること。
→E8.4.4 (3)に規定済み

(a) 発破による危険の性質**→E8.4.4 (3)(a)に規定済み**

(b) 発破作業での不安全状態と不安全行動**→E8.4.4 (3)(b)に規定済み**

(c) 発破作業の手順**→E8.4.4 (3)(c)に規定済み**

(d) 発破時の退避と退避解除の手順**→E8.4.4 (3)(d)に規定済み**

(e) 火薬類の不発発生時の安全対策**→E8.4.4 (3)(e)に規定済み**

(f) 緊急時対応**→E8.4.4 (3)(f)に規定済み**

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and

(b) Shotfirer(s) shall perform safekeeping, transportation and storage of Explosives, and perform Blasting Works and site safety management.

(3) Safety education and guidance

Further to the requirements of JSSS 1.16 [Proper Placement of Contractor's Personnel], the Contractor shall ensure that personnel engaged in Blasting Works have knowledge of and are able to comply with the following:

(a) Nature of hazards associated with Blasting;

(b) Unsafe conditions and conduct in performing Blasting Works;

(c) Procedures for Blasting Works;

(d) Evacuation and return Procedures;

(e) Safety measures when misfiring of Explosives occurs; and

(f) Emergency response (actions).

8.4.5. Blasting Safety Plan

The Contractor shall prepare a Blasting Safety Plan

Blasting Works, lead the Blasting Works at Site and perform the safety management of the Blasting Works; and

(b) Shotfirer(s) shall perform safekeeping, transportation and storage of Explosives, and perform Blasting Works and site safety management.

(3) Safety education and guidance

Further to the requirements of JSSS 1.16 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that personnel engaged in Blasting Works have knowledge of and are able to comply with the following:

JC: これが上記(1)で定義する 2 種類の専門職を指しているのか、それとも他の人を含むのかが不明瞭です。上記の 2 種類の専門職に限定して良いのであれば、blasting works はその 2 種類の専門家のみによって行われるという意味の文が(1)に入っているべきです。

The phrase "personnel engaged in Blasting Works" is not clear if it means only the explosive engineer and shotfirer as defined in (1) above or it includes other personnel, too. If the former is the case, the clause (1) should include the sentence that blasting works shall perform only by the explosive engineer and shotfirers.

NK: BS5607 に記述の 2 つの専門職、歩哨、その他の発破作業員がチームで作業します。
Blasting Works are executed by the team consisting of the explosive engineer, shotfirers, sentries (BS5607 7.4.2.4) and other workers involved in the blasting operations (BS5607 3.44.2 NOTE).
(3) is modified as right.

(a) Nature of hazards associated with Blasting;

(b) Unsafe conditions and conduct in performing Blasting Works;

(c) Procedures for Blasting Works;

(d) Evacuation and return Procedures;

JC: 避難した人を帰還させるのか、火薬の所定の場所への返却なのかが不明瞭です。

The word "return" in (d) is not clear if it means to make evacuated personnel to the original places or return surplus explosives to the magazine.

NK: It means to make the evacuated personnel to the original working places. Words are added as right.

(e) Safety measures when misfiring of Explosives occurs; and

(f) Emergency response (actions).

Blasting ~~Works~~ works ; and

(b) Shotfirer(s) shall perform safekeeping, transportation and storage of Explosives, and perform Blasting ~~Works~~ works and site safety management.

(3) Safety education and guidance

Further to the requirements of JSSS 1.16 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that personnel engaged in Blasting ~~Works~~ works , namely explosive engineer, shotfirer(s), Spotters (sentries) and other workers involved in the blasting operations, have knowledge of and are able to comply with the following:

(a) Nature of hazards associated with Blasting;

(b) Unsafe conditions and conduct in performing Blasting ~~Works~~ works ;

(c) Procedures for Blasting ~~Works~~ works ;

(d) Evacuation and return procedures of the evacuated workers and personnel;

(e) Safety measures when misfiring of Explosives occurs; and

(f) Emergency response (actions).

7.6.5. Blasting Safety Plan

The Contractor shall prepare a Blasting Safety Plan

8.7.3 計画書の作成

請負者は、発破作業を行うときは、本仕様書 1.3[安全衛生にかかわる計画書]に規定の事項に加え、次の安全上の措置について安全計画書に記述しなければならない。**→E8.4.5 に規定済み**

(1) 発破作業のリスク分析と対策**→E8.4.5 (1)に規定済み**

(2) 火薬類の輸送、保管、使用及び処分時の安全措置**→E8.4.5 (2)に規定済み**

(3) 発破作業時の作業員・周辺住民への安全措置**→E8.4.5 (3)に規定済み**

(4) 危険区域の決定**→E8.4.5 (4)に規定済み**

(5) 発破作業の影響がある区域、建物、構造物の特定**→E8.4.5 (5)に規定済み**

(6) 法律又は契約において規定される発破作業時の制約要因(振動、騒音等)を考慮した対策**→E8.4.5 (6)に規定済み**

(7) 試験発破**→E8.4.5 (7)に規定済み**

(8) 周辺の建物等への発破の振動による影響のモニタリング**→E8.4.5 (8)に規定済み**

(9) 発破担当エンジニア、発破技士の識別方法**→E8.4.5 (9)に規定済み**

(10) 発破時の監視員の配置**→E8.4.5 (10)に規定済み**

(11) 周辺住民への発破作業の開始日時の通知、発破作業直前の周知方法**→E8.4.5 (11)に規定済み**

(12) 危険区域からの作業員の発破前の退避方法**→E8.4.5 (12)に規定済み**

(13) 発破時に用いる警報システム**→E8.4.5 (13)に規定済み**

(14) 不発の火薬類の処理**→E8.4.5 (14)に規定済み**

(15) 発破に関する法的及び管理目的で必要な記録の一覧表**→E8.4.5 (15)に規定済み**

8.7.4 作業員及び周辺住民への措置

(1) 周辺住民への発破作業の周知

発注者が行う関係官庁、周辺住民・建物所有者への発破作業の作業内容、安全対策等を説明する説明会のために、発注者から要請があった場合は、請負者は発注者に協力すること。

周辺住民への発破作業の開始日時の予定を通知し、発破作業前には作業の開始を周知すること。**→E8.4.6 (1)に規定済み**

(2) 作業員及び周辺住民への危害防止の措置

発破作業による作業員及び周辺住民への危害の防止のため、次の措置を講じること。**→E8.4.6 (2)**

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describing all required safety measures for Blasting Works in addition to the items prescribed in JSSS 1.6 [Contractor's Safety Plan] and including the following:

(1) Risk analysis and countermeasures.

(2) Safety measures for transportation, safekeeping, use and disposal of Explosives.

(3) Safety measures for Contractor's Personnel, Employer's Personnel and any other persons, the general public, neighbouring residents and building owners on or adjacent to the Site and who may be affected by the Blasting Works.

(4) Determination of Exclusion Zone.

(5) Identification of affected areas, buildings, structures and property.

(6) Environmental and health compliance

8.4.5. Blasting Safety Plan

The Contractor shall prepare a Blasting Safety Plan describing all required safety measures for Blasting Works in addition to the items prescribed in JSSS 1.6 [*Contractor's Safety Plan*] and including the following:

JC: エンジニアが同意すべきものであるということがどこかで書かれているべきだと思います。
It should be stated somewhere that the Blasting Safety Plan shall be agreed by the Engineer.

NK: MM 3.(3)に記述のように、第 1 章 1.6 Contractor's Safety Plan で Safety Plan の提出を規定しています。又、第 1 章に the Engineer may review the Safety Plan…を規定予定です。本章のみに、エンジニアの同意が必要と書くことは、不要と考えます。
As mentioned in MM 3.(3) Chapter 1 has specified the Contractor shall submit Safety Plan and will specify "the Engineer may review the Safety Plan…".
Therefore, it is not necessary to specify "the Contractor shall get concurrence to the Safety Plan by the Engineer." for this Chapter only.

(1) Risk analysis and countermeasures.

(2) Safety measures for transportation, safekeeping, use and disposal of Explosives.

(3) Safety measures for Contractor's Personnel, Employer's Personnel and any other persons, the general public, neighbouring residents and building owners on or adjacent to the Site and who may be affected by the Blasting Works.

JC: これを定義して"Concerned Personnel"などのように呼んで以降の記載に使用するようにしては。例えば(12)項、8.4.6(1)など。

It is recommended to define as for example, "Concerned Personnel" and use the term instead of repeating the long expression in the clauses such as (12) below and 8.4.6. (1).

NK: referred to BS5607 and GC below for the above JC. It will be defined as "personnel affected by the Blasting Works" as right.

BS 5607 mentions as follows:
6.4 Exclusion zone and warning procedures
the risk of injury to contractor's personnel, third parties and members of the public is reduced to as low as reasonably practicable.
7.4.2.1 General
notified to all personnel involved in securing the zone and others affected by the event, including the general public.
GC: 4.8 Safety Procedures
for the use and protection of the public and of owners and occupiers of adjacent land.

(4) Determination of Exclusion Zone.

(5) Identification of affected areas, buildings,

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describing all required safety measures for Blasting ~~Works~~ works in addition to the items prescribed in JSSS 1.6 [*Contractor's Safety Plan*] and including the following:

(1) Risk analysis and countermeasures.

(2) Safety measures for transportation, safekeeping, use and disposal of Explosives.

(3) Safety measures for Contractor's Personnel, Employer's Personnel and any other persons, the general public, neighbouring residents and building owners on or adjacent to the Site and who may be affected by the Blasting ~~Works~~ works ~~(hereinafter collectively referred to as~~ "personnel affected by the Blasting works" in this Section).

(4) Determination of Exclusion Zone.

(5) Environmental and health compliance requirements including vibration, noise, fire, and the like, required by Laws and the

に規定済み

(a) 掘削、小割、岩塊除去等の発破による飛び石や周辺地山・岩石の崩落・転落防止のため、過装薬禁止、飛散防止対策等の措置を実施すること。**→E8.4.6 (2)(a)/(b)/(c)に規定済み**

(b) 危険区域を定め立札・赤旗等で明示し、危険区域内への発破作業員以外の作業員の立入りを禁止すること。**→E8.4.6 (2)(d)に規定済み**

(c) 危険区域境には発破時刻、サイレン符号その他の注意事項を示した掲示板を立てること。**→E8.4.6 (2)(e)(f)に規定済み**

(d) 退避場所を設定し、これを作業員に周知すること。**→E8.4.6 (2)(g)に規定済み**

(e) 発破技士と監視員との連絡・通信機器をそろえ、適宜機器の点検を行うこと。**→E8.4.6 (2)(h)に規定済み**

(f) 点火のときには、危険区域の境界に監視員を配置し、全ての作業員の退避を確認した後に点火を行うこと。**→E8.4.6 (2)(i)に規定済み**

(g) 発破作業は、可能な限り昼間に実施すること。**→E8.4.6 (2)(j)に規定済み**

requirements including vibration, noise, fire, and the like, required by Laws and the Contract.

(7) Test Blasting.

(8) Environmental monitoring plan and methods to record the impact of Blasting on affected buildings, structures and property.

(9) Identification of the explosive engineer and shotfirers to distinguish from other workers.

(10) Placement of Spotters.

(11) Method of notification of the start date and time of Blasting work and notice immediately before Blasting to other Contractor's Personnel, Employer's Personnel and any other persons, the general public, neighbouring residents and building owners on or adjacent to the Site and who may be affected by the Blasting operations.

(12) Evacuation method of all personnel from the Exclusion Zone before Blasting.

(13) Warning system at the time of Blasting.

(14) Procedures and methods for dealing with misfired Explosives (The plan for the treatment procedures for misfired Explosives shall be prepared by reference to BS5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10.5 Misfires.

(15) List of legal and administrative records.

8.4.6. Information to Workers and Neighbouring Residents

(1) Dissemination of Information

structures and property.

(6) Environmental and health compliance requirements including vibration, noise, fire, and the like, required by Laws and the Contract.

JC: 許容値が定まり、その範囲内での発破のかけかたが定まり、すると必然的に affected area が定まる、という論理に従い、5,6 は入れ替えます。
It is logically appropriate to change the order of (5) and (6). (First, determining the allowable values, secondly determining the blasting method within the values, then, the affected area is inevitably determined.)
NK: The order of (5) and (6) is changed as commented.

(7) Test Blasting.

(8) Environmental monitoring plan and methods to record the impact of Blasting on affected buildings, structures and property.

(9) Identification of the explosive engineer and shotfirers to distinguish from other workers.

(10) Placement of Spotters.

(11) Method of notification of the start date and time of Blasting work and notice immediately before Blasting to other Contractor's Personnel, Employer's Personnel and any other persons, the general public, neighbouring residents and building owners on or adjacent to the Site and who may be affected by the Blasting operations.

(12) Evacuation method of all personnel from the Exclusion Zone before Blasting.

JC: The JC for (3) advise to replace all personnel with "Concerned Personnel" or another term
NK: Personnel and persons in (3) is different from (12) as the latter is limited to personnel to leave Exclusion Zone. It is left as it is.

(13) Warning system at the time of Blasting.

(14) Procedures and methods for dealing with misfired Explosives (The plan for the treatment procedures for misfired Explosives shall be prepared by reference to BS5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10.5 Misfires.

(15) List of legal and administrative records.

8.4.6. Information to Workers and Neighbouring Residents

(1) Notice of Blasting (JC: Changed.)

~~The Contractor shall assist the Employer when so requested by the Employer in giving~~

Contract.

(6) Identification of affected areas, buildings, structures and property.

(7) ~~Test~~ Trial Blasting.

(8) Environmental monitoring plan and methods to record the impact of Blasting on affected buildings, structures and property.

(9) Identification of the explosive engineer and shotfirers to distinguish from other workers.

(10) Placement of Spotters.

(11) Method of notification of the start date and time of Blasting work and notice immediately before Blasting to other Contractor's Personnel, Employer's Personnel and any other persons, the general public, neighbouring residents and building owners on or adjacent to the Site and who may be affected by the Blasting operations.

(12) Evacuation method of all personnel from the Exclusion Zone before Blasting.

(13) Warning system at the time of Blasting.

(14) Procedures and methods for dealing with misfired Explosives (The plan for the treatment procedures for misfired Explosives shall be prepared by reference to BS5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10.5 Misfires.

(15) List of legal and administrative records.

7.6.6. Risk Prevention of Workers and Neighbouring Residents

(1) Notice of Blasting

The Contractor shall notify, in appropriate

	The Contractor shall assist the Employer when so requested by the Employer in giving briefings to related authorities, neighbouring residents and building owners by explaining the Blasting work scope, extent, duration, timing and safety measures and related information. The Contractor shall notify all affected persons including neighbouring residents and building owners of the planned schedule and start dates and times for Blasting work, the actual start dates and times and give notice immediately before the Blasting work commences.	~~briefings to related authorities, neighbouring residents and building owners by explaining the Blasting work scope, extent, duration, timing and safety measures and related information.~~ (JC: Deleted.) The Contractor shall notify all affected persons including neighbouring residents and building owners of the planned schedule and start dates and times for Blasting work, the actual start dates and times and give notice immediately before the Blasting work commences. JC: The JC for (3) advise to replace all affected personnel with "Concerned Personnel" or another term NK: This is replaced with personnel affected by the Blasting Works as right. JC: 個別の世帯を一軒一軒訪問して知らせるということではないと考えますが、それを想起させる書き方になってはいませんでしょうか。 It does not mean to notify about blasting work by visiting individual residence. The writing seems to remind such a situation? NK: Modified as right.	manners, all affected persons including neighbouring residents and building owners of the planned schedule and start dates and times for Blasting work, the actual start dates and times and give notice immediately before the Blasting work commences.
	(2) Risk Prevention The Contractor shall take all necessary measures to prevent any injury or damage to all affected persons and property from the Blasting Works including the following: (a) Prohibition of overcharging with Explosives; (b) Prevention of scattering of flying rock and	(2) Risk Prevention The Contractor shall take all necessary measures to prevent any injury or damage to all affected persons and property from the Blasting Works including the following: (a) Prohibition of overcharging with Explosives; JC: 言いたいことはわかるが、具体性が無い。test blasting を基に請負者が計画する段数ごとの火薬量の確認を、エンジニアが行う。 It is not specific requirement though it is understandable. The Engineer shall check the explosive quantity planned by the Contractor based on the test blasting. NK: 施工法に関する計画は請負者の責任であり、薬量の確認は請負者が行うべきである。エンジニアは、計画が契約に従い作成しているかをレビューする。右のように追記する。 The Contractor is responsible for planning of method of blasting. The Contractor shall check the quantity of explosive if necessary by an explosive design checker as same as design check for temporary works. The Engineer may review Method Statement and Safety Plan whether the Contractor plan method and safety measures in accordance with the Contract. Addition is made as the right. (b) Prevention of scattering of flying rock and other debris as prescribed in the Contract (if any); (JC added.)	(2) Risk Prevention Measures The Contractor shall take all necessary measures to prevent any injury or damage to all affected persons and property from the Blasting ~~Works~~ works including the following: (a) Prohibition of overcharging with Explosives more than specified in the Method Statement prepared based on the trial Blasting; (b) Prevention of scattering of flying rock and other debris with materials, for example,

	other debris;	JC: 具体性が無い。(その他項目にも共通して言えることですがここでは)求める飛散防止装置を発注者が規定することがデフォルトであるべきです。そのニュアンスが感じられません。必要に応じて特記に逃げるなどの策を検討願います。 It is not specific requirement. (Other clauses can be said commonly.) It shall be default for the Employer to determine the prevention measures of scattering of rocks. This concept that the Employer specify in the Contract cannot be read now. Please consider to specify specific requirements or to refer to the Particular Safety Specification. NK: 上の(a)と同じく、具体的な方法は請負者の責任が計画することです。特別な要求事項があれば、発注者は特記に記載することとします。 As mentioned (a) above, the Contractor is responsible for the preparation of detail method of construction including the prevention measures. The Employer specify when there is special requirement. Modified as right. JC: →具体的な方法を明示してください(BS などの規格にリファーできる内容があればリファーしてください)。 Please describe specific methods. (Please refer to the contents of BS if available.) NK: added 12.7.6 Blast protection of BS 5607	sand, nets, steel plates, timber, etc. mentioned in 12.7.6 [Blast protection] of BS 5607 and specified in the Contract (if any).
	(c) Prevention of collapse of surrounding rocks or ground areas;	(c) Prevention of collapse of surrounding rocks or ground as prescribed in the Contract (if any); (JC added.) JC: control blasting、つまり presplitting/smooth blasting の規定を意味するのか？ また発破による最終法面の規定なのか、あるいは隣接する構造物の基礎に対する規定なのか不明瞭である。発破とは本来 surrounding rocks や ground areas を緩めるものである。 NK: This specifies prevention of collapse by excessive loosening of surrounding rocks or ground areas. Modified as right. "as prescribed …" is not added because the Employer will not specify more than this.	(c) Prevention of collapse of surrounding rocks or ground more than planned in the Method Statement;
	(d) Define all Blasting as Dangerous Work and take measures in accordance with Section 2.3 [Prohibition of Entry – Dangerous	JC: これは Information to Workers and ...ではなく実施上の注意事項を纏めたものなので、適切な位置に移動させてください。 "Risk Prevention" is not "Information to Workers and Neighbouring Residents" but points to pay attention in performing the work. Please move to proper place. NK: NK thinks that it is better to change the title of this section to "Risk Prevention of Workers and Neighbouring Residents" and title of (2) to "Risk Prevention Measures" so that the title and the contents coincide. (d) Define all Blasting as Dangerous Work and take measures in accordance with Section 2.3 [Prohibition of Entry – Dangerous Work];	(d) Define Exclusion Zone for Blasting works and take necessary measures to prohibit the personnel affected by the Blasting works from entering the Exclusion Zone by a

	Work]; (e) Provide audible warning sirens to warn of impending, current and completed Blasting operations; (f) Place bulletin boards showing the Blasting time, siren code and other precautions at the boundary of the Dangerous Work area; (g) Establish evacuation requirements, routes and assembly areas and inform all workers and effected persons; (h) Provide communication equipment between the shotfirer and the Spotter, maintain and test the equipment; (i) Perform firing only after the Spotters have confirmed that all workers have been evacuated; and (j) Unless otherwise specified in the Contract, perform Blasting Works only during the daytime.	JC: 2.3 には一般的な立ち入り禁止措置の話しか記載されていませんので、2.3 はリファーせずに具体的に発破作業の際の退避エリアを規定すべきと考えます。 As JSSS 2.3 stipulates only prohibition of entry in general and is not proper to refer to in this clause. The evacuation area at the time of blasting should be stipulated concretely. NK: Modified the clause (d) and located (e)(f) below (d) as right. (e) Provide audible warning sirens to warn of impending, current and completed Blasting operations; (f) Place bulletin boards showing the Blasting time, siren code and other precautions at the boundary of the Dangerous Work area; (g) Establish evacuation requirements, routes and assembly areas and inform all workers and effected persons; JC: 緊急避難路のような規定に感じます。単純に evacuation の確認でよいのではないでしょうか。 It gives an impression of an emergency evacuation route. Isn't it enough to simply check evacuation? NK: As a risk prevention measure, it is important to establish and inform evacuation requirement and routes etc. Modified as right. (h) Provide communication equipment between the shotfirer and the Spotter, maintain and test the equipment; JC: 発破士との連絡手段として、電磁波の発生する通話機器は使用可能か確認願います。BS 5067 6.3 に以下の規定が有ります。(h) Please make sure if a telephone that generates electromagnetic waves can be used as a means of contacting the shotfirer. There is a stipulation inBS5607 as follows: (h) On-site use of radio transmitters and mobile telephones should be strictly controlled during blasting operations NK: There is a clause in 8.7.8 (4)(a)(v) of Japanese version to prohibit bringing in mobile phone that may affect adversely the electric detonator. Add the clause to (f) as right. (i) Perform firing only after the Spotters have confirmed that all workers have been evacuated; and JC: (g)と統合のうえ、避難してから発破をかけるという趣旨が明確になるよう変更してください。 Combine (g) with (i) to make the procedure clear that only after evacuation, blasting shall be fired. NK: modified as (e) in right by combining former (g) and (i).. (j) Unless otherwise specified in the Contract, perform Blasting Works only during the daytime.	system of signs, signals and Spotters in accordance with 7.4.2 [Blast warning procedures] of BS BS5607 including the following: (i) Provide audible warning sirens to warn of impending, current and completed Blasting operations; (ii) Place bulletin boards showing the Blasting time, siren code and other precautions at the boundary of the Dangerous Work area; (e) Establish evacuation requirements, ~~routes~~ and assembly areas at blasting operation and inform all ~~workers and effected persons~~ ~~the~~ personnel affected by the Blasting Works; and Perform firing only after the Spotters have confirmed that all ~~workers~~ personnel affected by the Blasting Works have been evacuated; and (f) Provide communication equipment between the shotfirer and the Spotter, maintain and test the equipment; (g) Prohibit bringing into the blasting areas any mobile phone that is not guaranteed that it will not adversely affect the electric detonators; and (h) Unless otherwise specified in the Contract, perform Blasting ~~Works~~ works only during the daytime.

8.7.5 火薬類の取り扱い上の措置

(1) 火薬庫での貯蔵→E8.4.7

現場で火薬類を貯蔵する火薬庫は、次の事項を遵守すること。

(a) 現場に火薬庫を建設するときは、当該国の法律に従い建設すること。→E8.4.7 (1)(a) に規定済み（法律遵守に加えて、火薬庫の構造及び各種要件について規定。）

(b) 火薬庫の倉庫番は、当該国の法律に従い適切な人員を配置すること。→E8.4.7 (1)(b) に規定済み

(c) 火薬庫の出納した火薬類の種類、数量、出納の年月日時刻、出納者を記録し、出納記録の内容を確認し、保存すること。→E8.4.7 (1)(c) に規定済み

(d) エンジニアの指示があるときには、出納記録を提出すること。→E8.4.7 (1)(d) に規定済み

その他の安全上の留意事項については、BS 5607: Code of practice for the safe use of explosives in the construction industry, 9.3 Storage を参照し、必要な措置を講じること。→E8.4.7 (1)後段に規定済み

(2) 火薬類の運搬

現場の火薬庫から発破作業現場に火薬類を運搬する場合には、当該国の法律を遵守するとともに、BS5607: Code of practice for the safe use of explosives in the construction industry, 9.4 Transport of explosives on site を参照し、必要な措置を講じること。→E8.4.7 (2)に規定済み

8.4.7. Handling and Storing of Explosives

(1) Storage of Explosives

(a) The Explosive store to be constructed at the Site shall be a secure, substantial and fireproof building, environmentally controlled, locked, guarded and protected at all times and in accordance with the Laws;

(b) Appropriate numbers and types of personnel shall be assigned by the Contractor for safekeeping and security of the stored Explosives and any other materials;

(c) The Contractor shall maintain records of the types and quantities of all Explosives received and issued at the store, listing the date and time of receipt and issue and the names of all personnel concerned; and

(d) The Contractor shall submit the records to the Engineer when the Engineer requests.

For other storage requirements, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 9.3 Storage.

(2) Transportation of Explosives

For transportation requirements, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 9.4 Transport of Explosives on Site.

(3) Quantity of Explosives at the Blasting site

8.4.7. Handling and Storing of Explosives

(1) Storage of Explosives

(a) The Explosive store to be constructed at the Site shall be a secure, substantial and fireproof building, environmentally controlled, locked, guarded and protected at all times and in accordance with ~~the Laws~~;

JC: “the laws of the Country” の間違いです。

“the Laws” in (a) is wrong. Should be “the laws of the Country”.

NK: GC stipulate as 1.1.6.5 “Laws” means all national (or state) legislation… and 2.2 (a) copies of the Laws of the Country…,Modified as commented.

(b) Appropriate numbers and types of personnel shall be assigned by the Contractor for safekeeping and security of the stored Explosives and any other materials;

(c) The Contractor shall maintain records of the types and quantities of all Explosives received and issued at the store, listing the date and time of receipt and issue and the names of all personnel concerned; and

(d) The Contractor shall submit the records to the Engineer when the Engineer requests.

For other storage requirements, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 9.3 Storage.

JC: Blasting は安全規定の塊みたいなものであるので、BS 5607 を引用するなら（OSHA でもよい）、思い切って項目を全面的にフォローし内容も参考にしてよいのではないか。さらに第三者の構造物に対する許容値について MTR M&W を参考にすることを推奨する。

As Blasting is soul of safety specification, it seems better to specify all items as mentioned in BS 5607 (OSHA) if referred to those. In addition, advise to refer to the allowable values influenced to structures of 3rd parties specified in Hongkong MTR M&W.

NK: modified following the comments as much as possible.

(2) Transportation of Explosives

For transportation requirements, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 9.4 Transport of Explosives on Site.

(3) Quantity of Explosives at the Blasting site

(a) The quantity of Explosives to be

7.6.7. Handling and Storing of Explosives

(1) Storage of Explosives

(a) The Explosive store to be constructed at the Site shall be a secure, substantial and fireproof building, environmentally controlled, locked, guarded and protected at all times and in accordance with the Laws of the Country;

(b) Appropriate numbers and types of personnel shall be assigned by the Contractor for safekeeping and security of the stored Explosives and any other materials;

(c) The Contractor shall maintain records of the types and quantities of all Explosives received and issued at the store, listing the date and time of receipt and issue and the names of all personnel concerned; and

(d) The Contractor shall submit the records to the Engineer when the Engineer requests.

For other storage requirements, the Contractor shall comply with 9.3 [Storage] of BS 5607.

(2) Transportation of Explosives

For transportation requirements, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 9.4 Transport of Explosives on Site.

(3) Quantity of Explosives at the Blasting site

(3) 発破作業現場

発破作業現場では、次の事項を遵守すること。

(a) 火薬庫から発破作業現場へ運搬する火薬量は、発破作業日の消費見込数量を大きく越えないこと。

(b) 発破作業現場に火薬類を翌日以降の発破作業のために在置しないこと。**→E8.4.7 (3)(b)に規定済み**

(c) 当日使用しなかった火薬類は火薬庫へ返却すること。**→E8.4.7 (3)(c)に規定済み**

(4) 火薬類の取扱い

火薬類の取扱いは、次の事項を遵守して行うこと。

(a) 爆薬、雷管等を叩いたり、投げ出したり、取り落としたりすることのないように慎重に取扱うこと。**→E8.4.7 (4)(a)に規定済み**

(b) 火薬類の収納容器は木その他電気不良導体で作られた頑丈なもので、内面に鉄類が現れない構造とすること。**→E8.4.7 (4)(b)に規定済み**

(c) 爆薬と雷管は別々に異なった施錠可能な容器に収納すること。**→E8.4.7 (4)(c)に規定済み**

(d) 火薬類の収納容器は衝撃等に対して安全なものとすること。**→E8.4.7 (4)(d)に規定済み**

(e) 火薬類の運搬、貯蔵、取扱い作業中の場所及び火薬類の貯蔵場所及び周辺では、喫煙、マッチ・ライター・火炎の使用、火花の出る作業等を禁止し、必要な場所にその旨の表示をすること。**→E8.4.7 (4)(e)に規定済み**

(5) 数量の管理

火薬類の数量管理は、次の事項を遵守して行うこと。

(a) 発破技士は、発破の都度、年月日時刻、受入、消費、残りの数量、発破孔数、装てん方法について記録すること。**→E8.4.7 (5)(a)に規定済み**

(b) 発破作業の担当者は、発破作業記録を検査確認すること。**→E8.4.7 (5)(b)に規定済み**

(c) 請負者は記録を保存し、エンジニアの指示があるときには記録を提出すること。**→E8.4.7 (5)(c)に規定済み**

(a) The quantity of Explosives to be transported from store to the Blasting site shall not greatly exceed the estimated quantity of consumption for that day;

(b) No extra or surplus Explosives shall be stored at the Blasting site; and

(c) Explosives not used on the day shall be returned to the Explosives store.

(4) Handling of Explosives

(a) Explosives shall be handled with extreme care ensuring that they are not hit, thrown or dropped;

(b) Containers for Explosives shall be solidly constructed from timber or non-conducting material and metals such as iron or foil must not be used on inner surfaces;

(c) Explosive and detonators shall be separately stored in lockable containers;

(d) The containers for Explosives shall protect against water ingress, impact damage; and

(e) Smoking, use of matches, lighters, flames, sparks etc. shall be prohibited in areas where Explosives are being transported,

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(a) The quantity of Explosives to be transported from store to the Blasting site shall ~~not greatly exceed~~ the estimated quantity of consumption ~~for that day~~;

JC: 事前の計画書で1shotごとの火薬量はプロポーズされているので、それを著しく超えて発破の現場へ持ち込むことはエンジニアが許さないはず。しかしながら火薬が余ることは想定しうるので、その措置を規定する、という流れの方が書きやすいのではないか。

MM: “greatly exceed”という表現は適切ではない。
The expression is not appropriate.
NK: modified as right. (“suitable” is agreed in the meeting)

(b) No extra or surplus Explosives shall be stored at the Blasting site; and

(c) Explosives not used on the day shall be returned to the Explosives store.

JC: 1shotごとの余りを、火薬庫に戻すことが適切か否かはその国の法律や余った火薬の状態にも拠ります。火薬庫に戻すことを必須とする書き方が適切か否かは確認願います。また、BS 5607との整合性も確認してください。
→BS5607の9.6に具体的な措置の記載があるので確認ください。

Please confirm if the procedure (c) is a must to return unused explosives to magazine. Check with BS5607 (there is a provision for measures for such a case in BS 5607 9.6).

NK: BS 5607 9.6 is “Disposal of unwanted explosives or explosives which have deteriorated during storage”, which is irrelevant. Rather, there is a procedure for returning unused explosives in 12.8.2 as follows:

12.8.2: Only the amount of explosive which can be readily charged in one day should be taken into the structure. Uncharged explosives should be removed to a location where they can be stored legally until the following day.

Modified as right.

(4) Handling of Explosives

(a) Explosives shall be handled with extreme care ensuring that they are not hit, thrown or dropped;

(b) Containers for Explosives shall be solidly constructed from timber or non-conducting material and metals such as iron or foil must not be used on inner surfaces;

(c) Explosive and detonators shall be separately stored in lockable containers;

(d) The containers for Explosives shall protect against water ingress, impact damage; and

---

(a) The quantity of Explosives to be transported from store to the Blasting site shall be suitable for the estimated quantity of consumption for the Basting;

(b) No extra or surplus Explosives shall be stored at the Blasting site; and

(c) Explosives not used on the day shall be returned to the Explosives store or a location where they can be stored legally until the following day.

(4) Handling of Explosives

(a) Explosives shall be handled with extreme care ensuring that they are not hit, thrown or dropped;

(b) Containers for Explosives shall be solidly constructed from timber or non-conducting material and metals such as iron or foil must not be used on inner surfaces;

(c) Explosive and detonators shall be separately stored in lockable containers;

(d) The containers for Explosives shall protect against water ingress, impact

(6) エンジニアに対する通知

エンジニアへの通知は、次の事項を遵守して行うこと。

(a) 火薬類の現場への搬入通知は遅くとも搬入予定の前日の正午までにエンジニアへ書面で通知すること。**→E8.4.7 (6)(a)に規定済み**

(b) 発破作業の実施通知は遅くとも前日の正午までにエンジニアへ書面で通知すること。**→E8.4.7 (6)(b)に規定済み**

(c) 毎週金曜日午前中までに翌週の搬入発破作業の予定をエンジニアへ書面で通知すること。**→E8.4.7 (6)(c)に規定済み**

8.7.6 試験発破

請負者は、次の目的のために本仕様書8.7.3[計画書の作成]で規定の計画に従い試験発破を行ない、試験発破の結果に応じ、安全計画書を変更しなくてはならない。**→E8.4.8 に規定済み**

(6) 発破に影響を与える発破地点の岩質・地形の特性等を確認すること。**→E8.4.8 (1)に規定済み**

(7) 計画した発破方法、火薬量、飛散防止措置の妥当

stored and handled, notice boards and warning signs shall be placed in suitable positions.

(5) Records of Blasting and Explosives

(a) The Shotfirer shall prepare daily work records showing the date and time of each Blasting operation, quantity of Explosives received, consumed and remaining, number of blast holes and loading method for the Blasting;

(b) The Explosive Engineer shall check and countersign the Blasting work records; and

(c) The Contractor shall submit the records to the Engineer when the Engineer requests.

(6) Notice to the Engineer

The Contractor shall notify the Engineer in writing as follows:

(a) Delivery of Explosives to the store and from the store to the Site, shall each be given to the Engineer by no later than noon on the day preceding the scheduled date of the arrival of Explosives at the store and the delivery to the Site;

(b) Notification of intended Blasting Works shall be given to the Engineer by no later than noon on the day preceding the scheduled date of the Blasting operation; and

(c) Notification of the schedule for the following week's Blasting shall be given to the Engineer by no later than Friday morning of the preceding week.

8.4.8. Test Blasting

The Contractor shall perform test Blasting in accordance with the Blasting Safety Plan provided in 8.7.6 [Blasting Safety Plan] for the following purposes, and modify the said safety plan according to the results of the test Blasting:

(1) Confirm the characteristics of rock and topography at the Blasting site that will affect the Blasting operations.

(2) Confirm the suitability of the planned Blasting method, Explosives amount, and scattering prevention other protection

(e) Smoking, use of matches, lighters, flames, sparks etc. shall be prohibited in areas where Explosives are being transported, stored and handled, notice boards and warning signs shall be placed in suitable positions.

(5) Records of Blasting and Explosives

(a) The Shotfirer shall prepare daily work records showing the date and time of each Blasting operation, quantity of Explosives received, consumed and remaining, number of blast holes and loading method for the Blasting;

(b) The Explosive Engineer shall check and countersign the Blasting work records; and

(c) The Contractor shall submit the records to the Engineer when the Engineer requests.

(6) Notice to the Engineer

The Contractor shall notify the Engineer in writing as follows:

(a) Delivery of Explosives to the store and from the store to the Site, shall each be given to the Engineer by no later than noon on the day preceding the scheduled date of the arrival of Explosives at the store and the delivery to the Site;

(b) Notification of intended Blasting Works shall be given to the Engineer by no later than noon on the day preceding the scheduled date of the Blasting operation; and

(c) Notification of the schedule for the following week's Blasting shall be given to the Engineer by no later than Friday morning of the preceding week.

8.4.8. ~~Test~~ Trial Blasting

NK: proposed to replace “test Blasting” with “trial blasting” as used in BS 5607, 6.2.4 Ground/airborne vibrations.

The Contractor shall perform ~~test~~ trial Blasting in accordance with the Blasting Safety Plan provided in 8.7.6 [*Blasting Safety Plan*] for the following purposes, and modify the said safety plan according to the results of the test Blasting:

(1) Confirm the characteristics of rock and topography at the Blasting site that will affect the Blasting operations.

damage; and

(e) Smoking, use of matches, lighters, flames, sparks etc. shall be prohibited in areas where Explosives are being transported, stored and handled, notice boards and warning signs shall be placed in suitable positions.

(5) Records of Blasting and Explosives

(a) The Shotfirer shall prepare daily work records showing the date and time of each Blasting operation, quantity of Explosives received, consumed, misfired and remaining, number of blast holes and loading method for the Blasting, and treatment of misfired Explosives;

(b) The Explosive Engineer shall check and countersign the Blasting work records; and

(c) The Contractor shall submit the records to the Engineer when the Engineer requests.

(6) Notice to the Engineer

The Contractor shall notify the Engineer in writing as follows:

(a) Delivery of Explosives to the store and from the store to the Site, shall each be given to the Engineer by no later than noon on the day preceding the scheduled date of the arrival of Explosives at the store and the delivery to the Site;

(b) Notification of intended Blasting ~~Works~~ works shall be given to the Engineer by no later than noon on the day preceding the scheduled date of the Blasting operation; and

(c) Notification of the schedule for the following week's Blasting shall be given to the Engineer by no later than Friday morning of the preceding week.

7.6.8. ~~Test~~ Trial Blasting

The Contractor shall perform ~~test~~ trial Blasting in accordance with the Blasting Safety Plan provided in 7.6.5 [*Blasting Safety Plan*] for the following purposes, and modify the said Safety Plan according to the results of the ~~test~~ trial Blasting:

(1) Confirm the characteristics of rock and topography at the Blasting site that will affect

性を確認すること。→E8.4.8 (2)に規定済み

(8) 発破による請負者の要員、発注者の要員、周辺住民、現場内及び隣接する既設の構造物・地盤の安全を確認すること。→E8.4.8 (3)に規定済み

(9) 発破による振動値が、契約で別途規定する又はエンジニアが指示する周辺の建物等への発破による許容振動値以下であることを確認すること。→E8.4.8 (4)に規定済み

8.7.7 周辺の建物等への影響のモニタリング

請負者は、本契約で別途規定する又はエンジニアが指示する周辺の建物等への発破による振動の影響を測定するために、次の計測によるモニタリングを行わなければならない。→E8.4.9 前文に規定済み

(1) モニタリング計画の作成

(a) 発破の振動による影響を測定するモニタリング計画を作成し、安全衛生計画書に含めること。

(b) モニタリングの方法、計測機器、計測地点、計測の頻度、記録方法を計画すること。→E8.4.9 (1)(b)に規定済み

(c) 計測の結果、振動値が、本契約で別途規定する又はエンジニアが指示する許容振動値に近い場合及び許容振動値以上の場合の対策を計画すること。→E8.4.9 (1)(c)に規定済み

(d) 本契約で別途規定がない限り、計測は毎発破作業毎に実施し、エンジニアが振動値は計画とおりであると判断した後は 3 日間隔、その後は 7 日間隔、1 ヵ月以降は 1 ヶ月間隔で実施することを計画すること。→E8.4.9 (1)(d)に規定済み

(2) 計測の実施と評価

(a) 本契約で別途規定の仕様に従い次を行うこと。

(i) 計測機器の準備、据え付けと計測 →E8.4.9 (2)(a)/(b)に規定済み

measures.

(3) Confirm the safety of Contractor's Personnel, Employer's Personnel and any other persons, the general public, neighbouring residents and building owners on or adjacent to the Site and who may be affected by the Blasting operations.

(4) Confirm that the vibration value of the Blasting does not exceed the allowable vibration value for existing buildings, structures and other property on or adjacent to the Site and which may be affected by the Blasting operations, as specified in the Contract or instructed by the Engineer.

8.4.9. Monitoring Impact on Adjacent Buildings and Structures

The Contractor shall monitor the vibrations caused by the Blasting operations to measure the extent of vibration in all affected areas particularly in the position of existing buildings, structures and other property on or adjacent to the Site and which may be affected by the Blasting operations to ensure that no vibration damage or weakening is caused.

For this purpose, the Contractor shall:

(1) Prepare a monitoring plan as a part of the Blasting Safety Plan, which will:

(a) Measure the extent and impact of Blasting vibrations;

(2) Confirm the suitability of the planned Blasting method, Explosives amount, and scattering prevention other protection measures.

(3) Confirm the safety of Contractor's Personnel, Employer's Personnel and any other persons, the general public, neighbouring residents and building owners on or adjacent to the Site and who may be affected by the Blasting operations.

NK: as defined in 7.6.5 (3), the above is replaced with "personnel affected by the Blasting works"

(4) Confirm that the vibration value of the Blasting does not exceed the allowable vibration value for existing buildings, structures and other property on or adjacent to the Site and which may be affected by the Blasting operations, as specified in the Contract or instructed by the Engineer.

NK added responding JC comment for the Engineer to be involved in blasting works.

8.4.9. Monitoring Impact on Adjacent Buildings and Structures

The Contractor shall monitor the vibrations caused by the Blasting operations to measure the extent of vibration in all affected areas particularly in the position of existing buildings, structures and other property on or adjacent to the Site and which may be affected by the Blasting operations to ensure that no vibration damage or weakening is caused.

JC: 対象物についての規定は契約書あるいは追加的にエンジニアからの要請で実施されるべき。振動の許容値についても発注者側で規定されるべき。MTR M&W 25.20 (c), 25.30～25.35 等参照されたい。

The monitoring object shall be determined by the Contract or instruction by the Engineer. The allowable vibration value also shall be given by the Employer. Refer to MTR M&W 25.20(c), 25.30~25.35.

JC: 契約に定めがある筈なので、それを前提とした記述にしてください（as specified in the Contract と入れるなど）

There should be relevant stipulation in the Contract. Please modify the expression including above, for example, inserting "as specified in the Contract".

NK: The clause is modified as right.

For this purpose, the Contractor shall:

(1) Prepare a monitoring plan as a part of the Blasting Safety Plan, which will:

(a) Measure the extent and impact of Blasting vibrations;

the Blasting operations.

(2) Confirm the suitability of the planned Blasting method, Explosives amount, ~~and~~ and scattering prevention and other protection measures.

(3) Confirm the safety of ~~Contractor's Personnel, Employer's Personnel and any other persons, the general public, neighbouring residents and building owners on or adjacent to the Site and who may be affected by the Blasting operations~~ personnel affected by the Blasting works.

(4) Confirm that the vibration value of the Blasting does not exceed the allowable vibration value for existing buildings, structures and other property on or adjacent to the Site and which may be affected by the Blasting operations, as specified in the Contract or instructed by the Engineer.

The Contractor shall submit the trial blasting reports and any changes to the Blasting Safety Plan to the Engineer before proceeding Blasting operation.

7.6.9. Monitoring Impact on Adjacent Buildings and Structures

The Contractor shall monitor the vibrations caused by the Blasting operations to measure the extent of vibration in all affected areas particularly in the position of existing buildings, structures and other property on or adjacent to the Site and which may be affected by the Blasting operations to ensure that no vibration damage or weakening is caused as specified in the Contract or instructed by the Engineer.

For this purpose, the Contractor shall:

(1) Prepare a monitoring plan as a part of the Blasting Safety Plan, which will:

(a) Measure the extent and impact of Blasting vibrations by vibration

(ii) 振動計測結果の評価 →E8.4.9 (2)(c)に規定済み

(b) 計測機器は試験発破の実施前にキャリブレーションを行うこと。→E8.4.9 (2)(d)に規定済み

(c) 次の発破の前までに評価書及び必要に応じ発破計画の変更をエンジニアへ提出すること。→E8.4.9 (2)(e)に規定済み

(b) Monitor the Blasting methods and equipment, showing the locations, measurement frequency and recording methods;

(c) Plan countermeasures in the instance that the actual measured vibration value is close to or exceeds the allowable vibration value specified in the Contract or instructed by the Engineer; and

(d) Unless otherwise specified in the Contract, perform measurement at each Blasting operation, at the first day and then every subsequent 3 days after the Engineer judges that the vibration value is as planned, then every 7 days, and every 1 month thereafter.

(2) Measurement and Evaluation

The Contractor shall

(a) Provide and maintain measuring equipment;

(b) Carry out measurement at the frequencies described above;

(c) Evaluate the measurement results;

(d) Calibrate the measurement equipment before test Blasting and other Blasting operations; and

(e) Submit the evaluation report and if necessary, any changes to the Blasting Safety Plan to the Engineer before the

(b) Monitor the Blasting methods and equipment, showing the locations, measurement frequency and recording methods;

(c) Plan countermeasures in the instance that the actual measured vibration value is close to or exceeds the allowable vibration value specified in the Contract or instructed by the Engineer; and

JC: ここでは allowable vibration value のみ契約書あるいはエンジニアから規定されるとなっていて、モニターする対象物について規定されていない。

In clause (c), there is a stipulation for allowable vibration value, however, no stipulation for the objects.

NK: Regarding the objects to be monitored and apply countermeasures are stated in the top statement of this section. (in all affected areas particularly in the position of existing buildings, structures and other property on or adjacent to the Site… as specified in the Contract or instructed by the Engineer.), so leave it as it is.

(d) Unless otherwise specified in the Contract, perform measurement at each Blasting operation, at the first day and then every subsequent 3 days after the Engineer judges that the vibration value is as planned, then every 7 days, and every 1 month thereafter.

(2) Measurement and Evaluation

JC: monitoring と measurement の違いは何か？
What is the difference between “monitoring” and “measurement”?

NK: “Measurement” in (2) is changed to “Monitoring” as the result of discussion in the meeting 2020/02/20.

The Contractor shall

(a) Provide and maintain measuring equipment;

(b) Carry out measurement at the frequencies described above;

(c) Evaluate the measurement results;

(d) Calibrate the measurement equipment before test Blasting and other Blasting operations; and

JC: It is strange that (d) regarding calibration of measurement equipment is located at the bottom. This should be right after (a).

NK: The content of (d) is moved to (b).

(e) Submit the evaluation report and if necessary, any changes to the Blasting

monitoring system and in terms of peak particle velocity and vibrational amplitude as specified in the Contract or instructed by the Engineer;

(b) Monitor the Blasting methods and equipment, showing the locations, measurement frequency and recording methods;

(c) Plan countermeasures in the instance that the actual measured vibration value is close to or exceeds the allowable vibration value specified in the Contract or instructed by the Engineer; and

(d) Unless otherwise specified in the Contract, perform measurement at each Blasting operation, at the first day and then every subsequent 3 days after the Engineer judges that the vibration value is as planned, then every 7 days, and every 1 month thereafter.

(2) Monitoring and Evaluation

The Contractor shall

(a) Provide and maintain measuring equipment;

(b) Calibrate the measurement equipment before trial Blasting and other Blasting operations;

(c) Carry out measurement at the frequencies described above;

(d) Evaluate the measurement results; and

8.7.8 発破作業時の措置

(1) 発破作業員の識別措置

発破作業の作業員には、他の作業員と識別出来る腕章、保護帽の標示等の措置を講じること。**→E8.4.10 (1)に規定済み**

(2) せん孔作業の留意事項

(a) せん孔では、前回の発破孔は使用しないこと。**→E8.4.10 (2)(a)に規定済み**

(b) せん孔作業中に不発の火薬類が発見された場合は、せん孔を中止し、8.7.3 [計画書の作成](14)で計画した不発の火薬類の処理手順、及び8.7.9[発破作業後の措置](2)[不発の火薬類の処理]に基づき不発の火薬類を処置すること。

(3) 装てん作業の留意事項

(a) 電気雷管を結線するまでは、短絡を保持すること。また電灯線・動力線その他漏電のおそれのあるものに近づけないこと。**→E8.4.10 (3)(a)/(b)に規定済み**

(b) 装てん中は、付近でせん孔その他の作業をしないこと。**→E8.4.10 (3)(c)に規定済み**

(c) 装てん前に孔をよく掃除して小石等を残さないこと。**→E8.4.10 (3)(d)に規定済み**

(d) 装てんしなかった爆薬・雷管は、火薬庫へ返納すること。**→E8.4.10 (3)(e)に規定済み**

装てん作業の安全上のその他の留意点については、BS5607: Code of practice for the safe use of explosives in the construction industry, 10 Safety when using explosives に準ずること。**→E8.4.10 (3)後段に規定済み**

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next Blasting operation.

8.4.10. Particular Safety Measures for Blasting Work

(1) Identification of Blasting workers

Provide armbands, uniforms or marked safety helmets to distinguish all workers engaged in Blasting operations from other workers.

(2) Drilling Work

(a) No drilling shall be allowed in the hole formed for previous Blasting; and

(b) If misfired explosive is found during the drilling operation, the drilling shall be stopped and the misfired explosive shall be treated in accordance with the procedures planned in 8.7.6 [Blasting Safety Plan] and 8.7.12 [Measures after Blasting], (2) [Treatment of misfired Explosives].

(3) Explosives Charging

(a) Electric detonator's leg wires shall be kept short-circuited until they are connected into the circuit for firing;

(b) Detonators shall be kept away from electric lighting supplies, power supplies and other electrical sources

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Safety Plan to the Engineer before the next Blasting operation.

8.4.10. Particular Safety Measures for Blasting Work

(1) Identification of Blasting workers

Provide armbands, uniforms or marked safety helmets to distinguish all workers engaged in Blasting operations from other workers.

JC: all worker engaged in Blasting operation に違和感有。shotfirer、blasting engineer に限定して良いのではないか。

"all workers engaged in Blasting operations" should limited to the Blasting Engineer and Shotfirers.

NK: BS には(1)に関する規定は無い。7.6.4(3)に記述の発破作業の従事者を他の作業員特別することを右のように規定します。As mentioned in JSSS 7.6.4 (3), the blasting work team consists of the explosive engineer, shotfirer(s), Spotters (sentries) and other workers involved in the blasting operations. There is no clause to specify Identification of Blasting workers in BS 5607.
(1) is modified as right.

(2) Drilling Work

(a) No drilling shall be allowed in the hole formed for previous Blasting; and

(b) If misfired explosive is found during the drilling operation, the drilling shall be stopped and the misfired explosive shall be treated in accordance with the procedures planned in 8.7.6 [*Blasting Safety Plan*] and 8.7.12 [*Measures after Blasting*], (2) [*Treatment of misfired Explosives*].

(3) Explosives Charging

JC: charging の内容になっていません。よって、BS5607 の 10.2 の内容を網羅させる形に記載を変えてください。そのうえで、最後の文(BS 遵守に係る一文)は削除してください。
This clause (3) is not provision of "charging" . Change the clause covering the contents of BS 5607 10.2 and delete the sentence for referring to BS.

NK: Items (a)~(e) are "Points to care for loading explosives" in Japanese version which are derived from the Pre-study in 2019. They are left as they are.
Added some clauses of BS 5607 10.2 so that the contents of BS can be included.

(a) Electric detonator's leg wires shall be kept short-circuited until they are connected into the circuit for firing;

(b) Detonators shall be kept away from electric lighting supplies, power supplies and other electrical sources

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(e) Submit the evaluation report and if necessary, any changes to the Blasting Safety Plan to the Engineer before the next Blasting operation.

7.6.10. Particular Safety Measures for Blasting Work

(1) Identification of Blasting workers

Provide armbands, uniforms or marked safety helmets to distinguish the explosive engineer, shotfirer(s), Spotters and other workers engaged in Blasting operations from other workers.

(2) Drilling Work

(a) No drilling shall be allowed in the hole formed for previous Blasting; and

(b) If misfired explosive is found during the drilling operation, the drilling shall be stopped and the misfired explosive shall be treated in accordance with the procedures planned in 7.6.5. [*Blasting Safety Plan*] and 7.6.11. [*Measures after Blasting*], (2) [*Treatment of misfired Explosives*].

(3) Explosives Charging

(a) No other activity such as drilling shall be permitted in the vicinity, whilst loading;

(b) Before loading, thoroughly clean the holes

	that may cause electric leakage;	that may cause electric leakage;	and do not leave any dust or debris;
		NK: (a) and (b) are moved to (4) because they are specially for electric detonator.	
	(c) No other activity such as drilling shall be permitted in the vicinity, whilst loading;	(c) No other activity such as drilling shall be permitted in the vicinity, whilst loading;	(c) Shock and friction which can cause accidental initiation of the charges such as below shall be avoided;
	(d) Before loading, thoroughly clean the holes and do not leave any dust or debris; and	(d) Before loading, thoroughly clean the holes and do not leave any dust or debris; and	(d) the over-vigorous use of stemming rods to force explosives into a shot hole;
	(e) Unused Explosives shall be returned to the Explosives store.	(e) ~~Unused Explosives shall be returned to the Explosives store.~~	(e) the use of drill rods or other metal tools in a shot hole containing explosives;
		NK: Item (e) is a duplication of 8.4.7 (3)(c) “Explosives not used on the day shall be returned to the Explosives store.”. Deleted.	(f) vehicles running over explosives and other hazards involving impact or concussion;
	For other safety measures for loading work, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10 Safety when using Explosives.	~~For other safety measures for loading work, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10 Safety when using Explosives~~ (JC: Deleted)	(g) rock, stone or similar material being projected from the blast, causing an accidental detonation of explosives, so that excess explosives should be removed from the blast site to a place of safety before blasting takes place; and
			(h) shock tube detonators being initiated when subjected to “snap, slap and shoot”.
			For other safety measures for explosive charging, the Contractor shall take safety measures referring to 10.2 [Handling and charging of explosives] of BS 5607.
	(4) Handling Detonators	(4) Handling Detonators	(4) Handling Detonators
		JC: 上記(3)同様、BS5607 10.4.3 の内容を書き出すような形にしてください。Same as (3) above, state the clause by deriving from BS 5607 10.4.3.	
		NK: Same as (3) above, leave as it is and referring to BS 5607 10.4.3 as well.	
(4) 雷管の取り扱い上の留意事項	(a) Measures for Blasting using electric detonators	(a) Measures for Blasting using electric detonators	(a) Measures for Blasting using electric detonators
(a) 電気雷管の発破作業の留意事項	(i) Check if the bus wire is not cut or damaged, and check its electrical continuity.	(i) Check if the bus wire is not cut or damaged, and check its electrical continuity.	(i) Make sure electric detonator's leg wires shall be kept short-circuited until they are connected into the circuit for firing;
(i) 母線は切断、損傷がないことを確認し、導通を確認すること。**→E8.4.10 (4)(a)(i)に規定済み**		JC: “bus wire”？→誤訳と思われます。 Could it (“bus wire”) be a mis-translation?	(ii) Check if ~~the bus wire is~~ shotfiring cables are not cut or damaged, its electrical continuity and short-circuited
(ii) 結線もれ、結線ちがい等がないように点検すること。**→E8.4.10 (4)(a)(ii)に規定済み**		NK: In OSHA and ACE, there is the definition of “Bus wire: an expendable wire used in parallel or series-in-parallel circuits to which are connected the leg wires of electric blasting caps.” BS 5607 10.4.3.2 b) specifies “All firing lines should be short-circuited” and 10.501 a) shotfiring cable. The bus wire is replaced with shotfiring cable.	(iii) Make sure electric detonators shall be kept away from electric lighting supplies, power supplies and other electrical sources that may cause electric leakage;
(iii) 電気雷管発破を行う時には迷走電流がないことを確認すること。**→E8.4.10 (4)(a)(iii)に規定済み**			
(iv) 無線通信施設、レーダー、移動式を含む無線電話等の近傍の現場で、高周波放射(radio-frequency radiation)による電気雷管の危険がある場合は、本契約で別途規定がない限り、電気雷管を使用しな			

いこと。→**E8.4.10 (4)(a)(iv)に規定済み**

(v) 電気雷管への悪影響がないことが保証されない携帯電話の発破作業場所への持ち込みを禁止すること。→**E8.4.10 (4)(a)(vi)に規定済み**

(vi) 雷探知機を発破作業場所の近傍に設置し、落雷の危険がある時は発破作業を中止し、発破作業員は安全な場所に退避すること。→**E8.4.10 (4)(a)(vii)に規定済み**

電気雷管の発破作業のその他の安全上の留意点については、BS5607: Code of practice for the safe use of explosives in the construction industry, 10.4.3 Electric detonators に準ずること。→**E8.4.10 (4)(a)後段に規定済み**

(ii) Check if there are no missing or previous wiring connections or wrong wiring connections.

(iii) Make sure there are no stray electric currents when using electric detonators.

(iv) Do not use electric detonators if there is any danger of electrical interference for example from radio-frequency radiation near radio communication facility, radar, wireless telephone including mobile type.

(v) Do not use electric detonators unless otherwise specified in the Contract.

(vi) Prohibit bringing all mobile phones and radios from the Blasting areas.

(vii) Install a lightning detector near the Blasting area, stop Blasting work when there is a risk of lightning strike, and evacuate workers to a safe place.

For other safety matters for Blasting with electric detonator, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10.4.3 Electric detonators.

(b) Measures for Blasting using non-electric detonators

(ii) Check if there are no missing or previous wiring connections or wrong wiring connections.

(iii) Make sure there are no stray electric currents when using electric detonators.

(iv) Do not use electric detonators if there is any danger of electrical interference for example from radio-frequency radiation near radio communication facility, radar, wireless telephone including mobile type.

~~(v) Do not use electric detonators unless otherwise specified in the Contract.~~

JC: 電気式発破で危険が予見される場合（迷走電流の懸念がある場合）に electric detonators を使用いてはならない、という趣旨の規定にしてください。
Please modify the sentence so as to mean that if a danger by stray electric current is predicted, electric detonators shall not be used.

NK: 上の(iii)に規定済み。(v)は(iv)の一部です。Regarding prohibition of using electric detonator due to stray electric current is stated in (iii) above. (v) is written mistakenly separating a part of (iv), "unless otherwise specified in the Contract" is moved to (iv), and (v) is deleted.

~~(vi) Prohibit bringing all mobile phones and radios from the Blasting areas.~~

NK: (vi)is deleted and (iv) is modified as specified in BS 5607 10.2 below.
10.2 Handling and charging of explosives
When shotfirers are handling and charging explosives at the blast site, they should at all times avoid shock, friction and static electricity or induced radio waves from mobile phones or other electronic devices which can cause accidental initiation of the charges, such as
d) the use of mobile phones or other electronic devices;

(vii) Install a lightning detector near the Blasting area, stop Blasting work when there is a risk of lightning strike, and evacuate workers to a safe place.

For other safety matters for Blasting with electric detonator, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10.4.3 Electric detonators.

(b) Measures for Blasting using non-electric detonators

(iv) Check if ~~the bus wire is~~ all shotfiring cables are not cut or damaged, and check its electrical continuity.

(v) Check if there are no missing or previous wiring connections or wrong wiring connections.

(vi) Make sure there are no stray electric currents when using electric detonators.

(vii) Do not use electric detonators if there is any danger of electrical interference for example from radio-frequency radiation near radio communication facility, radar, wireless telephone, mobile phones unless otherwise specified in the Contract.

(viii) Install a lightning detector near the Blasting area, stop Blasting work when there is a risk of lightning strike, and evacuate workers to a safe place.

For other safety matters for Blasting with electric detonator, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10.4.3 Electric detonators.

(b) Measures for Blasting using non-electric

(b) 非電気雷管の発破作業の留意事項

(i) ショックチューブを切断したり傷つけたりしないこと。**→E8.4.10 (4)(b)(i)に規定済み**

(ii) 点火前には結線を目視でチェックし、結線漏れや間違いの無いことを必ず点検すること。**→E8.4.10 (4)(b)(ii)に規定済み**

(5) 発破の点火作業の留意事項

(a) 点火位置は、爆破の程度に応じて隔離した安全な場所とすること。**→E8.4.10 (5)(a)/(b)に規定済み**

(b) 発破器は安全衛生計画書に基づき適切に保管すること。また、点火するとき以外はハンドルを発破器から取り外しておくこと。**→E8.4.10 (5)(c)に規定済み**

(c) 発破器と母線との連結は、点火直前に行うこと。**→E8.4.10 (5)(d)に規定済み**

(6) 発破作業時の留意事項

既設の構造物の近くで行なう発破作業は、本契約で別途定める所有者への通知、使用者や所有者の退避のほか、発破に伴う飛石の飛散防止措置等必要な安全対策を行ったうえで、作業を実施すること。**→E8.4.10 (6)に規定済み**

8.7.9 発破終了後の措置

(1) 発破終了後の現場の安全の確認

発破作業後の岩盤および周辺の岩盤の崩落・崩壊の危険の有無を検査し、安全と認めるまで、発破技士以外の作業員は発破場所及びその付近に立ち入らないこと。**→E8.4.11 (1)に規定済み**

(2) 不発の火薬類の処理

(i) Do not cut or damage the shock tube.

(ii) Before firing, check the connections visually and make sure that there are no missing or previous wiring connections or wrong wiring connections.

(5) Measures in Ignition

(a) Ignition shall be made at a safe place isolated and protected according to the degree of the blast;

(b) The shotfiring apparatus shall be properly stored according to the safety plan;

(c) The handle shall be removed from the shotfiring apparatus except when igniting; and

(d) The connection between the shotfiring apparatus and the bus wire shall be made just before ignition.

(6) Measures when Blasting near existing buildings and structures

Blasting near existing buildings or structures shall not be carried out unless specified in the Contract or instructed by the Engineer, in which case the Contractor shall comply with the specified or instructed requirements.

8.4.11. Measures after Blasting

(1) Confirmation of safety of Blasting area after Blasting

(a) No persons other than the shotfirer shall enter the Blasting site or its vicinity until after the shotfirer has inspected the area and confirmed that it is safe to re-enter; and

(b) The shotfirer shall inspect the area and surrounding area of the Blasting site to check that there is no danger of falling or collapsing of ground and rocks or misfired Explosives.

(2) Treatment of misfired Explosives

(i) Do not cut or damage the shock tube.

(ii) Before firing, check the connections visually and make sure that there are no missing or previous wiring connections or wrong wiring connections.

(5) Measures in Ignition

(a) Ignition shall be made at a safe place isolated and protected according to the degree of the blast;

(b) The shotfiring apparatus shall be properly stored according to the safety plan;

JC: ignition の話ではないのではないでしょうか。
Isn't it (b) about ignition?

NK: It is deemed important to prevent misuse and theft of shotfiring apparatus due to improper storage. Orders of (a) to (d) are changed.

(c) The handle shall be removed from the shotfiring apparatus except when igniting; and

(d) The connection between the shotfiring apparatus and the bus wire shall be made just before ignition.

(6) Measures when Blasting near existing buildings and structures

Blasting near existing buildings or structures shall not be carried out unless specified in the Contract or instructed by the Engineer, in which case the Contractor shall comply with the specified or instructed requirements.

8.4.11. Measures after Blasting

(1) Confirmation of safety of Blasting area after Blasting

(a) No persons other than the shotfirer shall enter the Blasting site or its vicinity until after the shotfirer has inspected the area and confirmed that it is safe to re-enter; and

(b) The shotfirer shall inspect the area and surrounding area of the Blasting site to check that there is no danger of falling or collapsing of ground and rocks or misfired Explosives.

(2) Treatment of misfired Explosives

JC: BS 5607 10.5 Misfires を参照して、主要な項目を記述した

detonators

(i) Do not cut or damage the shock tube.

(ii) Before firing, check the connections visually and make sure that there are no missing or previous wiring connections or wrong wiring connections.

(5) Measures in Ignition

(a) The connection between the shotfiring apparatus and ~~the bus wire~~ shotfiring cable shall be made just before ignition;

(b) Ignition shall be made at a safe place isolated and protected according to the degree of the blast;

(c) The handle shall be removed from the shotfiring apparatus except when igniting; and

(d) The shotfiring apparatus shall be properly stored according to the Safety Plan:

(6) Measures when Blasting near existing buildings and structures

Blasting near existing buildings or structures shall not be carried out unless specified in the Contract or instructed by the Engineer, in which case the Contractor shall comply with the specified or instructed requirements.

7.6.11. Measures after Blasting

(1) Confirmation of safety of Blasting area after Blasting

(a) No persons other than the shotfirer shall enter the Blasting site or its vicinity until ~~after~~ the shotfirer has inspected the area and confirmed that it is safe to re-enter; and

(b) The shotfirer shall inspect the area and surrounding area of the Blasting site to check that there is no danger of falling or collapsing of ground and rocks or misfired Explosives.

点火後、装てんされた火薬類が爆発しないとき、又は装てんされた火薬類が爆発したことの確認が困難であるときは、次の事項を含む安全衛生計画書に規定の不発の火薬類の処理に従い、処理を行うこと。なお、不発の火薬類の処理の計画は、BS5607: Code of practice for the safe use of explosives in the construction industry, 10.5 Misfires を参照して作成されたものであること。**→E8.4.11 (2)に規定済み（BS5607 は、E8.4.5 (14)に移動。）**

(a) 不発の火薬類の処理が必要なときは、直ちに発破器からハンドル等の点火スイッチ及び発破母線を取り外すこと。**→E8.4.11 (2)(a)に規定済み**

(b) 発破母線を短絡又は接地させること。**→E8.4.11 (2)(b)に規定済み**

(c) 請負者の発破担当エンジアへ報告し、指示を受けること。**→E8.4.11 (2)(c)に規定済み**

(d) 発破技士及びその他認められた者以外の発破現場への立入りを禁止すること。発破現場への立入りは、計画で規定している不発発生からの経過時間以降とすること。**→E8.4.11 (2)(d)に規定済み**

(e) 不発の火薬類の存在を明示し、認められた者以外が現場に近づかないよう柵等を設置すること。**→E8.4.11 (2)(e)に規定済み**

(f) 不発の原因の特定、不発の火薬類の対処の決定を適切な手順で行うこと。**→E8.4.11 (2)(f)に規定済み**

(g) 不発の火薬類の記録をとること。**→E8.4.11 (2)(i)に規定済み**

(h) 不発の火薬類が処理されるまでは、当該現場及びその付近において、不発の火薬類処理のための削孔作業等以外の作業を行わないこと。**→E8.4.11 (2)(g)に規定済み**

If, after ignition, the loaded Explosives did not explode, or if it is difficult to confirm the explosion, the misfired Explosives shall be treated in accordance with the Blasting Safety plan and the following measures shall be adopted initially by the shotfirer:

(a) Immediately remove the shotfiring apparatus such as the handle and the bus wire from the shotfiring apparatus;

(b) Make short-circuit or ground and completely isolate the bus wires;

(c) Report to the Explosive Engineer for further instructions;

(d) Prohibit anyone other than the shotfirer and other authorised personnel from entering the Blasting site. Entry to the Blasting site shall only be permitted after the elapsed time from the occurrence of misfire as specified in the Blasting Safety Plan;

(e) Clearly indicate the presence of misfired Explosives and install barriers and signs and prevent anyone other than the shotfirer and authorised person(s) from approaching to the Blasting site;

(f) Take appropriate procedures to identify the cause of the misfire and to determine the handling of the misfired explosive;

(g) No other work shall be permitted until treatment of the misfired Explosives is completed;

(h) The Explosive Engineer shall notify the Engineer immediately after any misfire event;

(i) The Shotfirer shall prepare records of

うえで、BS を順守すべき旨規定してください。具体的には以下のような要素が抜けていると考えます。
・不発の際の処理（re-fire、火薬を取り除く措置など）
・misfire の場合のフローチャートに示される、場合に応じた手順

Please stipulate important items referring to BS5607 10.5 Misfire and in addition, specify to follow the requirements of BS. ex. re-firing, remove misfired explosives, procedure shown in flowchart in BS)

NK: BS 規定の措置は 5 頁に渡り要求事項が多いため、コメントをもとに、右欄の規定案を作成しました。

NK: Taking into account the contents, modification is made as right.

If, after ignition, the loaded Explosives did not explode, or if it is difficult to confirm the explosion, the misfired Explosives shall be treated in accordance with the Blasting Safety plan and the following measures shall be adopted initially by the shotfirer:

(a) Immediately remove the shotfiring apparatus such as the handle and the bus wire from the-shotfiring apparatus;

(b) Make short-circuit or ground and completely isolate the bus wires;

(c) Report to the explosive engineer for further instructions;

(d) Prohibit anyone other than the shotfirer and other authorised personnel from entering the Blasting site. Entry to the Blasting site shall only be permitted after the elapsed time from the occurrence of misfire as specified in the Blasting Safety Plan;

(e) ~~Clearly indicate the presence of misfired Explosives and install barriers and signs and prevent anyone other than the shotfirer and authorised person(s) from approaching to the Blasting site;~~

JC: 発破の現場で新たにこのようなことはしないものと考えます。Action such as (e) is not actually not made at the blasting site. Deleted.

(f) Take appropriate procedures to identify the cause of the misfire and to determine the handling of the misfired explosive;

(g) No other work shall be permitted until treatment of the misfired Explosives is

(2) Treatment of misfired Explosives

If, after ignition, the loaded Explosives did not explode, or if it is difficult to confirm the explosion, the misfired Explosives shall be treated in accordance with the treatment of misfired Explosives in the Blasting Safety Plan, and 10.5 [Misfires] of BS5607 including the following:

(a) Procedure of treatment of misfired Explosives

The following treatment procedure shall be taken:

(i) Immediate remedial action;

(ii) Delayed remedial action;

(iii) Further attempt at detonation; and

(iv) Inspection to confirm complete detonation.

(b) Immediate remedial action

The following initial remedial actions shall be taken by the shotfirer:

(i) prohibit anyone other than the shotfirer and other authorized personnel from entering the Blasting site.

(ii) entry to the Blasting site shall only be permitted after the elapsed time from the occurrence of misfire as specified in the Blasting Safety Plan;

(iii) disconnect from the shotfiring apparatus any removable handle or key and the shotfiring cable, and short-circuit or ground the bare wires together;

(iv) when safe to do so, examine the cable and connections for any defects, and remedy any defect so found;

	misfired Explosives showing the date and time of the Blasting Works and the result of the subsequent treatment. The Explosive Engineer shall check and countersign the records; and (j) The Contractor shall submit the records to the Engineer immediately after the successful treatment of the misfire event.	completed; (h) The explosive engineer shall notify the Engineer immediately after any misfire event; JC: これは可能か？ Is it possible? NK: modified them to the Contractor and within a week. (i) ~~The shotfirer shall prepare records of misfired Explosives showing the date and time of the Blasting Works and the result of the subsequent treatment. The Explosive Engineer shall check and countersign the records; and~~ JC: ~~8.4.5(7)~~ 8.4. (5) Blasting and Explosives に record 一般のことが書いてあるので不要。No need to specify (i) because 8.4.5(7) mentions about record (general). NK: Deleted. (j) ~~The Contractor shall submit the records to the Engineer immediately after the successful treatment of the misfire event.~~ JC: ditto NK: Deleted.	(v) make a further attempt to fire the shot; and (vi) report to the explosive engineer for further instructions; (vii) not collect any exposed explosives before further action is taken; (viii) not allow drilling or any other site work to be carried out in the vicinity of the misfire until the misfire has been remedied, unless this is directly involved in the treatment of the misfire; and (ix) other actions specified in 10.5.4.1 [Initial actions]in BS5607. (c) Delayed remedial action and further attempt at detonation After the immediate remedial action, the delayed remedial action and further attempt at detonation shall be taken in accordance with the Blasting Safety Plan, and 10.5.4.2 [Written instructions], 10.5.4.3 [Attempts to re-fire], 10.5.4.4 [Drilling relieving holes] and 10.5.5 [Drilling relieving holes] in BS5607. (d) Take appropriate steps to prevent theft of Explosives and detonators or their initiation by an unauthorised person; (e) The Contractor shall notify the Engineer within a week after any misfire event.

JICA Standard Safety Specification Preparation Study
7 EXCAVATION WORK (English R3 for Issue 2)

2019.12.19&2020.1.8 Japanese Final
2020.1.20 NK Issue 1
2020.2.13 JICA Comments
2020.3.10 NK English R2
2020.3.25 NK English R3

JSSS in English R2 for Issue 2（2020/3/10）	JICA Comments on R2(2020/3/6) JC: JICA comments and revision in blue letters and underlined Red letters: last revision in R2 draft, NK: NK actions	JSSS in English R3 for Issue 2 (2020/3/25) Blue letters: JICA revised on the draft R2
7.1 GENERAL 7.1.1 Scope **7.2 PARTICULAR SAFETY MEASURES FOR EXCAVATION WORKS** 7.2.1 General 7.2.2 Safety Measures before Commencing Excavation Work 7.2.3 Safety Measures during Excavation Works **7.3 MANUAL EXCAVATION WORKS** **7.4 MECHANICAL EXCAVATION WORK** **7.5 TRENCH EXCAVATION** 7.5.1 General 7.5.2 Safety Measures during Trench Excavation **7.6 EXCAVATION BY BLASTING** 7.6.1 Scope 7.6.2 Definitions 7.6.3 Compliance Standards 7.6.4 Personnel for Blasting Works 7.6.5 Blasting Safety Plan 7.6.6 Risk prevention of Workers and Neighbouring Residents 7.6.7 Handling and Storing of Explosives 7.6.8 Trial Blasting 7.6.9 Monitoring Impact on Adjacent Buildings and Structures 7.6.10 Particular Safety Measures for Blasting Work 7.6.11 Measures after Blasting		**7.1 GENERAL** 7.1.1 Scope **7.2 PARTICULAR SAFETY MEASURES FOR EXCAVATION WORKS** 7.2.1 General 7.2.2 Safety Measures before Commencing Excavation Work 7.2.3 Safety Measures during Excavation Works **7.3 MANUAL EXCAVATION WORKS** **7.4 MECHANICAL EXCAVATION WORK** **7.5 TRENCH EXCAVATION** 7.5.1 General 7.5.2 Safety Measures during Trench Excavation **7.6 EXCAVATION BY BLASTING** 7.6.1 Scope 7.6.2 Definitions 7.6.3 Compliance Standards 7.6.4 Personnel for Blasting Works 7.6.5 Blasting Safety Plan 7.6.6 Risk prevention of Workers and Neighbouring Residents 7.6.7 Handling and Storing of Explosives 7.6.8 Trial Blasting 7.6.9 Monitoring Impact on Adjacent Buildings and Structures 7.6.10 Particular Safety Measures for Blasting Work 7.6.11 Measures after Blasting
7.1 GENERAL **7.1.1 Scope** This Chapter specifies the safety requirements for surface excavation work (excluding tunnelling) which shall include excavation of all types and using all methods including manual excavation, machine excavation and excavation by Blasting. **7.2 PARTICULAR SAFETY MEASURES FOR EXCAVATION WORKS** **7.2.1. General** (1) The Contractor shall plan all excavation work so that it can be executed in a safe and methodical manner. (2) Unless otherwise specified in the Contract, the Contractor shall be responsible for choosing manual or machine excavation, selecting types of Contractor's Equipment, types of TW, Earthwork Support, spoil removal, storage and handling, controlling ground and surface water, forming embankments and cuttings and the like taking account of all the conditions of the Site.	**7.2 GENERAL** **7.2.1 Scope** This Chapter specifies the safety requirements for surface excavation work (excluding tunnelling) which shall include excavation of all types and using all methods including manual excavation, machine excavation and excavation by Blasting. **7.2 PARTICULAR SAFETY MEASURES FOR EXCAVATION WORKS** **7.2.1. General** (1) The Contractor shall plan all excavation work so that it can be executed in a safe and methodical manner. (2) Unless otherwise specified in the Contract, the Contractor shall be responsible for choosing manual or machine excavation, selecting types of Contractor's Equipment, types of TW, Earthwork Support, spoil removal, storage and handling, controlling ground and surface water, forming embankments and cuttings and the like ~~taking into account of all the conditions of the Site~~. JC: 確かに小生が言ったことですが、もう少し考えた言い回しが欲しかったです。下記例示ですが長すぎるか？下記例示ですが長すぎるか？ Though this is commented last time, we wanted sentence a little more considered.	**7.3 GENERAL** **7.3.1 Scope** This Chapter specifies the safety requirements for surface excavation work (excluding tunnelling) which shall include excavation of all types and using all methods including manual excavation, machine excavation and excavation by Blasting. **7.2 PARTICULAR SAFETY MEASURES FOR EXCAVATION WORKS** **7.2.1. General** (1) The Contractor shall plan all excavation work so that it can be executed in a safe and methodical manner. (2) Unless otherwise specified in the Contract, the Contractor shall be responsible for choosing manual or machine excavation, selecting types of Contractor's Equipment, types of TW, Earthwork Support, spoil removal, storage and handling, controlling ground and surface water, forming embankments and cuttings and the like taking into account of relevant information provided by the Bidding document and subsequently obtained through the investigation by the Contractor.

	that I thought a little more. Is the following example sentence too long? "taking into account of all information given by the Employer in the Bidding document and/or subsequently obtained by it." NK: Modified as right.	
(3) Unless otherwise specified in the Contract, requirements for sloping sides and benching to sides of excavations shall comply with the technical requirements of OSHA Subpart P—Excavations §1926.652 Requirements for protective systems, (b) only, also dependant on the shape, nature the soil, hydraulic and geological conditions of the Site.	(3) Unless otherwise specified in the Contract, requirements for sloping sides and benching to sides of excavations shall comply with the technical requirements of OSHA Subpart P—Excavations §1926.652 Requirements for protective systems, (b) only, also dependant on the shape, nature the soil, hydraulic and geological conditions of the Site.	(3) Unless otherwise specified in the Contract, requirements for sloping sides and benching to sides of excavations shall comply with the technical requirements of OSHA Subpart P—Excavations §1926.652 Requirements for protective systems, (b) only, also dependant on the shape, nature the soil, hydraulic and geological conditions of the Site.
(4) ~~Earthwork Support~~ In accordance with JSSS 7.2 [*Earthwork Support*] the Contractor shall be responsible for preserving the structural integrity of all sides and soffits of excavations and shall provide earthwork support for the excavation of depth exceeds 1.5m in principle unless it is possible to excavate with a slope suitable for the soil condition.	(4) In accordance with JSSS 7.2 [Earthwork Support] the Contractor shall be responsible for preserving the structural integrity of all sides and soffits of excavations and shall provide earthwork support for the excavation of depth ~~exceeds 1.5m in principle unless it is possible to excavate with a slope suitable for~~ the soil condition. JC: GC と同じ adequate and stable という表現をもってきました。 "adequate and stable" used in GC is used here and modified as right.	(4) In accordance with JSSS 7.2 [Earthwork Support] the Contractor shall be responsible for preserving the structural integrity of all sides and soffits of excavations and shall provide earthwork support for the excavation of depth exceeding 1.5m unless it is possible to excavate with an adequate and stable slope taking account of the soil condition ..
(5) In accordance with JSSS 1.23 [Emergency Response Plan?], 1.23.2, the Contractor shall. execute excavation under dry condition by providing appropriate drainage to drain surface water and water contained in the ground and spring water at the Site.	NK: modified as right. (5) ~~In accordance with JSSS 1.23 [Emergency Response Plan], 1.23.2,~~ the Contractor shall execute excavation under dry condition by providing appropriate drainage to drain surface water and water contained in the ground and spring water at the Site. JC: 引用方法としておかしくないですか？1.23.2 は不要ですね。 This reference seems to be wrong. 1.23.2 is unnecessary. NK: The 1.23.6 (3) in 1.23 [Emergency Response Plan] in Issue 7 specifies drainage, however reader of JSS may be confused as the reader consider what relation of excavation works and emergency is, so deleted this reference as right.	(5) The Contractor shall execute excavation under dry condition by providing appropriate drainage to drain surface water and water contained in the ground and spring water at the Site.
(6) The Contractor shall execute all Excavation Works and associated filling, backfilling and support work without causing any damage to or weakening of surrounding subsurface conditions or ground bearing capability, any existing foundations, structures, buildings, roads, paved areas or the like, either on or adjacent to the Site, and ~~unless otherwise specified~~ as specified in the Contract (~~see Annex 1.3~~ Particular Safety Specification~~)~~, the Contractor shall take all necessary measures to prevent the occurrence of such damage or weakening by designing and providing permanent or temporary supports and reinforcement to such foundations, structures, buildings, roads or paved and obtain the prior consent of the Engineer before commencing Excavation Works.	(6) The Contractor shall execute all Excavation Works and associated filling, backfilling and support work ~~without causing any damage to or weakening of surrounding subsurface conditions or ground bearing capability, any existing foundations, structures, buildings, roads, paved areas or the like, either on or adjacent to the Site, and as specified in the Contract (see Particular Safety Specification),~~ the Contractor shall take all necessary measures to prevent the occurrence of such ~~damage or weakening~~ by designing and providing permanent or temporary supports and reinforcement to such foundations, structures, buildings, roads or paved and obtain the prior consent of the Engineer before commencing Excavation Works. JC: any という表現はきつすぎます。The sentence of "any" is too strict. JC: modified as above.	(6) The Contractor shall execute all Excavation Works and associated filling, backfilling and support work so that the criteria of allowable values specified in the Contract (see the Particular Safety Specification) or instructed by the Engineer to avoid adverse effects to surrounding areas and buildings, including existing foundations, structures, roads, paved areas or the like, by excavation are to be respected. In this regard, the Contractor shall take all necessary measures to prevent the occurrence of such adverse effects by designing and providing permanent or temporary supports and reinforcement before commencing Excavation Works.
(7) If loose rocks, standing trees, etc. existing above the excavation area may pose a danger to workers or construction equipment, take the following measures unless otherwise specified in the Contract; (a) Consult with the Engineer about measures such as removal of loose rocks, installation of rockfall protection fences, etc.; and (b) Based on the consultation with the Engineer, propose safety measures including construction methods to the Engineer and take actions in accordance with the Engineer's	(7) If loose rocks, standing trees, etc. existing above the excavation area may pose a danger to workers or construction equipment, take the following measures unless otherwise specified in the Contract; (a) Consult with the Engineer about measures such as removal of loose rocks, installation of rockfall protection fences, etc.; and (b) Based on the consultation with the Engineer, propose safety measures including construction methods to the Engineer and take actions in accordance with the Engineer's	(7) If loose rocks, standing trees, etc. existing outside the Site above the excavation area in the Site may pose a danger to workers or construction equipment, take the following measures unless otherwise specified in the Contract; (a) Consult with the Engineer about measures such as removal of loose rocks, installation of rockfall protection fences, etc.; and (b) ~~Based on the consultation with the Engineer, propose safety measures including construction methods to the Engineer and~~ Take actions in accordance with the Engineer's instruction.

instruction.

7.2.2. Safety Measures before Commencing Excavation Works

(1) The Contractor shall inspect the excavation work area and surrounding area before starting work each day and after adverse climatic conditions or earthquake to ensure that the following items meet the criteria of allowable values and counter measures determined by the Contractor and given in the Contract (see the Particular Safety Specification) to avoid adverse effects to surrounding areas and buildings by excavation:

(a) ~~No~~ Potentially unsafe areas where there may be any risk of landslide;

(b) ~~No~~ Loose rocks or boulders which may be at risk of falling;

(c) ~~No~~ Cracks in the excavation work area and the surrounding area;

(d) ~~No~~ Changes in ground water level, surface or any spring water; and

(e) ~~No~~ Deleterious effect due to freezing conditions.

(2) As a consequence of such inspections the HSO may prohibit the continuation of any affected work, take necessary corrective measures and make any necessary amendment to the Safety Plan and instruct all Contractor's Personnel of any revised safety

instruction.

JC: (b)の中に二つの要素が入っているので、下記のように分類・表記しなおしてはいかがでしょうか

There are two different elements in item (b). We propose to re-sort the contents as follows.
(a) removal of loose rocks ~ ~ ~
(b) take safety measures including change to the construction method
(c) requesting the Engineer to issue a variation???

NK: Addition is made to make location of loos rocks, etc and excavation area.

NK: Site 区域外の Loose rock 等による Site 内の工事者への危険に対しては、エンジニアの指示を受け安全措置をとることが適切である。Variation まで規定するか疑問ではあることから、右のように変更する。

For the danger against loose rocks, etc. located outside the Site, the Contractor shall take measures as instructed by the Engineer. It is doubtful to mention about variation.

NK modified as right.

7.2.2. Safety Measures before Commencing Excavation Works

(1) The Contractor shall inspect the excavation work area and surrounding area before starting work each day and after adverse climatic conditions or earthquake ~~to ensure that the following items meet the criteria of allowable values and counter measures determined by the Contractor and given in the Contract (see the Particular Safety Specification) to avoid adverse effects to surrounding areas and buildings by excavation:~~

JC: この箇所は日々の業務開始前、地震等の直後に状況確認をせよ、という話なので、allowable value について論じる必要はないと思います。(allowable value については、7.(6)に親和性が高いので、活用させていただきました。)
This clause stipulates to check the area before starting the work every day and after earthquake, etc. It is not necessary to mention about allowable values. ("allowable value" is used in 7. (6) as it has high affinity.)

NK: JC deleted the relevant part as above.

JC: "adverse climatic conditions"は"strong rain fall"ぐらいでいいのでは(異常時だけではないので)
Isn't it enough with "strong rain fall" instead of "adverse climatic conditions"?

NK: JSSS 2.7 mentions measures for heavy rain, strong wind and storms, heavy snow and ice, lightning, earthquake and tsunami as adverse weather, and 2.7.7 specifies Inspection of Temporary Works after Adverse Weather and Earthquake.
NK added the to refer to 2.7 as right.

(a) Potentially unsafe areas where there may be any risk of landslide;

(b) Loose rocks or boulders which may be at risk of falling;

(c) Cracks in the excavation work area and the surrounding area;

(d) Changes in ground water level, surface or any spring water; and

(e) Deleterious effect due to freezing conditions.

(2) As a consequence of such inspections the HSO may prohibit the continuation of any affected work, take necessary corrective measures and make any necessary amendment to the Safety Plan and instruct all Contractor's Personnel of any revised safety measures before work is allowed to commence and continue in

7.2.2. Safety Measures before Commencing Excavation Works

(1) The Contractor shall inspect the excavation work area and surrounding area before starting work each day and after adverse climatic conditions or earthquake mentioned in JSSS: 2.7 [ADVERSE WEATHER REQUIREMENTS]. The inspection shall include the following areas and items:

(a) Potentially unsafe areas where there may be any risk of landslide;

(b) Loose rocks or boulders which may be at risk of falling;

(c) Cracks in the excavation work area and the surrounding area;

(d) Changes in ground water level, surface or any spring water; and

(e) Deleterious effect due to freezing conditions.

(2) As a consequence of such inspections the HSO may prohibit the continuation of any affected work, take necessary corrective measures and make any necessary amendment to the Safety Plan and instruct all Contractor's Personnel of any revised safety

measures before work is allowed to commence and continue in order to ensure their continued safety.	order to ensure their continued safety.	measures before work is allowed to commence and continue in order to ensure their continued safety.
(3) Install facilities such as stairs and ramps as means of access or egress from the excavation site in accordance with JSSS 7.4.2 [Setting of Passage];	(3) Install facilities such as stairs and ramps as means of access or egress from the excavation site in accordance with JSSS 7.4.2 [Setting of Passage];	(3) Install facilities such as stairs and ramps as means of access or egress from the excavation site in accordance with JSSS 7.4.2 [Setting of Passage];
(4) Provide support or protection for the underground services appropriately in accordance with 3.1 [Existing Underground and Overhead Services], and take measures, according to the situation, such as indicating clearly the location and precautions of the underground service and providing protective fences;	(4) Provide support or protection for the underground services appropriately in accordance with 3.1 [Existing Underground and Overhead Services], and take measures, according to the situation, such as indicating clearly the location and precautions of the underground service and providing protective fences; JC: これだけでは何を記載しているか判断ができない。(地上からの落下防止)？ It is hard to understand what this clause provides. Is it for protection against falling? NK: 原文（和文）は埋設物の保護について規定しており、防護柵も落下防止ではなく、埋設物を防護する柵である。明確にするためにその旨を追加する。 The Japanese draft is mentioning about protection for the underground services. Add a phrase “for the services” at the end of the sentence.	(4) Provide support or protection for the underground services appropriately in accordance with 3.1 [Existing Underground and Overhead Services], and take measures, according to the situation, such as indicating clearly the location and precautions of the underground service and providing protective fences for the services;
(5) Prevent workers and construction equipment/transport vehicles from their falling at the excavation site, in accordance with JSSS 2.3 [Prohibition of Entry], install entry prevention facilities (fences, temporary enclosures, etc.), warning flags, and signs, etc.;	(5) Prevent workers and construction equipment/transport vehicles from their falling at the excavation site, in accordance with JSSS 2.3 [Prohibition of Entry], install entry prevention facilities (fences, temporary enclosures, etc.), warning flags, and signs, etc.; JC: fall protection facilities / entry control facilities なのか Is the entry prevention facilities fall protection or entry control? NK: 掘削区域での作業員・重機等の転落を防ぐために、立入防止柵を設けることで、entry control である。 “entry prevention facilities” means entry control facility to prevent those from their falling at the site..	(5) Prevent workers and construction equipment/transport vehicles from their falling at the excavation site, in accordance with JSSS 2.3 [Prohibition of Entry], install entry prevention facilities (fences, temporary enclosures, etc.), warning flags, and signs, etc.;
(6) Take the following measures when there is a risk of danger to third parties, workers, construction equipment, etc. by the fall of excavated soil/rock at the lower parts (bottom) of the excavation site;	(6) Take the following measures when there is a risk of danger to third parties, workers, construction equipment, etc. by the fall of excavated soil/rock ~~at~~ into the lower parts (bottom) of the excavation site; JC: danger to construction equipment はおかしくないですか。danger to person なら理解できるが、人と機械は同等の扱いか？workers or other persons “Danger to construction equipment” sounds strange. Are persons and equipment treated same in this meaning? NK: 右のように修正しました。 “Damage to equipment” may be more suitable. Modified as right. JC: 少し自信がないのですが、at だと、「掘削現場における下部が崩落して」という意味にも取れないではないような気がします(「そこが抜ける」、というイメージ)。 I wonder which is correct “at” or “into”. NK: 掘削の下部(底部)に対策工を設置することへ変更します。 We modify as follows: “measures shall be provided at the lower part” as Take the following measures at the lower parts (bottom) of the excavation site; when there is a risk of …	(6) Take the following measures at the lower parts (bottom) of the excavation site when there is a risk of danger to third parties and workers, or damage to construction equipment, etc. by the fall of excavated soil/rock;
(a) Identify dangerous locations, install entry prevention facilities such as fences, temporary enclosures, warning signs, etc. in accordance with JSSS 2.3 [Prohibition of Entry]; and (b) Install protective fences that can catch falling rocks, etc.	(a) Identify dangerous locations, install entry prevention facilities such as fences, temporary enclosures, warning signs, etc. in accordance with JSSS 2.3 [Prohibition of Entry]; and (b) Install protective fences that can catch falling rocks, etc.	(a) Identify dangerous locations, install entry prevention facilities such as fences, temporary enclosures, warning signs, etc. in accordance with JSSS 2.3 [Prohibition of Entry]; and (b) Install protective fences that catch falling rocks, etc.

(7) Risk prevention measures against falling rocks

(a) To protect workers from the dangers of falling of loose rocks and soils from the excavated surface, remove the loose rocks, etc. and take appropriate protective measures; and

(b) When there is a risk of falling of loose rocks/soils due to the excavation, take measures such as provision of earth retaining and protective net beforehand, and prohibiting workers from entering in the excavation site.

7.2.3 Safety Measures during Excavation Works

During the Excavation Works, the Contractor shall:

(1) Not place excavated spoil, filling or Contractor's Equipment near the vertical edge of excavated surfaces.

(2) Stop the excavation work where ground collapse is possible during excavation, evacuate all Contractor's Personnel, implement all necessary safety measures, prohibit Contractor's Personnel from recommencing work until all safety measures have been taken.

(3) Backfill and compact excavated areas that require such backfill as soon as possible after the Permanent Work is completed.

(4) For places where open excavation work is performed, maintain the necessary illuminance to perform the work safely.

JC: "catch falling rocks"という表現の違和感は私だけ？
Am I the only one who feels a sense of discomfort?

NK: 英英辞典とインターネットで調べますと、それぞれの意味は以下でした。

Receive means: to get or be given something: (来た物を受け取る、例 E-mail)
Catch means: to take hold of something, especially something that is moving through the air: (動く物を受け取る、つかまえる、例ボール)

catch falling rocks での画像検索では、落石防止柵が出てきますので、catch のままと致します。 We leave "catch" as it is.

(7) Risk prevention measures against falling rocks

(a) To protect workers from the dangers of falling of loose rocks and soils from the excavated surface, remove the loose rocks, etc. and take appropriate protective measures; and

(b) When there is a risk of falling of loose rocks/soils due to the excavation, take measures such as provision of earth retaining and protective net beforehand, and prohibiting workers from entering in the excavation site.

JC: (b)について、前もって土留めや防護網を設置し、作業員の立入りを禁止することが適切なのか。
Is it appropriate to provide earth retaining and protective net beforehand and to prohibit workers to enter into the excavation area?

NK: 落石の危険性がある場合に、前もって危険防止措置をとると規定することに問題はないと思われるが、現文では作業員が入場できないととれるので、安全が確認できるまでとする。
It is appropriate to take preventive measures against possibility of falling rocks. However, the present clause can be read that no worker shall enter the site. Change the sentence that workers are prohibited to enter until safety is confirmed as right.

7.2.3 Safety Measures during Excavation Works

During the Excavation Works, the Contractor shall:

(1) Not place excavated spoil, filling or Contractor's Equipment near the vertical edge of excavated surfaces.

(2) Stop the excavation work where ground collapse is possible during excavation, evacuate all Contractor's Personnel, implement all necessary safety measures, prohibit Contractor's Personnel from recommencing work until all safety measures have been taken.

(3) Backfill and compact excavated areas that require such backfill as soon as possible after the Permanent Work is completed.

JC: (3)は意味が通じなくなってしまった。

(3) has become unable to understand.

NK: The Japanese draft was that for temporary excavation, it is required to backfill immediately after the work is completed. Modified.
(3) is modified as right.

(4) For places where open excavation work is performed, maintain the necessary illuminance to perform the work safely.

(7) Risk prevention measures against falling rocks

(a) To protect workers from the dangers of falling of loose rocks and soils from the excavated surface, remove the loose rocks, etc. and take appropriate protective measures; and

(b) When there is a risk of falling of loose rocks/soils due to the excavation, take measures such as provision of earth retaining and protective net beforehand, and prohibiting workers from entering in the excavation site until the safety of the workers is confirmed.

7.2.3 Safety Measures during Excavation Works

During the Excavation Works, the Contractor shall:

(1) Not place excavated spoil, filling or Contractor's Equipment near the vertical edge of excavated surfaces.

(2) Stop the excavation work where ground collapse is possible during excavation, evacuate all Contractor's Personnel, implement all necessary safety measures, prohibit Contractor's Personnel from recommencing work until all safety measures have been taken.

(3) Backfill the temporary excavation area as immediately as possible after the relevant work is completed.

(4) For places where open excavation work is performed, maintain the necessary illuminance to perform the work safely.

7.3 MANUAL EXCAVATION WORKS

During manual excavation works, the Contractor shall:

(1) Not permit any excavation of depth exceeds 1.5m in principle without providing Earthwork Support to all vertical surfaces as specified in 7.2.1 [General] (4).

(2) Not permit excavation of the excavated surface/ground that stands vertically or close to the vertical, and excavation of the ground under the foundation of existing structures

(3) Maintain sufficient distance between workers.

(4) When breaking or removing loose rock, pay attention to the stability of the rock and the direction of its fall.

(5) When using a lever for removing rock, select equipment that has appropriate length and strength for the work.

7.4 MECHANICAL EXCAVATION WORK

The Contractor shall take the following measures for the safety of operators of excavating equipment (hereinafter referred to as "equipment") and workers engaged in the mechanical excavation works with the equipment:

(1) In accordance with JSSS 2.3 [Prohibition of Entry], prohibit workers from entering the places where workers are in danger due to the mechanical excavation works by placing notices of "No Entry" at easy-to-see locations, installing entry prevention facilities (fences, temporary enclosures, etc.) and placing Spotters.

(2) Take the safety measures prescribed in JSSS 4.2.3 [Safety Measures in Operation], 4.2.4 [Restriction to Operate Construction Equipment for Other Use] and (3) to (4) below.

(3) The operators shall operate the equipment following the following rules:

(a) Operate the equipment with paying attention always to the position of workers near the working range;

(b) When moving the equipment backward, make sure that there are no workers behind and follow the instructions of the Spotters;

(c) After the work, do not park the equipment on the slope where

7.3 MANUAL EXCAVATION WORKS

During manual excavation works, the Contractor shall:

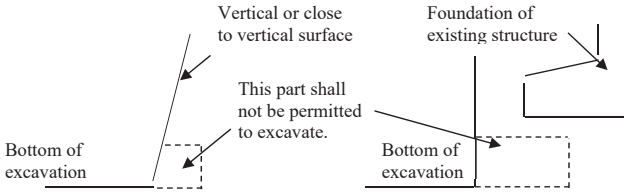
(1) Not permit any excavation of depth exceeds 1.5m ~~in principle~~ without providing Earthwork Support to all vertical surfaces as specified in 7.2.1 [General] (4).

JC: deleted "in principle".

(2) Not permit excavation of the excavated surface/ground that stands vertically or close to the vertical, and excavation of the ground under the foundation of existing structures.

JC: modified as right.

NK: JC requests MD to check and modify the expression of this clause after understanding the situation shown below.



(3) Maintain sufficient distance between workers.

(4) When breaking or removing loose rock, pay attention to the stability of the rock and the direction of its fall.

(5) When using a lever for removing rock, select equipment that has appropriate length and strength for the work.

7.4 MECHANICAL EXCAVATION WORK

The Contractor shall take the following measures for the safety of operators of excavating equipment (hereinafter referred to as "equipment") and workers engaged in the mechanical excavation works with the equipment:

(1) In accordance with JSSS 2.3 [Prohibition of Entry], prohibit workers from entering the places where workers are in danger due to the mechanical excavation works by placing notices of "No Entry" at easy-to-see locations, installing entry prevention facilities (fences, temporary enclosures, etc.) and placing Spotters.

(2) Take the safety measures prescribed in JSSS 4.2.3 [Safety Measures in Operation], 4.2.4 [Restriction to Operate Construction Equipment for Other Use] and (3) to (4) below.

(3) Ensure that the operators shall: ~~operate the equipment following the following rules:~~

(a) Operate the equipment with paying attention always to the position of workers near the working range;

(b) When moving the equipment backward, make sure that there are no workers behind and follow the instructions of the Spotters;

(c) After the work, ~~do~~ not park the equipment on the slope where excavation is in progress or on the ground that has a

7.3 MANUAL EXCAVATION WORKS

During manual excavation works, the Contractor shall:

(1) Not permit any excavation of depth exceeds 1.5m without providing Earthwork Support to all vertical surfaces as specified in 7.2.1 [General] (4).

(2) Not permit excavation of the vertical surface of the excavated area, or excavation of the ground under the foundation of existing structures.

(3) Maintain sufficient distance between workers.

(4) When breaking or removing loose rock, pay attention to the stability of the rock and the direction of its fall.

(5) When using a lever for removing rock, select equipment that has appropriate length and strength for the work.

7.4 MECHANICAL EXCAVATION WORK

The Contractor shall take the following measures for the safety of operators of excavating equipment (hereinafter referred to as "equipment") and workers engaged in the mechanical excavation works with the equipment:

(1) In accordance with JSSS 2.3 [Prohibition of Entry], prohibit workers from entering the places where workers are in danger due to the mechanical excavation works by placing notices of "No Entry" at easy-to-see locations, installing entry prevention facilities (fences, temporary enclosures, etc.) and placing Spotters.

(2) Take the safety measures prescribed in JSSS 4.2.3 [Safety Measures in Operation], 4.2.4 [Restriction to Operate Construction Equipment for Other Use] and (3) to (4) below.

(3) Ensure that the operators shall:

(a) Operate the equipment with paying attention always to the position of workers near the working range;

(b) When moving the equipment backward, make sure that there are no workers behind and follow the instructions of the Spotters;

(c) After the work, not park the equipment on the slope where excavation is in progress or on the ground that has a possibility to collapse.

excavation is in progress or on the ground that has a possibility to collapse.

(d) The bucket of equipment shall not pass over the operator's seat of another equipment.

(4) Workers shall work follow the following rules.

(a) Not enter under the bucket of equipment that is loading materials; and

(b) Keep away from dump trucks under loading or unloading materials.

7.5 TRENCH EXCAVATION

7.5.1. General

The Contractor shall take the following measures to prevent danger to workers due to the collapse of the excavation surface during trench excavation.

Trench excavation means excavation performed for laying gas pipes and water /sewage pipes, etc. which depth is larger than its width. In general, excavation width is less than 4.6m (15feet).

(1) When performing trench excavation with depth of 1.5m or more, earth retaining shall be provided unless any particular reason exists; and

(2) For trench excavation with a depth of less than 1.5m, protective systems such as exampled below shall be installed;

(a) Simple earth retaining (Trench box, Trench shield);

(b) Lightweight sheet pile earth retaining; and

(c) Aluminum hydraulic shoring, Timber shoring.

7.5.2 Safety Measures during Trench Excavation

(1) Materials and equipment to be used for earth retaining systems shall

possibility to collapse.

(d) Make sure that the bucket of equipment shall not pass over the operator's seat of another equipment.

(4) Ensure that workers shall: ~~follow the following rules:~~

(a) Not enter under the bucket of equipment that is loading materials; and

(b) Keep away from dump trucks under loading or unloading materials.

7.5 TRENCH EXCAVATION

7.5.1. General

The Contractor shall take the following measures to prevent danger to workers due to the collapse of the excavation surface during trench excavation.

Trench excavation means excavation performed for laying gas pipes and water /sewage pipes, etc. which depth is larger than its width. In general, excavation width is less than 4.6m (15feet).

(1) When performing trench excavation with depth of 1.5m or more, adequate and stable earth retaining shall be provided ~~unless any particular reason exists~~.; and

(2) For trench excavation with a depth ~~of less than~~ exceeding 1.5m, protective systems ~~such as exampled below~~ as shown below shall be installed, unless it is possible to excavate with an adequate and stable slope taking account of the soil condition.;

JC: Changed from "less than" to "exceeding".

NK: (1) is for 1.5 m or more, and (2) is for less than 1.5 m. Therefore, (2) is left as it is.

(a) Simple earth retaining (Trench box, Trench shield);

(b) Lightweight sheet pile earth retaining; and

(c) Aluminum hydraulic shoring, Timber shoring.

JC: 軽量鋼矢板　英語これでいいですか？steel sheet pile　でいいのでは

Is "Lightweight sheet pile" correct term in English? Is "steel sheet pile" OK?

NK: 特許庁の書類、インターネットの英語の製品紹介で、"lightweight sheet pile"を使用している。対象としている比較的浅いトレンチ掘削では通常のシートパイルは使用しないので、軽量鋼矢板であることは明確にしたいため、このままとする。
Japan Patent Office and internet for product catalogue use the term "lightweight sheet pile".
For relatively shallow trench excavation, ordinary sized ones are not used. It is better to distinguish the different use of normal and lightweight sheet piles.
Left as it is.

7.5.2 Safety Measures during Trench Excavation

(1) Materials and equipment to be used for earth retaining systems shall be appropriate for the width and depth of the trench and free from damage or defects that might impair their proper function;

(d) Make sure that the bucket of equipment shall not pass over the operator's seat of another equipment.

(4) Ensure that workers shall:

(a) Not enter under the bucket of equipment that is loading materials; and

(b) Keep away from dump trucks under loading or unloading materials.

7.5 TRENCH EXCAVATION

7.5.1. General

The Contractor shall take the following measures to prevent danger to workers due to the collapse of the excavation surface during trench excavation.

Trench excavation means excavation performed for laying gas pipes and water /sewage pipes, etc. which depth is larger than its width. In general, excavation width is less than 4.6m (15feet).

(1) When performing trench excavation with depth of 1.5m or more, adequate and stable earth retaining shall be provided.; and

(2) For trench excavation with a depth of less than 1.5m, protective systems as shown below shall be installed, unless it is possible to excavate with an adequate and stable slope taking account of the soil condition.;

(a) Simple earth retaining (Trench box, Trench shield);

(b) Lightweight sheet pile earth retaining; and

(c) Aluminum hydraulic shoring, Timber shoring.

7.5.2 Safety Measures during Trench Excavation

(1) Materials and equipment to be used for earth retaining systems shall

be appropriate for the width and depth of the trench and free from damage or defects that might impair their proper function; (2) Manufactured (prefabricated) materials for earth retaining systems shall be used in accordance with the instructions and recommendations given in the manual of the manufacturer; (3) The earth retaining system designed by the Contractor shall be provided in accordance with the design and construction procedure drawings; (4) Earth retaining system with sufficient strength shall be provided to protect workers from collapse of the ground in and structures near the excavation site; (5) Workers shall not be allowed to enter the trench until the earth retaining system is installed prior to the work; (6) Excavation to a level greater than 60cm below the bottom of the earth retaining system shall not be allowed; (7) If temporary removal of individual members of the earth retaining system is necessary, safety measures shall be taken to ensure the safety of workers, such as installing temporary members to hold the loads imposed on the system; (8) When removing the earth retaining system, not allow anyone other than the workers engaged in the removal work to enter the area and the vicinity; and (9) Backfilling of the trench shall be performed in parallel with the removal of the earth retaining system.	(2) Manufactured (prefabricated) materials for earth retaining systems shall be used in accordance with the instructions and recommendations given in the manual of the manufacturer; (3) The earth retaining system designed by the Contractor shall be installed in accordance with the design and construction procedure drawings; (4) Earth retaining system with sufficient strength shall be provided to protect workers from collapse of the ground in and structures near the excavation site; (5) Workers shall not be allowed to enter the trench until the earth retaining system is installed prior to the work; (6) Excavation to a level greater than 60cm below the bottom of the earth retaining system shall not be allowed; (7) If temporary removal of individual members of the earth retaining system is necessary, safety measures shall be taken to ensure the safety of workers, such as installing temporary members to hold the loads imposed on the system; (8) When removing the earth retaining system, the Contractor shall not allow anyone other than the workers engaged in the removal work to enter the area and the vicinity; and (9) The Contractor shall perform backfilling of the trench shall be performed in parallel with the removal of the earth retaining system. JC: modified (8) and (9) as above.	be appropriate for the width and depth of the trench and free from damage or defects that might impair their proper function; (2) Manufactured (prefabricated) materials for earth retaining systems shall be used in accordance with the instructions and recommendations given in the manual of the manufacturer; (3) The earth retaining system designed by the Contractor shall be installed in accordance with the design and construction procedure drawings; (4) Earth retaining system with sufficient strength shall be provided to protect workers from collapse of the ground in and structures near the excavation site; (5) Workers shall not be allowed to enter the trench until the earth retaining system is installed prior to the work; (6) Excavation to a level greater than 60cm below the bottom of the earth retaining system shall not be allowed; (7) If temporary removal of individual members of the earth retaining system is necessary, safety measures shall be taken to ensure the safety of workers, such as installing temporary members to hold the loads imposed on the system; (8) When removing the earth retaining system, the Contractor shall not allow anyone other than the workers engaged in the removal work to enter the area and the vicinity; and (9) The Contractor shall perform backfilling of the trench shall be performed in parallel with the removal of the earth retaining system.
7.6 EXCAVATION BY BLASTING **7.6.1. Scope** (1) This Section specifies safety measures in connection with excavation in rock in open that cannot be undertaken using conventional excavation techniques and which, following the Engineer's Instruction or consent, shall be undertaken by Blasting with Explosives. (2) The Blasting ~~Works~~ works plan shall be described in the relevant Method Statement. (3) This Section applies particularly to Blasting ~~Works~~ works where there may be any risk of injury or damage to persons and property on adjacent areas due to the use of Explosives either within or outside the Site. **7.6.2. Definitions** Definitions of terms for the purpose of this Chapter are as follows. (1) "**Blasting**" means blowing-up or breaking apart solid rock with the	**7.6 EXCAVATION BY BLASTING** **7.6.1. Scope** (1) This Section specifies safety measures in connection with excavation in rock in open that cannot be undertaken using conventional excavation techniques and which, following the Engineer's Instruction or consent, shall be undertaken by Blasting with Explosives. JC: こういう言い方するのか要確認 Confirmation is required if the expression "excavation in rock in open" is appropriate. NK: As a term "open-cut excavation" is usually used for excavation in open site area. Modified as right. 「明り掘削」は" open-cut excavation" が通常であるので、" in connection with open-cut rock excavation" と修正する。 (2) The Blasting works plan shall be described in the relevant Method Statement. (3) This Section applies particularly to Blasting works where there may be any risk of injury or damage to persons and property on adjacent areas due to the use of Explosives either within or outside the Site. **7.6.2. Definitions** Definitions of terms for the purpose of this Chapter are as follows. (1) "**Blasting**" means blowing-up or breaking apart solid rock with the	**7.6 EXCAVATION BY BLASTING** **7.6.1. Scope** (1) This Section specifies safety measures in connection with open-cut rock excavation that cannot be undertaken using conventional excavation techniques and which, following the Engineer's Instruction or consent, shall be undertaken by Blasting with Explosives. (2) The Blasting works plan shall be described in the relevant Method Statement. (3) This Section applies particularly to Blasting works where there may be any risk of injury or damage to persons and property on adjacent areas due to the use of Explosives either within or outside the Site. **7.6.2. Definitions** Definitions of terms for the purpose of this Chapter are as follows. (1) "**Blasting**" means blowing-up or breaking apart solid rock with the use of Explosives.

use of Explosives.

(2) "**Explosives**" means mean any substance or mixture of substances that is manufactured to produce an explosive effect and which term includes any explosion explosive, Blasting agent and Blasting supplies such as detonators, cords and detonating equipment.

(3) "**Exclusion Zone**" means an area from which all unauthorised Contractor's Personnel, unauthorised Employer's Personnel and any other unauthorised persons or the general public are prohibited to enter due to the risk of their being affected by the Blasting operations. Unauthorised personnel in this context shall have the same meaning as that stated in Section 2.3 [*Prohibition of Entry – Dangerous Work*] Clause 2.3.1 (c).

7.6.3. Compliance Standards

(1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], the Contractor shall comply with the requirements of this Chapter, read jointly with and including the further requirements of BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry.

(2) The Contractor shall obtain the necessary permits, licenses or approvals for Blasting work and the handling and storage of Explosives associated therewith. The Employer, at the request of the Contractor, shall provide such reasonable assistance to allow the Contractor to obtain properly such permits, licenses or approvals.

use of Explosives.

(2) "**Explosives**" means mean any substance or mixture of substances that is manufactured to produce an explosive effect and which term includes any explosion explosive, Blasting agent and Blasting supplies such as detonators, cords and detonating equipment.

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7.6.3. Compliance Standards

(1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], unless otherwise specified in JSSS, the Contractor shall comply with the requirements of this Chapter, read jointly with and including the further requirements of BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry.

JC: この言葉は少なくともこの場合絶対必要だと思います。BS の表現には主語がなく、誰がそれぞれのアクションに責任を持っているのかが不明です。

例えば、JSSS の中では振動や騒音等に対する許容値を発注者が契約の中で定めることにしていますが、定めるにあたっては発注者側で周辺の建物等に関する survey を行うことが必須のはずです。

一方、BS においては、BS5607　6.2.1 において、a detailed survey and examination of the site, buildings or structures and adjoining areas and property should be carried out in accordance with BS 5930.という記述があり、これでは誰がやるのかが不明です。

従って、JSSS に規定の内容が優先され、その他は BS に従うことを明らかにしておかなければ、許容値の設定、関係当局との調整等、全てコントラクターの責任になってしまいます。

The phrase "unless otherwise specified in JSSS" is indispensable in this case at least. BS does not mention subject, so it is not clear who is responsible for each action.

For example, JSSS specifies that the Employer shall specify allowable values of vibration, noise, etc. in the Contract. The Employer should survey these allowable values for structures, etc. around the Site when the Employer specify these allowable values.

On the other hand, BS5607, 6.2.1 mentions "a detailed survey and examination of the site, buildings or structures and adjoining areas and property should be carried out in accordance with BS 5930.". It is not clear who carry out the survey and investigation.

Therefore, it is necessary to stipulate clearly that provisions in JSSS are given priority and others than JSSS shall comply with BS. Otherwise, the Contractor has to burden broad responsibilities including determination of allowable values and coordination with relevant authorities.

NK: Added the phrase as suggested by JC. MD, please review JC.

(2) The Contractor shall obtain the necessary permits, licenses or approvals for Blasting work and the handling and storage of Explosives associated therewith. The Employer, at the request of the Contractor, shall provide such reasonable assistance to allow the Contractor to obtain properly such permits, licenses or approvals.

(2) "**Explosives**" means ~~mean~~ any substance or mixture of substances that is manufactured to produce an explosive effect and which term includes any explosion explosive, Blasting agent and Blasting supplies such as detonators, cords and detonating equipment.

(3) "**Exclusion Zone**" means an area from which all unauthorised Contractor's Personnel, unauthorised Employer's Personnel and any other unauthorised persons or the general public are prohibited to enter due to the risk of their being affected by the Blasting operations. Unauthorised personnel in this context shall have the same meaning as that stated in Section 2.3 [*Prohibition of Entry – Dangerous Work*] Clause 2.3.1 (c).

7.6.3. Compliance Standards

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(2) The Contractor shall obtain the necessary permits, licenses or approvals for Blasting work and the handling and storage of Explosives associated therewith. The Employer, at the request of the Contractor, shall provide such reasonable assistance to allow the Contractor to obtain properly such permits, licenses or approvals.

7.6.4. Personnel for Blasting Works

(1) Further to the requirements of JSSS 1.16 [*Proper Placement of Contractor's Personnel*], the Contractor shall assign the following personnel for Blasting ~~Works~~ works:

(a) Explosive engineer; and

(b) Shotfirer(s)

(2) Responsibilities and requirement of personnel for Blasting ~~Works~~ works:

(a) The explosive engineer shall plan the Blasting ~~Works~~ works, lead the Blasting ~~Works~~ works at Site and perform the safety management of the Blasting ~~Works~~ works ; and

(b) Shotfirer(s) shall perform safekeeping, transportation and storage of Explosives, and perform Blasting ~~Works~~ works and site safety management.

(3) Safety education and guidance

Further to the requirements of JSSS 1.16 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that personnel engaged in Blasting ~~Works~~ works , namely explosive engineer, shotfirer(s), Spotters (sentries) and other workers involved in the blasting operations, have knowledge of and are able to comply with the following:

(a) Nature of hazards associated with Blasting;

(b) Unsafe conditions and conduct in performing Blasting ~~Works~~ works ;

(c) Procedures for Blasting ~~Works~~ works ;

(d) Evacuation and return procedures of the evacuated workers and personnel;

(e) Safety measures when misfiring of Explosives occurs; and

(f) Emergency response (actions).

7.6.5. Blasting Safety Plan

The Contractor shall prepare a Blasting Safety Plan describing all required safety measures for Blasting ~~Works~~ works in addition to the items prescribed in JSSS 1.6 [*Contractor's Safety Plan*] and including the following:

(1) Risk analysis and countermeasures.

(2) Safety measures for transportation, safekeeping, use and disposal

7.6.4. Personnel for Blasting Works

(1) Further to the requirements of JSSS 1.16 [*Proper Placement of Contractor's Personnel*], the Contractor shall assign the following personnel for Blasting works:

(a) Explosive engineer; and

(b) Shotfirer(s)

(2) Responsibilities and requirement of personnel for Blasting works:

(a) The explosive engineer shall plan the Blasting works, lead the Blasting works at Site and perform the safety management of the Blasting works; and

(b) Shotfirer(s) shall perform safekeeping, transportation and storage of Explosives, and perform Blasting works and site safety management.

(3) Safety education and guidance

Further to the requirements of JSSS 1.16 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that ~~personnel engaged in Blasting works, namely~~ explosive engineer and shotfirer(s), ~~Spotters (sentries) and other workers involved in the blasting operations,~~ have sufficient knowledge of ~~and are able to comply with~~ the following:

JC: BS5607 8.3 には No person other than those designated in **8.2** should be in possession of explosives on site.という記述があり、また 8.4 以降の記述は blasting engineer と shotfirer に関して技量や知見を求める記述になっているところ、(3)の対象をその両者に限定した書き方にしてあります。

BS5607 8.3 describes "No person other than those designated in **8.2** should be in possession of explosives on site" and Sections after 8.2 describe about only requirements on skills and knowledges of blasting engineer and shotfirers. Therefore, (3) is revised to describe limitedly for the both.

NK: NK think all members of blasting team shall know knowledge (a) to (f) generally or Professionally. However, NK modifies as JIC comment.

(a) Nature of hazards associated with Blasting;

(b) Unsafe conditions and conduct in performing Blasting works;

(c) Procedures for Blasting works;

(d) Evacuation and return procedures of the evacuated workers and personnel;

(e) Safety measures when misfiring of Explosives occurs; and

(f) Emergency response (actions).

7.6.5. Blasting Safety Plan

The Contractor shall prepare a Blasting Safety Plan describing all required safety measures for Blasting works in addition to the items prescribed in JSSS 1.6 [*Contractor's Safety Plan*] and including the following:

(1) Risk analysis and countermeasures.

(2) Safety measures for transportation, safekeeping, use and disposal of Explosives.

(3) Safety measures for Contractor's Personnel, Employer's Personnel and any other persons, the general public, neighbouring residents

7.6.4. Personnel for Blasting Works

(1) Further to the requirements of JSSS 1.16 [*Proper Placement of Contractor's Personnel*], the Contractor shall assign the following personnel for Blasting works:

(a) Explosive engineer; and

(b) Shotfirer(s)

(2) Responsibilities and requirement of personnel for Blasting works:

(a) The explosive engineer shall plan the Blasting works, lead the Blasting works at Site and perform the safety management of the Blasting works; and

(b) Shotfirer(s) shall perform safekeeping, transportation and storage of Explosives, and perform Blasting works and site safety management.

(3) Safety education and guidance

Further to the requirements of JSSS 1.16 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that explosive engineer and shotfirer(s) have sufficient knowledge of the following:

(a) Nature of hazards associated with Blasting;

(b) Unsafe conditions and conduct in performing Blasting-works;

(c) Procedures for Blasting works;

(d) Evacuation and return procedures of the evacuated workers and personnel;

(e) Safety measures when misfiring of Explosives occurs; and

(f) Emergency response (actions).

7.6.5. Blasting Safety Plan

The Contractor shall prepare a Blasting Safety Plan describing all required safety measures for Blasting works in addition to the items prescribed in JSSS 1.6 [*Contractor's Safety Plan*] and including the following:

(1) Risk analysis and countermeasures.

(2) Safety measures for transportation, safekeeping, use and disposal of Explosives.

(3) Safety measures for Contractor's Personnel, Employer's Personnel

of Explosives.

(3) Safety measures for Contractor's Personnel, Employer's Personnel and any other persons, the general public, neighbouring residents and building owners on or adjacent to the Site and who may be affected by the Blasting ~~Works works (hereinafter collectively referred to as "~~personnel affected by the Blasting works" in this Section).

(4) Determination of Exclusion Zone.

(5) Environmental and health compliance requirements including vibration, noise, fire, and the like, required by Laws and the Contract.

(6) Identification of affected areas, buildings, structures and property.

(7) ~~Test~~ Trial Blasting.

(8) Environmental monitoring plan and methods to record the impact of Blasting on affected buildings, structures and property.

(9) Identification of the explosive engineer and shotfirers to distinguish from other workers.

(10) Placement of Spotters.

(11) Method of notification of the start date and time of Blasting work and notice immediately before Blasting to other Contractor's Personnel, Employer's Personnel and any other persons, the general public, neighbouring residents and building owners on or adjacent to the Site and who may be affected by the Blasting operations.

(12) Evacuation method of all personnel from the Exclusion Zone before Blasting.

(13) Warning system at the time of Blasting.

(14) Procedures and methods for dealing with misfired Explosives (The plan for the treatment procedures for misfired Explosives shall be prepared by reference to BS5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10.5 Misfires.

(15) List of legal and administrative records.

7.6.6. Risk Prevention of Workers and Neighbouring Residents

(1) Notice of Blasting

The Contractor shall notify, in appropriate manners, all affected persons including neighbouring residents and building owners of the planned schedule and start dates and times for Blasting work, the actual start dates and times and give notice immediately before the Blasting work commences.

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and building owners on or adjacent to the Site and who may be affected by the Blasting works (hereinafter collectively referred to as "personnel affected by the Blasting works" in this Section).

(4) Determination of Exclusion Zone.

(5) Environmental and health compliance requirements including vibration, noise, fire, and the like, required by Laws and the Contract.

(6) Identification of affected areas, buildings, structures and property.

(7) Trial Blasting.

(8) Environmental monitoring plan and methods to record the impact of Blasting on affected areas, buildings, structures and property.

JC: (6)に合わせておく必要はないですか？
Isn't it necessary to combine (6) and (8)?

NK: 項目(6)と(8)は密接に関係しているが、内容そのものは異なるため、一つの項目としてまとめることは適切ではないと考える。(7)と(8)の順序を入れ替えることで、identification に続いて monitoring となり、関係性が明らかになると思われる。
The contents of item (6) and (8) are closely related, however, they are different matters as actions. Therefore, it would be better to change the order of (7) and (8) so that identification and monitoring become clear to be closely related.

(9) Identification of the explosive engineer and shotfirers to distinguish from other workers.

(10) Placement of Spotters.

(11) Method of notification of the start date and time of Blasting work and notice immediately before Blasting to other Contractor's Personnel, Employer's Personnel and any other persons, the general public, neighbouring residents and building owners on or adjacent to the Site and who may be affected by the Blasting operations.

(12) Evacuation method of all personnel from the Exclusion Zone before Blasting.

(13) Warning system at the time of Blasting.

(14) Procedures and methods for dealing with misfired Explosives (The plan for the treatment procedures for misfired Explosives shall be prepared by reference to BS5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10.5 Misfires.

(15) List of legal and administrative records.

7.6.6. Risk Prevention of Workers and Neighbouring Residents

(1) Notice of Blasting

The Contractor shall notify, ~~in appropriate manners,~~ all affected persons including neighbouring residents and building owners of the planned schedule and start dates and times for Blasting work, Such information shall be updated as necessary, in particular, ~~the actual start dates and times and give notice~~ immediately before the Blasting work commences.

The Contractor shall notify ~~in appropriate manners,~~ all affected persons including neighbouring residents and building owners of

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and any other persons, the general public, neighbouring residents and building owners on or adjacent to the Site and who may be affected by the Blasting works (hereinafter collectively referred to as "personnel affected by the Blasting works" in this Section).

(4) Determination of Exclusion Zone.

(5) Environmental and health compliance requirements including vibration, noise, fire, and the like, required by Laws and the Contract.

(6) Identification of affected areas, buildings, structures and property.

(7) Environmental monitoring plan and methods to record the impact of Blasting on affected areas, buildings, structures and property.

(8) Trial Blasting

(9) Identification of the explosive engineer and shotfirers to distinguish from other workers.

(10) Placement of Spotters.

(11) Method of notification of the start date and time of Blasting work and notice immediately before Blasting to other Contractor's Personnel, Employer's Personnel and any other persons, the general public, neighbouring residents and building owners on or adjacent to the Site and who may be affected by the Blasting operations.

(12) Evacuation method of all personnel from the Exclusion Zone before Blasting.

(13) Warning system at the time of Blasting.

(14) Procedures and methods for dealing with misfired Explosives (The plan for the treatment procedures for misfired Explosives shall be prepared by reference to BS5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10.5 Misfires.

(15) List of legal and administrative records.

7.6.6. Risk Prevention of Workers and Neighbouring Residents

(1) Notice of Blasting

The Contractor shall notify all affected persons including neighbouring residents and building owners of the planned schedule and start dates and times for Blasting work. Such information shall be updated as necessary, in particular, immediately before the Blasting work commences.

(2) Risk Prevention Measures

The Contractor shall take all necessary measures to prevent any injury or damage to all affected persons and property from the Blasting ~~Works~~ works including the following:

(a) Prohibition of overcharging with Explosives more than specified in the Method Statement prepared based on the trial Blasting;

(b) Prevention of scattering of flying rock and other debris with materials, for example, sand, nets, steel plates, timber, etc. mentioned in 12.7.6［Blast protection] of BS 5607 and specified in the Contract (if any).

(c) Prevention of collapse of surrounding rocks or ground more than planned in the Method Statement;

(d) Define Exclusion Zone for Blasting works and take necessary measures to prohibit the personnel affected by the Blasting works from entering the Exclusion Zone by a system of signs, signals and Spotters in accordance with 7.4.2 [Blast warning procedures] of BS BS5607 including the following:

(i) Provide audible warning sirens to warn of impending, current and completed Blasting operations;

(ii) Place bulletin boards showing the Blasting time, siren code and other precautions at the boundary of the Dangerous Work area;

(e) Establish evacuation requirements, ~~routes~~ and assembly areas at blasting operation and inform all ~~workers and effected persons the~~ personnel affected by the Blasting Works; and

Perform firing only after the Spotters have confirmed that all ~~workers~~ personnel affected by the Blasting Works have been evacuated; and

(f) Provide communication equipment between the shotfirer and the Spotter, maintain and test the equipment;

(g) Prohibit bringing into the blasting areas any mobile phone that is

the planned schedule and start dates and times for Blasting work. Such information shall be updated as necessary, in particular, ~~the actual start dates and times and give notice~~ immediately before the Blasting work commences.

JC: BS5607 6.6 でも notification という言葉が使われているので、notify という表現でもよいと思います。updated という言葉も BS5607 6.6 からとりました。

The term “notification” is used in also BS5607 6.6, therefore, “notify” is deemed to be right in this context. The term “update” is also derived from BS5606 6.6. JC modified as above.

(2) Risk Prevention Measures

The Contractor shall take all necessary measures to prevent any injury or damage to all affected persons and property from the Blasting works including the following:

(a) Prohibition of overcharging with Explosives more than specified in the Method Statement prepared based on the trial Blasting;

(b) Prevention of scattering of flying rock and other debris with materials, for example, sand, nets, steel plates, timber, etc. mentioned in 12.7.6［Blast protection] of BS 5607 and specified in the Contract (if any).

(c) ~~Prevention of collapse of surrounding rocks or ground more than planned in the Method Statement;~~

JC:「想定を超えた爆破とならないように●●する」の●●の部分が具体的に記述できないようならば、削除してもよいと思います。Overcharge しない、ということならば既に(a)に書いてあります。

The required sentence is “the prevention of blasting more than planned by measures of ●●”. If the “●●” cannot be described, (c above can be deleted because prohibition of overcharging is specified in (a).

NK: deleted.

(c) Define Exclusion Zone for Blasting works and take necessary measures to prohibit the personnel affected by the Blasting works from entering the Exclusion Zone by a system of signs, signals and Spotters in accordance with 7.4.2 [Blast warning procedures] of BS BS5607 including the following:

(i) Provide audible warning sirens to warn of impending, current and completed Blasting operations;

(ii) Place bulletin boards showing the Blasting time, siren code and other precautions at the boundary of the Dangerous Work area;

(d) Establish evacuation requirements, and assembly areas at blasting operation and inform all personnel affected by the Blasting Works; and

Perform firing only after the Spotters have confirmed that all personnel affected by the Blasting Works have been evacuated; and

(e) Provide communication equipment between the shotfirer and the Spotter, maintain and test the equipment;

(f) Prohibit bringing into the blasting areas any mobile phone that ~~is not guaranteed that it will not~~ may adversely affect the electric

(2) Risk Prevention Measures

The Contractor shall take all necessary measures to prevent any injury or damage to all affected persons and property from the Blasting works including the following:

(a) Prohibition of overcharging with Explosives more than specified in the Method Statement prepared based on the trial Blasting;

(b) Prevention of scattering of flying rock and other debris with materials, for example, sand, nets, steel plates, timber, etc. mentioned in 12.7.6［Blast protection] of BS 5607 and specified in the Contract (if any).

~~(c) Prevention of collapse of surrounding rocks or ground more than planned in the Method Statement;~~

(c) Define Exclusion Zone for Blasting works and take necessary measures to prohibit the personnel affected by the Blasting works from entering the Exclusion Zone by a system of signs, signals and Spotters in accordance with 7.4.2 [Blast warning procedures] of BS BS5607 including the following:

(i) Provide audible warning sirens to warn of impending, current and completed Blasting operations;

(ii) Place bulletin boards showing the Blasting time, siren code and other precautions at the boundary of the Dangerous Work area;

(d) Establish evacuation requirements, and assembly areas at blasting operation and inform all personnel affected by the Blasting Works; and

Perform firing only after the Spotters have confirmed that all personnel affected by the Blasting Works have been evacuated; and

(e) Provide communication equipment between the shotfirer and the Spotter, maintain and test the equipment;

(f) Prohibit bringing into the blasting areas any mobile phone that may affect adversely the electric detonator; and

not guaranteed that it will not adversely affect the electric detonators; and

(h) Unless otherwise specified in the Contract, perform Blasting ~~Works~~ works only during the daytime.

7.6.7. Handling and Storing of Explosives

(1) Storage of Explosives

(a) The Explosive store to be constructed at the Site shall be a secure, substantial and fireproof building, environmentally controlled, locked, guarded and protected at all times and in accordance with the Laws of the Country;

(b) Appropriate numbers and types of personnel shall be assigned by the Contractor for safekeeping and security of the stored Explosives and any other materials;

(c) The Contractor shall maintain records of the types and quantities of all Explosives received and issued at the store, listing the date and time of receipt and issue and the names of all personnel concerned; and

(d) The Contractor shall submit the records to the Engineer when the Engineer requests.

For other storage requirements, the Contractor shall comply with 9.3 [Storage] of BS 5607.

(2) Transportation of Explosives

For transportation requirements, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 9.4 Transport of Explosives on Site.

(3) Quantity of Explosives at the Blasting site

(a) The quantity of Explosives to be transported from store to the Blasting site shall be suitable for the estimated quantity of consumption for the Basting;

(b) No extra or surplus Explosives shall be stored at the Blasting site; and

(c) Explosives not used on the day shall be returned to the Explosives store or a location where they can be stored legally until the following day.

detonators; and

Prohibit bringing into the blasting areas any mobile phone that that may affect adversely the electric detonator; and

JC: BS と同じ表現とする。
Modified to make the expression same as in BS.
NK: modified

(g) Unless otherwise specified in the Contract, perform Blasting works only during the daytime.

7.6.7. Handling and Storing of Explosives

(1) Storage of Explosives

(a) The Explosive store to be constructed at the Site shall be a secure, substantial and fireproof building, environmentally controlled, locked, guarded and protected at all times and in accordance with the Laws of the Country;

(b) Appropriate numbers and types of personnel shall be assigned by the Contractor for safekeeping and security of the stored Explosives and any other materials;

(c) The Contractor shall maintain records of the types and quantities of all Explosives received and issued at the store, listing the date and time of receipt and issue and the names of all personnel concerned; and

(d) The Contractor shall submit the records to the Engineer when the Engineer requests.

For other storage requirements, the Contractor shall comply with 9.3 [Storage] of BS 5607.

(2) Transportation of Explosives

For transportation requirements, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 9.4 Transport of Explosives on Site.

(3) Quantity of Explosives at the Blasting site

(a) The quantity of Explosives to be transported from store to the Blasting site shall be suitable for the estimated quantity of consumption for the Basting; and

(b) No extra or surplus Explosives shall be stored at the Blasting site.

(c) ~~Explosives not used on the day shall be returned to the Explosives store or a location where they can be stored legally until the following day.~~

JC: BS5607 12.8.2 は Demolition の場合に関連した記述で、他にもいろいろな場合（掘削、水中、トンネル等）の記述が併記されているなかで、これを持ってくるのが正しいのかはよくわかりません。

一方、同 BS の 9 条は全般にかかる安全対策について論じていますが、その中の 9.3.4 に以下のような具体的な記述があります。

If more explosives have been issued than are required and the intention is to return them to the licensed store, they should be examined by the shotfirer before return・・・(以下長いので略)。

むしろこちらを引っ張ってくるべきだと思います。すると、JSSS7.6.7(1)で Storage

(g) Unless otherwise specified in the Contract, perform Blasting works only during the daytime.

7.6.7. Handling and Storing of Explosives

(1) Storage of Explosives

(a) The Explosive store to be constructed at the Site shall be a secure, substantial and fireproof building, environmentally controlled, locked, guarded and protected at all times and in accordance with the Laws of the Country;

(b) Appropriate numbers and types of personnel shall be assigned by the Contractor for safekeeping and security of the stored Explosives and any other materials;

(c) The Contractor shall maintain records of the types and quantities of all Explosives received and issued at the store, listing the date and time of receipt and issue and the names of all personnel concerned; and

(d) The Contractor shall submit the records to the Engineer when the Engineer requests.

For other storage requirements, the Contractor shall comply with 9.3 [Storage] of BS 5607.

(2) Transportation of Explosives

For transportation requirements, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 9.4 Transport of Explosives on Site.

(3) Quantity of Explosives at the Blasting site

(a) The quantity of Explosives to be transported from store to the Blasting site shall be suitable for the estimated quantity of consumption for the Basting; and

(b) No extra or surplus Explosives shall be stored at the Blasting site.

~~(c) Explosives not used on the day shall be returned to the Explosives store or a location where they can be stored legally until the following day.~~

(4) Handling of Explosives

(a) Explosives shall be handled with extreme care ensuring that they are not hit, thrown or dropped;

(b) Containers for Explosives shall be solidly constructed from timber or non-conducting material and metals such as iron or foil must not be used on inner surfaces;

(c) Explosive and detonators shall be separately stored in lockable containers;

(d) The containers for Explosives shall protect against water ingress, impact damage; and

(e) Smoking, use of matches, lighters, flames, sparks etc. shall be prohibited in areas where Explosives are being transported, stored and handled, notice boards and warning signs shall be placed in suitable positions.

(5) Records of Blasting and Explosives

(a) The Shotfirer shall prepare daily work records showing the date and time of each Blasting operation, quantity of Explosives received, consumed, misfired and remaining, number of blast holes and loading method for the Blasting, and treatment of misfired Explosives;

(b) The Explosive Engineer shall check and countersign the Blasting work records; and

(c) The Contractor shall submit the records to the Engineer when the Engineer requests.

(6) Notice to the Engineer

The Contractor shall notify the Engineer in writing as follows:

(a) Delivery of Explosives to the store and from the store to the Site, shall each be given to the Engineer by no later than noon on the day preceding the scheduled date of the arrival of Explosives at the store and the delivery to the Site;

(b) Notification of intended Blasting ~~Works~~ works shall be given to the Engineer by no later than noon on the day preceding

について論じている箇所で、BS5607 9.3 に全体として従うことが求められているので、ここからは(c)の記述を削除してもよいと思います。

BS5607 12.8.2 specify about demolition. JSS describes other various cases (excavation, underwater, tunnel, etc.), so it is not sure correct to adopt the description of 12.8.2 to (c).

On the other hand, in BS5607 9 which stipulates general safety measures, 9.3.4 stipulates concretely as follows:

"If more explosives have been issued than are required and the intention is to return them to the licensed store, they should be examined by the shotfirer before return・・・."

It is better to refer to this 9.3.4. As JSSS 7.6.7 (1) regarding Storage of explosive, stipulates that BS 5607 9.3 shall be complied with in overall.

Therefore, item (c) is not necessary. JC deleted.

NK: deleted as commented.

(4) Handling of Explosives

(a) Explosives shall be handled with extreme care ensuring that they are not hit, thrown or dropped;

(b) Containers for Explosives shall be solidly constructed from timber or non-conducting material and metals such as iron or foil must not be used on inner surfaces;

(c) Explosive and detonators shall be separately stored in lockable containers;

(d) The containers for Explosives shall protect against water ingress, impact damage; and

(e) Smoking, use of matches, lighters, flames, sparks etc. shall be prohibited in areas where Explosives are being transported, stored and handled, notice boards and warning signs shall be placed in suitable positions.

(5) Records of Blasting and Explosives

(a) The Shotfirer shall prepare daily work records showing the date and time of each Blasting operation, quantity of Explosives received, consumed, misfired and remaining, number of blast holes and loading method for the Blasting, and treatment of misfired Explosives;

(b) The Explosive Engineer shall check and countersign the Blasting work records; and

(c) The Contractor shall submit the records to the Engineer when the Engineer requests.

(6) Notice to the Engineer

The Contractor shall notify the Engineer in writing as follows:

(a) Delivery of Explosives to the store and from the store to the Site, shall each be given to the Engineer by no later than noon on the day preceding the scheduled date of the arrival of Explosives at the store and the delivery to the Site;

(b) Notification of intended Blasting works shall be given to the Engineer by no later than noon on the day preceding the scheduled date of the Blasting operation; and

(4) Handling of Explosives

(a) Explosives shall be handled with extreme care ensuring that they are not hit, thrown or dropped;

(b) Containers for Explosives shall be solidly constructed from timber or non-conducting material and metals such as iron or foil must not be used on inner surfaces;

(c) Explosive and detonators shall be separately stored in lockable containers;

(d) The containers for Explosives shall protect against water ingress, impact damage; and

(e) Smoking, use of matches, lighters, flames, sparks etc. shall be prohibited in areas where Explosives are being transported, stored and handled, notice boards and warning signs shall be placed in suitable positions.

(5) Records of Blasting and Explosives

(a) The Shotfirer shall prepare daily work records showing the date and time of each Blasting operation, quantity of Explosives received, consumed, misfired and remaining, number of blast holes and ~~loading~~ charging method for the Blasting, and treatment of misfired Explosives;

(b) The Explosive Engineer shall check and countersign the Blasting work records; and

(c) The Contractor shall submit the records to the Engineer when the Engineer requests.

(6) Notice to the Engineer

The Contractor shall notify the Engineer in writing as follows:

(a) Delivery of Explosives to the store and from the store to the Site, shall each be given to the Engineer by no later than noon on the day preceding the scheduled date of the arrival of Explosives at the store and the delivery to the Site;

(b) Notification of intended Blasting works shall be given to the Engineer by no later than noon on the day preceding the

the scheduled date of the Blasting operation; and

(c) Notification of the schedule for the following week's Blasting shall be given to the Engineer by no later than Friday morning of the preceding week.

7.6.8. ~~Test~~ Trial Blasting

The Contractor shall perform ~~test~~ trial Blasting in accordance with the Blasting Safety Plan provided in 7.6.5 [*Blasting Safety Plan*] for the following purposes, and modify the said Safety Plan according to the results of the ~~test~~ trial Blasting:

(1) Confirm the characteristics of rock and topography at the Blasting site that will affect the Blasting operations.

(2) Confirm the suitability of the planned Blasting method, Explosives amount, ~~and~~ scattering prevention and other protection measures.

(3) Confirm the safety of ~~Contractor's Personnel, Employer's Personnel and any other persons, the general public, neighbouring residents and building owners on or adjacent to the Site and who may be affected by the Blasting operations~~ personnel affected by the Blasting works.

(4) Confirm that the vibration value of the Blasting does not exceed the allowable vibration value for existing buildings, structures and other property on or adjacent to the Site and which may be affected by the Blasting operations, as specified in the Contract or instructed by the Engineer.

The Contractor shall submit the trial blasting reports and any changes to the Blasting Safety Plan to the Engineer before proceeding Blasting operation.

7.6.9. Monitoring Impact on Adjacent Buildings and Structures

The Contractor shall monitor the vibrations caused by the Blasting operations to measure the extent of vibration in all affected areas particularly in the position of existing buildings, structures and other property on or adjacent to the Site and which may be affected by the Blasting operations to ensure that no vibration damage or weakening is caused as specified in the Contract or instructed by the Engineer.

For this purpose, the Contractor shall:

(1) Prepare a monitoring plan as a part of the Blasting Safety Plan, which will:

(c) Notification of the schedule for the following week's Blasting shall be given to the Engineer by no later than Friday morning of the preceding week.

7.6.8. Trial Blasting

The Contractor shall perform trial Blasting in accordance with the Blasting Safety Plan provided in 7.6.5 [*Blasting Safety Plan*] for the following purposes, and modify the said Safety Plan according to the results of the trial Blasting:

(1) Confirm the characteristics of rock and topography at the Blasting site that will affect the Blasting operations.

(2) Confirm the suitability of the planned Blasting method, Explosives amount, scattering prevention and other protection measures.

(3) Confirm the safety of personnel affected by the Blasting works.

(4) Confirm that the vibration value of the Blasting does not exceed the allowable vibration value for existing buildings, structures and other property on or adjacent to the Site and which may be affected by the Blasting operations, as specified in the Contract or instructed by the Engineer.

The Contractor shall submit the trial blasting reports and any changes to the Blasting Safety Plan to the Engineer before proceeding Blasting operation.

7.6.9. Monitoring Impact on Adjacent Buildings and Structures

The Contractor shall monitor the vibrations caused by the Blasting operations ~~to measure the extent of vibration~~ in the ~~all~~ affected areas, buildings, structures and properties identified in the Blasting Safety Plan to ~~particularly in the position of existing buildings, structures and other property on or adjacent to the Site and which may be affected by the Blasting operations~~ to ensure that ~~no~~ vibration damage or weakening ~~is~~ caused by the Blasting operations will remain within the allowable values ~~as~~ specified in the Contract or instructed by the Engineer.

JC: Blasting Safety Plan と紐づける等、ここまでの記述の流れを汲んだ記述にしました。"no vibration damage" は表現がきつすぎる。

The sentence is modified so that the description follows the context of JSSS as a whole such as relating with the Blasting Safety Plan. "No vibration damage" is too severe to stipulate. JC modified as above.

NK: modifies.

For this purpose, the Contractor shall:

(1) Prepare a monitoring plan as a part of the Blasting Safety Plan, which will:

JC: 7.6.5 (8)に Environmental monitoring plan という言葉があるがそれと同じならば用語を統一しておくべき。

In 7.6.5.(8), the term "Environment monitoring plan" is used. If "monitoring plan" in (1) above means same as 7.6.5.(8), terms shall be unified.

NK: 同じものを指しているので、environmental monitoring plan に統一します。

scheduled date of the Blasting operation; and

(c) Notification of the schedule for the following week's Blasting shall be given to the Engineer by no later than Friday morning of the preceding week.

7.6.8. Trial Blasting

The Contractor shall perform trial Blasting in accordance with the Blasting Safety Plan provided in 7.6.5 [*Blasting Safety Plan*] for the following purposes, and modify the said Safety Plan according to the results of the trial Blasting:

(1) Confirm the characteristics of rock and topography at the Blasting site that will affect the Blasting operations.

(2) Confirm the suitability of the planned Blasting method, Explosives amount, scattering prevention and other protection measures.

(3) Confirm the safety of personnel affected by the Blasting works.

(4) Confirm that the vibration value of the Blasting does not exceed the allowable vibration value for existing buildings, structures and other property on or adjacent to the Site and which may be affected by the Blasting operations, as specified in the Contract or instructed by the Engineer.

The Contractor shall submit the trial blasting reports and any changes to the Blasting Safety Plan to the Engineer before proceeding Blasting operation.

7.6.9. Monitoring Impact on Adjacent Buildings and Structures

The Contractor shall monitor the vibrations caused by the Blasting operations in the affected areas, buildings, structures and properties identified in the Blasting Safety Plan to ensure that vibration damage or weakening caused by the Blasting operations will remain within the allowable values specified in the Contract or instructed by the Engineer.

For this purpose, the Contractor shall:

(1) Prepare an environmental monitoring plan as a part of the Blasting Safety Plan, which will:

(a) Measure the extent and impact of Blasting vibrations by vibration monitoring system and in terms of peak particle velocity and vibrational amplitude as specified in the Contract or instructed by the Engineer;

(b) Monitor the Blasting methods and equipment, showing the locations, measurement frequency and recording methods;

(c) Plan countermeasures in the instance that the actual measured vibration value is close to or exceeds the allowable vibration value specified in the Contract or instructed by the Engineer; and

(d) Unless otherwise specified in the Contract, perform measurement at each Blasting operation, at the first day and then every subsequent 3 days after the Engineer judges that the vibration value is as planned, then every 7 days, and every 1 month thereafter.

(2) Monitoring and Evaluation

The Contractor shall

(a) Provide and maintain measuring equipment;

(b) Calibrate the measurement equipment before trial Blasting and other Blasting operations;

(c) Carry out measurement at the frequencies described above;

(d) Evaluate the measurement results; and

(e) Submit the evaluation report and if necessary, any changes to the Blasting Safety Plan to the Engineer before the next Blasting operation.

7.6.10. Particular Safety Measures for Blasting Work

(1) Identification of Blasting workers

Provide armbands, uniforms or marked safety helmets to distinguish the explosive engineer, shotfirer(s), Spotters and other workers engaged in Blasting operations from other workers.

As these two terms are the same meaning, modified to use "environment monitoring plan".

(a) Measure the extent and impact of Blasting vibrations by vibration monitoring system and in terms of peak particle velocity and vibrational amplitude as specified in the Contract or instructed by the Engineer and as determined by the Contractor;

JC: 契約に発注者が指定したからといって、被害が生じた時のコントラクターの責は免れないので、記載は両方(発注者も指定するし、コントラクターも必要と考えるもののモニターをする)のがいいと考えます。

Even though the Employer specifies values, the Contractor cannot be avoidable being responsible for damage caused . Therefore, it is better to specify both values by the Employer and Contractor to monitor.

NK: added "and as determined by the Contractor" to (a) and (c).

(b) Monitor the Blasting methods and equipment, showing the locations, measurement frequency and recording methods;

(c) Plan countermeasures in the instance that the actual measured vibration value is close to or exceeds the allowable vibration value specified in the Contract or instructed by the Engineer and as determined by the Contractor; and

(d) Unless otherwise specified in the Contract, perform measurement at each Blasting operation, at the first day and then every subsequent 3 days after the Engineer judges that the vibration value is as planned, then every 7 days, and every 1 month thereafter.

(2) Monitoring and Evaluation

The Contractor shall

(a) Provide and maintain measuring equipment;

(b) Calibrate the measurement equipment before trial Blasting and other Blasting operations;

(c) Carry out measurement at the frequencies described above;

(d) Evaluate the measurement results; and

(e) Submit the evaluation report and if necessary, any changes to the Blasting Safety Plan to the Engineer before the next Blasting operation.

JC: "measurement" should be "monitoring".
NK: Changed to "monitoring" to coincide as right.

7.6.10. Particular Safety Measures for Blasting Work

(1) Identification of Blasting workers

Provide ~~armbands,~~ clear visible identification mark uniforms or marked safety helmets to distinguish the explosive engineer and shotfirer(s), ~~Spotters and other workers~~ engaged in Blasting operations from other workers.

JC: clear visible identification mark とかにすべき。腕章は無い！7.6.4(3)を explosive engineer と shotfirer に限定していることに連動して他は削除。

As there is no armbands, "clear visible identification mark", etc. is to be specified

The personnel for blasting work are limited as explosive engineer and shotfirer in 7.6.4.(3). Other than them are deleted.

(a) ~~Measure~~ Monitor the extent and impact of Blasting vibrations by vibration monitoring system and in terms of peak particle velocity and vibrational amplitude as specified in the Contract or instructed by the Engineer and as determined by the Contractor;

(b) Monitor the Blasting methods and equipment, showing the locations, measurement frequency and recording methods;

(c) Plan countermeasures in the instance that the actual measured vibration value is close to or exceeds the allowable vibration value specified in the Contract or instructed by the Engineer and as determined by the Contractor; and

(d) Unless otherwise specified in the Contract, perform monitoring at each Blasting operation, at the first day and then every subsequent 3 days after the Engineer judges that the vibration value is as planned, then every 7 days, and every 1 month thereafter.

(2) Monitoring and Evaluation

The Contractor shall

(a) Provide and maintain monitoring equipment;

(b) Calibrate the monitoring equipment before trial Blasting and other Blasting operations;

(c) Carry out monitoring at the frequencies described above;

(d) Evaluate the monitoring results; and

(e) Submit the evaluation report and if necessary, any changes to the Blasting Safety Plan to the Engineer before the next Blasting operation.

JC: "measurement" should be "monitoring".

NK: Changed to "monitoring" to coincide as right.

7.6.10. Particular Safety Measures for Blasting Work

(1) Identification of Blasting workers

Provide ~~armbands,~~ clear visible identification mark, uniforms or marked safety helmets to distinguish the explosive engineer and shotfirer(s) ~~Spotters and other workers~~ engaged in Blasting operations from other workers.

(2) Drilling Work

(a) No drilling shall be allowed in the hole formed for previous Blasting; and

(b) If misfired explosive is found during the drilling operation, the drilling shall be stopped and the misfired explosive shall be treated in accordance with the procedures planned in 7.6.5. [*Blasting Safety Plan*] and 7.6.11. [*Measures after Blasting*], (2) [*Treatment of misfired Explosives*].

(3) Explosives Charging

(a) No other activity such as drilling shall be permitted in the vicinity, whilst loading;

(b) Before loading, thoroughly clean the holes and do not leave any dust or debris;

(c) Shock and friction which can cause accidental initiation of the charges such as below shall be avoided;

(d) the over-vigorous use of stemming rods to force explosives into a shot hole;

(e) the use of drill rods or other metal tools in a shot hole containing explosives;

(f) vehicles running over explosives and other hazards involving

NK: "armbands" is changed as commended. Personnel other than explosive engineer and shotfirer are deleted.

(2) Drilling Work

(a) No drilling shall be allowed in the hole formed for previous Blasting; and

(b) If misfired explosive is found during the drilling operation, the drilling shall be stopped and the misfired explosive shall be treated in accordance with the procedures planned in 7.6.5. [*Blasting Safety Plan*] and 7.6.11. [*Measures after Blasting*], (2) [*Treatment of misfired Explosives*].

(3) Explosives Charging

(a) ~~No other activity such as drilling shall be permitted in the vicinity, whilst loading;~~ Drilling operation is not permitted during charging of explosive

JC: Drilling operation is not permitted during charging of explosive.のように簡潔に。Simple expression is to be made such as "Drilling operation is not permitted during charging of explosive".

NK: Modified as commended.

(b) Before ~~loading~~ charging, thoroughly clean the holes and do not leave any dust or debris;

NK: 装填の用語として、OSHA は"1926.905 Loading of explosives"のように"loading"、BS は BS5607 "10.2 Handling and charging of explosives"のように"charging"を使用しています。本節は BS をもとに規定していることから、用語を"charging"に統一します。
The terms of "loading" and "charging" are used in OSHA and BS, respectively. In this Section, "charging" is used as BS is referred to.

(c) ~~Shock and friction which can cause accidental initiation of the charges such as below shall be avoided; Explosive shall be treated gently without giving strong friction or shock.~~ Shock and friction such as the following, which can cause accidental initiation of the charges, shall be avoided;

JC: Simple expression recommended such as "Explosive shall be treated gently without giving strong friction or shock."

JC: (d)以降の記述が乱れています。全体を見直し、場合によっては記述をもう少し簡易にして、そのまま BS に飛ぶ等の工夫をしてください。

Description in (d) to (h) is incorrect. Please review the whole and make the description a little simpler in case, and take measures such as referring to BS.

NK: 以下の(d)から(h)の番号付けが間違っていました。正しくは(i)から(v)でした。そのため、(c)の such as below の文章に意味がなくなっていました。原案を変更し、上記赤字のように変更します。
The following (d) to (h) were incorrectly given numbered. Correct ones are (i) to (v). Therefore, the above (c) is strange sentence as JC commented. NK modified the (c) and revised numbers of following sentences: (iv) is deleted as it is not at time of explosive charging.

~~(d)~~ (i) The over-vigorous use of stemming rods to force explosives into a shot holes;

~~(e)~~ (ii) The use of drill rods or other metal tools in a shot hole containing explosives;

~~(f)~~ (iii) Vehicles running over explosives and other hazards involving impact or concussion;

(2) Drilling Work

(a) No drilling shall be allowed in the hole formed for previous Blasting; and

(b) If misfired explosive is found during the drilling operation, the drilling shall be stopped and the misfired explosive shall be treated in accordance with the procedures planned in 7.6.5. [*Blasting Safety Plan*] and 7.6.11. [*Measures after Blasting*], (2) [*Treatment of misfired Explosives*].

(3) Explosives Charging

(a) Drilling operation is not permitted during charging of explosive;

(b) Before ~~loading~~ charging , thoroughly clean the holes and do not leave any dust or debris;

(c) Shock and friction such as the following, which can cause accidental initiation of the charges, shall be avoided;

(i) The over-vigorous use of stemming rods to force explosives into a shot hole;

(ii) The use of drill rods or other metal tools in a shot hole containing explosives;

impact or concussion;

(g) rock, stone or similar material being projected from the blast, causing an accidental detonation of explosives, so that excess explosives should be removed from the blast site to a place of safety before blasting takes place; and

(h) shock tube detonators being initiated when subjected to “snap, slap and shoot”.

For other safety measures for explosive charging, the Contractor shall take safety measures referring to 10.2 [Handling and charging of explosives] of BS 5607.

(4) Handling Detonators

(a) Measures for Blasting using electric detonators

(i) Make sure electric detonator's leg wires shall be kept short-circuited until they are connected into the circuit for firing;

(ii) Check if ~~the bus wire is~~ shotfiring cables are not cut or damaged, its electrical continuity and short-circuited

(iii) Make sure electric detonators shall be kept away from electric lighting supplies, power supplies and other electrical sources that may cause electric leakage;

(iv) Check if ~~the bus wire is~~ all shotfiring cables are not cut or damaged, and check its electrical continuity.

(v) Check if there are no missing or previous wiring connections or wrong wiring connections.

(vi) Make sure there are no stray electric currents when using electric detonators.

(vii) Do not use electric detonators if there is any danger of electrical interference for example from radio-frequency radiation near radio communication facility, radar, wireless telephone, mobile phones unless otherwise specified in the Contract.

~~(g)~~ (iv) ~~Rock, stone or similar material being projected from the blast, causing an accidental detonation of explosives, so that excess explosives should be removed from the blast site to a place of safety before blasting takes place; and~~

~~(h)~~ (v) Shock tube detonators being initiated when subjected to “snap, slap and shoot”.

For other safety measures for explosive charging, the Contractor shall take safety measures referring to 10.2 [Handling and charging of explosives] of BS 5607.

(4) Handling Detonators

(a) Measures for Blasting using electric detonators

(i) Make sure electric detonator's leg wires shall be kept short-circuited until they are connected into the circuit for firing;

(ii) Check if shotfiring cables are not cut or damaged ~~its electrical continuity and short-circuited~~;

JC: short-circuited の状態であるべきことは(i)で記述があるので削除してもよいと思います。
Status of short-circuit is already mentioned in (i), thus the part should be deleted.
NK: Deleted.

(iii) Make sure electric detonators shall be kept away from electric lighting supplies, power supplies and other electrical sources that may cause electric leakage;

(iv) ~~Check if all shotfiring cables are not cut or damaged, and check its electrical continuity.~~

JC: 上記（ii）と重複 (iv) is a duplication of (ii).
NK: Deleted.

(v) Check if there are no missing or previous wiring connections or wrong wiring connections.

JC: previous wiring connections とは？
What is “previous wiring connections”?

NK: previous wiring connections は、前回の発破の際の電線に結線していないかの意味であるため、”mis-connection with previous blast wires”に変更する。

The phrase “if there are previous wiring connections” means that “if the wire used for previous blasting is left and connected to the wiring this time. It is modified to “ mis-connection with previous blast wires.”

(vi) Make sure there are no stray electric currents ~~when using electric detonators.~~

JC: 最初に電気発破と言っているので不要。

This phrase is not necessary because (a) is for “Measures for Blasting using electric detonators.”
NK: Deleted as commented.

(vii) Do not use electric detonators if there is any danger of electrical interference for example from radio-frequency radiation near radio communication facility, radar. ~~wireless telephone, mobile phones unless otherwise specified in the Contract~~.

(iii) Vehicles running over explosives and other hazards involving impact or concussion; and

(iv) Shock tube detonators being initiated when subjected to “snap, slap and shoot”.

For other safety measures for explosive charging, the Contractor shall take safety measures referring to 10.2 [Handling and charging of explosives] of BS 5607.

(4) Handling Detonators

(a) Measures for Blasting using electric detonators

(i) Make sure electric detonator's leg wires shall be kept short-circuited until they are connected into the circuit for firing;

(ii) Check if shotfiring cables are not cut or damaged;

(iii) Make sure electric detonators shall be kept away from electric lighting supplies, power supplies and other electrical sources that may cause electric leakage;

(iv) Check if there are no missing or wrong wiring connections or mis-connection with previous blast wires.

(v) Make sure there are no stray electric currents ~~when using electric detonators.~~

(vi) Do not use electric detonators if there is any danger of electrical interference for example from radio-frequency radiation near radio communication

(viii) Install a lightning detector near the Blasting area, stop Blasting work when there is a risk of lightning strike, and evacuate workers to a safe place.

For other safety matters for Blasting with electric detonator, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10.4.3 Electric detonators.

(b) Measures for Blasting using non-electric detonators

(i) Do not cut or damage the shock tube.

(ii) Before firing, check the connections visually and make sure that there are no missing or previous wiring connections or wrong wiring connections.

(5) Measures in Ignition

(a) The connection between the shotfiring apparatus and ~~the bus wire~~ shotfiring cable shall be made just before ignition;

(b) Ignition shall be made at a safe place isolated and protected according to the degree of the blast;

(c) The handle shall be removed from the shotfiring apparatus except when igniting; and

(d) The shotfiring apparatus shall be properly stored according to the Safety Plan:

(6) Measures when Blasting near existing buildings and structures

Blasting near existing buildings or structures shall not be carried out unless specified in the Contract or instructed by the Engineer, in which case the Contractor shall comply with the specified or instructed requirements.

7.6.11. Measures after Blasting

JC: 例示のような既設の設備の近辺で電気雷管を使うなという意味ならば、ワイヤレスフォン等は例示不要。

If the purpose of this item is that electric detonators shall not be used in the exemplified circumstances, prohibition of wireless phones etc. is not necessary.

NK: 和文 8.7.8 (4)(a)(iv)/(v)で、無線通信施設、レーダー等の近くでの電気雷管使用禁止(iv)と、影響がないと保証されない限り携帯電話を持ち込まない(v)と別れていたものが合体されてしまっていた。分けて規定する。

7.6.10. Particular Safety Measures for Blasting Work (4) (a) (viii) で Prohibit bringing into the blasting areas any mobile phone unless it is guaranteed that it will not adversely affect the electric detonators.と規定している。そのため、上記のコメントの箇所は削除する。

7.6.10. Particular Safety Measures for Blasting Work (4) (a) (viii) specifies Prohibit bringing into the blasting areas any mobile phone unless it is guaranteed that it will not adversely affect the electric detonators. Delete as commented.

(viii) Install a lightning detector near the Blasting area, stop Blasting work when there is a risk of lightning strike, and evacuate workers to a safe place.

For other safety matters for Blasting with electric detonator, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10.4.3 Electric detonators.

(b) Measures for Blasting using non-electric detonators

(i) Do not cut or damage the shock tube.

(ii) Before firing, check the connections visually and make sure that there are no missing or previous wiring connections or wrong wiring connections.

(5) Measures in Ignition

(a) The connection between the shotfiring apparatus and shotfiring cable shall be made just before ignition;

(b) Ignition shall be made at a safe place isolated and protected according to the degree of the blast;

(c) The handle shall be removed from the shotfiring apparatus except when igniting; and

(d) ~~The shotfiring apparatus shall be properly stored according to the Safety Plan:~~

JC: 定義上 shotfiring apparatus は Explosive に含まれると理解されますので、7.6.7 の Storage でカバーされていると理解し、削除します。

As shotfiring apparatus included in explosives as a matter of definition, it is already covered by 7.6.7. Storage. Deleted.

NK: Deleted as commented.

(6) Measures when Blasting near existing buildings and structures

Blasting near existing buildings or structures shall not be carried out unless specified in the Contract or instructed by the Engineer, ~~in which case the Contractor shall comply with the specified or instructed requirements~~.

JC: specification / instruction に含まれるのでは
Isn't this included in the specification / instruction?

NK: It is deemed natural that requirements are included in the specification/instruction by the Engineer. The underlined part is deleted.

facility, radar. ~~wireless telephone, mobile phones unless otherwise specified in the Contract~~.

(viii) Install a lightning detector near the Blasting area, stop Blasting work when there is a risk of lightning strike, and evacuate workers to a safe place.

For other safety matters for Blasting with electric detonator, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10.4.3 Electric detonators.

(b) Measures for Blasting using non-electric detonators

(i) Do not cut or damage the shock tube.

(ii) Before firing, check the connections visually and make sure that there are no missing or previous wiring connections or wrong wiring connections.

(5) Measures in Ignition

(a) The connection between the shotfiring apparatus and shotfiring cable shall be made just before ignition;

(b) Ignition shall be made at a safe place isolated and protected according to the degree of the blast; and

(c) The handle shall be removed from the shotfiring apparatus except when igniting.

(6) Measures when Blasting near existing buildings and structures

Blasting near existing buildings or structures shall not be carried out unless specified in the Contract or instructed by the Engineer. ~~in which case the Contractor shall comply with the specified or instructed requirements~~.

(1) Confirmation of safety of Blasting area after Blasting

(a) No persons other than the shotfirer shall enter the Blasting site or its vicinity until ~~after~~ the shotfirer has inspected the area and confirmed that it is safe to re-enter; and

(b) The shotfirer shall inspect the area and surrounding area of the Blasting site to check that there is no danger of falling or collapsing of ground and rocks or misfired Explosives.

(2) Treatment of misfired Explosives

If, after ignition, the loaded Explosives did not explode, or if it is difficult to confirm the explosion, the misfired Explosives shall be treated in accordance with the treatment of misfired Explosives in the Blasting Safety Plan, and 10.5 [Misfires] of BS5607 including the following:

(a) Procedure of treatment of misfired Explosives

The following treatment procedure shall be taken:

(i) Immediate remedial action;

(ix) Delayed remedial action;

(x) Further attempt at detonation; and

(xi) Inspection to confirm complete detonation.

7.6.11. Measures after Blasting

(1) Confirmation of safety of Blasting area after Blasting

(a) No persons other than the shotfirer shall enter the Blasting site or its vicinity until the shotfirer has inspected the area and confirmed that it is safe to re-enter; and

(b) The shotfirer shall inspect the area and surrounding area of the Blasting site to check that there is no danger of falling or collapsing of ground and rocks or misfired Explosives.

(2) Treatment of misfired Explosives

If, after ignition, the loaded Explosives did not explode, or if it is difficult to confirm the explosion, the misfired Explosive shall be treated in accordance with the treatment of misfired Explosives in the Blasting Safety Plan, and 10.5 [Misfires] of BS5607 including the following:

JC: Explosive / explosive が混在している。
"Explosive" and "explosive" are both used in this section.

NK: As "Explosive" is a defined word in 7.6.2. Thus, "Explosive" should be used in this section. However, it is questionable if it should be defined at all same as "Blasting". To MD: please review the above.

(a) Procedure of treatment of misfired Explosives

The following treatment procedure of misfires Explosive shall be taken:

(i) Immediate remedial action;

(ii) Delayed remedial action;

(iii) Further attempt at detonation; and

(iv) Inspection to confirm complete detonation.

The details of the above actions are stipulated in succeeding (b) to (d).

JC: この用語が良く分かりません。4 種類あるが、以下の記載は Immediate と Delayed の 2 つ。他の 2 件は何なのか。ここで、不発処理の記載が必要であれば簡潔な内容とすべきと考える。

These four terms in (i) to (iv) cannot be understood well. Provisions are stated below for "immediate action" and "delayed action". What are the other two?

If provisions for treatment of misfire is necessary, it should be of simple contents.

NK: (i) Immediate remedial action は(b)に、(ii) Delayed remedial action 及び(iii)further attempt at detonation は(b)に定している。 (iv) Inspection to confirm complete detonation は、(d)として追加する。

JC の「簡潔な内容」に関しては、前回コメントの「BS 5607 10.5 Misfires を参照して、主要な項目を記述したうえで、BS を順守すべき旨規定してください。具体的には以下のような要素が抜けていると考えます。
・不発の際の処理（re-fire、火薬を取り除く措置など）
・misfire の場合のフローチャートに示される、場合に応じた手順」
に従ったものです。不発発生直後の行動については、この程度の具体的な規定が望ましいと考えます。

(i) Immediate remedial action is specified in (b), (ii) Delayed remedial action and (iii)further attempt at detonation is in (c). (iv) Inspection to confirm complete is added this time.

7.6.11. Measures after Blasting

(1) Confirmation of safety of Blasting area after Blasting

(a) No persons other than the shotfirer shall enter the Blasting site or its vicinity until the shotfirer has inspected the area and confirmed that it is safe to re-enter; and

(b) The shotfirer shall inspect the area and surrounding area of the Blasting site to check that there is no danger of falling or collapsing of ground and rocks or misfired Explosives.

(2) Treatment of misfired Explosives

If, after ignition, the loaded Explosives did not explode, or if it is difficult to confirm the explosion, the misfired Explosive shall be treated in accordance with the treatment of misfired Explosives in the Blasting Safety Plan, and 10.5 [Misfires] of BS5607 including the following:

(a) Procedure of treatment of misfired Explosives

The following treatment procedure of misfires Explosive shall be taken:

(i) Immediate remedial action;

(ii) Delayed remedial action;

(iii) Further attempt at detonation; and

(iv) Inspection to confirm complete detonation.

The details of the above actions are stipulated in succeeding (b) to (d).

(b) Immediate remedial action

The following initial remedial actions shall be taken by the shotfirer:

(i) prohibit anyone other than the shotfirer and other authorized personnel from entering the Blasting site.

(ii) entry to the Blasting site shall only be permitted after the elapsed time from the occurrence of misfire as specified in the Blasting Safety Plan;

(iii) disconnect from the shotfiring apparatus any removable handle or key and the shotfiring cable, and short-circuit or ground the bare wires together;

(iv) when safe to do so, examine the cable and connections for any defects, and remedy any defect so found;

(v) make a further attempt to fire the shot; and

(vi) report to the explosive engineer for further instructions;

(vii) not collect any exposed explosives before further action is taken;

(viii) not allow drilling or any other site work to be carried out in the vicinity of the misfire until the misfire has been remedied, unless this is directly involved in the treatment of the misfire; and

(ix) other actions specified in 10.5.4.1 [Initial actions]in BS5607.

(c) Delayed remedial action and further attempt at detonation

After the immediate remedial action, the delayed remedial action and further attempt at detonation shall be taken in accordance with the Blasting Safety Plan, and 10.5.4.2 [Written instructions], 10.5.4.3 [Attempts to re-fire], 10.5.4.4 [Drilling relieving holes] and 10.5.5 [Drilling relieving holes] in BS5607.

The comment regarding “simple contents” is somewhat different from the following comment previously given by JICA.

“Please stipulate important items referring to BS5607 10.5 Misfire and in addition, specify to follow the requirements of BS. ex. re-firing, remove misfired explosives, procedure shown in flowchart in BS)” (Translation has been partially abbreviated.)

NK thinks that present provisions regarding the immediate remedial actions to take for misfire are concrete ones to be specified.

NK: 右欄にコメントに対応した追記を行いました。
As right, additional sentences are added in right to meet the JC comments.

(b) Immediate remedial action

The following initial ~~remedial~~ actions shall be taken by the shotfirer:

(i) prohibit anyone other than the shotfirer and other authorized personnel from entering the Blasting site.

(ii) entry to the Blasting site shall only be permitted after the elapsed time from the occurrence of misfire as specified in the Blasting Safety Plan;

(iii) disconnect from the shotfiring apparatus any removable handle or key and the shotfiring cable, and short-circuit or ground the bare wires together;

(iv) when safe to do so, examine the cable and connections for any defects, and remedy any defect so found;

(v) make a further attempt to fire the shot; and

(vi) report to the explosive engineer for further instructions;

(vii) not collect any exposed explosives before further action is taken;

(viii) not allow drilling or any other site work to be carried out in the vicinity of the misfire until the misfire has been remedied, unless this is directly involved in the treatment of the misfire; and

(x) other actions specified in 10.5.4.1 [Initial actions]in BS5607.

(c) Delayed remedial action and further attempt at detonation

After the immediate remedial action, the delayed remedial action and further attempt at detonation shall be taken in accordance with the Blasting Safety Plan, and 10.5.4.2 [Written instructions], 10.5.4.3 [Attempts to re-fire], 10.5.4.4 [Drilling relieving holes] and 10.5.5 [Drilling relieving holes] in BS5607.

(b) Immediate remedial action

The following initial ~~remedial~~ actions shall be taken by the shotfirer:

(i) prohibit anyone other than the shotfirer and other authorized personnel from entering the Blasting site.

(ii) entry to the Blasting site shall only be permitted after the elapsed time from the occurrence of misfire as specified in the Blasting Safety Plan;

(iii) disconnect from the shotfiring apparatus any removable handle or key and the shotfiring cable, and short-circuit or ground the bare wires together;

(iv) when safe to do so, examine the cable and connections for any defects, and remedy any defect so found;

(v) make a further attempt to fire the shot; and

(vi) report to the explosive engineer for further instructions;

(vii) not collect any exposed explosives before further action is taken;

(viii) not allow drilling or any other site work to be carried out in the vicinity of the misfire until the misfire has been remedied, unless this is directly involved in the treatment of the misfire; and

(ix) other actions specified in 10.5.4.1 [Initial actions]in BS5607.

After the initial actions, the following initial remedial actions shall be taken by the shotfirer:

(i) when safe to do so, examine the cable and connections for any defects, and remedy any defect so found; and

(iii) make a further attempt to fire the shot.

(c) Delayed remedial action and further attempt at detonation

After the immediate remedial action, when necessary, the delayed remedial action and further attempt at detonation shall be taken.

The delayed remedial action and further attempt at detonation should be safe removal of the stemming to allow re-priming, or drilling and firing relieving holes placed so as to work away the rock surrounding the stemming and charge of the misfired shot holes.

(d) Take appropriate steps to prevent theft of Explosives and detonators or their initiation by an unauthorised person; (e) The Contractor shall notify the Engineer within a week after any misfire event.	(d) Take appropriate steps to prevent theft of Explosives and detonators or their initiation by an unauthorised person; (e) The Contractor shall promptly notify the Engineer ~~within a week after any misfire event~~ of any misfire event and the remedial actions. JC: modified (f) as above.	The action and attempt shall be taken in accordance with the Blasting Safety Plan, and 10.5.4.2 [Written instructions], 10.5.4.3 [Attempts to re-fire], 10.5.4.4 [Drilling relieving holes] and 10.5.5 [Drilling relieving holes] in BS5607. (d) Inspection to confirm complete detonation After further attempt at detonation, inspection shall be made to confirm complete detonation. If any non or partial detonation is found, remedial measures shall be taken according to Figure-1 Procedure to remedy misfires in 10.5.1 [General] in BS 5607. (e) Take appropriate steps to prevent theft of Explosives and detonators or their initiation by an unauthorised person; (f) The Contractor shall promptly notify the Engineer ~~within a week after any misfire event~~ of any misfire event and the remedial actions.

JICA Standard Safety Specification Preparation Study
7 EXCAVATION WORKS　7 土工工事

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JSSS in English for Issue 3 (2020/04/08)	JSSS in English Issue 3（2020/04/28）	JSSS in English Issue 3 Clear Copy（2020/04/28）
7.1 GENERAL	**CHAPTER 7 EXCAVATION WORKS**	**CHAPTER 7 EXCAVATION WORKS**
7.1.1 Scope	**7.1 GENERAL**	**7.1 GENERAL**
7.2 PARTICULAR SAFETY MEASURES FOR EXCAVATION WORKS	7.1.1 Scope	7.1.1 Scope
7.2.1 General	**7.2 PARTICULAR SAFETY MEASURES**	**7.2 PARTICULAR SAFETY MEASURES**
7.2.2 Safety Measures before Commencing Excavation Work	7.2.1 General	7.2.1 General
7.2.3 Safety Measures during Excavation Works	7.2.2 Safety Measures before Commencing Excavation Works	7.2.2 Safety Measures before Commencing Excavation Works
7.3 MANUAL EXCAVATION WORKS	7.2.3 Safety Measures during Excavation Works	7.2.3 Safety Measures during Excavation Works
7.4 MECHANICAL EXCAVATION WORK	**7.3 MANUAL EXCAVATION WORKS**	**7.3 MANUAL EXCAVATION WORKS**
7.5 TRENCH EXCAVATION	7.3.1 General	7.3.1 General
7.5.1 General	**7.4 MANUAL EXCAVATION WORKS**	**7.4 MANUAL EXCAVATION WORKS**
7.5.2 Safety Measures during Trench Excavation	7.4.1 General	7.4.1 General
7.6 EXCAVATION BY BLASTING	**7.5 TRENCHES, PITS AND OTHER TYPES OF STRUCTURAL EXCAVATION**	**7.5 TRENCHES, PITS AND OTHER TYPES OF STRUCTURAL EXCAVATION**
7.6.1 Scope	7.5.1 General	7.5.1 General
7.6.2 Definitions	7.5.2 Safety Measures during Excavation	7.5.2 Safety Measures during Excavation
7.6.3 Compliance Standards	7.5.3 Monitoring Impact of Excavation Works on Other Properties	7.5.3 Monitoring Impact of Excavation Works on Other Properties
7.6.4 Personnel for Blasting Works	**7.6 BLASTING WORKS**	**7.6 BLASTING WORKS**
7.6.5 Blasting Safety Plan	7.6.1 Scope	7.6.1 Scope
7.6.6 Risk prevention of Workers and Neighbouring Residents	7.6.2 General Blasting Requirements	7.6.2 General Blasting Requirements
7.6.7 Handling and Storing of Explosives	7.6.3 Blasting Noise	7.6.3 Blasting Noise
7.6.8 Trial Blasting	7.6.4 Definitions	7.6.4 Definitions
7.6.9 Monitoring Impact on Adjacent Buildings and Structures	7.6.5 Compliance Standards	7.6.5 Compliance Standards
7.6.10 Particular Safety Measures for Blasting Work	7.6.6 Personnel for Blasting Works	7.6.6 Personnel for Blasting Works
7.6.11 Measures after Blasting	7.6.7 Blasting Safety Plan	7.6.7 Blasting Safety Plan
	7.6.8 Risk Prevention of Workers and Neighbouring Residents	7.6.8 Risk Prevention of Workers and Neighbouring Residents
	7.6.9 Handling and Storing of Explosives	7.6.9 Handling and Storing of Explosives
	7.6.10 Trial Blasting	7.6.10 Trial Blasting
	7.6.11 Monitoring Impact of Blasting Works on Other Properties	7.6.11 Monitoring Impact of Blasting Works on Other Properties
	7.6.12 Particular Safety Measures for Blasting Works	7.6.12 Particular Safety Measures for Blasting Works
	7.6.13 Measures after Blasting	7.6.13 Measures after Blasting

7.1 GENERAL 7.1.1 Scope This Chapter specifies the safety requirements for surface excavation work (excluding tunnelling) which shall include excavation of all types and using all methods including manual excavation, machine excavation and excavation by Blasting ~~together with all associated embankment filling, backfilling and Earthwork Support.~~ JC1: Embankment is not necessary to stipulate. Earthwork support, too because it is stipulated in Chapter 4. Reinstate "Trench Excavation". There may be opinions that why only trench excavations must be stipulated, however, based on the fact that there have been so many accidents related with trench excavation, we request to stipulate in JSSS, even there may be duplication with OSHA. NK1: Deleted as commented. Provisions for Trench Excavation will be reinstated in 7.5.	**7 EXCAVATION WORKS** **7.1 GENERAL** 7.1.2 Scope *Please note that this item is reformatted to be consistent with later Chapters.* *The content of each Chapter are now correctly referred to as a heading, i,e, Excavation Works and also Blasting Works, which is a part of Excavation Works.* (1) This Chapter specifies the safety requirements for excavation works which include: (a) Open-cut and all other types of surface excavation; (b) Pits, trenches, basements and all other types of structural excavation; (c) Excavation using all methods such as manual excavation and machine excavation; (d) Excavation by Blasting (hereinafter referred to as "Blasting Works"); *I suggest that the following is left in as it is as embankment filling and backfilling are an intrinsic part of the works in this chapter. If not to be covered by these rules where is it to be covered?* *"Backfilling" has nothing to do with temporary excavations it is to excavation for permanent works whereby the contractor shall backfill working space and voids above foundations etc efficiently as soon as possible to ensure that openings are not left unsafe and open for excessive periods. It is also referred to in the later clause 7.2.1 (6).* (e) All associated embankment filling, backfilling and disposal; and (f) Earthwork Support, and which are hereinafter collectively referred to as "Excavation Works". (2) Excavation in tunnelling is not included. (3) General requirements for example for Contractor's Equipment, Temporary Works and other related works all which apply to the work in this Chapter, are included in other Chapters of JSSS. Additional particular requirements are contained in this Chapter. 7.1.3 ~~Safety Plan and Instructions to Workers~~ ~~(1) Prepare a safety plan describing the safety requirements for Excavation Works and Inform all relevant workers of the content and requirements.~~ ~~(2) Plan the execution of all Excavation Works by using Contractor's Equipment and/or sufficient numbers of workers so that overloading and consequent back injury and other injury is avoided.~~	**7 EXCAVATION WORKS** **7.1 GENERAL** 7.1.1 Scope (1) This Chapter specifies the safety requirements for excavation works which include: (a) Open-cut and all other types of surface excavation; (b) Pits, trenches, basements and all other types of structural excavation; (c) Excavation using all methods such as manual excavation and machine excavation; (d) Excavation by Blasting (hereinafter referred to as "Blasting Works"); (e) All associated embankment filling, backfilling and disposal; and (f) Earthwork Support, and which are hereinafter collectively referred to as "Excavation Works". (2) Excavation in tunnelling is not included. (3) General requirements for example for Contractor's Equipment, Temporary Works and other related works all which apply to the work in this Chapter, are included in other Chapters of JSSS. Additional particular requirements are contained in this Chapter.
7.2 PARTICULAR SAFETY MEASURES FOR EXCAVATION WORKS 7.2.1 General	**7.2 PARTICULAR SAFETY MEASURES** 7.2.1 General (1) The Contractor shall plan all Excavation Works so that they can be	**7.2 PARTICULAR SAFETY MEASURES** 7.2.1 General (1) The Contractor shall plan all Excavation Works so that they can be

(1) The Contractor shall plan all excavation work so that it can be executed in a safe and methodical manner.

(2) Unless otherwise specified in the Contract, the Contractor shall be responsible for choosing manual or machine excavation, selecting types of Contractor's Equipment, types of TW, Earthwork Support, spoil removal, storage and handling, controlling ground and surface water, forming embankments and cuttings and the like, ~~in conformity with GC 4.10. taking account of all the conditions of the Site.~~ taking into account of relevant information provided by the Bidding document and subsequently obtained through the investigation by the Contractor.

JC2: Though this is commented last time, we wanted sentence a little more considered. that I thought a little more. Is the following example sentence too long?

"taking into account of all information given by the Employer in the Bidding document and/or subsequently obtained by it."

NK2: Modified as right.

(3) Unless otherwise specified in the Contract, requirements for sloping sides and benching to sides of excavations shall comply with the technical requirements of OSHA Subpart P—Excavations §1926.652 Requirements for protective systems, (b) only, also dependant on the shape, nature the soil, hydraulic and geological conditions of the Site.

(4) ~~Earthwork Support~~ In accordance with JSSS 7.2 [*Earthwork Support*] the Contractor shall be responsible for preserving the structural integrity of all sides and soffits of excavations and shall provide ~~whatever Earthwork Support may be necessary to achieve this.~~ earthwork support for the excavation of depth ~~exceeds 1.5m in principle unless it is possible to excavate with a slope suitable for the soil condition.~~ exceeding 1.5m unless it is possible to excavate with an adequate and stable slope taking account of the soil condition.

JC1: Please reinstate the provision in 8.2 (3) of Japanese version "In accordance with JSSS 7.2.1[Earth Retaining Work] (2), the earth retaining shall be planned in principle to be provided for the excavation of depth exceeds 1.5m;".

NK1: added (5).

JC2: Term of "adequate and stable" used in GC is used here and modified as right.

executed in a safe and methodical manner.

(2) Unless otherwise specified in the Particular Safety Specification, the Contractor shall be responsible for choosing manual or machine excavation, selecting types of Contractor's Equipment, types of Temporary Works, Earthwork Support, spoil removal, storage and handling, controlling ground and surface water, forming embankments and cuttings and the like, in conformity with GC 4.10.

The following added wording to the above is not recommended:

"taking into account of relevant information provided by the Bidding document and subsequently obtained through the investigation by the Contractor."

The addition appears to have no connection with safety.

"Relevant information" meaning what and to whom?

"Subsequently" meaning what and when?

As "Contractor" is used rather than "Bidder" it follows that subsequently means after the contract has been awarded and therefore, that the Bid is to be based only upon the "relevant information" provided in the Bidding document.

This is not correct and it is a potentially risky change as it transfers the responsibility for describing all site conditions to the Employer via the bidding documents and ignores the Contractor's basic obligations.

The Contractor has a fundamental obligation to satisfy himself of conditions (taking account of cost and time) before he submits his Tender (Bid) and the full and relevant requirements are stated in GC 4.10.

Many claims are founded on interpretation of this clause and I do not recommend any change such as you have suggested, it is actually not necessary and may compromise interpretation of this basic clause.

Although reference is perhaps not vital, this is why I had included reference to GC 4.10 to emphasise that we were not changing the contract but this has been deleted

Also, TW now becomes Temporary Works as I advised in January

(3) Sloping sides and benching to sides of excavations shall comply with the technical requirements of OSHA Subpart P—Excavations §1926.652 Requirements for protective systems, (b) only, dependant on the dimensional constraints of the Site and the nature of the soil, hydraulic and geological conditions.

(4) The Contractor shall be responsible for preserving the structural integrity of all sides and excavations and shall provide whatever Earthwork Support may be necessary to achieve this, in accordance with the requirements of JSSS 6.2 [*Earthwork Support*]

The following added wording (which is any case duplicated with JSSS 6.2 1 (4)) to the above is not recommended:

"earthwork support for the excavation of depth exceeding 1.5m unless it is possible to excavate with an adequate and stable slope taking account of the soil condition"

As already advised I do not recommend any such change or the placing of any restriction on when support shall or shall not be provided, there is no need to do this when it is 100% the Contractor's risk anyway.

It to some extent follows OSHA but is actually not compliant with OSHA.

executed in a safe and methodical manner.

(2) Unless otherwise specified in the Particular Safety Specification, the Contractor shall be responsible for choosing manual or machine excavation, selecting types of Contractor's Equipment, types of Temporary Works, Earthwork Support, spoil removal, storage and handling, controlling ground and surface water, forming embankments and cuttings and the like, in conformity with GC 4.10.

(3) Sloping sides and benching to sides of excavations shall comply with the technical requirements of OSHA Subpart P—Excavations §1926.652 Requirements for protective systems, (b) only, dependent on the dimensional constraints of the Site and the nature of the soil, hydraulic and geological conditions.

(4) The Contractor shall be responsible for preserving the structural integrity of all sides and excavations and shall provide whatever Earthwork Support may be necessary to achieve this, in accordance with the requirements of JSSS 6.2 [*Earthwork Support*]

NK: modified as right.

(5) ~~In accordance with JSSS 1.23 [Emergency Response Plan?], 1.23.2,~~ the Contractor shall. execute excavation under dry condition by providing appropriate drainage to drain surface water and water contained in the ground and spring water at the Site.

JC2: This reference seems to be wrong. 1.23.2 is unnecessary.

NK2: The 1.23.6 (3) in 1.23 [Emergency Response Plan] in Issue 7 specifies drainage, however reader of JSS may be confused as the reader consider what relation of excavation works and emergency is, so deleted this reference as right.

(6) The Contractor shall execute all Excavation Works and associated filling, backfilling and support work ~~without causing any damage to or weakening of surrounding subsurface conditions or ground bearing capability, any existing foundations, structures, buildings, roads, paved areas or the like, either on or adjacent to the Site and unless otherwise specified as specified in the Contract (see Annex 1.3 Particular Safety Specification),~~ so that the criteria of allowable values specified in the Contract (see the Particular Safety Specification) or instructed by the Engineer to avoid adverse effects to surrounding areas and buildings, including existing foundations, structures, roads, paved areas or the like, by excavation are to be respected. In this regard, the Contractor shall take all necessary measures to prevent the occurrence of such ~~damage or weakening~~ by designing and providing permanent or temporary supports and reinforcement to such foundations, structures, buildings, roads or paved and obtain the prior consent of the Engineer before commencing Excavation Works.

JC1: The provision of 8.2 (5) of Japanese version mentions "as stipulated separately in the Contract". The nuance of English version is completely different. Please modify it as the Employer determines the requirement.

NK1: is modified as (6).

JC2: The sentence of "any" is too strict.

NK2: modified as above.

NK1: added (7) to specify the Japanese 8. 2 (6)

(7) If loose rocks, standing trees, etc. existing outside the Site above the excavation area in the Site may pose a danger to workers or construction equipment, take the following measures unless otherwise specified in the Contract;

NK2: Added outside and inside to make clear the rocks, etc. are not in the Site. This issue was argued by JICA at the beginning of preparation. It can be actually handled by Variation, however it is left as JICA wants.

(a) Consult with the Engineer about measures such as removal of loose rocks, installation of rockfall protection fences, etc.; and

(b) ~~Based on the consultation with the Engineer, propose safety measures including construction methods to the Engineer and~~ take actions in accordance with the Engineer's instruction.

JC2: There are two different elements in item (b). We propose to re-sort the contents as follows.
(a) removal of loose rocks ~ ~ ~

I had previously advised as follows:

Problem is that OSHA appears to restrict to a 1.51 m minimum depth, unless "examination of the ground by a competent person provides no indication of a potential cave-in." There is no definition of "competent person" nor do we suggest that it is necessary.

We also recommend that no such minimum should be stated and that the Contractor shall be responsible no matter what the depth, no such minimum is stated in JSSS 7.2.

I have now included the "Competent Person" in the definition of operation leader in Annex 1.1, but I still do not feel comfortable that such a loosely defined minimum be applied in a standard specification.

There may be a risk of accident and injury to workers due to collapse of sides e.g. the effect of the load and vibration from road traffic on trenches and pits in roads which are less than 1.5 metres deep, and also an effect on adjacent buildings, structures or Contractors Equipment. If not foreseen by the "competent person" this then creates a problem for the HSO.

I also note that later, examples of Earthwork Support measures have been added for sides less than 1.5 m deep so I suggest that this threshold is no longer required.

Further to the above however, I suggest that there should be no mention in this Chapter 7 of requirements for earthwork support as this is duplication of the common requirements in Section 6.2 and which will inevitably create ambiguity and confusion.

I have therefore deleted all reference to the 1.5 m threshold in Chapter 7 and sloping/benched sides and dealt with this entirely in Section 6.2.

~~(5) The Contractor shall execute excavation under dry condition by providing appropriate drainage to drain surface water and water contained in the ground and spring water at the Site.~~

I had deleted the above clause in the draft giving the following reason:

It is not only drainage that must be provided, the Contractor shall design and provide everything necessary. In any event this is already mentioned in JSSS 1.26.2 in a more comprehensive manner and need not be repeated more simplistically here.

I have edited the following clauses to make the wording consistent with the Contract and with JSSS 6.1 3 and 6.2.

(6) The Contractor shall execute all Excavation Works and associated filling, backfilling and Earthwork Support without weakening any ground or causing any damage to any buildings, structures and other properties, paved areas, roads, footpaths, fences, railways, waterways, drainage, utilities or any other property on the Site or outside the Site (collectively referred to in this Chapter as "other properties").

The Contractor shall also ensure the safety of all persons, whilst they are working in, under or adjacent to any excavation on or outside the Site.

The Contractor shall take all necessary measures to prevent the occurrence of any such weakening or damage by other properties and obtain the prior consent of the Engineer to such measures

(5) The Contractor shall execute all Excavation Works and associated filling, backfilling and Earthwork Support without weakening any ground or causing any damage to any buildings, structures and other properties, paved areas, roads, footpaths, fences, railways, waterways, drainage, utilities or any other property on the Site or outside the Site (collectively referred to in this Chapter as "other properties").

The Contractor shall also ensure the safety of all persons, whilst they are working in, under or adjacent to any excavation on or outside the Site.

The Contractor shall take all necessary measures to prevent the occurrence of any such weakening or damage by other properties

(b) take safety measures including change to the construction method
(c) requesting the Engineer to issue a variation???

NK2: For the danger against loose rocks, etc. located outside the Site, the Contractor shall take measures as instructed by the Engineer. It is doubtful to mention about variation.

NK2: modified as above.

7.2.2 Safety Measures before Commencing Excavation Works

(1) The ~~HSO~~ Contractor shall inspect the excavation work area and surrounding areas before starting work each day and after adverse climatic conditions or ~~earthquake to ensure that there are: the following items meet the criteria of allowable values and counter measures determined by the Contractor and given in the Contract (see the Particular Safety Specification) to avoid adverse effects to surrounding areas and buildings by excavation~~: mentioned in JSSS: 2.7 [ADVERSE WEATHER REQUIREMENTS]. The inspection shall include the following areas and items:

JC1: The HSO take all responsibility for safety. The HSO's duty is to review and check whether the safety activities are taken at the site by the Site staff in charge of construction (the Contractor) in accordance with the Safety Plan and manage safety at the Site.

From this concept, "The HSO shall inspect work area before starting work…" is to be revised to "The Contractor shall …"

NK1: Revised as commented here and also other clauses.

JC1: The premise is that the allowable effect and countermeasures shall be given by the Employer for surrounding areas outside of excavation. The provision shall be made on the premise.

NK1: The clause is modified as above.

JC2: This clause stipulates to check the area before starting the work every day and after earthquake, etc. It is not necessary to mention about allowable values. ("allowable value" is used in 7. (6) as it has high affinity.)

NK2: JC deleted the relevant part as above.

JC2: "adverse climatic conditions"は"strong rain fall"ぐらいでいいのでは(異常時だけではないので)
Isn't it enough with "strong rain fall" instead of "adverse climatic conditions"?

NK2: JSSS 2.7 mentions measures for heavy rain, strong wind and storms, heavy snow and ice, lightning, earthquake and tsunami as adverse weather, and 2.7.7 specifies Inspection of Temporary Works after Adverse Weather and Earthquake.
NK added the to refer to 2.7 as right.

(a) ~~No~~ potentially unsafe areas where there may be any risk of Landslide;

(b) ~~No~~ loose rock or boulders which may be at risk of falling;

(c) ~~No~~ cracks in the excavation work area and the surrounding area;

(d) ~~No~~ changes in ground water level, surface or any spring water; and

(e) ~~No~~ deleterious effect due to freezing conditions.

JC1: The expression "No something" is excessive. Those (for example no cracks, no change of water level) make works impossible to perform.

NK1: The conditions are changed to relate to the criteria (in (1) above) given in the Contract as above.

before commencing relevant parts of the Excavation Works.

The original text of the above clause has been suggested to be revised by JICA/NK as follows:

The Contractor shall execute all Excavation Works and associated filling, backfilling and support work so that the criteria of allowable values specified in the Contract (see the Particular Safety Specification) or instructed by the Engineer to avoid adverse effects to surrounding areas and buildings, including existing foundations, structures, roads, paved areas or the like, by excavation are to be respected. In this regard, the Contractor shall take all necessary measures to prevent the occurrence of such adverse effects by designing and providing permanent or temporary supports and reinforcement before commencing Excavation Works.

I do not recommend that the above change be made for the following reasons:

The essential basis of the Contract (and the rule of Law in most countries) is that the Works shall be executed by the Contractor without causing any damage at all to neighbouring properties.

If any damage is caused then the Employer is open to claim for repairing such damage from adjacent owners and for which the contractor should be liable subject to the requirements of the contract.

FIDIC GC 17.1 (b) applies.

Insurance may also be compromised if not handled properly under GC 18.3.(d) (ii).

The added text to this clause is not necessary, it confuses any meaning and implies that there is some flexibility i.e. that some damage or "adverse effect" is acceptable if it falls within "allowable values" when as a common basis this is not correct.

If anything, it would be better to state as originally drafted namely as a common default the Contractor shall cause NO damage to surrounding areas and buildings, etc. etc.. when performing the Works, as this is the usual legal and contractual obligation of the Contractor.,

I recommend that the default situation should be that the Contractor is instructed as a general rule via JSSS to set up and manage monitoring to ensure his compliance (i.e. that damage does not occur), This is in principle as the earlier draft of JSSS.

This will require further development of the contractor's monitoring requirements and I have drafted a new clause 7.5.3 to deal with this.

In any exceptional rare case for example on large projects in congested areas and where damage is likely and unavoidable then the Employer should already have consulted and agreed with the owners and residents that the Works can be executed in a manner that may cause some damage and has agreed that compensation will be paid for such damage in accordance with a scale of damage. However, I suggest that this should not be a norm or a usual situation and that JSSS or the User Guide should not imply that this is a common option and I suggest that it should be the exception rather than the norm. otherwise it will be misunderstood by some Executing Agencies that such damage may be allowable when actually it is isn't.

During our January 2020 discussion, I said I would research this further and requested JICA to provide examples of the reference documentation for the Hong Kong MTR.

and obtain the prior consent of the Engineer to such measures before commencing relevant parts of the Excavation Works.

(2) As a consequence of such inspections the HSO may prohibit the continuation of any affected work, take necessary corrective measures and make any necessary amendment to the Safety Plan and instruct all Contractor's Personnel of any revised safety measures before work is allowed to commence and continue in order to ensure their continued safety.

MM: as mentioned MM 3.(1) mentioned in the first line above.

NK1: added requirements in Japanese JSSS as (3) to (7) below.

(3) Install facilities such as stairs and ramps as means of access or egress from the excavation site in accordance with JSSS 7.4.2 [Setting of Passage];

(4) Provide support or protection for the underground services appropriately in accordance with 3.1 [Existing Underground and Overhead Services], and take measures, according to the situation, such as indicating clearly the location and precautions of the underground service and providing protective fences for the services;

IJC2: t is hard to understand what this clause provides. Is it for protection against falling?

NK2: The Japanese draft is mentioning about protection for the underground services. Add a phrase "for the services" at the end of the sentence.

(5) Prevent workers and construction equipment/transport vehicles from their falling at the excavation site, in accordance with JSSS 2.3 [Prohibition of Entry], install entry prevention facilities (fences, temporary enclosures, etc.), warning flags, and signs, etc.;

JC2: Do the entry prevention facilities mean fall protection or entry control?

NK2: "entry prevention facilities" means entry control facility to prevent those from their falling at the site.

(6) ~~Take the following measures when there is a risk of danger to third parties, workers, construction equipment, etc. by the fall of excavated soil/rock at the lower parts (bottom) of the excavation site~~;

Take the following measures at the lower parts (bottom) of the excavation site when there is a risk of danger to third parties and workers, or damage to construction equipment, etc. by the fall of excavated soil/rock;

JC2: "Danger to construction equipment" sounds strange. Are persons and equipment treated same in this meaning?

NK2: "Damage to equipment" may be more suitable. Modified as above.

JC2: I wonder which is correct "at" or "into".

NK2: We modify as follows: "measures shall be provided at the lower part" as Take the following measures at the lower parts (bottom) of the excavation site; when there is a risk of …

(a) Identify dangerous locations, install entry prevention facilities such as fences, temporary enclosures, warning signs, etc. in accordance with JSSS 2.3 [Prohibition of Entry]; and

(b) Install protective fences that can catch falling rocks, etc.

JC2: Am I the only one who feels a sense of discomfort to (b) catch falling rocks?

NK2: English-English dictionary and internet show as follows:
Receive means: to get or be given something: (e.g. E-mail)

I have briefly studied the information provided by JICA and consequently believe that this may have been wrongly interpreted. In reviewing I feel it is important to note that:

1) Damage is the responsibility of the Contractor and the Engineer has no authority to determine what damage is acceptable or not.

2) The Engineer is not part of the relationship between Site owner and adjacent owners and if any damage is caused to neighbouring property, the Engineer's opinion is not relevant, adjacent owners usually have a basic right of claim against the Employer.

JICA appear to consider that some damage to adjacent buildings, structures, railway, roads, footpaths slopes and utilities etc., is "allowable" within certain specified limits but I feel that this is not correct and not supportable under the HK MTR information provided.

It is apparent that:

1) No damage or deformation to buildings, paving and services, etc. is allowable

2) If any damage is caused, the Contractor shall stop the Works and shall then be responsible for proposing and implementing remedial measures.

I consider that monitoring of any movement is not for the purpose of judging whether damage is reasonable or not but is to predict whether any damage is likely to occur, in which case, it then in total becomes the contractor's responsibility to remedy.

Please note also that in the sample provided for the Hong Kong MTR, whilst sample monitoring ranges are provided, Clause 2.19 (3) on page 2/10, makes clear that this is for information only and that in any event, the Contractor must meet his obligations under the Contract:

"the Contractor shall satisfy himself that the specified criteria is adequate to fulfil his contractual obligations and shall take any additional measures necessary to avoid damage to property."

Pages 40 and 42 are missing from the provided copy of the HK MTR Conditions of Contract, therefore I cannot complete my review of the Contractor's obligations for care of the Works under Clause 22 of the Contract.

I do not in any event recommend the concept of the Employer or Engineer establishing measurement criteria as a general rule for predicting damage, as it is difficult to do and if wrong it could affect liability of the Employer and Engineer and even JICA if they are called upon to fund it.

This can be complex legal and contractual territory that I recommend should not be dealt with by JSSS as if it were a simple and common issue.

FIDIC GC 17.1 (b) applies and I suggest that it should not be compromised by the suggested addition to this clause.

(7) If loose rocks, standing trees, etc. existing ~~outside the Site~~ above the excavation area ~~in the Site~~ may pose a danger to workers or construction equipment, take the following measures unless otherwise specified in the Contract;

(a) Consult with the Engineer about measures such as removal of loose rocks, installation of rockfall protection fences, etc.; and

(b) ~~Based on the consultation with the Engineer, propose safety measures including construction methods to the Engineer~~

(6) If loose rocks, standing trees, etc. existing above the excavation area may pose a danger to workers or construction equipment, take the following measures unless otherwise specified in the Contract;

(a) Consult with the Engineer about measures such as removal of loose rocks, installation of rockfall protection fences, etc.; and

(b) Take actions in accordance with the Engineer's instruction.

Catch means: to take hold of something, especially something that is moving through the air: (e.g. ball)
Internet figures for catch falling rocks show falling rock fences.
We leave "catch" as it is.

(7) Risk prevention measures against falling rocks

(a) To protect workers from the dangers of falling of loose rocks and s

(b) and protective net beforehand, and prohibiting workers from entering in the excavation site until the safety of the workers is confirmed.

JC2: Is it appropriate to provide earth retaining and protective net beforehand and to prohibit workers to enter into the excavation area?

NK2: It is appropriate to take preventive measures against possibility of falling rocks. However, the present clause can be read that no worker shall enter the site. Change the sentence that workers are prohibited to enter until safety is confirmed as right.

7.2.3 Safety Measures during Excavation Works

During the Excavation Works, the Contractor shall:

(1) Not place excavated spoil, filling or Contractor's Equipment near the vertical edge of excavated surfaces.

(2) Stop the excavation work where ground collapse is possible during excavation, evacuate all Contractor's Personnel, implement all necessary safety measures, prohibit Contractor's Personnel from recommencing work until all safety measures have been taken.

(3) ~~Backfill and compact excavated areas that require such backfill as soon as possible after the Permanent Work is completed.~~ Backfill the temporary excavation area as immediately as possible after the relevant work is completed.

JC2: (3) has become unable to understand.

NK2: The Japanese draft was that for temporary excavation, it is required to backfill immediately after the work is completed. Modified.

(4) For places where open excavation work is performed, maintain the necessary illuminance to perform the work safely.

~~and~~ Take actions in accordance with the Engineer's instruction.

The above is difficult to understand, conditions outside the Site are not usually within the Scope of a Contract.

If such hazards exist and were apparent at or before Tender stage, then the neighbour is usually legally obliged to remove the risk at his own cost and should be requested to do so.

If the risk is created by the execution of the Permanent Works then this can mean that the Contractor has created the risk by his methods and it should be a part of the contractor's scope responsibility anyway.

Rather than concentrating upon the manner in which this is dealt with contractually, I suggest that JSSS should concentrate on safety i,e. by the HSO removing the risk and taking appropriate measures immediately.

I suggest as follows:

(8) If loose rock, boulders, trees and the like, are positioned above working areas and where there is any risk that these may pose a danger to workers, unless otherwise instructed by the Engineer, the HSO shall prohibit workers from entering the working areas and issue appropriate instructions including for example to:

(a) Provide protective overhead safety barriers or safety nets;

(b) Carefully remove loose rocks;

(c) Provide (or improve existing) Earthwork Support to unstable areas;

7.2.2 Safety Measures before Commencing Excavation Works

(1) The HSO shall inspect the Excavation Works area and surrounding areas before starting work each day and after adverse climatic conditions or earthquake as described in JSSS: 2.7 [*Adverse Weather Requirements*]. The inspection shall include the following areas and items:

In your draft for the above, "HSO" has been changed to "Contractor" which for reasons explained is not correct. I recommend that wherever an inspection is required for safety purposes it should state HSO as he is responsible. In practice he may delegate this internally e.g. to an operation leader but that is his choice.

(a) Potentially unsafe areas where there may be any risk of landslide;

(b) Loose rock or boulders which may be at risk of falling;

(c) Cracks in the Excavation Works area and the surrounding area;

(d) Changes in ground water level, surface or any spring water; and

(e) Deleterious effect due to freezing conditions.

(2) As a consequence of such inspections the HSO may prohibit the continuation of any affected work, take necessary corrective measures and make any necessary amendment to the Safety Plan and instruct all Contractor's Personnel of any revised safety measures before work is allowed to commence and continue in order to ensure their continued safety.

(7) If loose rock, boulders, trees and the like, are positioned above working areas and where there is any risk that these may pose a danger to workers, unless otherwise instructed by the Engineer, the HSO shall prohibit workers from entering the working areas and issue appropriate instructions including for example to:

(a) Provide protective overhead safety barriers or safety nets;

(b) Carefully remove loose rocks;

(c) Provide (or improve existing) Earthwork Support to unstable areas;

7.2.2 Safety Measures before Commencing Excavation Works

(1) The HSO shall inspect the Excavation Works area and surrounding areas before starting work each day and after adverse climatic conditions or earthquake as described in JSSS: 2.7 [*Adverse Weather Requirements*]. The inspection shall include the following areas and items:

(a) Potentially unsafe areas where there may be any risk of landslide;

(b) Loose rock or boulders which may be at risk of falling;

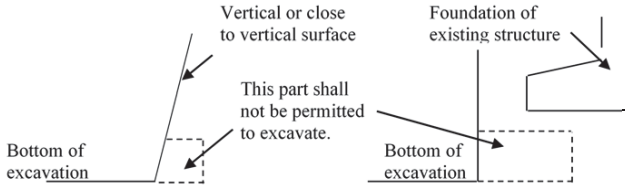
(c) Cracks in the Excavation Works area and the surrounding area;

(d) Changes in ground water level, surface or any spring water; and

(e) Deleterious effect due to freezing conditions.

(2) As a consequence of such inspections the HSO may prohibit the continuation of any affected work, take necessary corrective measures and make any necessary amendment to the Safety Plan and instruct all Contractor's Personnel of any revised safety measures before work is allowed to commence and continue in order to ensure their continued safety.

	(3) Install facilities such as stairs and ramps as means of access or egress from the excavation site in accordance with JSSS 6.4.4 [*Vertical Access*] ~~7.4.2 [Setting of Passage];~~	(3) Install facilities such as stairs and ramps as means of access or egress from the excavation site in accordance with JSSS 6.4.4 [*Vertical Access*];
	Please note that I have added a new subclause in JSSS Section 6.4 Vertical Access, covering steps, stairs and ramps	
	(4) Provide support or protection for the underground services appropriately in accordance with JSSS Chapter 3 [*Existing Underground, Concealed and Overhead Services*], and take measures, according to the situation, such as indicating clearly the location and precautions of the underground service and providing protective fences for the services.	(4) Provide support or protection for the underground services appropriately in accordance with JSSS Chapter 3 [*Existing Underground, Concealed and Overhead Services*], and take measures, according to the situation, such as indicating clearly the location and precautions of the underground service and providing protective fences for the services.
	(5) Prevent workers and construction equipment/transport vehicles from their falling at the excavation site, in accordance with JSSS 2.3 [*Prohibition of Entry-Dangerous Work*], install entry prevention facilities (fences, temporary enclosures, etc.), warning flags, and signs, etc..	(5) Prevent workers and construction equipment/transport vehicles from their falling at the excavation site, in accordance with JSSS 2.3 [*Prohibition of Entry-Dangerous Work*], install entry prevention facilities (fences, temporary enclosures, etc.), warning flags, and signs, etc.
	I suggest that the following are not now necessary as they are already covered by 7.2.1 (8)	
	~~(6) Take the following measures at the lower parts (bottom) of the excavation site when there is a risk of danger to third parties and workers, or damage to construction equipment, etc. by the fall of excavated soil/rock:~~	
	~~(a) Identify dangerous locations, install entry prevention facilities such as fences, temporary enclosures, warning signs, etc. in accordance with JSSS 2.3 [*Prohibition of Entry-Dangerous Work*]; and~~	
	~~(b) Install protective fences that catch falling rocks, etc.~~	
	I suggest that the following are not now necessary as they are already covered by 7.2.1 (8)	
	~~(7) Risk prevention measures against falling rocks~~	
	~~(a) To protect workers from the dangers of falling of loose rocks and soils from the excavated surface, remove the loose rocks, etc. and take appropriate protective measures; and~~	
	~~(b) When there is a risk of falling of loose rocks/soils due to the excavation, take measures such as provision of earth retaining and protective net beforehand, and prohibiting workers from entering in the excavation site until the safety of the workers is confirmed.~~	
	7.2.3 Safety Measures during Excavation Works	7.2.3 Safety Measures during Excavation Works
	During the Excavation Works, the Contractor shall:	During the Excavation Works, the Contractor shall:
	(1) Not place excavated spoil, filling or Contractor's Equipment near the vertical edge of excavated surfaces.	(1) Not place excavated spoil, filling or Contractor's Equipment near the vertical edge of excavated surfaces.
	(2) Stop the Excavation Works where ground collapse is possible during excavation, evacuate all Contractor's Personnel, implement all necessary safety measures, prohibit Contractor's Personnel from recommencing work until all safety measures have been taken.	(2) Stop the Excavation Works where ground collapse is possible during excavation, evacuate all Contractor's Personnel, implement all necessary safety measures, prohibit Contractor's Personnel from recommencing work until all safety measures have been taken.
	(3) Backfill any temporary excavation area as soon as possible after the relevant work is completed.	(3) Backfill any temporary excavation area as soon as possible after the relevant work is completed.

	The original clause had nothing to do with temporary excavations it is to excavation for permanent works whereby the contractor shall backfill working space and above foundations etc. efficiently as soon as possible to ensure that openings are not left open and unsafe for excessive periods. *I recommend that the original clause goes in.* (4) Backfill and compact excavated areas that require such backfill as soon as possible after the Permanent Works are completed. (5) For places where open Excavation Works are performed, maintain the necessary illuminance to perform the work safely.	(4) Backfill and compact excavated areas that require such backfill as soon as possible after the Permanent Works are completed. (5) For places where open Excavation Works are performed, maintain the necessary illuminance to perform the work safely.
7.3 MANUAL EXCAVATION WORKS 7.3.1 ~~General~~ During manual excavation works, the Contractor shall: (1) ~~Not permit any excavation without providing Earthwork Support to all vertical surfaces.~~ Not permit any excavation of depth exceeds 1.5m ~~in principle~~ without providing Earthwork Support to all vertical surfaces as specified in JSSS 7.2.1 [General] (4). JC2: deleted "in principle" (2) Not permit excavation of the excavated surface/ground that stands vertically or close to the vertical, and excavation of the ground under the foundation of existing structures. JC: modified as right. NK: JC requests MD to check and modify the expression of this clause after understanding the situation shown below.  (3) Maintain sufficient distance between workers. (4) When breaking or removing loose rock, pay attention to the stability of the rock and the direction of its fall. (5) When using a lever for removing rock, select equipment that has appropriate length and strength for the work. JC1: (a) This expression is excessive because it means that earth retaining is required regardless of the depth. 1) (b) Originally, the Japanese version intended to prohibit to excavate under the existing foundation etc. NK1: For (a), the clause is modified as right. For (b), a new clause (2) is added from 8.4.1 (1) of Japanese version. MM: 3. (1) Addition of 7.4 MECHANICAL EXCAVATION WORK to specify requirements in Japanese JSSS as 7.4 below.	**7.3. MANUAL EXCAVATION WORKS** 7.3.1 General During manual Excavation Works, the Contractor shall: ~~(1) Not permit any excavation without providing Earthwork Support unless otherwise permitted by the HSO in accordance with JSSS 6.2 [*Earthwork Support*].~~ *The following added wording to the above is not recommended:* "depth exceeds 1.5m without providing Earthwork Support to all vertical surfaces as specified in 7.2.1 [General] (4). " *See above and previous notes, I do not recommend that the draft be changed in this way.* ***Please refer to my earlier notes; I do not recommend any reference here to the 1.5 m threshold and recommend that this is dealt with entirely in Section 6.2.*** ***The original text of this clause (as edited above) has been transferred to 7.1 as a general item.*** ~~(2) Not permit excavation of the vertical surface of the excavated area, or excavation of the ground under the foundation of existing structure~~ *Above is edited as follows:* (3) Not undermine any excavation under and beyond the vertical face. (4) Not excavate under existing foundations (5) Maintain sufficient distance between workers. (6) When breaking or removing loose rock, pay attention to the stability of the rock and the direction of its fall. (7) When using a lever for removing rock, select equipment that has appropriate length and strength for the work. *The following clause has been added in the JICA draft:* *All of the content (and more) is already included in Chapter 4 [Contractor's Equipment], it is not necessary to duplicate it here. Please confirm which is to be deleted, here or Chapter 4?*	**7.3. MANUAL EXCAVATION WORKS** 7.3.1 General During manual Excavation Works, the Contractor shall: (1) Not undermine any excavation under and beyond the vertical face. (2) Not excavate under existing foundations (3) Maintain sufficient distance between workers. (4) When breaking or removing loose rock, pay attention to the stability of the rock and the direction of its fall. (5) When using a lever for removing rock, select equipment that has appropriate length and strength for the work.
7.4 MECHANICAL EXCAVATION WORK	**7.4 MECHANICAL EXCAVATION WORK**	**7.4 MECHANICAL EXCAVATION WORK**

The Contractor shall take the following measures for the safety of operators of excavating equipment (hereinafter referred to as "equipment") and workers engaged in the mechanical excavation works with the equipment:

(1) In accordance with JSSS 2.3 [Prohibition of Entry], prohibit workers from entering the places where workers are in danger due to the mechanical excavation works by placing notices of "No Entry" at easy-to-see locations, installing entry prevention facilities (fences, temporary enclosures, etc.) and placing Spotters.

(2) Take the safety measures prescribed in JSSS 4.2.3 [Safety Measures in Operation], 4.2.4 [Restriction to Operate Construction Equipment for Other Use] and (3) to (4) below.

(3) ~~The operators shall operate the equipment following the following rules:~~ Ensure that the operators shall:

JC2: Modified.

(a) Operate the equipment with paying attention always to the position of workers near the working range;

(b) When moving the equipment backward, make sure that there are no workers behind and follow the instructions of the Spotters;

(c) After the work, ~~do~~ not park the equipment on the slope where excavation is in progress or on the ground that has a possibility to collapse.

(d) Make sure that the bucket of equipment shall not pass over the operator's seat of another equipment.

(4) Ensure that workers shall: ~~Workers shall work follow the following rules.~~

(a) Not enter under the bucket of equipment that is loading materials; and

(b) Keep away from dump trucks under loading or unloading materials.

MM 3. (1) addition of 7.5 TRENCH EXCAVATION to specify requirements in Japanese JSSS is added as 7.5 below.

7.5 TRENCH EXCAVATION

7.5.1 General

The Contractor shall take the following measures to prevent danger to workers due to the collapse of the excavation surface during trench excavation.

Trench excavation means excavation performed for laying gas pipes and water /sewage pipes, etc. which depth is larger than its width. In general, excavation width is less than 4.6m (15feet).

7.4.1 General

The Contractor shall take the following measures for the safety of operators of excavating equipment (hereinafter referred to as "equipment") and workers engaged in the mechanical Excavation Works with the equipment:

(1) In accordance with JSSS 2.3 [*Prohibition of Entry-Dangerous Work*], prohibit workers from entering the places where workers are in danger due to the mechanical Excavation Works by placing notices of "No Entry" at easy-to-see locations, installing entry prevention facilities (fences, temporary enclosures, etc.) and placing Spotters.

As noted in the original draft, it is not good practice and there is no need to include such general cross reference to other sections. The referenced sections and chapters are of general application anyway.

Please refer to JSSS 1.4.9 (2) which explains this.

(2) Take the safety measures prescribed in JSSS Chapter 4 [*Contractor's Equipment*]

Cross reference is not necessary and references have changed.

(3) Ensure that the operators shall:

(a) Operate the equipment always paying careful attention to the position of workers near the working range;

(b) When moving the equipment backward, make sure that there are no workers behind and follow the instructions of the Spotters;

(c) After the work, not park the equipment on the slope where excavation is in progress or on the ground that has a possibility to collapse; and

(d) Make sure that the bucket of equipment shall not pass over the operator's seat of other equipment.

(4) Ensure that workers shall:

(a) Not enter under the bucket of equipment that is loading materials; and

(b) Keep away from dump trucks under loading or unloading materials.

The above and more is already included in Chapter 4 [Contractor's Equipment], why is it necessary to duplicate some of it here? I suggest that it is not necessary here.

7.5 TRENCHES, PITS AND OTHER TYPES OF STRUCTURAL EXCAVATION

In English international construction usage, "Trench excavation" is a classification of only one type of Excavation but there are many other accepted types which commonly include for example:

Pit excavation,

Basement excavation,

Excavation for deep piling

7.4.1 General

The Contractor shall take the following measures for the safety of operators of excavating equipment (hereinafter referred to as "equipment") and workers engaged in the mechanical Excavation Works with the equipment:

(1) In accordance with JSSS 2.3 [*Prohibition of Entry-Dangerous Work*], prohibit workers from entering the places where workers are in danger due to the mechanical Excavation Works by placing notices of "No Entry" at easy-to-see locations, installing entry prevention facilities (fences, temporary enclosures, etc.) and placing Spotters.

(2) Take the safety measures prescribed in JSSS Chapter 4 [*Contractor's Equipment*]

(3) Ensure that the operators shall:

(a) Operate the equipment always paying careful attention to the position of workers near the working range;

(b) When moving the equipment backward, make sure that there are no workers behind and follow the instructions of the Spotters;

(c) After the work, not park the equipment on the slope where excavation is in progress or on the ground that has a possibility to collapse; and

(d) Make sure that the bucket of equipment shall not pass over the operator's seat of other equipment.

(4) Ensure that workers shall:

(a) Not enter under the bucket of equipment that is loading materials; and

(b) Keep away from dump trucks under loading or unloading materials.

7.5 TRENCHES, PITS AND OTHER TYPES OF STRUCTURAL EXCAVATION

(1) When performing trench excavation with depth of 1.5m or more, adequate and stable earth retaining shall be provided ~~unless any particular reason exists~~; and

(2) ~~For trench excavation with a depth of less than 1.5m, protective systems such as exampled below shall be installed;~~ For trench excavation with a depth of less than 1.5m, protective systems as shown below shall be installed, unless it is possible to excavate with an adequate and stable slope taking account of the soil condition.;

JC2: Changed from "less than" to "exceeding".

NK2: (1) is for 1.5 m or more, and (2) is for less than 1.5 m. Therefore, (2) is left as it is.

(a) Simple earth retaining (Trench box, Trench shield);

(b) Lightweight sheet pile earth retaining; and

(c) Aluminum hydraulic shoring, Timber shoring.

JC2: Is "Lightweight sheet pile" correct term in English? Is "steel sheet pile" OK?

NK2: Japan Patent Office and internet for product catalogue use the term "lightweight sheet pile".
For relatively shallow trench excavation, ordinary sized ones are not used. It is better to distinguish the different use of normal and lightweight sheet piles. Left as it is.

7.5.2 Safety Measures during Trench Excavation

(1) Materials and equipment to be used for earth retaining systems shall be appropriate for the width and depth of the trench and free from damage or defects that might impair their proper function;

(2) Manufactured (prefabricated) materials for earth retaining systems shall be used in accordance with the instructions and recommendations given in the manual of the manufacturer;

(3) The earth retaining system designed by the Contractor shall be provided in accordance with the design and construction procedure drawings;

(4) Earth retaining system with sufficient strength shall be provided to protect workers from collapse of the ground in and structures near the excavation site;

(5) Workers shall not be allowed to enter the trench until the earth retaining system is installed prior to the work;

(6) Excavation to a level greater than 60cm below the bottom of the earth retaining system shall not be allowed;

(7) If temporary removal of individual members of the earth retaining system is necessary, safety measures shall be taken to ensure the safety of workers, such as installing temporary members to hold the loads imposed on the system;

(8) When removing the earth retaining system, the Contractor shall not allow anyone other than the workers engaged in the removal work to enter the area and the vicinity; and

(9) The Contractor shall perform backfilling of the trench shall be ~~performed Backfilling of the trench shall be performed~~ in parallel with the removal of the earth retaining system.

Oversite excavation, cuttings, reduce level excavation, etc etc

There is no great difference in the risks between collapse of a trench or collapse of a pit or basement excavation all are similar and the prescribed safety measures are the same so:

Why separate only "trench excavation"? and

What happens to the required measures for the other types?

To describe only trench excavation and ignore all others, looks unusual and appears incomplete.

Reference to OSHA is creating this problem as US and English usage are slightly different.

OSHA uses the phrase "Excavation and trenching" as if both are different. In English construction usage, "Excavation" alone is commonly used and the various types (e.g. trench, pit and basement excavation) will be understood to be covered by this term.

This is why 7.1.1 is all embracing.

The given definition of "Trench Excavation" in the draft is not necessary as the word "trench" is in common usage.

It is also not correct, Trench Excavation is not "excavation performed for laying gas pipes and water /sewage pipes, etc.". "Trench excavation" will also cover for example excavations for any linear structure or material such as :

strip foundations, ground beams, cables and ducts etc. etc.

There is not so much in this clause anyway but if considered necessary, I would suggest it would be better re-headed as Excavation Generally or even "Trenches, Pits and Other Excavations" as above.

7.5.1 General

The Contractor shall take the following measures to prevent danger to workers due to the collapse of the excavation surface during trench excavation.

See notes above, the following definition is not sufficient or necessary

~~Trench excavation means excavation performed for laying gas pipes and water /sewage pipes, etc. which depth is larger than its width. In general, excavation width is less than 4.6m (15feet).~~

~~(1) When performing trench excavation with depth of 1.5m or more, adequate and stable Earthwork Support shall be provided.; and~~

The above is not recommended as it conflicts with other clauses, please refer to earlier notes. It is deleted here and dealt with in Section 6.2

~~(2) For trench excavation with a depth of less than 1.5m, protective systems as shown below shall be installed, unless it is possible to excavate with an adequate and stable slope taking account of the soil condition.;~~

~~(a) Simple earth retaining (Trench box, Trench shield);~~

~~(b) Lightweight sheet pile earth retaining; and~~

~~(c) Aluminium hydraulic shoring, Timber shoring.~~

The above appears illogical as there are numerous statements that no support is required below 1.5 metre depth yet then this is provided which specifies requirements.

7.5.1 General

The Contractor shall take the following measures to prevent danger to workers due to the collapse of the excavation surface during trench excavation.

	I have not edited the added subclauses but suggest that they are deleted anyway 7.5.2 Safety Measures during ~~Trench~~ Excavation *None of the following items are unique to trench excavation, all items apply to all types of excavation.* *Also all of the following items are for Earthwork Support not Excavation and this would be better transferred to JSSS 6.2.4 to avoid duplication and ambiguity. I have already included relevant part of the following in 6.2.4 with suitable editing and this subclause can now be deleted.* *Reference to "earth retaining systems" should be changed to "Earthwork Support".* (1) Materials and equipment to be used for Earthwork Support shall be appropriate for the width and depth of the excavation and free from damage or defects that might impair their proper function. ~~(2) Manufactured (prefabricated) materials for Earthwork Support shall be used in accordance with the instructions and recommendations given in the manual of the manufacturer.~~ *No need already covered by JSSS 1.35* ~~(3) Earthwork Support designed by the Contractor shall be installed in accordance with the design and construction procedure drawings.~~ *There are no such drawings in JSSS and no meaning to this requirement. This is also all Contractor design.* ~~(4) Earthwork Support with sufficient strength shall be provided to protect workers from collapse of the ground in and structures near the excavation site.~~ *The above is not completely clear however it is already covered by 6.2.1 (2) above* (5) Workers shall not be allowed to enter any excavation ~~the trench~~ until Earthwork Support is installed prior to the work; (6) Excavation to a level greater than 60cm below the bottom of the Earthwork Support shall not be allowed; (7) If temporary removal of individual members of the Earthwork Support is necessary, safety measures shall be taken to ensure the safety of workers, such as installing temporary members to hold the loads imposed on the system; (8) When removing Earthwork Support, the Contractor shall not allow anyone other than the workers engaged in the removal work to enter the area and the vicinity; and (9) The Contractor shall perform backfilling of any ~~trench~~ excavation in parallel with the removal of the Earthwork Support. *Please refer to the notes against Clause 7.2 (6) above.* *I have added a comprehensive and common clause for contractor's monitoring of Excavation Works in* JSSS 6.1.3 [*Temporary Inspection and Monitoring Systems*]. *I think it should go here and not in Section 6.2 [Earthwork Support] as such settlement can be a result of excavation generally, including that caused by say*	7.5.2 Safety Measures during Excavation (1) Materials and equipment to be used for Earthwork Support shall be appropriate for the width and depth of the excavation and free from damage or defects that might impair their proper function. (2) Workers shall not be allowed to enter any excavation ~~the trench~~ until Earthwork Support is installed prior to the work; (3) Excavation to a level greater than 60cm below the bottom of the Earthwork Support shall not be allowed; (4) If temporary removal of individual members of the Earthwork Support is necessary, safety measures shall be taken to ensure the safety of workers, such as installing temporary members to hold the loads imposed on the system; (5) When removing Earthwork Support, the Contractor shall not allow anyone other than the workers engaged in the removal work to enter the area and the vicinity; and (6) The Contractor shall perform backfilling of any ~~trench~~ excavation in parallel with the removal of the Earthwork Support. 7.5.3 Monitoring Impact of Excavation Works on Other Properties The Contractor shall comply with the requirements of JSSS 6.1.3 [*Monitoring Impact of Works on Other Properties*].

	water table lowering (e.g. well-point systems) and Earthwork Support, but not only for the Earthwork Support. *I have added suitable mention in Section 6.2 so that this is coordinated.* 7.5.3 Monitoring Impact of Excavation Works on Other Properties The Contractor shall comply with the requirements of JSSS 6.1.3 [*Monitoring Impact of Works on Other Properties*].	
7.6 EXCAVATION BY BLASTING 7.6.1 Scope (1) This Section specifies safety measures in connection with ~~excavation in rock~~ ~~in open~~ open-cut rock excavation that cannot be undertaken using conventional excavation techniques and which, following the Engineer's Instruction or consent, shall be undertaken by Blasting with Explosives. NK1: added in open in right because 8.4 specifies excluding underground excavation with blasting. JC1: Why are "Blasting" and" Explosives" written in capital letters? Are they defined? See 8.4.2 (1), (2). NK1: They are defined in 8.4.2. NK will ask MD the reason of definition. JC2: Confirmation is required if the expression "excavation in rock in open" is appropriate. NK2: As a term "open-cut excavation" is usually used for excavation in open site area. Modified as "in connection with open-cut rock excavation". (2) The ~~Works~~ works plan shall be described in the relevant Method Statement. (3) This Section applies particularly to ~~Works~~ works where there may be any risk of injury or damage to persons and property on adjacent areas due to the use of Explosives either within or outside the Site. NK1: There are two terms in 7.6: "Blasting Works" and "Blasting works". Tentatively, "Blasting works" is used above because "excavation work" is used in 7.1 and "Blasting" is defined in 8.4.2. (To MD: Please confirm the term.)	**7.6 BLASTING WORKS** *See above clause 7.1.1 where Blasting Works is defined. I have changed the following references accordingly:* 7.6.1 Scope (1) This Section specifies safety measures in connection with excavation in rock ~~open-cut rock excavation~~ that cannot be undertaken using conventional excavation techniques. *The revised wording "open" or "open cut" are not correct or necessary, excavation in rock can apply to all types of excavation where rock can be encountered (e.g. trenches, pits and basements). Suggest that the original wording is correct.* *The above definition is simple and clear but please advise if you need a other more detailed definition of "Rock"?* *I suggest that the following is necessary:* (2) Blasting Works for tunnelling is not included in the scope of this Chapter. Any such work shall be performed in accordance with the Particular Safety Specification. *I suggest that also that some limitation shall be including in JSSS to restrict the use of blasting as it may otherwise assume that is an acceptable alternative to more expensive removal techniques.* *I have therefore separated the clause, edited it and added further general requirements as follows:* 7.6.2 General Blasting Requirements (1) Blasting shall only be permitted to be performed by the Contractor: (a) When it is safe to do so and when there is no risk of injury or damage being caused to persons or property within or outside the Site (b) Where it specifically allowed or required by the Particular Safety Specification; and (c) During the execution of the Works after the Contractor has received the Engineer's approval or instruction. (2) Blasting when approved, shall only be permitted at times which have been predetermined and agreed with the Engineer and any relevant authority. ~~(3) The Blasting Works plan shall be described in the relevant Method Statement.~~	**7.6 BLASTING WORKS** 7.6.1 Scope (1) This Section specifies safety measures in connection with excavation in rock that cannot be undertaken using conventional excavation techniques. (2) Blasting Works for tunnelling is not included in the scope of this Chapter. Any such work shall be performed in accordance with the Particular Safety Specification. 7.6.2 General Blasting Requirements (1) Blasting shall only be permitted to be performed by the Contractor: (a) When it is safe to do so and when there is no risk of injury or damage being caused to persons or property within or outside the Site (b) Where it specifically allowed or required by the Particular Safety Specification; and (c) During the execution of the Works after the Contractor has received the Engineer's approval or instruction. (2) Blasting when approved, shall only be permitted at times which have been predetermined and agreed with the Engineer and any relevant authority.

7.6.2 Definitions

Definitions of terms for the purpose of this Chapter are as follows.

(1) "**Blasting**" means blowing-up or breaking apart solid rock with the use of Explosives.

(2) "**Explosives**" means ~~mean~~ any substance or mixture of substances that is manufactured to produce an explosive effect and which term includes any explosion explosive, Blasting agent and Blasting supplies such as detonators, cords and detonating equipment.

(3) "**Exclusion Zone**" means an area from which all unauthorised Contractor's Personnel, unauthorised Employer's Personnel and any other unauthorised persons or the general public are prohibited to enter due to the risk of their being affected by the Blasting operations. Unauthorised personnel in this context shall have the same meaning as that stated in Section 2.3 [*Prohibition of Entry – Dangerous Work*] Clause 2.3.1 (c).

7.6.3 Compliance Standards

(1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], unless otherwise specified in JSSS, the Contractor shall comply with the requirements of this Chapter, read jointly with and including the further technical requirements of BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry.

JC2: The phrase "unless otherwise specified in JSSS" is indispensable in this case at least. BS does not mention subject, so it is not clear who is responsible for each action.

For example, JSSS specifies that the Employer shall specify allowable values of vibration, noise, etc. in the Contract. The Employer should survey these allowable values for structures, etc. around the Site when the Employer specify these allowable values.

On the other hand, BS5607, 6.2.1 mentions "a detailed survey and examination of the site, buildings or structures and adjoining areas and property should be carried out in accordance with BS 5930.". It is not clear who carry out the survey and

What does the above clause mean? The Blasting Safety Plan is described below. Please clarify

~~(4) This Section applies particularly to Blasting Works where there may be any risk of injury or damage to persons and property on adjacent areas due to the use of Explosives either within or outside the Site.~~

Ditto, why would the use of explosives be possible outside the Site? Please see above suggested added clause (3), it is assumed that this can be deleted please check.

Noise: There appears to be no maximum criteria stated in the BS so I suggest the following:

7.6.3 Blasting Noise

Noise levels, measured in areas close to the Exclusion Zone and in areas accessible to other workers or the public shall not exceed a sound pressure level of 85 dB and/or a peak sound level of 110 dB

7.6.4 Definitions

Definitions of terms for the purpose of this Chapter are as follows.

(1) "**Blasting**" means blowing-up or breaking apart solid rock with the use of Explosives.

(2) "**Explosives**" means any substance or mixture of substances that is manufactured to produce an explosive effect and which term includes any explosion explosive, Blasting agent and Blasting supplies such as detonators, cords and detonating equipment.

(3) "**Exclusion Zone**" means an area from which all unauthorised Contractor's Personnel, unauthorised Employer's Personnel and any other unauthorised persons or the general public are prohibited to enter due to the risk of their being affected by the Blasting Works. Unauthorised personnel in this context shall have the same meaning as that stated in Section 2.3 [*Prohibition of Entry – Dangerous Work*] Clause 2.3.1 (c).

7.6.5 Compliance Standards

Changed in 2.5 therefore for consistency to be changed everywhere;

(1) By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*], for any items in this Section or relevant to the subject of this Section and which are not fully covered by JSSS, the Contractor shall take necessary measures for Blasting Works complying with the technical requirements specified in BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry.

The above standard wording has been changed (for the better) as a consequence of JICA comment on Chapter 1 as above and I suggest for consistency that the same is applicable and should be used here.

I also suggest that more reliance should be placed upon the use of the BS and less on trying to repeat or "improve" parts of the BS in JSSS. If anything some of the clauses in JSSS could be omittec wgere the BS is more stringent or more clear.

.See later notes on survey and monitoring

7.6.3 Blasting Noise

Noise levels, measured in areas close to the Exclusion Zone and in areas accessible to other workers or the public shall not exceed a sound pressure level of 85 dB and/or a peak sound level of 110 dB

7.6.4 Definitions

Definitions of terms for the purpose of this Chapter are as follows.

(1) "**Blasting**" means blowing-up or breaking apart solid rock with the use of Explosives.

(2) "**Explosives**" means any substance or mixture of substances that is manufactured to produce an explosive effect and which term includes any explosion explosive, Blasting agent and Blasting supplies such as detonators, cords and detonating equipment.

(3) "**Exclusion Zone**" means an area from which all unauthorised Contractor's Personnel, unauthorised Employer's Personnel and any other unauthorised persons or the general public are prohibited to enter due to the risk of their being affected by the Blasting Works. Unauthorised personnel in this context shall have the same meaning as that stated in Section 2.3 [*Prohibition of Entry – Dangerous Work*] Clause 2.3.1 (c).

7.6.5 Compliance Standards

(1) By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*], for any items in this Section or relevant to the subject of this Section and which are not fully covered by JSSS, the Contractor shall take necessary measures for Blasting Works complying with the technical requirements specified in BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry.

(2) The Contractor shall obtain the necessary permits, licenses or approvals for Blasting work and the handling and storage of Explosives associated therewith. The Employer, at the request of the Contractor, shall provide such reasonable assistance to allow the Contractor to obtain properly such permits, licenses or approvals.

investigation.

Therefore, it is necessary to stipulate clearly that provisions in JSSS are given priority and others than JSSS shall comply with BS. Otherwise, the Contractor has to burden broad responsibilities including determination of allowable values and coordination with relevant authorities.

NK2: Added the phrase as suggested by JC. MD, please review JC.

(2) The Contractor shall obtain the necessary permits, licenses or approvals for Blasting work and the handling and storage of Explosives associated therewith. The Employer, at the request of the Contractor, shall provide such reasonable assistance to allow the Contractor to obtain properly such permits, licenses or approvals ~~in accordance with GC 2.2 [*Permits, Licences or Approvals*]~~.

JC1: Referencing to GC2.2 is not necessary here.

NK1: The reference is deleted.

7.6.4 Personnel for Blasting Works

(1) Further to the requirements of JSSS 1.16 [*Proper Placement of Contractor's Personnel*], the Contractor shall assign the following personnel for Blasting ~~W~~works:

(a) Explosive ~~E~~engineer; and

(b) Shotfirer(s).

JC1: It seems that capital and lowercase letters are used without rules.

NK1: Unless a word is defined, it will be written with lowercase. The above is modified as above because of itemisation. Hereinafter, "explosive engineer" and "shotfirer" are used only by lowercase letters.

(2) Responsibilities and requirement of personnel for Blasting ~~W~~works:

(a) The Explosive Engineer shall plan the Blasting Works, lead the Blasting ~~W~~works at Site and perform the safety management of the Blasting ~~W~~works; and

(b) Shotfirer(s) shall perform safekeeping, transportation and storage of Explosives, and perform Blasting ~~W~~works and site safety management.

(3) Safety education and guidance

~~Further to the requirements of JSSS 1.16 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that personnel engaged in W works; namely explosive engineer, shotfirer(s), Spotters (sentries) and other workers involved in the blasting operations, have knowledge of and are able to comply with the following:~~

Further to the requirements of JSSS 1.16 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that explosive engineer and shotfirer(s) have sufficient knowledge of the following:

JC1: The phrase "personnel engaged in Blasting Works" is not clear if it means only the explosive engineer and shotfirer as defined in (1) above or it includes other personnel, too. If the former is the case, the clause (1) should include the sentence that blasting works shall perform only by the explosive engineer and shotfirers.

NK1: Blasting Works are executed by the team consisting of the explosive engineer, shotfirers, sentries (BS5607 7.4.2.4) and other workers involved in the blasting operations (BS5607 3.44.2 NOTE).

(2) The Contractor shall obtain the necessary permits, licenses or approvals for Blasting work and the handling and storage of Explosives associated therewith. The Employer, at the request of the Contractor, shall provide such reasonable assistance to allow the Contractor to obtain properly such permits, licenses or approvals.

Part deleted.

7.6.6 Personnel for Blasting Works

Please refer to the BS with regard to the selection and qualification of blasting contractors to perform the blasting works, it seems logical but is this to apply? It seems insufficient that a contractor with no experience or proven capability can employ two blasting staff and then be qualified to perform the works.

(1) Further to the requirements of JSSS 1.18 [*Proper Placement of Contractor's Personnel*], the Contractor shall assign the following personnel for Blasting Works:

(a) Explosives engineer; and

(b) Shotfirer(s).

What about other team members e.g. blasting supervisor (see BS), explosives storekeeper, drivers carrying explosives, security staff, spotters

(2) Responsibilities and requirement of personnel for Blasting Works:

(a) The Explosives engineer shall plan the Blasting Works, lead the Blasting Works at Site and perform the safety management of the Blasting Works; and

(b) Shotfirer(s) shall perform safekeeping, transportation and storage of Explosives, and perform Blasting Works and site safety management.

(3) Safety education and guidance

Further to the requirements of JSSS 1.18 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that the Explosives engineer and shotfirer(s) have sufficient knowledge of and are able to comply with the following:

"personnel engaged in Blasting Works" means "all persons" so engaged. Why make this restrictive? Can state "all personnel involved.."?

What about other team members e.g. blasting supervisor, explosives storekeeper, drivers carrying explosives, security staff, spotters? All and more need to be made aware and this is only safety training. I suggest the original wording is wider.

(a) Nature of hazards associated with Blasting;

(b) Unsafe conditions and conduct in performing Blasting Works;

7.6.6 Personnel for Blasting Works

(1) Further to the requirements of JSSS 1.18 [Proper Placement of Contractor's Personnel], the Contractor shall assign the following personnel for Blasting Works:

(a) Explosives engineer; and

(b) Shotfirer(s).

(2) Responsibilities and requirement of personnel for Blasting Works:

(a) The Explosives engineer shall plan the Blasting Works, lead the Blasting Works at Site and perform the safety management of the Blasting Works; and

(b) Shotfirer(s) shall perform safekeeping, transportation and storage of Explosives, and perform Blasting Works and site safety management.

(3) Safety education and guidance

Further to the requirements of JSSS 1.18 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that the Explosives engineer and shotfirer(s) have sufficient knowledge of and are able to comply with the following:

(a) Nature of hazards associated with Blasting;

(b) Unsafe conditions and conduct in performing Blasting Works;

(c) Procedures for Blasting Works;

(d) Evacuation and return procedures for any evacuated workers and personnel;

(e) Safety measures when misfiring of Explosives occurs; and

(f) Emergency response *(actions)*.

(3) is modified as above.

JC2: BS5607 8.3 describes "No person other than those designated in **8.2** should be in possession of explosives on site" and Sections after 8.2 describe about only requirements on skills and knowledges of blasting engineer and shotfirers. Therefore, (3) is revised to describe limitedly for the both.

NK2: NK think all members of blasting team shall know knowledge (a) to (f) generally or Professionally. However, NK modifies as JIC comment.

(a) Nature of hazards associated with Blasting;

(b) Unsafe conditions and conduct in performing Blasting ~~W~~ works;

(c) Procedures for Blasting Works;

(d) Evacuation and return Procedures of the evacuated workers and personnel;

JC1: The word "return" in (d) is not clear if it means to make evacuated personnel to the original places or return surplus explosives to the magazine.

NK1: It means to make the evacuated personnel to the original working places. Words are added as right.

(e) Safety measures when misfiring of Explosives occurs; and

(f) Emergency response *(actions).*

7.6.5 Blasting Safety Plan

The Contractor shall prepare a Blasting Safety Plan describing all required safety measures for Blasting Works in addition to the items prescribed in JSSS 1.6 [*Contractor's Safety Plan*] and including the following:

JC1: It should be stated somewhere that the Blasting Safety Plan shall be agreed by the Engineer.

NK1: As mentioned in MM 3.(3) Chapter 1 has specified the Contractor shall submit Safety Plan and will specify "the Engineer may review the Safety Plan…".

Therefore, it is not necessary to specify "the Contractor shall get concurrence to the Safety Plan by the Engineer." for this Chapter only.

(1) Risk analysis and countermeasures.

(2) Safety measures for transportation, safekeeping, use and disposal of Explosives.

(3) Safety measures for Contractor's Personnel, Employer's Personnel and any other persons, the general public, neighbouring residents and building owners on or adjacent to the Site and who may be affected by the Blasting ~~W~~works (hereinafter collectively referred to as "personnel affected by the Blasting works" in this Section)..

JC1: It is recommended to define as for example, "Concerned Personnel" and use the term instead of repeating the long expression in the clauses such as (12) below and 8.4.6. (1).

NK1: referred to BS5607 and GC below for the above JC. It will be defined as "personnel affected by the Blasting Works" as right.

BS 5607 mentions as follows:

6.4 Exclusion zone and warning procedures

the risk of injury to contractor's personnel, third parties and members of the public is reduced to as low as reasonably practicable.

7.4.2.1 General

notified to all personnel involved in securing the zone and others affected by the event, including the general public.

GC: 4.8 Safety Procedures

(c) Procedures for Blasting Works;

(d) Evacuation and return procedures for any evacuated workers and personnel;

Change not necessary but added anyway

(e) Safety measures when misfiring of Explosives occurs; and

(f) Emergency response *(actions).*

7.6.7 Blasting Safety Plan

The Contractor shall prepare a Blasting Safety Plan describing all required safety measures for Blasting Works in addition to the items prescribed in JSSS 1.7 [*Contractor's Safety Plans*] and including the following:

(1) Risk analysis and countermeasures.

(2) Safety measures for transportation, safekeeping, use and disposal of Explosives.

(3) Safety measures for Contractor's Personnel, Employer's Personnel and any other persons, the general public, neighbouring residents and building owners on or adjacent to the Site and who may be affected by the Blasting Works (hereinafter collectively referred to as "persons affected by the Blasting Works" in this Section).

"Personnel" needs to be changes to "Persons"

Edited as above.

(4) Determination of Exclusion Zone.

(5) Identification of affected areas, buildings, structures and property.

(6) Environmental and health compliance requirements including vibration, noise, fire, and the like, required by Laws and the Contract.

(7) Environmental monitoring plan and methods to record the impact of Blasting on affected buildings, structures and property.

(8) Trial Blasting.

(9) Identification of the Explosives engineer and shotfirers to distinguish from other workers.

(10) Placement of Spotters.

(11) Method of notification of the start date and time of Blasting work and the serving of notice immediately before commencement of

7.6.7 Blasting Safety Plan

The Contractor shall prepare a Blasting Safety Plan describing all required safety measures for Blasting Works in addition to the items prescribed in JSSS 1.7 [*Contractor's Safety Plans*] and including the following:

(1) Risk analysis and countermeasures.

(2) Safety measures for transportation, safekeeping, use and disposal of Explosives.

(3) Safety measures for Contractor's Personnel, Employer's Personnel and any other persons, the general public, neighbouring residents and building owners on or adjacent to the Site and who may be affected by the Blasting Works (hereinafter collectively referred to as "persons affected by the Blasting Works" in this Section).

(4) Determination of Exclusion Zone.

(5) Identification of affected areas, buildings, structures and property.

(6) Environmental and health compliance requirements including vibration, noise, fire, and the like, required by Laws and the Contract.

(7) Environmental monitoring plan and methods to record the impact of Blasting on affected buildings, structures and property.

(8) Trial Blasting.

(9) Identification of the Explosives engineer and shotfirers to distinguish from other workers.

(10) Placement of Spotters.

(11) Method of notification of the start date and time of Blasting work and the serving of notice immediately before commencement of Blasting Works to other persons affected by the Blasting Works.

(12) Evacuation method of all personnel from the Exclusion Zone before

for the use and protection of the public and of owners and occupiers of adjacent land.

(4) Determination of Exclusion Zone.

(5) Identification of affected areas, buildings, structures and property.

(6) Environmental and health compliance requirements including vibration, noise, fire, and the like, required by Laws and the Contract.

JC1: It is logically appropriate to change the order of (5) and (6). (First, determining the allowable values, secondly determining the blasting method within the values, then, the affected area is inevitably determined.)

NK1: The order of (5) and (6) is changed as commented.

(7) Environmental monitoring plan and methods to record the impact of Blasting on affected areas, buildings, structures and property.

(8) ~~Test~~ Trial Blasting.

NK1: Following BS, Test is replaced Trial.

(9) ~~Environmental monitoring plan and methods to record the impact of Blasting on affected buildings, structures and property.~~

JC2: Isn't it necessary to combine (6) and (8)?

NK2: The contents of item (6) and (8) are closely related, however, they are different matters as actions. Therefore, it would be better to change the order of (7) and (8) so that identification and monitoring become clear to be closely related.

(10) Identification of the explosive engineer and shotfirers to distinguish from other workers.

(11) Placement of Spotters.

(12) Method of notification of the start date and time of Blasting work and notice immediately before Blasting to other Contractor's Personnel, Employer's Personnel and any other persons, the general public, neighbouring residents and building owners on or adjacent to the Site and who may be affected by the Blasting operations.

(13) Evacuation method of all personnel from the Exclusion Zone before Blasting.

JC1: The JC for (3) advise to replace all personnel with "Concerned Personnel" or another term

NK1: Personnel and persons in (3) is different from (12) as the latter is limited to personnel to leave Exclusion Zone. It is left as it is.

(14) Warning system at the time of Blasting.

(15) Procedures and methods for dealing with misfired Explosives (The plan for the treatment procedures for misfired Explosives shall be prepared by reference to BS5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10.5 Misfires.

(16) List of legal and administrative records.

7.6.6 ~~Information to~~ **Risk Prevention of** Workers and Neighbouring Residents

JC1: Revised title.

(1) ~~Dissemination of Information~~ Notice of Blasting

JC1: Revised title.

Blasting Works to other persons affected by the Blasting Works.

(12) Evacuation method of all personnel from the Exclusion Zone before Blasting.

(13) Warning system at the time of Blasting.

(14) Procedures and methods for dealing with misfired Explosives (The plan for the treatment procedures for misfired Explosives shall be prepared by reference to BS5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10.5 Misfires.

(15) List of legal and administrative records.

7.6.8 Risk Prevention of Workers and Neighbouring Residents

(1) Notice of Blasting

~~The Contractor shall assist the Employer when so requested by the Employer in giving briefings to neighbouring communities, residents and property owners by explaining the Blasting work~~

Blasting.

(13) Warning system at the time of Blasting.

(14) Procedures and methods for dealing with misfired Explosives (The plan for the treatment procedures for misfired Explosives shall be prepared by reference to BS5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10.5 Misfires.

(15) List of legal and administrative records.

7.6.8 Risk Prevention of Workers and Neighbouring Residents

(1) Notice of Blasting

The Contractor shall notify all persons affected by the Blasting Works. of the planned schedule and start dates and times for Blasting Works. Such information shall be updated as necessary,

~~The Contractor shall assist the Employer when so requested by the Employer in giving briefings to related authorities, neighbouring residents and building owners by explaining the Blasting work scope, extent, duration, timing and safety measures and related information.~~

JC1: deleted.

The Contractor shall notify~~, in appropriate manners,~~ all affected persons including neighbouring residents and building owners of the planned schedule and start dates and times for Blasting work, ~~the actual start dates and times and give notice~~ immediately Such information shall be updated as necessary, in particular, before the Blasting work commences.

JC1: Modified.

JC2: The term "notification" is used in also BS5607 6.6, therefore, "notify" is deemed to be right in this context. The term "update" is also derived from BS5606 6.6.
JC modified as above.

(2) Risk Prevention Measures

The Contractor shall take all necessary measures to prevent any injury or damage to all affected persons and property from the Blasting Works including the following:

(a) Prohibition of overcharging with Explosives more than specified in the Method Statement prepared based on the trial Blasting;

JC: It is not specific requirement though it is understandable. The Engineer shall check the explosive quantity planned by the Contractor based on the test blasting.

NK: The Contractor is responsible for planning of method of blasting. The Contractor shall check the quantity of explosive if necessary by an explosive design checker as same as design check for temporary works.
The Engineer may review Method Statement and Safety Plan whether the Contractor plan method and safety measures in accordance with the Contract.
Addition is made as above.

(b) Prevention of scattering of flying rock and other debris with materials, for example, sand, nets, steel plates, timber, etc. mentioned in 12.7.6 [Blast protection] of BS 5607 and as prescribed in the Contract (if any);

JC1: Phrase underlined is added.

JC1: It is not specific requirement. (Other clauses can be said commonly.) It shall be default for the Employer to determine the prevention measures of scattering of rocks. This concept that the Employer specify in the Contract cannot be read now. Please consider to specify specific requirements or to refer to the Particular Safety Specification.

NK1: As mentioned (a) above, the Contractor is responsible for the preparation of detail method of construction including the prevention measures. The Employer specify when there is special requirement. Modified as right.

JC1: Please describe specific methods. (Please refer to the contents of BS if available.)

NK1: added 12.7.6 Blast protection of BS 5607

~~(c) Prevention of collapse of surrounding rocks or ground areas more than planned in the Method Statement;~~

JC1: Is this meaning control blasting (presplitting/smooth blasting) or final excavation surfaces by blasting, or foundation of structures neighboring the Site? It is not clear. Blasting is originally tool to loosening the surrounding rocks and ground

~~scope, extent, duration, timing and safety measures and related information.~~

The Contractor shall notify all persons affected by the Blasting Works. of the planned schedule and start dates and times for Blasting Works. Such information shall be updated as necessary, immediately before the Blasting Works commence.

(2) Risk Prevention Measures

The Contractor shall take all necessary measures to prevent any injury or damage to all persons affected by the Blasting Works, including the following:

(a) Prohibition of overcharging with Explosives more than that specified in the Method Statement prepared based upon the trial Blasting;

~~(b)~~ Prevention of scattering of flying rock and other debris ~~including for example the provision of sand, nets, steel plates, timber, and the like as mentioned in 12.7.6 [Blast protection] of BS 5607 and as prescribed in the Contract (if any);~~

As a basic rule I do not suggest giving any examples, the Contractor is already required to comply with BS 5607 so it is not necessary to give any further reference.

I disagree that the Employer shall determine the prevention measures of scattering of rocks as a common basis as he is employing and paying the contractor as a qualified technical expert to do this work.

I recommend that the original wording should not be changed, the given examples are not specific and any attempt to define scope may compromise the employer and even JICA in the future.

(c) Prevention of collapse of surrounding rocks or ground areas;

This is based upon the JICA/NK draft and I do understand why it is deleted.

It may not be overcharging it could be for other reasons e.g. incorrect drilling and blasting location in the wrong place or direction according to geology.

Blasting must be controlled and contained within the area required without damaging surrounding areas. Aside from the risk of damage to other property, The employer should not be required to pay for repair or reinstatement of surrounding areas where the contractor has failed to control his own operations.

I suggest that the above is not deleted

~~(d) Define all Blasting Works as Dangerous Work and take measures in accordance with Section 2.3 [*Prohibition of Entry – Dangerous Work*].~~

(e) Demarcate the Exclusion Zone for Blasting Works and take necessary measures to prohibit the personnel affected by the Blasting works from entering the Exclusion Zone by a system of signs, signals and Spotters in accordance with 7.4.2 [Blast warning procedures] of BS BS5607 including the following:

The BS covers safety measures and more, is the following therefor necessary?

immediately before the Blasting Works commence.

(2) Risk Prevention Measures

The Contractor shall take all necessary measures to prevent any injury or damage to all persons affected by the Blasting Works, including the following:

(a) Prohibition of overcharging with Explosives more than that specified in the Method Statement prepared based upon the trial Blasting;

(b) Prevention of scattering of flying rock and other debris.

(c) Prevention of collapse of surrounding rocks or ground areas;

(d) Demarcate the Exclusion Zone for Blasting Works and take necessary measures to prohibit the personnel affected by the Blasting works from entering the Exclusion Zone by a system of signs, signals and Spotters in accordance with 7.4.2 [Blast warning procedures] of BS BS5607 including the following:

(i) Provide audible warning sirens to warn of impending, current and completed Blasting operations.

(ii) Place bulletin boards showing the Blasting time, siren code and other precautions at the boundary of the Dangerous Work area.

(e) Establish evacuation requirements, routes and assembly areas and inform all persons affected by the Blasting Works;

(f) Perform firing only after the Spotters have confirmed that all persons affected by the Blasting Works have been evacuated;

(g) Provide communication equipment between the shotfirer and the Spotter, maintain and test the equipment;

(h) Prohibit bringing into the Blasting areas any mobile phone that may affect adversely the electric detonator; and

(i) Unless otherwise specified in the Particular Safety Specification, perform Blasting Works only during the daytime.

areas

NK1: This specifies prevention of collapse by excessive loosening of surrounding rocks or ground areas. Modified as above. “as prescribed …” is not added because the Employer will not specify more than this.

JC1: “Risk Prevention” is not “Information to Workers and Neighbouring Residents” but points to pay attention in performing the work. Please move to proper place.

NK1: NK thinks that it is better to change the title of this section to “Risk Prevention of Workers and Neighbouring Residents” and title of (2) to “Risk Prevention Measures” so that the title and the contents coincide.

JC2: The required sentence is “the prevention of blasting more than planned by measures of ●●”. If the “●●” cannot be described, (c above can be deleted because prohibition of overcharging is specified in (a).

NK2: deleted.

(d) ~~Define all Blasting as Dangerous Work and take measures in accordance with Section 2.3 [*Prohibition of Entry – Dangerous Work*];~~ Define Exclusion Zone for Blasting works and take necessary measures to prohibit the personnel affected by the Blasting works from entering the Exclusion Zone by a system of signs, signals and Spotters in accordance with 7.4.2 [Blast warning procedures] of BS BS5607 including the following:

JC: As JSSS 2.3 stipulates only prohibition of entry in general and is not proper to refer to in this clause. The evacuation area at the time of blasting should be stipulated concretely.

NK: Modified the clause (d) and located (e)(f) below (d).

~~(e) Provide audible warning sirens to warn of impending, current and completed Blasting operations;~~

~~(f) Place bulletin boards showing the Blasting time, siren code and other precautions at the boundary of the Dangerous Work area;~~

① Provide audible warning sirens to warn of impending, current and completed Blasting operations;

② Place bulletin boards showing the Blasting time, siren code and other precautions at the boundary of the Dangerous Work area;

(g) Establish evacuation requirements, ~~routes~~ and assembly areas at blasting operation and inform all ~~workers and effected persons the~~ personnel affected by the Blasting Works; and

(h) Perform firing only after the Spotters have confirmed that all ~~workers~~ personnel affected by the Blasting Works have been evacuated; and

JC1: It gives an impression of an emergency evacuation route. Isn’t it enough to simply check evacuation?

NK1: As a risk prevention measure, it is important to establish and inform evacuation requirement and routes etc.
Modified as right.

(i) Provide communication equipment between the shotfirer and the Spotter, maintain and test the equipment;

(i) Provide audible warning sirens to warn of impending, current and completed Blasting operations.

(ii) Place bulletin boards showing the Blasting time, siren code and other precautions at the boundary of the Dangerous Work area.

(f) Establish evacuation requirements, routes and assembly areas and inform all persons affected by the Blasting Works;

(g) Perform firing only after the Spotters have confirmed that all persons affected by the Blasting Works have been evacuated;

(h) Provide communication equipment between the shotfirer and the Spotter, maintain and test the equipment;

(i) Prohibit bringing into the Blasting areas any mobile phone that may affect adversely the electric detonator; and

(j) Unless otherwise specified in the Particular Safety Specification, perform Blasting Works only during the daytime.

(j) ~~Perform firing only after the Spotters have confirmed that all workers have been evacuated; and~~ Prohibit bringing into the blasting areas any mobile phone that ~~is not guaranteed that it will not adversely affect the electric detonators;~~ may affect adversely the electric detonator; and

JC1: Combine (g) with (i) to make the procedure clear that only after evacuation, blasting shall be fired.

NK1: modified as (e) in right by combining former (g) and (i)

JC2: Modified to make the expression same as in BS.

NK: modified.

(k) Unless otherwise specified in the Contract, perform Blasting Works only during the daytime.

7.6.7 Handling and Storing of Explosives

(1) Storage of Explosives

(a) The Explosive store to be constructed at the Site shall be a secure, substantial and fireproof building, environmentally controlled, locked, guarded and protected at all times and in accordance with the Laws of the Country;

JC1: added. "the Laws" in (a) is wrong. Should be "the laws of the Country".

NK: GC stipulate as 1.1.6.5 "Laws" means all national (or state) legislation… and 2.2 (a) copies of the Laws of the Country…Modified as commented.

(b) Appropriate numbers and types of personnel shall be assigned by the Contractor for safekeeping and security of the stored Explosives and any other materials;

(c) The Contractor shall maintain records of the types and quantities of all Explosives received and issued at the store, listing the date and time of receipt and issue and the names of all personnel concerned; and

(d) The Contractor shall submit the records to the Engineer when the Engineer requests.

For other storage requirements, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 9.3 Storage.

JC1: As Blasting is soul of safety specification, it seems better to specify all items as mentioned in BS 5607 (OSHA) if referred to those. In addition, advise to refer to the allowable values influenced to structures of 3rd parties specified in Hongkong MTR M&W.

NK1: modified following the comments as much as possible.

7.6.9 Handling and Storing of Explosives

(1) Storage of Explosives

(a) The Explosive store to be constructed at the Site shall be a secure, substantial and fireproof building, environmentally controlled, locked, guarded and protected at all times and in accordance with the Laws of the Country;

(b) Appropriate numbers and types of personnel shall be assigned by the Contractor for safekeeping and security of the stored Explosives and any other materials;

(c) The Contractor shall maintain records of the types and quantities of all Explosives received and issued at the store, listing the date and time of receipt and issue and the names of all personnel concerned; and

(d) The Contractor shall submit the records to the Engineer when the Engineer requests.

For other storage requirements, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 9.3 Storage.

JICA have commented as follows:

JC1: As Blasting is soul of safety specification, it seems better to specify all items as mentioned in BS 5607 (OSHA) if referred to those. In addition, advise to refer to the allowable values influenced to structures of 3rd parties specified in Hongkong MTR M&W.

Please note:

1) The full HK blasting document contains no use or mention of the expression "allowable values" of any damage to "structures of 3rd parties"

2) The document includes criteria for measurement and recording but this does not state that any damage is allowable.

3) Similar to previous comments on Earthwork Support (see above), I suggest that the criteria is given to determine whether Blasting is likely to cause damage in which case the Blasting Works shall, stop and the contractor shall propose remedial measures before proceeding.

4) Pages 40 and 42 are missing from my copy of the HK MTR Conditions of Contract, therefore I cannot complete my review and give any final comments on the Contractor's basic obligation.

7.6.9 Handling and Storing of Explosives

(1) Storage of Explosives

(a) The Explosive store to be constructed at the Site shall be a secure, substantial and fireproof building, environmentally controlled, locked, guarded and protected at all times and in accordance with the Laws of the Country;

(b) Appropriate numbers and types of personnel shall be assigned by the Contractor for safekeeping and security of the stored Explosives and any other materials;

(c) The Contractor shall maintain records of the types and quantities of all Explosives received and issued at the store, listing the date and time of receipt and issue and the names of all personnel concerned; and

(d) The Contractor shall submit the records to the Engineer when the Engineer requests.

For other storage requirements, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 9.3 Storage.

(2) Transportation of Explosives

For transportation requirements, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 9.4 Transport of Explosives on Site.

(3) Quantity of Explosives at the Blasting site

(a) No Explosives shall be stored at the Blasting site; and

(b) Explosives not used on the day shall be returned to the Explosives store.

(4) Handling of Explosives

(a) Explosives shall be handled with extreme care ensuring that they are not hit, thrown or dropped;

(b) Containers for Explosives shall be solidly constructed from timber or non-conducting material and metals such as iron or foil must not be used on inner surfaces;

(c) Explosive and detonators shall be separately stored in lockable containers;

(d) The containers for Explosives shall protect against water

(2) Transportation of Explosives

For transportation requirements, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 9.4 Transport of Explosives on Site.

(3) Quantity of Explosives at the Blasting site

(a) ~~The quantity of Explosives to be transported from store to the Blasting site shall not greatly exceed the estimated quantity of consumption for that day;~~ The quantity of Explosives to be transported from store to the Blasting site shall be suitable for the estimated quantity of consumption for the Basting;

MM: The "greatly exceed" expression is not appropriate.

NK1: modified as right. ("suitable" is agreed in the meeting)

(b) No extra or surplus Explosives shall be stored at the Blasting site; and

(c) ~~Explosives not used on the day shall be returned to the Explosives store.~~ ~~Explosives not used on the day shall be returned to the Explosives store or a location where they can be stored legally until the following day.~~

JC1: Please confirm if the procedure (c) is a must to return unused explosives to magazine. Check with BS5607 (there is a provision for measures for such a case in BS 5607 9.6).

NK1: BS 5607 9.6 is "Disposal of unwanted explosives or explosives which have deteriorated during storage", which is irrelevant. Rather, there is a procedure for returning unused explosives in 12.8.2 as follows:

12.8.2: Only the amount of explosive which can be readily charged in one day should be taken into the structure. Uncharged explosives should be removed to a location where they can be stored legally until the following day. Modified as above.

JC2: BS5607 12.8.2 specify about demolition. JSS describes other various cases (excavation, underwater, tunnel, etc.), so it is not sure correct to adopt the description of 12.8.2 to (c).

I do recommend that any such reference and addition is correct or justified particularly for blasting.

My suggestion is the same as for Earthwork Support (see above notes) namely:

"If anything, it would be better to state as originally drafted namely as a common default the Contractor shall cause NO damage to surrounding areas and buildings, etc. etc.. when performing the Works, as this is the usual legal and contractual obligation of the Contractor.,

If there is a chance of damage occurring due to an unavoidable method of execution, then I recommend that the default situation should be that the Contractor is instructed via JSSS to set up and manage monitoring to ensure his compliance i.e. that damage does not occur, subject to receiving the consent of the Engineer.

Regarding the additional reference to BS 5607, the Contractor is already required to comply with this BS so it is not necessary and I do not recommend giving reference to further particular BS clauses in JSSS.

(2) Transportation of Explosives

For transportation requirements, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 9.4 Transport of Explosives on Site.

(3) Quantity of Explosives at the Blasting site

~~(a) The quantity of Explosives to be transported from store to the Blasting site shall not greatly exceed the estimated quantity of consumption for that day;~~

(b) No ~~extra or surplus~~ Explosives shall be stored at the Blasting site; and

I suggest the above is better

(c) Explosives not used on the day shall be returned to the Explosives store.

Ditto

(4) Handling of Explosives

(a) Explosives shall be handled with extreme care ensuring that they are not hit, thrown or dropped;

(b) Containers for Explosives shall be solidly constructed from timber or non-conducting material and metals such as iron or foil must not be used on inner surfaces;

(c) Explosive and detonators shall be separately stored in lockable containers;

(d) The containers for Explosives shall protect against water ingress, impact damage; and

(e) Smoking, use of matches, lighters, flames, sparks etc. shall be prohibited in areas where Explosives are being transported, stored and handled, notice boards and warning signs shall be placed in suitable positions.

(5) Records of Blasting and Explosives

(a) The Shotfirer shall prepare daily work records showing the date and time of each Blasting operation, quantity of Explosives received, consumed, misfired and remaining, number of blast holes, charging method for the Blasting and

ingress, impact damage; and

(e) Smoking, use of matches, lighters, flames, sparks etc. shall be prohibited in areas where Explosives are being transported, stored and handled, notice boards and warning signs shall be placed in suitable positions.

(5) Records of Blasting and Explosives

(a) The Shotfirer shall prepare daily work records showing the date and time of each Blasting operation, quantity of Explosives received, consumed, misfired and remaining, number of blast holes, charging method for the Blasting and treatment of misfired Explosives;

(b) The Explosives engineer shall check and countersign the Blasting Works records; and

(c) The Contractor shall submit the records to the Engineer when the Engineer requests.

(6) Notice to the Engineer

The Contractor shall notify the Engineer in writing as follows:

(a) Delivery of Explosives to the store and from the store to the Site, shall each be given to the Engineer by no later than noon on the day preceding the scheduled date of the arrival of Explosives at the store and the delivery to the Site;

(b) Notification of intended Blasting Works shall be given to the Engineer by no later than noon on the day preceding the scheduled date of the Blasting operation; and

(c) Notification of the schedule for the following week's Blasting shall be given to the Engineer by no later than Friday morning of the preceding week.

On the other hand, in BS5607 9 which stipulates general safety measures, 9.3.4 stipulates concretely as follows:

"If more explosives have been issued than are required and the intention is to return them to the licensed store, they should be examined by the shotfirer before return・・・."

It is better to refer to this 9.3.4. As JSSS 7.6.7 (1) regarding Storage of explosive, stipulates that BS 5607 9.3 shall be complied with in overall.

Therefore, item (c) is not necessary. JC deleted.

NK2: deleted as commented.

(4) Handling of Explosives

(a) Explosives shall be handled with extreme care ensuring that they are not hit, thrown or dropped;

(b) Containers for Explosives shall be solidly constructed from timber or non-conducting material and metals such as iron or foil must not be used on inner surfaces;

(c) Explosive and detonators shall be separately stored in lockable containers;

(d) The containers for Explosives shall protect against water ingress, impact damage; and

(e) Smoking, use of matches, lighters, flames, sparks etc. shall be prohibited in areas where Explosives are being transported, stored and handled, notice boards and warning signs shall be placed in suitable positions.

(5) Records of Blasting and Explosives

(a) ~~The Shotfirer shall prepare daily work records showing the date and time of each Blasting operation, quantity of Explosives received, consumed and remaining, number of blast holes and loading method for the Blasting;~~ The Shotfirer shall prepare daily work records showing the date and time of each Blasting operation, quantity of Explosives received, consumed, misfired and remaining, number of blast holes and ~~loading~~ charging method for the Blasting, and treatment of misfired Explosives;

JC1: modified.

JC2: modified loading to charging.

(b) The Explosive Engineer shall check and countersign the Blasting work records; and

(c) The Contractor shall submit the records to the Engineer when the Engineer requests.

(6) Notice to the Engineer

The Contractor shall notify the Engineer in writing as follows:

(a) Delivery of Explosives to the store and from the store to the Site, shall each be given to the Engineer by no later than noon on the day preceding the scheduled date of the arrival of Explosives at the store and the delivery to the Site;

(b) Notification of intended Blasting ~~W~~ works shall be given to the Engineer by no later than noon on the day preceding the

treatment of misfired Explosives;

(b) The Explosives engineer shall check and countersign the Blasting Works records; and

(c) The Contractor shall submit the records to the Engineer when the Engineer requests.

(6) Notice to the Engineer

The Contractor shall notify the Engineer in writing as follows:

(a) Delivery of Explosives to the store and from the store to the Site, shall each be given to the Engineer by no later than noon on the day preceding the scheduled date of the arrival of Explosives at the store and the delivery to the Site;

(b) Notification of intended Blasting Works shall be given to the Engineer by no later than noon on the day preceding the scheduled date of the Blasting operation; and

(c) Notification of the schedule for the following week's Blasting shall be given to the Engineer by no later than Friday morning of the preceding week.

scheduled date of the Blasting operation; and

(c) Notification of the schedule for the following week's Blasting shall be given to the Engineer by no later than Friday morning of the preceding week.

7.6.8 ~~Test~~ Trial Blasting

~~The Contractor shall perform test Blasting in accordance with the Blasting Safety Plan provided in 7.6.5 [*Blasting Safety Plan*] for the following purposes, and modify the said safety plan according to the results of the test Blasting:~~ The Contractor shall perform ~~test~~ trial Blasting in accordance with the Blasting Safety Plan provided in 7.6.5 [*Blasting Safety Plan*] for the following purposes, and modify the said Safety Plan according to the results of the ~~test~~ trial Blasting:

(1) Confirm the characteristics of rock and topography at the Blasting site that will affect the Blasting operations.

(2) Confirm the suitability of the planned Blasting method, Explosives amount, ~~and~~ scattering prevention and other protection measures.

(3) Confirm the safety of ~~Contractor's Personnel, Employer's Personnel and any other persons, the general public, neighbouring residents and building owners on or adjacent to the Site and who may be~~ personnel affected by the Blasting works ~~affected by the Blasting operations.~~

NK1: as defined in 7.6.5 (3), the above is replaced with "personnel affected by the Blasting works"

(4) Confirm that the vibration value of the Blasting does not exceed the allowable vibration value for existing buildings, structures and other property on or adjacent to the Site and which may be affected by the Blasting operations, as specified in the Contract or instructed by the Engineer.

The Contractor shall submit the trial blasting reports and any changes to the Blasting Safety Plan to the Engineer before proceeding Blasting operation.

NK added responding JC comment for the Engineer to be involved in blasting works.

7.6.9 Monitoring Impact on Adjacent Buildings and Structures

~~The Contractor shall monitor the vibrations caused by the Blasting operations to measure the extent of vibration in all affected areas particularly in the position of existing buildings, structures and other property on or adjacent to the Site and which may be affected by the Blasting operations to ensure that no vibration damage or weakening is caused as specified in the Contract or instructed by the Engineer.~~

The Contractor shall monitor the vibrations caused by the Blasting operations in the affected areas, buildings, structures and properties identified in the Blasting Safety Plan to ensure that vibration damage or weakening caused by the Blasting operations will remain within the allowable values specified in the Contract or instructed by the Engineer.

JC1: The monitoring object shall be determined by the Contract or instruction by the Engineer. The allowable vibration value also shall be given by the Employer.

7.6.10 Trial Blasting

The Contractor shall perform trial Blasting in accordance with the Blasting Safety Plan provided in 7.6.5 [*Blasting Safety Plan*] for the following purposes, and modify the said Blasting Safety Plan according to the results of the trial Blasting:

(1) Confirm the characteristics of rock and topography at the Blasting site that will affect the Blasting operations.

(2) Confirm the suitability of the planned Blasting method, Explosives amount, and scattering prevention and other protection measures.

(3) Confirm the safety of all persons affected by the Blasting Works.

~~(4) Confirm that the vibration values of the Blasting does not exceed the allowable vibration value for existing buildings, structures and other property on or adjacent to the Site and which may be affected by the Blasting operations, as specified in the Contract or instructed by the Engineer.~~

Please refer to following clause 7.6.11 and as a consequence I suggest that the above is modified as follows:

(5) Confirm that the Contractor's criteria is adequate for the purpose of JSSS エラー！参照元が見つかりません。 [*Monitoring Impact on Other Properties*].

The Contractor shall submit the trial Blasting reports with any consequent changes to the Blasting Safety Plan to the Engineer before proceeding with the Blasting Works.

7.6.11 Monitoring Impact of Blasting Works on Other Properties

The Contractor shall comply with the requirements of JSSS 6.1.3 [*Monitoring Impact of Works on Other Properties*].

There are numerous references to the requirements for monitoring the impact of the Works on other properties so (as with Excavation) I have developed JSSS 6.1.3 to cover this as a Common Specification.

It is only necessary therefore to include the above cross reference here and the following can therefore be deleted.

~~*The above Original (as re-edited)*~~

~~(1) The Contractor shall monitor the vibration, settlement and all other potential effects of the Blasting Works to ascertain any effect upon buildings, structures and other properties, paved areas, roads,~~

7.6.10 Trial Blasting

The Contractor shall perform trial Blasting in accordance with the Blasting Safety Plan provided in 7.6.5 [*Blasting Safety Plan*] for the following purposes, and modify the said Blasting Safety Plan according to the results of the trial Blasting:

(1) Confirm the characteristics of rock and topography at the Blasting site that will affect the Blasting operations.

(2) Confirm the suitability of the planned Blasting method, Explosives amount, and scattering prevention and other protection measures.

(3) Confirm the safety of all persons affected by the Blasting Works.

(4) Confirm that the Contractor's criteria is adequate for the purpose of JSSS エラー！参照元が見つかりません。 [*Monitoring Impact on Other Properties*].

The Contractor shall submit the trial Blasting reports with any consequent changes to the Blasting Safety Plan to the Engineer before proceeding with the Blasting Works.

7.6.11 Monitoring Impact of Blasting Works on Other Properties

The Contractor shall comply with the requirements of JSSS 6.1.3 [*Monitoring Impact of Works on Other Properties*].

Refer to MTR M&W 25.20(c), 25.30~25.35.

JC1: There should be relevant stipulation in the Contract. Please modify the expression including above, for example, inserting "as specified in the Contract".

NK1: The clause is modified as right.

JC2: The sentence is modified so that the description follows the context of JSSS as a whole such as relating with the Blasting Safety Plan. "No vibration damage" is too severe to stipulate. JC modified as above.

NK2: modifies.

For this purpose, the Contractor shall:

(1) Prepare an environmental monitoring plan as a part of the Blasting Safety Plan, which will:

JC2: In 7.6.5.(8), the term "Environment monitoring plan" is used. If "monitoring plan" in (1) above means same as 7.6.5.(8), terms shall be unified.

NK2: As these two terms are the same meaning, modified to use "environment monitoring plan".

(a) ~~Measure~~ Monitor the extent and impact of Blasting vibrations by vibration monitoring system and in terms of peak particle velocity and vibrational amplitude as specified in the Contract or instructed by the Engineer and as determined by the Contractor;

RC2: Even though the Employer specifies values, the Contractor cannot be avoidable being responsible for damage caused . Therefore, it is better to specify both values by the Employer and Contractor to monitor.

NK2: added "and as determined by the Contractor" to (a) and (c).

(b) Monitor the Blasting methods and equipment, showing the locations, measurement frequency and recording methods;

(c) Plan countermeasures in the instance that the actual measured vibration value is close to or exceeds the allowable vibration value specified in the Contract or instructed by the Engineer and as determined by the Contractor; and

JC1: In clause (c), there is a stipulation for allowable vibration value, however, no stipulation for the objects.

NK1: Regarding the objects to be monitored and apply countermeasures are stated in the top statement of this section. (in all affected areas particularly in the position of existing buildings, structures and other property on or adjacent to the Site… as specified in the Contract or instructed by the Engineer.), so leave it as it is.

(d) Unless otherwise specified in the Contract, perform ~~measurement~~ monitoring at each Blasting operation, at the first day and then every subsequent 3 days after the Engineer judges that the vibration value is as planned, then every 7 days, and every 1 month thereafter.

(2) ~~Measurement~~ Monitoring and Evaluation

JC1: What is the difference between "monitoring" and "measurement"?

NK1: "Measurement" in (2) is changed to "Monitoring" as the result of discussion in the meeting 2020/02/20.

The Contractor shall

(a) Provide and maintain ~~measurement~~ monitoring equipment;

(b) Calibrate the ~~measurement~~ monitoring equipment before

~~footpaths, fences, railways, waterways, drainage, utilities and the like on the Site or outside the Site (collectively referred to in this Section as "other properties") to ensure that no damage or weakening is caused to such other properties.~~

~~JICA require the following re-wording to the original text of this clause:~~

~~The Contractor shall monitor the vibrations caused by the Blasting operations in the affected areas, buildings, structures and properties identified in the Blasting Safety Plan to ensure that vibration damage or weakening caused by the Blasting operations will remain within the allowable values specified in the Contract or instructed by the Engineer.~~

test Blasting and other Blasting operations;

(c) Carry out ~~measurement~~ monitoring at the frequencies described above;

(d) Evaluate the ~~measurement~~ monitoring results;

(e) ~~Calibrate the measurement equipment before test Blasting and other Blasting operations; and~~

JC1: It is strange that (d) regarding calibration of measurement equipment is located at the bottom. This should be right after (a).

NK1: The content of (d) is moved to (b).

(f) Submit the evaluation report and if necessary, any changes to the Blasting Safety Plan to the Engineer before the next Blasting operation.

JC2: "measurement" should be "monitoring".

NK2: Changed to "monitoring" to coincide as right.

7.6.10 Particular Safety Measures for Blasting Work

(1) Identification of Blasting workers

~~Provide armbands, uniforms or marked safety helmets to distinguish all workers engaged in Blasting operations from other workers.~~

~~Provide armbands, uniforms or marked safety helmets to distinguish the explosive engineer, shotfirer(s), Spotters and other workers engaged in Blasting operations from other workers.~~

Provide ~~armbands,~~ clear visible identification mark, uniforms or marked safety helmets to distinguish the explosive engineer and shotfirer(s) ~~, Spotters and other workers~~ engaged in Blasting operations from other workers.

JC1: "all workers engaged in Blasting operations" should limited to the Blasting Engineer and Shotfirers.

NK1: As mentioned in JSSS 7.6.4 (3), the blasting work team consists of the explosive engineer, shotfirer(s), Spotters (sentries) and other workers involved in the blasting operations. There is no clause to specify Identification of Blasting workers in BS 5607. (1) is modified as right.

JC2: As there is no armbands, "clear visible identification mark", etc. is to be specified The personnel for blasting work are limited as explosive engineer and shotfirer in 7.6.4.(3). Other than them are deleted.

NK2: "armbands" is changed as commended. Personnel other than explosive engineer and shotfirer are deleted.

(2) Drilling Work

(a) No drilling shall be allowed in the hole formed for previous Blasting; and

(b) If misfired explosive is found during the drilling operation, the drilling shall be stopped and the misfired explosive shall be treated in accordance with the procedures planned in 7.6.5 7.6.5 [*Blasting Safety Plan*] and 7.611 7.6.11 [*Measures after Blasting*], (2) [*Treatment of misfired Explosives*].

(3) Explosives Charging

JC1: This clause (3) is not provision of "charging" . Change the clause covering the contents of BS 5607 10.2 and delete the sentence for referring to BS.

7.6.12 Particular Safety Measures for Blasting Works

(1) Identification of Blasting workers

~~Provide armbands, uniforms or marked safety helmets to distinguish all workers engaged in Blasting Works from other workers.~~

Provide clear visible identification mark, uniforms or marked safety helmets to distinguish the Explosives engineer and shotfirer(s) engaged in Blasting Works from other workers.

(2) Drilling Work

(a) No drilling shall be allowed in the hole formed for previous Blasting; and

(b) If misfired explosive is found during the drilling operation, the drilling shall be stopped and the misfired explosive shall be treated in accordance with the procedures planned in 7.6.5 [*Blasting Safety Plan*] and 7.6.11 [*Measures after Blasting*], (2) [*Treatment of misfired Explosives*].

(3) Explosives Charging

(a) Drilling operations shall not be permitted during charging of Explosives.

(b) Before charging, thoroughly clean the holes and do not leave any dust or debris; and

(c) Shock and friction such as the following, which can cause accidental initiation of the charges, shall be avoided:

(i) the over-vigorous use of stemming rods to force explosives into a shot hole.

(ii) the use of drill rods or other metal tools in a shot hole containing explosives.

(iii) vehicles running over explosives and other hazards involving impact or concussion.

(iv) shock tube detonators being initiated when subjected to "snap, slap and shoot".

7.6.12 Particular Safety Measures for Blasting Works

(1) Identification of Blasting workers

Provide clear visible identification mark, uniforms or marked safety helmets to distinguish the Explosives engineer and shotfirer(s) engaged in Blasting Works from other workers.

(2) Drilling Work

(a) No drilling shall be allowed in the hole formed for previous Blasting; and

(b) If misfired explosive is found during the drilling operation, the drilling shall be stopped and the misfired explosive shall be treated in accordance with the procedures planned in 7.6.5 [*Blasting Safety Plan*] and 7.6.11 [*Measures after Blasting*], (2) [*Treatment of misfired Explosives*].

(3) Explosives Charging

(a) Drilling operations shall not be permitted during charging of Explosives.

(b) Before charging, thoroughly clean the holes and do not leave any dust or debris; and

(c) Shock and friction such as the following, which can cause accidental initiation of the charges, shall be avoided:

(i) the over-vigorous use of stemming rods to force explosives into a shot hole.

(ii) the use of drill rods or other metal tools in a shot hole containing explosives.

(iii) vehicles running over explosives and other hazards involving impact or concussion.

(iv) shock tube detonators being initiated when subjected to "snap, slap and shoot".

For other safety measures for charging work, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10 Safety when using

NK1: Items (a)~(e) are “Points to care for loading explosives” in Japanese version which are derived from the Pre-study in 2019. They are left as they are.
Added some clauses of BS 5607 10.2 so that the contents of BS can be included.

(a) ~~Electric detonator's leg wires shall be kept short-circuited until they are connected into the circuit for firing;~~

(b) ~~Detonators shall be kept away from electric lighting supplies, power supplies and other electrical sources that may cause electric leakage;~~

1. NK: (a) and (b) are moved to (4) because they are specially for electric detonator.

(a) ~~No other activity such as drilling shall be permitted in the vicinity, whilst loading;~~ Drilling operation is not permitted during charging of explosive;

JC2: Drilling operation is not permitted during charging of explosive.のように簡潔に。Simple expression is to be made such as “Drilling operation is not permitted during charging of explosive”.

NK2: Modified as commended.

(b) Before ~~loading~~ charging, thoroughly clean the holes and do not leave any dust or debris;

(c) ~~Shock and friction which can cause accidental initiation of the charges such as below shall be avoided;~~ Shock and friction such as the following, which can cause accidental initiation of the charges, shall be avoided;

JC2: Simple expression recommended such as “Explosive shall be treated gently without giving strong friction or shock.”

JC2: Description in (d) to (h) is incorrect. Please review the whole and make the description a little simpler in case, and take measures such as referring to BS.

NK2: The following (d) to (h) were incorrectly given numbered. Correct ones are (i) to (v). Therefore, the above (c) is strange sentence as JC commented. NK modified the (c) and revised numbers of following sentences: (iv) is deleted as it is not at time of explosive charging.

(i) the over-vigorous use of stemming rods to force explosives into a shot hole;

(ii) the use of drill rods or other metal tools in a shot hole containing explosives;

(iii) vehicles running over explosives and other hazards involving impact or concussion;

(iv) ~~rock, stone or similar material being projected from the blast, causing an accidental detonation of explosives, so that excess explosives should be removed from the blast site to a place of safety before blasting takes place; and~~

(v) shock tube detonators being initiated when subjected to "snap, slap and shoot".

(d) ~~No other activity such as drilling shall be permitted in the vicinity, whilst loading;~~

(e) ~~Before loading, thoroughly clean the holes and do not leave any dust or debris; and~~

(f) ~~Unused Explosives shall be returned to the Explosives store.~~

For other safety measures for loading work, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10 Safety when using Explosives.

(4) Handling Detonators

(a) Measures for Blasting using electric detonators:

(i) Make sure electric detonator's leg wires shall be kept short-circuited until they are connected into the circuit for firing.

(ii) Check if shotfiring cables are not cut or damaged.

(iii) Make sure electric detonators shall be kept away from electric lighting supplies, power supplies and other electrical sources that may cause electric leakage.

(iv) Check if there are no missing or wrong wiring connections or mis-connection with previous blast wires.

(v) Make sure there are no stray electric currents.

(vi) Do not use electric detonators if there is any danger of electrical interference for example from radio-frequency radiation near radio communication facility or radar.

(vii) Install a lightning detector near the Blasting area, stop Blasting Works when there is a risk of lightning strike, and evacuate workers to a safe place.

For other safety matters for Blasting with electric detonator, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10.4.3 Electric detonators.

(5) Measures for Blasting using non-electric detonators:

(i) Do not cut or damage the shock tube.

(ii) Before firing, check the connections visually and make sure that there are no missing or previous wiring connections or wrong wiring connections.

(a) Measures in Ignition:

(b) The connection between the shotfiring apparatus and shotfiring cable shall be made just before ignition;

(c) Ignition shall be made at a safe place isolated and protected according to the degree of the blast; and

(d) The handle shall be removed from the shotfiring apparatus except when igniting.

I suggest that the following is not necessary as there are no requirements :

~~(6) Measures when Blasting near existing buildings and structures~~

~~Blasting near existing buildings or structures shall not be carried out unless specified in the Particular Safety Specification or instructed by the Engineer.~~

For other safety measures for charging work, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10 Safety when using Explosives.

(4) Handling Detonators

(a) Measures for Blasting using electric detonators:

(i) Make sure electric detonator's leg wires shall be kept short-circuited until they are connected into the circuit for firing.

(ii) Check if shotfiring cables are not cut or damaged.

(iii) Make sure electric detonators shall be kept away from electric lighting supplies, power supplies and other electrical sources that may cause electric leakage.

(iv) Check if there are no missing or wrong wiring connections or mis-connection with previous blast wires.

(v) Make sure there are no stray electric currents.

(vi) Do not use electric detonators if there is any danger of electrical interference for example from radio-frequency radiation near radio communication facility or radar.

(vii) Install a lightning detector near the Blasting area, stop Blasting Works when there is a risk of lightning strike, and evacuate workers to a safe place.

For other safety matters for Blasting with electric detonator, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10.4.3 Electric detonators.

(5) Measures for Blasting using non-electric detonators:

(i) Do not cut or damage the shock tube.

(ii) Before firing, check the connections visually and make sure that there are no missing or previous wiring connections or wrong wiring connections.

(a) Measures in Ignition:

(b) The connection between the shotfiring apparatus and shotfiring cable shall be made just before ignition;

(c) Ignition shall be made at a safe place isolated and protected according to the degree of the blast; and

(d) The handle shall be removed from the shotfiring apparatus except when igniting.

comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10 Safety when using Explosives.

(4) Handling Detonators

JC1: Same as (3) above, state the clause by deriving from BS 5607 10.4.3.

NK1: Same as (3) above, leave as it is and referring to BS 5607 10.4.3 as well.

(a) Measures for Blasting using electric detonators

JC1: Could it ("bus wire") be a mis-translation?

NK1: In OSHA and ACE, there is the definition of "Bus wire: an expendable wire used in parallel or series-in-parallel circuits to which are connected the leg wires of electric blasting caps."
BS 5607 10.4.3.2 b) specifies "All firing lines should be short-circuited" and 10.501 a) shotfiring cable. The bus wire is replaced with shotfiring cable.

JC1 Please modify the sentence so as to mean that if a danger by stray electric current is predicted, electric detonators shall not be used.

NK1: Regarding prohibition of using electric detonator due to stray electric current is stated in (iii) above. (v) is written mistakenly separating a part of (iv), "unless otherwise specified in the Contract" is moved to (iv), and (v) is deleted.
NK: (vi)is deleted and (iv) is modified as specified in BS 5607 10.2 below.

10.2 Handling and charging of explosives
When shotfirers are handling and charging explosives at the blast site, they should at all times avoid shock, friction and static electricity or induced radio waves from mobile phones or other electronic devices which can cause accidental initiation of the charges, such as
d) the use of mobile phones or other electronic devices;

~~(i) Make sure electric Check if the bus wire is not cut or damaged, and check its electrical continuity.~~

~~(ii) Check if there are no missing or previous wiring connections or wrong wiring connections.~~

~~(iii) Make sure there are no stray electric currents when using electric detonators.~~

~~(iv) Do not use electric detonators if there is any danger of electrical interference for example from radio-frequency radiation near radio communication facility, radar, wireless telephone including mobile type.~~

~~(v) Do not use electric detonators unless otherwise specified in the Contract.~~

~~(vi) Prohibit bringing all mobile phones and radios from the Blasting areas.~~

~~(vii) Install a lightning detector near the Blasting area, stop Blasting work when there is a risk of lightning strike, and evacuate workers to a safe place.~~

NK1: It is complicated, so modified clauses are shown below.

(i) Make sure electric detonator's leg wires shall be kept short-circuited until they are connected into the circuit for firing;

(ii) Check if ~~the bus wire is~~ shotfiring ca;bles are not cut or damaged~~, its electrical continuity and short circuited~~

JC2: Status of short-circuit is already mentioned in (i), thus the part should be deleted.

NK2: Deleted.

(iii) Make sure electric detonators shall be kept away from electric lighting supplies, power supplies and other electrical sources that may cause electric leakage;

(iv) ~~Check if the bus wire is all shotfiring cables are not cut or damaged, and check its electrical continuity.~~

JC2: (iv) is a duplication of (ii).

NK2: Deleted.

(v) Check if there are no missing or previous wiring connections ~~or wrong wiring connections.~~ or mis-connection with previous blast wires.

JC2: What is "previous wiring connections"?

NK2: The phrase "if there are previous wiring connections" means that "if the wire used for previous blasting is left and connected to the wiring this time. It is modified to "mis-connection with previous blast wires."

(vi) Make sure there are no stray electric currents ~~when using electric detonators~~.

JC2: This phrase is not necessary because (a) is for "Measures for Blasting using electric detonators."

NK2: Deleted as commented.

(vii) Do not use electric detonators if there is any danger of electrical interference for example from radio-frequency radiation near radio communication facility, radar~~, wireless telephone, mobile phones unless otherwise specified in the Contract~~.

JC2: If the purpose of this item is that electric detonators shall not be used in the exemplified circumstances, prohibition of wireless phones etc. is not necessary.

NK2: 7.6.10. Particular Safety Measures for Blasting Work (4) (a) (viii) specifies Prohibit bringing into the blasting areas any mobile phone unless it is guaranteed that it will not adversely affect the electric detonators. Delete as commented.

(viii) Install a lightning detector near the Blasting area, stop Blasting work when there is a risk of lightning strike, and evacuate workers to a safe place.

For other safety matters for Blasting with electric detonator, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10.4.3 Electric detonators.

(b) Measures for Blasting using non-electric detonators

(i) Do not cut or damage the shock tube.

(ii) Before firing, check the connections visually and make sure that there are no missing or previous wiring connections or wrong wiring connections.

(5) Measures in Ignition

(a) The connection between the shotfiring apparatus and ~~the bus wire~~ shotfiring cable shall be made just before ignition.

(b) Ignition shall be made at a safe place isolated and protected according to the degree of the blast;

(c) The handle shall be removed from the shotfiring apparatus

except when igniting; and

(d) ~~The shotfiring apparatus shall be properly stored according to the safety plan.~~

JC1: Isn't it (b) about ignition?

NK1: It is deemed important to prevent misuse and theft of shotfiring apparatus due to improper storage. Orders of (a) to (d) are changed.

JC2: As shotfiring apparatus included in explosives as a matter of definition, it is already covered by 7.6.7. Storage. Deleted.

NK2: Deleted as commented.

(6) Measures when Blasting near existing buildings and structures

Blasting near existing buildings or structures shall not be carried out unless specified in the Contract or instructed by the Engineer~~, in which case the Contractor shall comply with the specified or instructed requirements.~~

JC2: Isn't this included in the specification / instruction?

NK2: It is deemed natural that requirements are included in the specification/instruction by the Engineer. The underlined part is deleted.

7.6.11 Measures after Blasting

(1) Confirmation of safety of Blasting area after Blasting

(a) No persons other than the shotfirer shall enter the Blasting site or its vicinity until ~~after~~ the shotfirer has inspected the area and confirmed that it is safe to re-enter; and

(b) The shotfirer shall inspect the area and surrounding area of the Blasting site to check that there is no danger of falling or collapsing of ground and rocks or misfired Explosives.

(2) Treatment of misfired Explosives

JC1: Please stipulate important items referring to BS5607 10.5 Misfire and in addition, specify to follow the requirements of BS. ex. re-firing, remove misfired explosives, procedure shown in flowchart in BS)

NK1: Taking into account the contents, modification is made as right.

JC1 : (e) Action such as (e) is not actually not made at the blasting site. Deleted.

JC1: (h) Is it possible?

NK1: modified them to the Contractor and within a week.

JC1: No need to specify (i) because 8.4.5(7) mentions about record (general).

NK: Deleted.

JC1: (j) ditto.

NK: Deleted.

~~If, after ignition, the loaded Explosives did not explode, or if it is difficult to confirm the explosion, the misfired Explosives shall be treated in accordance with the Blasting Safety plan and the following measures shall be adopted initially by the shotfirer:~~

(a) ~~Immediately remove the shotfiring apparatus such as the handle and the bus wire from the shotfiring apparatus;~~

(b) ~~Make short circuit or ground and completely isolate the bus wires;~~

(c) ~~Report to the Explosive Engineer for further instructions;~~

7.6.13 Measures after Blasting

(1) Confirmation of safety of Blasting area after Blasting:

(a) No persons other than the shotfirer shall enter the Blasting site or its vicinity until after the shotfirer has inspected the area and confirmed that it is safe to re-enter; and

(b) The shotfirer shall inspect the area and surrounding area of the Blasting site to check that there is no danger of falling or collapsing of ground and rocks or misfired Explosives.

(2) Treatment of misfired Explosives

If, after ignition, the loaded Explosives did not explode, or if it is difficult to confirm the explosion, the misfired Explosive shall be treated in accordance with the treatment of misfired Explosives in the Blasting Safety Plan, and 10.5 [Misfires] of BS5607 including the following:

(a) Procedure of treatment of misfired Explosives;

The following treatment procedure of misfired Explosives shall be taken:

(i) Immediate remedial action.

(ii) Delayed remedial action.

(iii) Further attempt at detonation.

(iv) Inspection to confirm complete detonation.

The details of the above actions are stipulated in succeeding (b) to (d).

(b) Immediate remedial action;

The following initial actions shall be taken by the shotfirer:

(i) Prohibit anyone other than the shotfirer and other authorized personnel from entering the Blasting site.

7.6.13 Measures after Blasting

(1) Confirmation of safety of Blasting area after Blasting:

(a) No persons other than the shotfirer shall enter the Blasting site or its vicinity until after the shotfirer has inspected the area and confirmed that it is safe to re-enter; and

(b) The shotfirer shall inspect the area and surrounding area of the Blasting site to check that there is no danger of falling or collapsing of ground and rocks or misfired Explosives.

(2) Treatment of misfired Explosives

If, after ignition, the loaded Explosives did not explode, or if it is difficult to confirm the explosion, the misfired Explosive shall be treated in accordance with the treatment of misfired Explosives in the Blasting Safety Plan, and 10.5 [Misfires] of BS5607 including the following:

(a) Procedure of treatment of misfired Explosives;

The following treatment procedure of misfired Explosives shall be taken:

(i) Immediate remedial action.

(ii) Delayed remedial action.

(iii) Further attempt at detonation.

(iv) Inspection to confirm complete detonation.

The details of the above actions are stipulated in succeeding (b) to (d).

(b) Immediate remedial action;

The following initial actions shall be taken by the shotfirer:

(i) Prohibit anyone other than the shotfirer and other authorized personnel from entering the Blasting site.

(d) ~~Prohibit anyone other than the shotfirer and other authorised personnel from entering the Blasting site. Entry to the Blasting site shall only be permitted after the elapsed time from the occurrence of misfire as specified in the Blasting Safety Plan;~~

(e) ~~Clearly indicate the presence of misfired Explosives and install barriers and signs and prevent anyone other than the shotfirer and authorised person(s) from approaching to the Blasting site;~~

(f) ~~Take appropriate procedures to identify the cause of the misfire and to determine the handling of the misfired explosive;~~

(g) ~~No other work shall be permitted until treatment of the misfired Explosives is completed;~~

(h) ~~The Explosive Engineer shall notify the Engineer immediately after any misfire event;~~

(i) ~~The Shotfirer shall prepare records of misfired Explosives showing the date and time of the Blasting Works and the result of the subsequent treatment. The Explosive Engineer shall check and countersign the records; and~~

(j) ~~The Contractor shall submit the records to the Engineer immediately after the successful treatment of the misfire event.~~

NK1: It is complicated, so modified clauses are shown below.

If, after ignition, the loaded Explosives did not explode, or if it is difficult to confirm the explosion, the misfired Explosives shall be treated in accordance with the treatment of misfired Explosives in the Blasting Safety Plan, and 10.5 [Misfires] of BS5607 including the following:

JC2: Terms of "Explosive" and "explosive" are both used in this section.

NK2: As "Explosive" is a defined word in 7.6.2. Thus, "Explosive" should be used in this section. However, it is questionable if it should be defined at all same as "Blasting". To MD: please review the above.

(a) Procedure of treatment of misfired Explosives

The following treatment procedure of misfires Explosive shall be taken:

(i) Immediate remedial action;

(ii) Delayed remedial action;

(iii) Further attempt at detonation; and

(iv) Inspection to confirm complete detonation.

The details of the above actions are stipulated in succeeding (b) to (d).

JC2: These four terms in (i) to (iv) cannot be understood well. Provisions are stated below for "immediate action" and "delayed action". What are the other two? If provisions for treatment of misfire is necessary, it should be of simple contents.

NK2: (i) Immediate remedial action is specified in (b), (ii) Delayed remedial action and (iii)further attempt at detonation is in (c). (iv) Inspection to confirm complete is

(ii) Entry to the Blasting site shall only be permitted after the elapsed time from the occurrence of misfire as specified in the Blasting Safety Plan.

(iii) Disconnect from the shotfiring apparatus any removable handle or key and the shotfiring cable, and short-circuit or ground the bare wires together.

(iv) When safe to do so, examine the cable and connections for any defects, and remedy any defect so found.

(v) Make a further attempt to fire the shot.

(vi) Report to the explosive engineer for further instructions.

(vii) Do not collect any exposed explosives before further action is taken.

(viii) Do not allow drilling or any other site work to be carried out in the vicinity of the misfire until the misfire has been remedied, unless this is directly involved in the treatment of the misfire.

(ix) Other actions specified in 10.5.4.1 [Initial actions]in BS5607.

After the initial actions, the following initial remedial actions shall be taken by the shotfirer:

(i) When safe to do so, examine the cable and connections for any defects, and remedy any defect so found; and

(ii) Make a further attempt to fire the shot.

(c) Delayed remedial action and further attempt at detonation:

(i) After the immediate remedial action, when necessary, the delayed remedial action and further attempt at detonation shall be taken.

(ii) The delayed remedial action and further attempt at detonation should be safe removal of the stemming to allow re-priming, or drilling and firing relieving holes placed so as to work away the rock surrounding the stemming and charge of the misfired shot holes.

(iii) The action and attempt shall be taken in accordance with the Blasting Safety Plan, and 10.5.4.2 [Written instructions], 10.5.4.3 [Attempts to re-fire], 10.5.4.4 [Drilling relieving holes] and 10.5.5 [Drilling relieving holes] in BS5607.

(d) Inspection to confirm complete detonation;

After further attempt at detonation, inspection shall be made to confirm complete detonation. If any non or partial detonation is found, remedial measures shall be taken according to Figure-1 Procedure to remedy misfires in 10.5.1 [General] in BS 5607.

(e) Take appropriate steps to prevent theft of Explosives and detonators or their initiation by an unauthorised person; and

(f) The Contractor shall promptly notify the Engineer of any misfire event and the remedial actions.

(ii) Entry to the Blasting site shall only be permitted after the elapsed time from the occurrence of misfire as specified in the Blasting Safety Plan.

(iii) Disconnect from the shotfiring apparatus any removable handle or key and the shotfiring cable, and short-circuit or ground the bare wires together.

(iv) When safe to do so, examine the cable and connections for any defects, and remedy any defect so found.

(v) Make a further attempt to fire the shot.

(vi) Report to the explosive engineer for further instructions.

(vii) Do not collect any exposed explosives before further action is taken.

(viii) Do not allow drilling or any other site work to be carried out in the vicinity of the misfire until the misfire has been remedied, unless this is directly involved in the treatment of the misfire.

(ix) Other actions specified in 10.5.4.1 [Initial actions]in BS5607.

After the initial actions, the following initial remedial actions shall be taken by the shotfirer:

(i) When safe to do so, examine the cable and connections for any defects, and remedy any defect so found; and

(ii) Make a further attempt to fire the shot.

(c) Delayed remedial action and further attempt at detonation:

(i) After the immediate remedial action, when necessary, the delayed remedial action and further attempt at detonation shall be taken.

(ii) The delayed remedial action and further attempt at detonation should be safe removal of the stemming to allow re-priming, or drilling and firing relieving holes placed so as to work away the rock surrounding the stemming and charge of the misfired shot holes.

(iii) The action and attempt shall be taken in accordance with the Blasting Safety Plan, and 10.5.4.2 [Written instructions], 10.5.4.3 [Attempts to re-fire], 10.5.4.4 [Drilling relieving holes] and 10.5.5 [Drilling relieving holes] in BS5607.

(d) Inspection to confirm complete detonation;

After further attempt at detonation, inspection shall be made to confirm complete detonation. If any non or partial detonation is found, remedial measures shall be taken according to Figure-1 Procedure to remedy misfires in 10.5.1 [General] in BS 5607.

(e) Take appropriate steps to prevent theft of Explosives and detonators or their initiation by an unauthorised person; and

(f) The Contractor shall promptly notify the Engineer of any misfire event and the remedial actions.

added this time.

The comment regarding “simple contents” is somewhat different from the following comment previously given by JICA.

“Please stipulate important items referring to BS5607 10.5 Misfire and in addition, specify to follow the requirements of BS. ex. re-firing, remove misfired explosives, procedure shown in flowchart in BS)” (Translation has been partially abbreviated.)

NK thinks that present provisions regarding the immediate remedial actions to take for misfire are concrete ones to be specified.

NK2: As above, additional sentences are added in right to meet the JC comments.

(b) Immediate remedial action

The following initial ~~remedial~~ actions shall be taken by the shotfirer:

(i) prohibit anyone other than the shotfirer and other authorized personnel from entering the Blasting site.

(ii) entry to the Blasting site shall only be permitted after the elapsed time from the occurrence of misfire as specified in the Blasting Safety Plan;

(iii) disconnect from the shotfiring apparatus any removable handle or key and the shotfiring cable, and short-circuit or ground the bare wires together;

(iv) when safe to do so, examine the cable and connections for any defects, and remedy any defect so found;

(v) make a further attempt to fire the shot; and

(vi) report to the explosive engineer for further instructions;

(vii) not collect any exposed explosives before further action is taken;

(viii) not allow drilling or any other site work to be carried out in the vicinity of the misfire until the misfire has been remedied, unless this is directly involved in the treatment of the misfire; and

(ix) other actions specified in 10.5.4.1 [Initial actions]in BS5607.

After the initial actions, the following initial remedial actions shall be taken by the shotfirer:

(i) when safe to do so, examine the cable and connections for any defects, and remedy any defect so found; and

(ii) make a further attempt to fire the shot.

(j) Delayed remedial action and further attempt at detonation

~~After the immediate remedial action, the delayed remedial action and further attempt at detonation shall be taken in accordance with the Blasting Safety Plan, and 10.5.4.2 [Written instructions], 10.5.4.3 [Attempts to re-fire], 10.5.4.4 [Drilling relieving holes] and 10.5.5 [Drilling relieving holes] in BS5607.~~

After the immediate remedial action, when necessary, the delayed remedial action and further attempt at detonation shall be taken.

The delayed remedial action and further attempt at detonation should be safe removal of the stemming to allow re-priming, or drilling and firing relieving holes placed so as to work away the rock surrounding the stemming and charge of the misfired shot holes. The action and attempt shall be taken in accordance with the Blasting Safety Plan, and 10.5.4.2 [Written instructions], 10.5.4.3 [Attempts to re-fire], 10.5.4.4 [Drilling relieving holes] and 10.5.5 [Drilling relieving holes] in BS5607. (k) Inspection to confirm complete detonation After further attempt at detonation, inspection shall be made to confirm complete detonation. If any non or partial detonation is found, remedial measures shall be taken according to Figure-1 Procedure to remedy misfires in 10.5.1 [General] in BS 5607. (l) Take appropriate steps to prevent theft of Explosives and detonators or their initiation by an unauthorised person; (m) ~~The Contractor shall notify the Engineer within a week after any misfire event.~~ The Contractor shall promptly notify the Engineer of any misfire event and the remedial actions. JC2: modified (f) as above.		

JSSS in English R3 for Issue 2（2020/3/30） Red letters: NK revision JC1&2: JICA comment 1 (to Issue 1) &2 (to R2), MM: Minutes of Meeting (2/20), NK1 &2: NK Comment 1 to Issue2 &2 (to R2)	JSSS in English Issue 2 (2020/4/28 by MD) With comments by MD *MD Comments* NK6/22: Comments	JSSS in English R4 for Issue 3 DFR on Issue 2 of 2020/4/28 (2020/6/23) NK: Comment and Revision
CHAPTER 7 EXCAVATION WORKS **7.1 GENERAL** 7.1.1 Scope **7.2 PARTICULAR SAFETY MEASURES FOR EXCAVATION WORKS** 7.2.1 General 7.2.2 Safety Measures before Commencing Excavation Works 7.2.3 Safety Measures during Excavation Works **7.3 MANUAL EXCAVATION WORKS** 7.3.1 General **7.4 MECHANICAL EXCAVATION WORK** **7.5 EXCAVATION BY BLASTING** 7.4.1 Scope 7.4.2 Definitions 7.4.3 Compliance Standards 7.4.4 Personnel for Blasting Works 7.4.5 Blasting Safety Plan 7.4.6 Information to Risk Prevention of Workers and Neighbouring Residents 7.4.7 Handling and Storing of Explosives 7.4.8 Test Trial Blasting 7.4.9 Monitoring Impact on Adjacent Buildings and Structures 7.4.10 Particular Safety Measures for Blasting Work 7.4.11 Measures after Blasting	**CHAPTER 7 EXCAVATION WORKS** **7.1 GENERAL** 7.1.1 Scope **7.2 PARTICULAR SAFETY MEASURES** 7.2.1 General 7.2.2 Safety Measures before Commencing Excavation Works 7.2.3 Safety Measures during Excavation Works **7.3 MANUAL EXCAVATION WORKS** 7.3.1 General **7.4 MANUAL EXCAVATION WORKS** 7.4.1 General **7.5 TRENCHES, PITS AND OTHER TYPES OF STRUCTURAL EXCAVATION** 7.5.1 General 7.5.2 Safety Measures during Excavation 7.5.3 Monitoring Impact of Excavation Works on Other Properties **7.6 BLASTING WORKS** 7.6.1 Scope 7.6.2 General Blasting Requirements 7.6.3 Blasting Noise 7.6.4 Definitions 7.6.5 Compliance Standards 7.6.6 Personnel for Blasting Works 7.6.7 Blasting Safety Plan 7.6.8 Risk Prevention of Workers and Neighbouring Residents 7.6.9 Handling and Storing of Explosives 7.6.10 Trial Blasting 7.6.11 Monitoring Impact of Blasting Works on Other Properties 7.6.12 Particular Safety Measures for Blasting Works 7.6.13 Measures after Blasting	**CHAPTER 7 EXCAVATION WORKS** **7.1 GENERAL** 7.1.1 Scope **7.2 PARTIC *Monitoring* ULAR SAFETY MEASURES** 7.2.1 General 7.2.2 Safety Measures before Commencing Excavation Works 7.2.3 Safety Measures during Excavation Works **7.3 MANUAL EXCAVATION WORKS** 7.3.1 General **7.4 MANUAL EXCAVATION WORKS** 7.4.1 General **7.5 TRENCHES, PITS AND OTHER TYPES OF STRUCTURAL EXCAVATION** 7.5.1 General 7.5.2 Safety Measures during Excavation 7.5.3 Monitoring Impact of Excavation Works on Other Properties **7.6 BLASTING WORKS** 7.6.1 Scope 7.6.2 General Blasting Requirements 7.6.3 Blasting Noise 7.6.4 Definitions 7.6.5 Compliance Standards 7.6.6 Personnel for Blasting Works 7.6.7 Blasting Safety Plan 7.6.8 Risk Prevention of Workers and Neighbouring Residents 7.6.9 Handling and Storing of Explosives 7.6.10 Trial Blasting 7.6.11 Monitoring Impact of Blasting Works on Other Properties 7.6.12 Particular Safety Measures for Blasting Works 7.6.13 Measures after Blasting
7. EXCAVATION WORKS 7.1 **GENERAL** 7.1.1 **Scope** (1) This Chapter specifies the safety requirements for surface excavation work (excluding tunnelling) which shall include excavation of all types and using all methods including manual excavation, machine excavation and excavation by Blasting ~~together with all associated embankment filling, backfilling and Earthwork Support.~~ JC1: Embankment is not necessary to stipulate. Earthwork support, too because it is stipulated in Chapter 4. Reinstate "Trench Excavation". There may be opinions that why only trench excavations must be stipulated, however, based on the fact that there have been so many accidents related with trench excavation, we request to stipulate in JSSS, even there may be duplication with OSHA.	**7. 7 EXCAVATION WORKS** 7.1 **GENERAL** 7.1.1 **Scope** *Please note that this item is reformatted to be consistent with later Chapters.* *The contents of each Chapter are now correctly referred to as a heading, i,e, Excavation Works and also Blasting Works, which is a part of Excavation Works.* (1) This Chapter specifies the safety requirements for excavation works which include: (a) Open-cut and all other types of surface excavation; (b) Pits, trenches, basements and all other types of structural excavation; (c) Excavation using all methods such as manual excavation and machine excavation; (d) Excavation by Blasting (hereinafter referred to as "Blasting Works");	**7. EXCAVATION WORKS** 7.1 **GENERAL** 7.1.1 **Scope** (1) This Chapter specifies the safety requirements for excavation works which include: (a) Open-cut and all other types of surface excavation; (b) Pits, trenches, basements and all other types of structural excavation; (c) Excavation using all methods such as manual excavation and machine excavation; (d) Excavation by Blasting (hereinafter referred to as "Blasting Works");

NK1: Deleted as commented. Provisions for Trench Excavation will be reinstated in 7.5.

I suggest that the following is left in as it is as embankment filling and backfilling are an intrinsic part of the works in this chapter. If not to be covered by these rules where is it to be covered?

"Backfilling" has nothing to do with temporary excavations it is to excavation for permanent works whereby the Contractor shall backfill working space and voids above foundations etc. efficiently as soon as possible to ensure that openings are not left unsafe and open for excessive periods. It is also referred to in the later clause 7.2.1 (6).

(e) All associated embankment filling, backfilling and disposal; and

(f) Earthwork Support,

and which are hereinafter collectively referred to as "Excavation Works".

(2) Excavation in tunnelling is not included.

(3) General requirements for example for Contractor's Equipment, Temporary Works and other related works all which apply to the work in this Chapter, are included in other Chapters of JSSS.

Additional particular requirements are contained in this Chapter.

7.1.1 ~~Safety Plan and Instructions to Workers~~

~~(1) Prepare a safety plan describing the safety requirements for Excavation Works and Inform all relevant workers of the content and requirements.~~

~~(2) Plan the execution of all Excavation Works by using Contractor's Equipment and/or sufficient numbers of workers so that overloading and consequent back injury and other injury is avoided.~~

NK6/22: 7.1.2 is added as MD proposed to stipulate at 7.5.1 Monitoring Impact of Excavation Works on Other Properties.
The Contractor shall comply with the requirements of JSSS 6.1.3 [Monitoring Impact of Works on Other Properties].

(e) All associated embankment filling, backfilling and disposal; and

(f) Earthwork Support,

and which are hereinafter collectively referred to as "Excavation Works".

(2) Excavation in tunnelling is not included.

(3) General requirements for example for Contractor's Equipment, Temporary Works and other related works all which apply to the work in this Chapter, are included in other Chapters of JSSS.

Additional particular requirements are contained in this Chapter.

7.1.2 **Monitoring of Works and Surroundings**

(1) The Contractor shall monitor the Excavation Works to demonstrate that they are performing safely to the designed limits and for the intended purpose.

(2) For more details, refer to JSSS 2.1.7 [Monitoring and Records].

7.2 **PARTICULAR SAFETY MEASURES FOR EXCAVATION WORKS**

7.2.7 **General**

(1) The Contractor shall plan all excavation work so that it can be executed in a safe and methodical manner.

(2) Unless otherwise specified in the Contract, the Contractor shall be responsible for choosing manual or machine excavation, selecting types of Contractor's Equipment, types of TW, Earthwork Support, spoil removal, storage and handling, controlling ground and surface water, forming embankments and cuttings and the like, ~~in conformity with GC 4.10. taking account of all the conditions of the Site.~~ taking into account of relevant information provided by the Bidding document and subsequently obtained through the investigation by the Contractor.

JC2: Though this is commented last time, we wanted sentence a little more considered. that I thought a little more. Is the following example sentence too long?

"taking into account of all information given by the Employer in the Bidding document and/or subsequently obtained by it."

NK2: Modified as right.

7.2 **PARTICULAR SAFETY MEASURES**

7.2.1 **General**

(1) The Contractor shall plan all Excavation Works so that they can be executed in a safe and methodical manner.

(2) Unless otherwise specified in the Particular Safety Specification, the Contractor shall be responsible for choosing manual or machine excavation, selecting types of Contractor's Equipment, types of Temporary Works, Earthwork Support, spoil removal, storage and handling, controlling ground and surface water, forming embankments and cuttings and the like, in conformity with GC 4.10.

The following added wording to the above is not recommended:

"taking into account of relevant information provided by the Bidding document and subsequently obtained through the investigation by the Contractor."

The addition appears to have no connection with safety.

"Relevant information" meaning what and to whom?

"Subsequently" meaning what and when?

7.2 **PARTICULAR SAFETY MEASURES**

7.2.1 **General**

(1) The Contractor shall plan all Excavation Works so that they can be executed in a safe and methodical manner.

(2) Unless otherwise specified in the Particular Safety Specification, the Contractor shall be responsible for choosing manual or machine excavation, selecting types of Contractor's Equipment, types of Temporary Works, Earthwork Support, spoil removal, storage and handling, controlling ground and surface water, forming embankments and cuttings and the like, in conformity with GC 4.10.

(3) Unless otherwise specified in the Contract, requirements for sloping sides and benching to sides of excavations shall comply with the technical requirements of OSHA Subpart P—Excavations §1926.652 Requirements for protective systems, (b) only, also dependent on the shape, nature the soil, hydraulic and geological conditions of the Site.

(4) ~~Earthwork Support~~ In accordance with JSSS 7.2 [*Earthwork Support*] the Contractor shall be responsible for preserving the structural integrity of all sides and soffits of excavations and shall provide ~~whatever Earthwork Support may be necessary to achieve this.~~ earthwork support for the excavation of depth ~~exceeds 1.5m in principle unless it is possible to excavate with a slope suitable for the soil condition.~~ exceeding 1.5m unless it is possible to excavate with an adequate and stable slope taking account of the soil condition .

JC1: Please reinstate the provision in 8.2 (3) of Japanese version "In accordance with JSSS 7.2.1[Earth Retaining Work] (2), the earth retaining shall be planned in principle to be provided for the excavation of depth exceeds 1.5m;".
NK1: added (5).

JC2: Term of "adequate and stable" used in GC is used here and modified as right.
NK: modified as right.

As "Contractor" is used rather than "Bidder" it follows that subsequently means after the contract has been awarded and therefore, that the Bid is to be based only upon the "relevant information" provided in the Bidding document.

This is not correct and it is a potentially risky change as it transfers the responsibility for describing all site conditions to the Employer via the bidding documents and ignores the Contractor's basic obligations.

The Contractor has a fundamental obligation to satisfy himself of conditions (taking account of cost and time) before he submits his Tender (Bid) and the full and relevant requirements are stated in GC 4.10.

Many claims are founded on interpretation of this clause and I do not recommend any change such as you have suggested, it is actually not necessary and may compromise interpretation of this basic clause.

Although reference is perhaps not vital, this is why I had included reference to GC 4.10 to emphasise that we were not changing the contract but this has been deleted

Also, TW now becomes Temporary Works as I advised in January.

NK6/22: Agreed.

(3) Sloping sides and benching to sides of excavations shall comply with the technical requirements of OSHA Subpart P—Excavations §1926.652 Requirements for protective systems, (b) only, dependent on the dimensional constraints of the Site and the nature of the soil, hydraulic and geological conditions.

(4) The Contractor shall be responsible for preserving the structural integrity of all sides and excavations and shall provide whatever Earthwork Support may be necessary to achieve this, in accordance with the requirements of JSSS 6.2 [*Earthwork Support*]

The following added wording (which is any case duplicated with JSSS 6.2 1 (4)) to the above is not recommended:

"earthwork support for the excavation of depth exceeding 1.5m unless it is possible to excavate with an adequate and stable slope taking account of the soil condition"

As already advised I do not recommend any such change or the placing of any restriction on when support shall or shall not be provided, there is no need to do this when it is 100% the Contractor's risk anyway.

It to some extent follows OSHA but is actually not compliant with OSHA.

I had previously advised as follows:

> *Problem is that OSHA appears to restrict to a 1.51 m minimum depth, unless "examination of the ground by a competent person provides no indication of a potential cave-in." There is no definition of "competent person" nor do we suggest that it is necessary.*
>
> *We also recommend that no such minimum should be stated and that the Contractor shall be responsible no matter what the depth, no such minimum is stated in JSSS 7.2.*

I have now included the "Competent Person" in the definition of operation leader in Annex 1.1, but I still do not feel comfortable that such a loosely defined minimum be applied in a standard specification.

There may be a risk of accident and injury to workers due to collapse of sides e.g. the effect of the load and vibration from road traffic on trenches and pits in roads which are less than 1.5 metres deep, and also an effect on adjacent

(3) Sloping sides and benching to sides of excavations shall comply with the technical requirements of OSHA Subpart P—Excavations §1926.652 Requirements for protective systems, (b) only, dependent on the dimensional constraints of the Site and the nature of the soil, hydraulic and geological conditions.

(4) The Contractor shall be responsible for preserving the structural integrity of all sides and excavations and shall provide whatever Earthwork Support may be necessary to achieve this, in accordance with the requirements of JSSS 6.2 [*Earthwork Support*]

buildings, structures or Contractors Equipment. If not foreseen by the "competent person" this then creates a problem for the HSO.

I also note that later, examples of Earthwork Support measures have been added for sides less than 1.5 m deep so I suggest that this threshold is no longer required.

Further to the above however, I suggest that there should be no mention in this Chapter 7 of requirements for earthwork support as this is duplication of the common requirements in Section 6.2 and which will inevitably create ambiguity and confusion.

I have therefore deleted all reference to the 1.5 m threshold in Chapter 7 and sloping/benched sides and dealt with this entirely in Section 6.2.

NK6/22: The 6.2.1 stipulates as follows:

6.2 EARTHWORK SUPPORT

6.2.1 General

(4) The requirements for providing Earthwork Support may be waived by the HSO for the following excavations which have been inspected at the Site by him and judged by him to be safe, stable and free from any risk of movement or collapse:

(a) Excavation in rock; and

(b) Excavation less than 1.5 m deep.

We agreed not to specify here about 1.5 m deep in this Chapter.

(5) ~~In accordance with JSSS 1.23 [Emergency Response Plan?], 1.23.2,~~ the Contractor shall. execute excavation under dry condition by providing appropriate drainage to drain surface water and water contained in the ground and spring water at the Site.

~~(5) The Contractor shall execute excavation under dry condition by providing appropriate drainage to drain surface water and water contained in the ground and spring water at the Site.~~

JC2 : This reference seems to be wrong. 1.23.2 is unnecessary.

NK2: The 1.23.6 (3) in 1.23 [Emergency Response Plan] in Issue 7 specifies drainage, however reader of JSS may be confused as the reader consider what relation of excavation works and emergency is, so deleted this reference as right.

I had deleted the above clause in the draft giving the following reason:

It is not only drainage that must be provided, the Contractor shall design and provide everything necessary. In any event this is already mentioned in JSSS 1.26.2 in a more comprehensive manner and need not be repeated more simplistically here.

NK: agreed to delete this.

I have edited the following clauses to make the wording consistent with the Contract and with JSSS 6.1 3 and 6.2.

(6) The Contractor shall execute all Excavation Works and associated filling, backfilling and support work ~~without causing any damage to or weakening of surrounding subsurface conditions or ground bearing capability, any existing foundations, structures, buildings, roads, paved areas or the like, either on or adjacent to the Site and unless otherwise specified as specified~~ in the Contract ~~(see Annex 1.3 Particular Safety Specification),~~ so that the criteria of allowable values specified in the Contract (see the Particular Safety Specification) or instructed by the Engineer to avoid adverse effects to surrounding areas and buildings, including existing foundations, structures, roads, paved areas or the like, by excavation are to be respected. In this regard, the Contractor shall take all necessary measures to prevent the occurrence of such ~~damage or weakening~~ by designing and providing permanent or temporary supports and reinforcement to such foundations, structures, buildings, roads or paved and obtain the prior consent of the Engineer before commencing Excavation Works.

~~(6) The Contractor shall execute all Excavation Works and associated filling, backfilling and Earthwork Support without weakening any ground or causing any damage to any buildings, structures and other properties, paved areas, roads, footpaths, fences, railways, waterways, drainage, utilities or any other property on the Site or outside the Site (collectively referred to in this Chapter as "other properties").~~

~~The Contractor shall also ensure the safety of all persons, whilst they are working in, under or adjacent to any excavation on or outside the Site.~~

~~The Contractor shall take all necessary measures to prevent the occurrence of any such weakening or damage by other properties and obtain the prior consent of the Engineer to such measures before commencing relevant parts of the Excavation Works.~~

JC1: The provision of 8.2 (5) of Japanese version mentions "as stipulated separately in the Contract". The nuance of English version is completely different. Please modify it as the Employer determines the requirement.

The original text of the above clause has been suggested to be revised by JICA/NK as follows:

The Contractor shall execute all Excavation Works and associated filling, backfilling and support work so that the criteria of allowable values specified in the Contract (see the Particular Safety

(5) The Contractor shall execute all Excavation Works and associated filling, backfilling and Earthwork Support without weakening any ground or causing any damage to any buildings, structures and other properties, paved areas, roads, footpaths, fences, railways, waterways, drainage, utilities or any other property on the Site or outside the Site (collectively referred to in this Chapter as "other properties").

The Contractor shall also ensure the safety of all persons, whilst they are working in, under or adjacent to any excavation on or outside the Site.

The Contractor shall take all necessary measures to prevent the occurrence of any such weakening or damage by other properties and obtain the prior consent of the Engineer to such measures before commencing relevant parts of the Excavation Works.

NK1: is modified as (6).

JC2: The sentence of “any” is too strict.
NK2: modified as above.

NK1: added (7) to specify the Japanese 8. 2 (6)

Specification) or instructed by the Engineer to avoid adverse effects to surrounding areas and buildings, including existing foundations, structures, roads, paved areas or the like, by excavation are to be respected. In this regard, the Contractor shall take all necessary measures to prevent the occurrence of such adverse effects by designing and providing permanent or temporary supports and reinforcement before commencing Excavation Works.

I do not recommend that the above change be made for the following reasons:

The essential basis of the Contract (and the rule of Law in most countries) is that the Works shall be executed by the Contractor without causing any damage at all to neighbouring properties.

If any damage is caused then the Employer is open to claim for repairing such damage from adjacent owners and for which the Contractor should be liable subject to the requirements of the Contract.

FIDIC GC 17.1 (b) applies.

17. Risk and Responsibility 17.1 Indemnities

> *The Contractor shall indemnify and hold harmless the Employer, the Employer's Personnel, and their respective agents, against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of:*
>
> *(b) damage to or loss of any property, real or personal (other than the Works), to the extent that such damage or loss arises out of or in the course of or by reason of the Contractor's design (if any), the execution and completion of the Works and the remedying of any defects,*

Insurance may also be compromised if not handled properly under GC 18.3.(d) (ii).

The added text to this clause is not necessary, it confuses any meaning and implies that there is some flexibility i.e. that some damage or “adverse effect” is acceptable if it falls within “allowable values” when as a common basis this is not correct.

If anything, it would be better to state as originally drafted namely as a common default the Contractor shall cause NO damage to surrounding areas and buildings, etc. etc.. when performing the Works, as this is the usual legal and contractual obligation of the Contractor.,

I recommend that the default situation should be that the Contractor is instructed as a general rule via JSSS to set up and manage monitoring to ensure his compliance (i.e. that damage does not occur), This is in principle as the earlier draft of JSSS.

This will require further development of the contractor's monitoring requirements and I have drafted a new clause 7.5.3 to deal with this.

In any exceptional rare case for example on large projects in congested areas and where damage is likely and unavoidable then the Employer should already have consulted and agreed with the owners and residents that the Works can be executed in a manner that may cause some damage and has agreed that compensation will be paid for such damage in accordance with a scale of damage. However, I suggest that this should not be a norm or a usual situation and that JSSS or the User Guide should not imply that this is a common option and I suggest that it should be the exception rather than the norm, otherwise it will be misunderstood by some Executing Agencies that such damage may be allowable when actually it is isn't.

	During our January 2020 discussion, I said I would research this further and requested JICA to provide examples of the reference documentation for the Hong Kong MTR. *I have briefly studied the information provided by JICA and consequently believe that this may have been wrongly interpreted. In reviewing I feel it is important to note that:* *1) Damage is the responsibility of the Contractor and the Engineer has no authority to determine what damage is acceptable or not.* *2) The Engineer is not part of the relationship between Site owner and adjacent owners and if any damage is caused to neighbouring property, the Engineer's opinion is not relevant, adjacent owners usually have a basic right of claim against the Employer.* *JICA appear to consider that some damage to adjacent buildings, structures, railway, roads, footpaths slopes and utilities etc., is "allowable" within certain specified limits but I feel that this is not correct and not supportable under the HK MTR information provided.* *It is apparent that:* *1) No damage or deformation to buildings, paving and services, etc. is allowable.* *2) If any damage is caused, the Contractor shall stop the Works and shall then be responsible for proposing and implementing remedial measures.* *I consider that monitoring of any movement is not for the purpose of judging whether damage is reasonable or not but is to predict whether any damage is likely to occur, in which case, it then in total becomes the Contractor's responsibility to remedy.* *Please note also that in the sample provided for the Hong Kong MTR, whilst sample monitoring ranges are provided, Clause 2.19 (3) on page 2/10, makes clear that this is for information only and that in any event, the Contractor must meet his obligations under the Contract:* ***"the Contractor shall satisfy himself that the specified criteria is adequate to fulfil his contractual obligations and shall take any additional measures necessary to avoid damage to property."*** *Pages 40 and 42 are missing from the provided copy of the HK MTR Conditions of Contract, therefore I cannot complete my review of the Contractor's obligations for care of the Works under Clause 22 of the Contract.* *I do not in any event recommend the concept of the Employer or Engineer establishing measurement criteria as a general rule for predicting damage, as it is difficult to do and if wrong it could affect liability of the Employer and Engineer and even JICA if they are called upon to fund it.* *This can be complex legal and contractual territory that I recommend should not be dealt with by JSSS as if it were a simple and common issue.* *FIDIC GC 17.1 (b) applies and I suggest that it should not be compromised by the suggested addition to this clause.* NK6/22: We would like to specify this (6) as MD's proposed stipulation in accordance with GC and request JICA to review this again though JICA commented to include criteria of allowable values.	
(7) If loose rocks, standing trees, etc. existing outside the Site above the excavation area in the Site may pose a danger to workers or construction equipment, take the following measures unless	(7) If loose rocks, standing trees, etc. existing ~~outside the Site~~ above the excavation area ~~in the Site~~ may pose a danger to workers or construction equipment, take the following measures unless	(6) If loose rocks, standing trees, etc. existing above the excavation area may pose a danger to workers or construction equipment, take the following measures unless otherwise specified in the Contract;

otherwise specified in the Contract;

NK2: Added outside and inside to make clear the rocks, etc. are not in the Site. This issue was argued by JICA at the beginning of preparation. It can be actually handled by Variation, however it is left as JICA wants.

(a) Consult with the Engineer about measures such as removal of loose rocks, installation of rockfall protection fences, etc.; and

(b) ~~Based on the consultation with the Engineer, propose safety measures including construction methods to the Engineer and~~ take actions in accordance with the Engineer's instruction.

JC2: There are two different elements in item (b). We propose to re-sort the contents as follows.
(a) removal of loose rocks ~ ~ ~
(b) take safety measures including change to the construction method
(c) requesting the Engineer to issue a variation???

NK2: For the danger against loose rocks, etc. located outside the Site, the Contractor shall take measures as instructed by the Engineer. It is doubtful to mention about variation.

NK2: modified as above.

7.2.8 **Safety Measures before Commencing Excavation Works**

(1) The ~~HSO~~ Contractor shall inspect [1]the excavation work area and surrounding areas before starting work each day and after adverse climatic conditions or ~~earthquake to ensure that there are: the following items meet the criteria of allowable values and counter measures determined by the Contractor and given in the Contract (see the Particular Safety Specification) to avoid adverse effects to surrounding areas and buildings by excavation~~: mentioned in JSSS: 2.7 [ADVERSE WEATHER REQUIREMENTS]. The inspection shall include the following areas and items:

JC1: The HSO take all responsibility for safety. The HSO's duty is to review and check whether the safety activities are taken at the site by the Site staff in charge of construction (the Contractor) in accordance with the Safety Plan and manage safety at the Site.

From this concept, "The HSO shall inspect work area before starting work…" is to be revised to "The Contractor shall …"

NK1: Revised as commented here and also other clauses.

otherwise specified in the Contract;

(a) Consult with the Engineer about measures such as removal of loose rocks, installation of rockfall protection fences, etc.; and

(b) ~~Based on the consultation with the Engineer, propose safety measures including construction methods to the Engineer and~~ Take actions in accordance with the Engineer's instruction.

The above is difficult to understand, conditions outside the Site are not usually within the Scope of a Contract.

If such hazards exist and were apparent at or before Tender stage, then the neighbour is usually legally obliged to remove the risk at his own cost and should be requested to do so.

If the risk is created by the execution of the Permanent Works then this can mean that the Contractor has created the risk by his methods and it should be a part of the contractor's scope responsibility anyway.

Rather than concentrating upon the manner in which this is dealt with contractually, I suggest that JSSS should concentrate on safety i,e. by the HSO removing the risk and taking appropriate measures immediately.

I suggest as follows:

(8) If loose rock, boulders, trees and the like, are positioned above working areas and where there is any risk that these may pose a danger to workers, unless otherwise instructed by the Engineer, the HSO shall prohibit workers from entering the working areas and issue appropriate instructions including for example to:

(a) Provide protective overhead safety barriers or safety nets;

(b) Carefully remove loose rocks;

(c) Provide (or improve existing) Earthwork Support to unstable areas;

NK6/22: agreed to the above.

7.2.2 **Safety Measures before Commencing Excavation Works**

(1) The HSO shall inspect the Excavation Works area and surrounding areas before starting work each day and after adverse climatic conditions or earthquake as described in JSSS: 2.7 [*Adverse Weather Requirements*]. The inspection shall include the following areas and items:

In your draft for the above, "HSO" has been changed to "Contractor" which for reasons explained is not correct. I recommend that wherever an inspection is required for safety purposes it should state HSO as he is responsible. In practice he may delegate this internally e.g. to an operation leader but that is his choice.

NK6/22: agreed to the above (1) to specify the HSO because of the safety responsibilities of HSO.

(a) Consult with the Engineer about measures such as removal of loose rocks, installation of rockfall protection fences, etc.; and

(b) Take actions in accordance with the Engineer's instruction.

(7) If loose rock, boulders, trees and the like, are positioned above working areas and where there is any risk that these may pose a danger to workers, unless otherwise instructed by the Engineer, the HSO shall prohibit workers from entering the working areas and issue appropriate instructions including for example to:

(a) Provide protective overhead safety barriers or safety nets;

(b) Carefully remove loose rocks; and

(c) Provide (or improve existing) Earthwork Support to unstable areas.

7.2.2 **Safety Measures before Commencing Excavation Works**

(1) The HSO shall inspect the Excavation Works area and surrounding areas before starting work each day and after adverse climatic conditions or earthquake as described in JSSS: 2.7 [*Adverse Weather Requirements*]. The inspection shall include the following areas and items:

[1] Refer to JSSS 1.10 [*Contractor's Health and Safety Officer at the Site*]

JC1 : The premise is that the allowable effect and countermeasures shall be given by the Employer for surrounding areas outside of excavation. The provision shall be made on the premise.
NK1: The clause is modified as above.

JC2: This clause stipulates to check the area before starting the work every day and after earthquake, etc. It is not necessary to mention about allowable values. ("allowable value" is used in 7. (6) as it has high affinity.)
NK2: JC deleted the relevant part as above.

JC2: "adverse climatic conditions"は"strong rain fall"ぐらいでいいのでは(異常時だけではないので)
Isn't it enough with "strong rain fall" instead of "adverse climatic conditions"?
NK2: JSSS 2.7 mentions measures for heavy rain, strong wind and storms, heavy snow and ice, lightning, earthquake and tsunami as adverse weather, and 2.7.7 specifies Inspection of Temporary Works after Adverse Weather and Earthquake.
NK added the to refer to 2.7 as right.

(a) ~~No~~ potentially unsafe areas where there may be any risk of Landslide;

(b) ~~No~~ loose rock or boulders which may be at risk of falling;

(c) ~~No~~ cracks in the excavation work area and the surrounding area;

(d) ~~No~~ changes in ground water level, surface or any spring water; and

(e) ~~No~~ deleterious effect due to freezing conditions.

JC1: The expression "No something" is excessive. Those (for example no cracks, no change of water level) make works impossible to perform.
NK1: The conditions are changed to relate to the criteria (in (1) above) given in the Contract as above.

(2) As a consequence of such inspections the HSO may prohibit the continuation of any affected work, take necessary corrective measures and make any necessary amendment to the Safety Plan and instruct all Contractor's Personnel of any revised safety measures before work is allowed to commence and continue in order to ensure their continued safety.

MM: as mentioned MM 3.(1) mentioned in the first line above.
NK1: added requirements in Japanese JSSS as (3) to (7) below.

(3) Install facilities such as stairs and ramps as means of access or egress from the excavation site in accordance with JSSS 7.4.2 [Setting of Passage];

(4) Provide support or protection for the underground services appropriately in accordance with 3.1 [Existing Underground and Overhead Services], and take measures, according to the situation, such as indicating clearly the location and precautions of the underground service and providing protective fences for the services;

IJC2: It is hard to understand what this clause provides. Is it for protection against falling?
NK2: The Japanese draft is mentioning about protection for the underground services. Add a phrase "for the services" at the end of the sentence.

(5) Prevent workers and construction equipment/transport vehicles from their falling at the excavation site, in accordance with JSSS 2.3 [Prohibition of Entry], install entry prevention facilities (fences,

(a) Potentially unsafe areas where there may be any risk of landslide;

(b) Loose rock or boulders which may be at risk of falling;

(c) Cracks in the Excavation Works area and the surrounding area;

(d) Changes in ground water level, surface or any spring water; and

(e) Deleterious effect due to freezing conditions.

(2) As a consequence of such inspections the HSO may prohibit the continuation of any affected work, take necessary corrective measures and make any necessary amendment to the Safety Plan and instruct all Contractor's Personnel of any revised safety measures before work is allowed to commence and continue in order to ensure their continued safety.

(3) Install facilities such as stairs and ramps as means of access or egress from the excavation site in accordance with JSSS 6.4.4 [*Vertical Access*] ~~7.4.2 [Setting of Passage];~~

Please note that I have added a new subclause in JSSS Section 6.4 Vertical Access, covering steps, stairs and ramps

(4) Provide support or protection for the underground services appropriately in accordance with JSSS Chapter 3 [*Existing*

(a) Potentially unsafe areas where there may be any risk of landslide;

(b) Loose rock or boulders which may be at risk of falling;

(c) Cracks in the Excavation Works area and the surrounding area;

(d) Changes in ground water level, surface or any spring water; and

(e) Deleterious effect due to freezing conditions.

(2) As a consequence of such inspections the HSO may prohibit the continuation of any affected work, take necessary corrective measures and make any necessary amendment to the Safety Plan and instruct all Contractor's Personnel of any revised safety measures before work is allowed to commence and continue in order to ensure their continued safety.

(3) Install facilities such as stairs and ramps as means of access or egress from the excavation site in accordance with JSSS 6.4.4 [*Vertical Access*];

(4) Provide support or protection for the underground services appropriately in accordance with JSSS Chapter 3 [*Existing Underground, Concealed and Overhead Services*], and take

temporary enclosures, etc.), warning flags, and signs, etc.;

JC2: Do the entry prevention facilities mean fall protection or entry control?
NK2: "entry prevention facilities" means entry control facility to prevent those from their falling at the site..

(6) ~~Take the following measures when there is a risk of danger to third parties, workers, construction equipment, etc. by the fall of excavated soil/rock at the lower parts (bottom) of the excavation site~~;

Take the following measures at the lower parts (bottom) of the excavation site when there is a risk of danger to third parties and workers, or damage to construction equipment, etc. by the fall of excavated soil/rock;

JC2: "Danger to construction equipment" sounds strange. Are persons and equipment treated same in this meaning?
NK2: "Damage to equipment" may be more suitable. Modified as above.

JC2: I wonder which is correct "at" or "into".
NK2: We modify as follows: "measures shall be provided at the lower part" as Take the following measures at the lower parts (bottom) of the excavation site; when there is a risk of …

(a) Identify dangerous locations, install entry prevention facilities such as fences, temporary enclosures, warning signs, etc. in accordance with JSSS 2.3 [Prohibition of Entry]; and
(b) Install protective fences that can catch falling rocks, etc.

JC2: Am I the only one who feels a sense of discomfort to (b) catch falling rocks?
NK2: English-English dictionary and internet show as follows:
Receive means: to get or be given something: (e.g. E-mail)
Catch means: to take hold of something, especially something that is moving through the air: (e.g. ball)
Internet figures for catch falling rocks show falling rock fences.
We leave "catch" as it is.

(7) Risk prevention measures against falling rocks
(a) To protect workers from the dangers of falling of loose rocks and soils from the excavated surface, remove the loose rocks, etc. and take appropriate protective measures; and
(b) When there is a risk of falling of loose rocks/soils due to the excavation, take measures such as provision of earth retaining and protective net beforehand, and prohibiting workers from entering in the excavation site until the safety of the workers is confirmed.

JC2: Is it appropriate to provide earth retaining and protective net beforehand and to prohibit workers to enter into the excavation area?
NK2: It is appropriate to take preventive measures against possibility of falling rocks. However, the present clause can be read that no worker shall enter the site. Change the sentence that workers are prohibited to enter until safety is confirmed as right.

7.2.9 Safety Measures during Excavation Works

During the Excavation Works, the Contractor shall:

(1) Not place excavated spoil, filling or Contractor's Equipment near the vertical edge of excavated surfaces.

(2) Stop the excavation work where ground collapse is possible during excavation, evacuate all Contractor's Personnel, implement all

Underground, Concealed and Overhead Services], and take measures, according to the situation, such as indicating clearly the location and precautions of the underground service and providing protective fences for the services.

(5) Prevent workers and construction equipment/transport vehicles from their falling at the excavation site, in accordance with JSSS 2.3 [*Prohibition of Entry-Dangerous Work*], install entry prevention facilities (fences, temporary enclosures, etc.), warning flags, and signs, etc..

I suggest that the following are not now necessary as they are already covered by 7.2.1 (8)

~~(6) Take the following measures at the lower parts (bottom) of the excavation site when there is a risk of danger to third parties and workers, or damage to construction equipment, etc. by the fall of excavated soil/rock;~~

~~(a) Identify dangerous locations, install entry prevention facilities such as fences, temporary enclosures, warning signs, etc. in accordance with JSSS 2.3 [*Prohibition of Entry-Dangerous Work*]; and~~

~~(b) Install protective fences that catch falling rocks, etc.~~

I suggest that the following are not now necessary as they are already covered by 7.2.1 (8)

~~(7) Risk prevention measures against falling rocks~~

~~(a) To protect workers from the dangers of falling of loose rocks and soils from the excavated surface, remove the loose rocks, etc. and take appropriate protective measures; and~~

~~(b) When there is a risk of falling of loose rocks/soils due to the excavation, take measures such as provision of earth retaining and protective net beforehand, and prohibiting workers from entering in the excavation site until the safety of the workers is confirmed.~~

NK6/22: confirmed.

7.2.3 **Safety Measures during Excavation Works**

During the Excavation Works, the Contractor shall:

(1) Not place excavated spoil, filling or Contractor's Equipment near the vertical edge of excavated surfaces.

(2) Stop the Excavation Works where ground collapse is possible during excavation, evacuate all Contractor's Personnel, implement

measures, according to the situation, such as indicating clearly the location and precautions of the underground service and providing protective fences for the services.

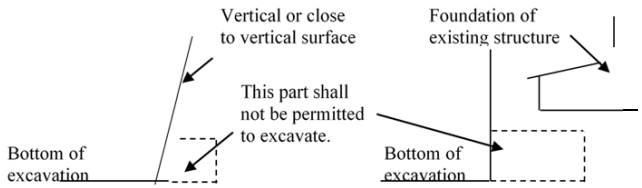
(5) Prevent workers and construction equipment/transport vehicles from their falling at the excavation site, in accordance with JSSS 2.3 [*Prohibition of Entry-Dangerous Work*], install entry prevention facilities (fences, temporary enclosures, etc.), warning flags, and signs, etc.

7.2.3 **Safety Measures during Excavation Works**

During the Excavation Works, the Contractor shall:

(1) Not place excavated spoil, filling or Contractor's Equipment near the vertical edge of excavated surfaces.

(2) Stop the Excavation Works where ground collapse is possible during excavation, evacuate all Contractor's Personnel, implement

necessary safety measures, prohibit Contractor's Personnel from recommencing work until all safety measures have been taken. (3) ~~Backfill and compact excavated areas that require such backfill as soon as possible after the Permanent Work is completed.~~ Backfill the temporary excavation area as immediately as possible after the relevant work is completed. JC2: (3) has become unable to understand. NK2: The Japanese draft was that for temporary excavation, it is required to backfill immediately after the work is completed. Modified. (4) For places where open excavation work is performed, maintain the necessary illuminance to perform the work safely.	all necessary safety measures, prohibit Contractor's Personnel from recommencing work until all safety measures have been taken. (3) Backfill any temporary excavation area as soon as possible after the relevant work is completed. *The original clause had nothing to do with temporary excavations it is to excavation for permanent works whereby the contractor shall backfill working space and above foundations etc. efficiently as soon as possible to ensure that openings are not left open and unsafe for excessive periods.* *I recommend that the original clause goes in.* NK6/22: agreed. (4) Backfill and compact excavated areas that require such backfill as soon as possible after the Permanent Works are completed. (5) For places where open Excavation Works are performed, maintain the necessary illuminance to perform the work safely.	all necessary safety measures, prohibit Contractor's Personnel from recommencing work until all safety measures have been taken. (3) Backfill any temporary excavation area as soon as possible after the relevant work is completed. (4) Backfill and compact excavated areas that require such backfill as soon as possible after the Permanent Works are completed. (5) For places where open Excavation Works are performed, maintain the necessary illuminance to perform the work safely.
7.3 **MANUAL EXCAVATION WORKS** 7.3.7 ~~General~~ During manual excavation works, the Contractor shall: (1) ~~Not permit any excavation without providing Earthwork Support to all vertical surfaces.~~ Not permit any excavation of depth exceeds 1.5m ~~in principle~~ without providing Earthwork Support to all vertical surfaces as specified in JSSS 7.2.1 [General] (4). JC2: deleted "in principle". (2) Not permit excavation of the excavated surface/ground that stands vertically or close to the vertical, and excavation of the ground under the foundation of existing structures. JC: modified as right. NK: JC requests MD to check and modify the expression of this clause after understanding the situation shown below.  (3) Maintain sufficient distance between workers. (4) When breaking or removing loose rock, pay attention to the	7.3 **MANUAL EXCAVATION WORKS** 7.3.1 **General** During manual Excavation Works, the Contractor shall: ~~(1) Not permit any excavation without providing Earthwork Support unless otherwise permitted by the HSO in accordance with JSSS 6.2 [*Earthwork Support*].~~ *The following added wording to the above is not recommended:* "depth exceeds 1.5m without providing Earthwork Support to all vertical surfaces as specified in 7.2.1 [General] (4). " *See above and previous notes, I do not recommend that the draft be changed in this way.* *Please refer to my earlier notes; I do not recommend any reference here to the 1.5 m threshold and recommend that this is dealt with entirely in Section 6.2.* *The original text of this clause (as edited above) has been transferred to 7.1 as a general item.* NK6/22: agreed as mentioned in 7.2.1 (4) not to specify 1.5 m limits. ~~(2) Not permit excavation of the vertical surface of the excavated area, or excavation of the ground under the foundation of existing structure~~ *Above is edited as follows:* (3) Not undermine any excavation under and beyond the vertical face. (4) Not excavate under existing foundations (5) Maintain sufficient distance between workers. (6) When breaking or removing loose rock, pay attention to the	7.3 **MANUAL EXCAVATION WORKS** 7.3.1 **General** During manual Excavation Works, the Contractor shall: (1) Not undermine any excavation under and beyond the vertical face. (2) Not excavate under existing foundations. (3) Maintain sufficient distance between workers. (4) When breaking or removing loose rock, pay attention to the

stability of the rock and the direction of its fall. (5) When using a lever for removing rock, select equipment that has appropriate length and strength for the work. JC1: (a) This expression is excessive because it means that earth retaining is required regardless of the depth. (b) Originally, the Japanese version intended to prohibit to excavate under the existing foundation etc. NK1: For (a), the clause is modified as right. For (b), a new clause (2) is added from 8.4.1 (1) of Japanese version. MM: 3. (1) Addition of 7.4 MECHANICAL EXCAVATION WORK to specify requirements in Japanese JSSS as 7.4 below.	stability of the rock and the direction of its fall. (7) When using a lever for removing rock, select equipment that has appropriate length and strength for the work. *The following clause has been added in the JICA draft:* *All of the content (and more) is already included in Chapter 4 [Contractor's Equipment], it is not necessary to duplicate it here. Please confirm which is to be deleted, here or Chapter 4?*	stability of the rock and the direction of its fall. (5) When using a lever for removing rock, select equipment that has appropriate length and strength for the work.
7.4 MECHANICAL EXCAVATION WORK The Contractor shall take the following measures for the safety of operators of excavating equipment (hereinafter referred to as "equipment") and workers engaged in the mechanical excavation works with the equipment: (1) In accordance with JSSS 2.3 [Prohibition of Entry], prohibit workers from entering the places where workers are in danger due to the mechanical excavation works by placing notices of "No Entry" at easy-to-see locations, installing entry prevention facilities (fences, temporary enclosures, etc.) and placing Spotters. (2) Take the safety measures prescribed in JSSS 4.2.3 [Safety Measures in Operation], 4.2.4 [Restriction to Operate Construction Equipment for Other Use] and (3) to (4) below. (3) ~~The operators shall operate the equipment following the following rules:~~ Ensure that the operators shall: JC2: Modified. (a) Operate the equipment with paying attention always to the position of workers near the working range; (b) When moving the equipment backward, make sure that there are no workers behind and follow the instructions of the Spotters; (c) After the work, ~~do~~ not park the equipment on the slope where excavation is in progress or on the ground that has a possibility to collapse. (d) Make sure that the bucket of equipment shall not pass over the operator's seat of another equipment. (4) Ensure that workers shall: ~~Workers shall work follow the following rules.~~ (a) Not enter under the bucket of equipment that is loading materials; and (b) Keep away from dump trucks under loading or unloading materials. MM 3. (1) addition of 7.5 TRENCH EXCAVATION to specify requirements in Japanese JSSS is added as 7.5 below.	*The following clause has been added in the JICA draft:* *All of the content (and more) is already included in Chapter 4 [Contractor's Equipment], it is not necessary to duplicate it here. Please confirm which is to be deleted, here or Chapter 4?* NK6/22: agreed to delete 7.4 Mechanical Excavation because the following provisions are mostly general ones and covered in Chapter 4. Do we need to stipulate to refer to Chapter 4 for requirements of Mechanical Excavation as only manual excavation is specified? **7.4 MECHANICAL EXCAVATION WORK** 7.4.1 General The Contractor shall take the following measures for the safety of operators of excavating equipment (hereinafter referred to as "equipment") and workers engaged in the mechanical Excavation Works with the equipment: (1) In accordance with JSSS 2.3 [*Prohibition of Entry-Dangerous Work*], prohibit workers from entering the places where workers are in danger due to the mechanical Excavation Works by placing notices of "No Entry" at easy-to-see locations, installing entry prevention facilities (fences, temporary enclosures, etc.) and placing Spotters. *As noted in the original draft, it is not good practice and there is no need to include such general cross reference to other sections. The referenced sections and chapters are of general application anyway.* *Please refer to JSSS 1.4.9 (2) which explains this.* (2) Take the safety measures prescribed in JSSS Chapter 4 [*Contractor's Equipment*] *Cross reference is not necessary and references have changed.* (3) Ensure that the operators shall: (a) Operate the equipment always paying careful attention to the position of workers near the working range; (b) When moving the equipment backward, make sure that there are no workers behind and follow the instructions of the Spotters; (c) After the work, not park the equipment on the slope where excavation is in progress or on the ground that has a possibility to collapse; and	~~7.4 MECHANICAL EXCAVATION WORK~~ ~~7.4.1 General~~ ~~The Contractor shall take the following measures for the safety of operators of excavating equipment (hereinafter referred to as "equipment") and workers engaged in the mechanical Excavation Works with the equipment:~~ ~~(1) In accordance with JSSS 2.3 [*Prohibition of Entry Dangerous Work*], prohibit workers from entering the places where workers are in danger due to the mechanical Excavation Works by placing notices of "No Entry" at easy to see locations, installing entry prevention facilities (fences, temporary enclosures, etc.) and placing Spotters.~~ ~~(2) Take the safety measures prescribed in JSSS Chapter 4 [*Contractor's Equipment*]~~ ~~(3) Ensure that the operators shall:~~ ~~(a) Operate the equipment always paying careful attention to the position of workers near the working range;~~ ~~(b) When moving the equipment backward, make sure that there are no workers behind and follow the instructions of the Spotters;~~ ~~(c) After the work, not park the equipment on the slope where excavation is in progress or on the ground that has a possibility to collapse; and~~ ~~(d) Make sure that the bucket of equipment shall not pass over the operator's seat of other equipment.~~

	(d) Make sure that the bucket of equipment shall not pass over the operator's seat of other equipment. (4) Ensure that workers shall: (a) Not enter under the bucket of equipment that is loading materials; and (b) Keep away from dump trucks under loading or unloading materials. *The above and more is already included in Chapter 4 [Contractor's Equipment], why is it necessary to duplicate some of it here? I suggest that it is not necessary here.*	~~(4) Ensure that workers shall:~~ ~~(a) Not enter under the bucket of equipment that is loading materials; and~~ ~~(b) Keep away from dump trucks under loading or unloading materials.~~
7.5 **TRENCH EXCAVATION**	7.5 **TRENCHES, PITS AND OTHER TYPES OF STRUCTURAL EXCAVATION** *In English international construction usage, "Trench excavation" is a classification of only one type of Excavation but there are many other accepted types which commonly include for example:* *Pit excavation,* *Basement excavation,* *Excavation for deep piling* *Oversite excavation, cuttings, reduce level excavation, etc.* *There is no great difference in the risks between collapse of a trench or collapse of a pit or basement excavation all are similar and the prescribed safety measures are the same so:* *Why separate only "trench excavation"? and* *What happens to the required measures for the other types?* *To describe only trench excavation and ignore all others, looks unusual and appears incomplete.* *Reference to OSHA is creating this problem as US and English usage are slightly different.* *OSHA uses the phrase "Excavation and trenching" as if both are different. In English construction usage, "Excavation" alone is commonly used and the various types (e.g. trench, pit and basement excavation) will be understood to be covered by this term.* *This is why 7.1.1 is all embracing.* *The given definition of "Trench Excavation" in the draft is not necessary as the word "trench" is in common usage.* *It is also not correct, Trench Excavation is not "excavation performed for laying gas pipes and water /sewage pipes, etc.". "Trench excavation" will also cover for example excavations for any linear structure or material such as :* *strip foundations, ground beams, cables and ducts etc. etc.* *There is not so much in this clause anyway but if considered necessary, I would suggest it would be better re-headed as Excavation Generally or even "Trenches, Pits and Other Excavations" as above.* NK6/22: agreed to change the title and specify as proposed above.	7.4 **TRENCHES, PITS AND OTHER TYPES OF STRUCTURAL EXCAVATION**

7.5.1 **General** The Contractor shall take the following measures to prevent danger to workers due to the collapse of the excavation surface during trench excavation. Trench excavation means excavation performed for laying gas pipes and water /sewage pipes, etc. which depth is larger than its width. In general, excavation width is less than 4.6m (15feet). (1) When performing trench excavation with depth of 1.5m or more, adequate and stable earth retaining shall be provided ~~unless any particular reason exists~~; and (2) ~~For trench excavation with a depth of less than 1.5m, protective systems such as exampled below shall be installed;~~ For trench excavation with a depth of less than 1.5m, protective systems as shown below shall be installed, unless it is possible to excavate with an adequate and stable slope taking account of the soil condition.; JC2: Changed from "less than" to "exceeding". NK2: (1) is for 1.5 m or more, and (2) is for less than 1.5 m. Therefore, (2) is left as it is. (a) Simple earth retaining (Trench box, Trench shield); (b) Lightweight sheet pile earth retaining; and (c) Aluminum hydraulic shoring, Timber shoring. JC2: Is "Lightweight sheet pile" correct term in English? Is "steel sheet pile" OK? NK2: Japan Patent Office and internet for product catalogue use the term "lightweight sheet pile". For relatively shallow trench excavation, ordinary sized ones are not used. It is better to distinguish the different use of normal and lightweight sheet piles. Left as it is. **7.5.2 Safety Measures during Trench Excavation** (1) Materials and equipment to be used for earth retaining systems shall be appropriate for the width and depth of the trench and free from damage or defects that might impair their proper function; (2) Manufactured (prefabricated) materials for earth retaining systems shall be used in accordance with the instructions and recommendations given in the manual of the manufacturer; (3) The earth retaining system designed by the Contractor shall be provided in accordance with the design and construction procedure	7.5.1 **General** The Contractor shall take the following measures to prevent danger to workers due to the collapse of the excavation surface during trench excavation. NK6/22: Do we need to mention same as the title of this Section? *See notes above, the following definition is not sufficient or necessary.* ~~Trench excavation means excavation performed for laying gas pipes and water /sewage pipes, etc. which depth is larger than its width. In general, excavation width is less than 4.6m (15feet).~~ ~~(1) When performing trench excavation with depth of 1.5m or more, adequate and stable Earthwork Support shall be provided.; and~~ *The above is not recommended as it conflicts with other clauses, please refer to earlier notes. It is deleted here and dealt with in Section 6.2* ~~(2) For trench excavation with a depth of less than 1.5m, protective systems as shown below shall be installed, unless it is possible to excavate with an adequate and stable slope taking account of the soil condition.;~~ ~~(a) Simple earth retaining (Trench box, Trench shield);~~ ~~(b) Lightweight sheet pile earth retaining; and~~ ~~(c) Aluminium hydraulic shoring, Timber shoring.~~ *The above appears illogical as there are numerous statements that no support is required below 1.5 metre depth yet then this is provided which specifies requirements.* NK6/22: agreed as mentioned in 7.2.1 (4) not to specify 1.5 m limits. *I have not edited the added subclauses but suggest that they are deleted anyway* 7.5.2 **Safety Measures during Trench Excavation** *None of the following items are unique to trench excavation, all items apply to all types of excavation.* *Also all of the following items are for Earthwork Support not Excavation and this would be better transferred to JSSS 6.2.4 [General Safety and Construction Requirements] to avoid duplication and ambiguity. I have already included relevant part of the following in 6.2.4 with suitable editing and this subclause can now be deleted.* *Reference to "earth retaining systems" should be changed to "Earthwork Support".* (1) Materials and equipment to be used for Earthwork Support shall be appropriate for the width and depth of the excavation and free from damage or defects that might impair their proper function. ~~(2) Manufactured (prefabricated) materials for Earthwork Support shall be used in accordance with the instructions and recommendations given in the manual of the manufacturer.~~ *No need already covered by JSSS 1.35 [Contractor's Equipment, Temporary Works, Safety Equipment and PPE].* ~~(3) Earthwork Support designed by the Contractor shall be installed in accordance with the design and construction procedure~~	7.4.1 **General** The Contractor shall take the following measures to prevent danger to workers due to the collapse of the excavation surface during ~~trench excavation~~ trenches, pits and other types of structural excavation. 7.4.2 **Safety Measures during Excavation** (1) Materials and equipment to be used for Earthwork Support shall be appropriate for the width and depth of the excavation and free from damage or defects that might impair their proper function.

drawings; (4) Earth retaining system with sufficient strength shall be provided to protect workers from collapse of the ground in and structures near the excavation site; (5) Workers shall not be allowed to enter the trench until the earth retaining system is installed prior to the work; (6) Excavation to a level greater than 60cm below the bottom of the earth retaining system shall not be allowed; (7) If temporary removal of individual members of the earth retaining system is necessary, safety measures shall be taken to ensure the safety of workers, such as installing temporary members to hold the loads imposed on the system; (8) When removing the earth retaining system, the Contractor shall not allow anyone other than the workers engaged in the removal work to enter the area and the vicinity; and (9) The Contractor shall perform backfilling of the trench shall be ~~performed Backfilling of the trench shall be performed~~ in parallel with the removal of the earth retaining system.	~~drawings.~~ *There are no such drawings in JSSS and no meaning to this requirement. This is also all Contractor design.* NK6/22: Th Contractor will actually prepare such drawings to install Earthwork Support at the Site though JSSS does not mention about drawings in 1.37 Design and Management of Temporary Works. Japanese draft stipulates such drawings. Now OK to delete (3). ~~(4) Earthwork Support with sufficient strength shall be provided to protect workers from collapse of the ground in and structures near the excavation site.~~ *The above is not completely clear however it is already covered by 6.2.1 (2) above* NK6/22: understood. (5) Workers shall not be allowed to enter any excavation ~~the trench~~ until Earthwork Support is installed prior to the work; (6) Excavation to a level greater than 60cm below the bottom of the Earthwork Support shall not be allowed; (7) If temporary removal of individual members of the Earthwork Support is necessary, safety measures shall be taken to ensure the safety of workers, such as installing temporary members to hold the loads imposed on the system; (8) When removing Earthwork Support, the Contractor shall not allow anyone other than the workers engaged in the removal work to enter the area and the vicinity; and (9) The Contractor shall perform backfilling of any ~~trench~~ excavation in parallel with the removal of the Earthwork Support. *Please refer to the notes against Clause 7.2 (6) above.* *I have added a comprehensive and common clause for contractor's monitoring of Excavation Works in* JSSS 6.1.3 [*Temporary Inspection and Monitoring Systems*]. *I think it should go here and not in Section 6.2 [Earthwork Support] as such settlement can be a result of excavation generally, including that caused by say water table lowering (e.g. well-point systems) and Earthwork Support, but not only for the Earthwork Support.* *I have added suitable mention in Section 6.2 so that this is coordinated.* 7.5.1 Monitoring Impact of Excavation Works on Other Properties The Contractor shall comply with the requirements of JSSS 6.1.3 [*Monitoring Impact of Works on Other Properties*]. NK6/22: As commented by JICA on Chapter 6 TW, the monitoring is moved to 2.1.7 [Monitoring and Records]. Instead of 7.5.1 above, we propose to specify at 7.1.2.	(2) Workers shall not be allowed to enter any excavation ~~the trench~~ until Earthwork Support is installed prior to the work; (3) Excavation to a level greater than 60cm below the bottom of the Earthwork Support shall not be allowed; (4) If temporary removal of individual members of the Earthwork Support is necessary, safety measures shall be taken to ensure the safety of workers, such as installing temporary members to hold the loads imposed on the system; (5) When removing Earthwork Support, the Contractor shall not allow anyone other than the workers engaged in the removal work to enter the area and the vicinity; and (6) The Contractor shall perform backfilling of any ~~trench~~ excavation in parallel with the removal of the Earthwork Support. ~~7.4.1 Monitoring Impact of Excavation Works on Other Properties~~ ~~The Contractor shall comply with the requirements of JSSS 6.1.3 [*Monitoring Impact of Works on Other Properties*].~~
7.6 **EXCAVATION BY BLASTING** 7.6.1 **Scope** (1) This Section specifies safety measures in connection with ~~excavation in rock in open~~ open-cut rock excavation that cannot be	7.6 **BLASTING WORKS** *See above clause 7.1.1 where Blasting Works is defined. I have changed the following references accordingly:* 7.6.1 **Scope** (1) This Section specifies safety measures in connection with excavation in	7.5 **BLASTING WORKS** 7.5.1 **Scope** (1) This Section specifies safety measures in connection with excavation in

undertaken using conventional excavation techniques and which, following the Engineer's Instruction or consent, shall be undertaken by Blasting with Explosives.

NK1: added in open in right because 8.4 specifies excluding underground excavation with blasting.

JC1: Why are "Blasting" and" Explosives" written in capital letters? Are they defined? See 8.4.2 (1), (2).
NK1: They are defined in 8.4.2. NK will ask MD the reason of definition.

JC2: Confirmation is required if the expression "excavation in rock in open" is appropriate.
NK2: As a term "open-cut excavation" is usually used for excavation in open site area. Modified as "in connection with open-cut rock excavation".

(2) The ~~Works~~ works plan shall be described in the relevant Method Statement.

(3) This Section applies particularly to ~~Works~~ works where there may be any risk of injury or damage to persons and property on adjacent areas due to the use of Explosives either within or outside the Site.

NK1: There are two terms in 7.6: "Blasting Works" and "Blasting works". Tentatively, "Blasting works" is used above because "excavation work" is used in 7.1 and "Blasting" is defined in 8.4.2. (To MD: Please confirm the term.)

rock ~~open-cut rock excavation~~ that cannot be undertaken using conventional excavation techniques.

The revised wording "open" or "open cut" are not correct or necessary, excavation in rock can apply to all types of excavation where rock can be encountered (e.g. trenches, pits and basements). Suggest that the original wording is correct.

The above definition is simple and clear but please advise if you need a other more detailed definition of "Rock"?

I suggest that the following is necessary:

(2) Blasting Works for tunnelling is not included in the scope of this Chapter. Any such work shall be performed in accordance with the Particular Safety Specification.

I suggest that also that some limitation shall be including in JSSS to restrict the use of blasting as it may otherwise assume that is an acceptable alternative to more expensive removal techniques.

I have therefore separated the clause, edited it and added further general requirements as follows:

7.6.2 **General Blasting Requirements**

(1) Blasting shall only be permitted to be performed by the Contractor:

(a) When it is safe to do so and when there is no risk of injury or damage being caused to persons or property within or outside the Site

(b) Where it specifically allowed or required by the Particular Safety Specification; and

(c) During the execution of the Works after the Contractor has received the Engineer's approval or instruction.

(2) Blasting when approved, shall only be permitted at times which have been predetermined and agreed with the Engineer and any relevant authority.

~~(3) The Blasting Works plan shall be described in the relevant Method Statement.~~

What does the above clause mean? The Blasting Safety Plan is described below. Please clarify.

NK6/22: Blasting works are made as a part of construction works consisting of clearing, excavation, concrete works, backfilling, etc. Method Statement will cover the whole parts of works, so above (3) stipulates the blasting work plan shall be a part of the relevant MS.

~~(4) This Section applies particularly to Blasting Works where there may be any risk of injury or damage to persons and property on adjacent areas due to the use of Explosives either within or outside the Site.~~

Ditto, why would the use of explosives be possible outside the Site? Please see above suggested added clause (3), it is assumed that this can be deleted please check.

rock that cannot be undertaken using conventional excavation techniques.

(2) Blasting Works for tunnelling is not included in the scope of this Chapter. Any such work shall be performed in accordance with the Particular Safety Specification.

7.5.2 General Blasting Requirements

(1) Blasting shall only be permitted to be performed by the Contractor:

(a) When it is safe to do so and when there is no risk of injury or damage being caused to persons or property within or outside the Site

(b) Where it specifically allowed or required by the Particular Safety Specification; and

(c) During the execution of the Works after the Contractor has received the Engineer's approval or instruction.

(2) Blasting when approved, shall only be permitted at times which have been predetermined and agreed with the Engineer and any relevant authority.

7.6.2 **Definitions**

Definitions of terms for the purpose of this Chapter are as follows.

(1) "**Blasting**" means blowing-up or breaking apart solid rock with the use of Explosives.

(2) "**Explosives**" means ~~mean~~ any substance or mixture of substances that is manufactured to produce an explosive effect and which term includes any explosion explosive, Blasting agent and Blasting supplies such as detonators, cords and detonating equipment.

(3) "**Exclusion Zone**" means an area from which all unauthorised Contractor's Personnel, unauthorised Employer's Personnel and any other unauthorised persons or the general public are prohibited to enter due to the risk of their being affected by the Blasting operations. Unauthorised personnel in this context shall have the same meaning as that stated in Section 2.3 [*Prohibition of Entry – Dangerous Work*] Clause 2.3.1 (c).

7.6.3 **Compliance Standards**

(1) By reference to JSSS 1.4 [*JSSS - Laws and Reference Standards*], unless otherwise specified in JSSS, the Contractor shall comply with the requirements of this Chapter, read jointly with and including the further technical requirements of BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry.

JC2: The phrase "unless otherwise specified in JSSS" is indispensable in this case at least. BS does not mention subject, so it is not clear who is responsible for each action.

For example, JSSS specifies that the Employer shall specify allowable values of vibration, noise, etc. in the Contract. The Employer should survey these allowable values for structures, etc. around the Site when the Employer specify these allowable values.

On the other hand, BS5607, 6.2.1 mentions "a detailed survey and examination of the site, buildings or structures and adjoining areas and property should be carried out in accordance with BS 5930.". It is not clear who carry out the survey and

NK6/22: It states the risk shall be not expected outside the Site by the flying rocks of the blasting in the Site. (1) (a) specifies same, so (4) can be deleted.

Noise: There appears to be no maximum criteria stated in the BS so I suggest the following:

7.6.3 **Blasting Noise**

Noise levels, measured in areas close to the Exclusion Zone and in areas accessible to other workers or the public shall not exceed a sound pressure level of 85 dB and/or a peak sound level of 110 dB

NK6/22: Japanese Noise Regulation Act stipulates noise of the specific construction works shall not exceed 85 dB at the boundary of the Project area.
NK agree to the MD's proposed level.
To MD, May I know your basis of a sound pressure level of 85 dB and/or a peak sound level of 110 dB
騒音規制法は、特定建設作業の騒音は敷地境界において 85 デシベルを超えないことと規定している。

7.6.4 **Definitions**

Definitions of terms for the purpose of this Chapter are as follows.

(1) "**Blasting**" means blowing-up or breaking apart solid rock with the use of Explosives.

(2) "**Explosives**" means any substance or mixture of substances that is manufactured to produce an explosive effect and which term includes any explosion explosive, Blasting agent and Blasting supplies such as detonators, cords and detonating equipment.

(3) "**Exclusion Zone**" means an area from which all unauthorised Contractor's Personnel, unauthorised Employer's Personnel and any other unauthorised persons or the general public are prohibited to enter due to the risk of their being affected by the Blasting Works. Unauthorised personnel in this context shall have the same meaning as that stated in Section 2.3 [*Prohibition of Entry – Dangerous Work*] Clause 2.3.1 (c).

7.6.5 **Compliance Standards**

Changed in 2.5 therefore for consistency to be changed everywhere;

(1) By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*], for any items in this Section or relevant to the subject of this Section and which are not fully covered by JSSS, the Contractor shall take necessary measures for Blasting Works complying with the technical requirements specified in BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry.

The above standard wording has been changed (for the better) as a consequence of JICA comment on Chapter 1 as above and I suggest for consistency that the same is applicable and should be used here.

I also suggest that more reliance should be placed upon the use of the BS and less on trying to repeat or "improve" parts of the BS in JSSS. If anything some of the clauses in JSSS could be omittec wgere the BS is more stringent or more clear.

7.5.3 Blasting Noise

Noise levels measured ~~in areas close to the Exclusion Zone and in areas accessible to other workers or the public~~ at the boundary of the Project area shall not exceed a sound pressure level of 85 dB and/or a peak sound level of 110 dB.

7.5.4 Definitions

Definitions of terms for the purpose of this Chapter are as follows.

(1) "Blasting" means blowing-up or breaking apart solid rock with the use of Explosives.

(2) "Explosives" means any substance or mixture of substances that is manufactured to produce an explosive effect and which term includes any explosion explosive, Blasting agent and Blasting supplies such as detonators, cords and detonating equipment.

(3) "Exclusion Zone" means an area from which all unauthorised Contractor's Personnel, unauthorised Employer's Personnel and any other unauthorised persons or the general public are prohibited to enter due to the risk of their being affected by the Blasting Works. Unauthorised personnel in this context shall have the same meaning as that stated in Section 2.3 [*Prohibition of Entry – Dangerous Work*] Clause 2.3.1 (c).

7.5.5 Compliance Standards

(1) By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*], for any items in this Section or relevant to the subject of this Section and which are not fully covered by JSSS, the Contractor shall take necessary measures for Blasting Works complying with the technical requirements specified in BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry.

investigation.

Therefore, it is necessary to stipulate clearly that provisions in JSSS are given priority and others than JSSS shall comply with BS. Otherwise, the Contractor has to burden broad responsibilities including determination of allowable values and coordination with relevant authorities.

NK2: Added the phrase as suggested by JC. MD, please review JC.

(2) The Contractor shall obtain the necessary permits, licenses or approvals for Blasting work and the handling and storage of Explosives associated therewith. The Employer, at the request of the Contractor, shall provide such reasonable assistance to allow the Contractor to obtain properly such permits, licenses or ~~approvals in accordance with GC 2.2 [*Permits, Licences or Approvals*]~~.

JC1: Referencing to GC2.2 is not necessary here.

NK1: The reference is deleted.

7.6.4 Personnel for Blasting Works

(1) Further to the requirements of JSSS 1.16 [*Proper Placement of Contractor's Personnel*], the Contractor shall assign the following personnel for Blasting ~~W~~works:

(a) Explosive ~~E~~engineer; and

(b) Shotfirer(s).

JC1: It seems that capital and lowercase letters are used without rules.

NK1: Unless a word is defined, it will be written with lowercase. The above is modified as above because of itemisation. Hereinafter, "explosive engineer" and "shotfirer" are used only by lowercase letters.

(2) Responsibilities and requirement of personnel for Blasting ~~W~~works:

(a) The Explosive Engineer shall plan the Blasting Works, lead the Blasting ~~W~~works at Site and perform the safety management of the Blasting ~~W~~works; and

(b) Shotfirer(s) shall perform safekeeping, transportation and storage of Explosives, and perform Blasting ~~W~~works and site safety management.

(3) Safety education and guidance

~~Further to the requirements of JSSS 1.16 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that personnel engaged in W works; namely explosive engineer, shotfirer(s), Spotters (sentries) and other workers involved in the blasting operations, have knowledge of and are able to comply with the following:~~

Further to the requirements of JSSS 1.16 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that explosive engineer and shotfirer(s) have sufficient knowledge of the following:

JC1: The phrase "personnel engaged in Blasting Works" is not clear if it means only the explosive engineer and shotfirer as defined in (1) above or it includes other personnel, too. If the former is the case, the clause (1) should include the sentence that blasting works shall perform only by the explosive engineer and shotfirers.

NK1: Blasting Works are executed by the team consisting of the explosive engineer,

See later notes on survey and monitoring

(2) The Contractor shall obtain the necessary permits, licenses or approvals for Blasting work and the handling and storage of Explosives associated therewith. The Employer, at the request of the Contractor, shall provide such reasonable assistance to allow the Contractor to obtain properly such permits, licenses or approvals.

Part deleted.

7.6.6 Personnel for Blasting Works

Please refer to the BS with regard to the selection and qualification of blasting contractors to perform the blasting works, it seems logical but is this to apply? It seems insufficient that a contractor with no experience or proven capability can employ two blasting staff and then be qualified to perform the works.

(1) Further to the requirements of JSSS 1.18 [*Proper Placement of Contractor's Personnel*], the Contractor shall assign the following personnel for Blasting Works:

(a) Explosives engineer; and

(a) Shotfirer(s).

What about other team members e.g. blasting supervisor (see BS), explosives storekeeper, drivers carrying explosives, security staff, spotters

NK6/22: JICA specified as above after discussion on our proposal based on BS, so no change is made at this stage.

(2) Responsibilities and requirement of personnel for Blasting Works:

NK6/22: JICA commented "Blasting Works" is not defined, so requested to change to "Blasting works". Do you define it?

(a) The Explosives engineer shall plan the Blasting Works, lead the Blasting Works at Site and perform the safety management of the Blasting Works; and

(b) Shotfirer(s) shall perform safekeeping, transportation and storage of Explosives, and perform Blasting Works and site safety management.

(3) Safety education and guidance

Further to the requirements of JSSS 1.18 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that the Explosives engineer and shotfirer(s) have sufficient knowledge of and are able to comply with the following:

"personnel engaged in Blasting Works" means "all persons" so engaged. Why make this restrictive? Can state "all personnel involved.."?

What about other team members e.g. blasting supervisor, explosives storekeeper, drivers carrying explosives, security staff, spotters? All and more need to be made aware and this is only safety training. I suggest the original wording is wider.

NK6/22: JICA specified as above after discussion on our proposal based on BS, so no change is made at this stage.

(2) The Contractor shall obtain the necessary permits, licenses or approvals for Blasting work and the handling and storage of Explosives associated therewith. The Employer, at the request of the Contractor, shall provide such reasonable assistance to allow the Contractor to obtain properly such permits, licenses or approvals.

7.5.6 Personnel for Blasting Works

(1) Further to the requirements of JSSS 1.18 [Proper Placement of Contractor's Personnel], the Contractor shall assign the following personnel for Blasting Works:

(a) Explosives engineer; and

(b) Shotfirer(s).

(2) Responsibilities and requirement of personnel for Blasting Works:

(a) The Explosives engineer shall plan the Blasting Works, lead the Blasting Works at Site and perform the safety management of the Blasting Works; and

(b) Shotfirer(s) shall perform safekeeping, transportation and storage of Explosives, and perform Blasting Works and site safety management.

(3) Safety education and guidance

Further to the requirements of JSSS 1.18 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that the Explosives engineer and shotfirer(s) have sufficient knowledge of and are able to comply with the following:

shotfirers, sentries (BS5607 7.4.2.4) and other workers involved in the blasting operations (BS5607 3.44.2 NOTE).

(3) is modified as above.

JC2: BS5607 8.3 describes "No person other than those designated in **8.2** should be in possession of explosives on site" and Sections after 8.2 describe about only requirements on skills and knowledges of blasting engineer and shotfirers. Therefore, (3) is revised to describe limitedly for the both.

NK2: NK think all members of blasting team shall know knowledge (a) to (f) generally or Professionally. However, NK modifies as JIC comment.

(a) Nature of hazards associated with Blasting;

(b) Unsafe conditions and conduct in performing Blasting ~~W~~ works;

(c) Procedures for Blasting Works;

(d) Evacuation and return Procedures of the evacuated workers and personnel;

JC1: The word "return" in (d) is not clear if it means to make evacuated personnel to the original places or return surplus explosives to the magazine.

NK1: It means to make the evacuated personnel to the original working places. Words are added as right.

(e) Safety measures when misfiring of Explosives occurs; and

(f) Emergency response *(actions).*

7.6.5 **Blasting Safety Plan**

The Contractor shall prepare a Blasting Safety Plan describing all required safety measures for Blasting Works in addition to the items prescribed in JSSS 1.6 [*Contractor's Safety Plan*] and including the following:

JC1: It should be stated somewhere that the Blasting Safety Plan shall be agreed by the Engineer.

NK1: As mentioned in MM 3.(3) Chapter 1 has specified the Contractor shall submit Safety Plan and will specify "the Engineer may review the Safety Plan…".

Therefore, it is not necessary to specify "the Contractor shall get concurrence to the Safety Plan by the Engineer." for this Chapter only.

(1) Risk analysis and countermeasures.

(2) Safety measures for transportation, safekeeping, use and disposal of Explosives.

(3) Safety measures for Contractor's Personnel, Employer's Personnel and any other persons, the general public, neighbouring residents and building owners on or adjacent to the Site and who may be affected by the Blasting ~~W~~ works (hereinafter collectively referred to as "personnel affected by the Blasting works" in this Section)..

JC1: It is recommended to define as for example, "Concerned Personnel" and use the term instead of repeating the long expression in the clauses such as (12) below and 8.4.6. (1).

NK1: referred to BS5607 and GC below for the above JC. It will be defined as "personnel affected by the Blasting Works" as right.

BS 5607 mentions as follows:

6.4 Exclusion zone and warning procedures

the risk of injury to contractor's personnel, third parties and members of the public is reduced to as low as reasonably practicable.

7.4.2.1 General

notified to all personnel involved in securing the zone and others affected by the event, including the general public.

(a) Nature of hazards associated with Blasting;

(b) Unsafe conditions and conduct in performing Blasting Works;

(c) Procedures for Blasting Works;

(d) Evacuation and return procedures for any evacuated workers and personnel;

Change not necessary but added anyway

(e) Safety measures when misfiring of Explosives occurs; and

(f) Emergency response *(actions).*

7.6.7 **Blasting Safety Plan**

The Contractor shall prepare a Blasting Safety Plan describing all required safety measures for Blasting Works in addition to the items prescribed in JSSS 1.7 [*Contractor's Safety Plans*] and including the following:

(1) Risk analysis and countermeasures.

(2) Safety measures for transportation, safekeeping, use and disposal of Explosives.

(3) Safety measures for Contractor's Personnel, Employer's Personnel and any other persons, the general public, neighbouring residents and building owners on or adjacent to the Site and who may be affected by the Blasting Works (hereinafter collectively referred to as "persons affected by the Blasting Works" in this Section).

"Personnel" needs to be changes to "Persons"

Edited as above.

(a) Nature of hazards associated with Blasting;

(b) Unsafe conditions and conduct in performing Blasting Works;

(c) Procedures for Blasting Works;

(d) Evacuation and return procedures for any evacuated workers and personnel;

(e) Safety measures when misfiring of Explosives occurs; and

(f) Emergency response *(action*

7.5.7 **Blasting Safety Plan**

The Contractor shall prepare a Blasting Safety Plan describing all required safety measures for Blasting Works in addition to the items prescribed in JSSS 1.7 [*Contractor's Safety Plans*] and including the following:

(1) Risk analysis and countermeasures.

(2) Safety measures for transportation, safekeeping, use and disposal of Explosives.

(3) Safety measures for Contractor's Personnel, Employer's Personnel and any other persons, the general public, neighbouring residents and building owners on or adjacent to the Site and who may be affected by the Blasting Works (hereinafter collectively referred to as "persons affected by the Blasting Works" in this Section).

GC: 4.8 Safety Procedures
for the use and protection of the public and of owners and occupiers of adjacent land.

(4) Determination of Exclusion Zone.

(5) Identification of affected areas, buildings, structures and property.

(6) Environmental and health compliance requirements including vibration, noise, fire, and the like, required by Laws and the Contract.

JC1: It is logically appropriate to change the order of (5) and (6). (First, determining the allowable values, secondly determining the blasting method within the values, then, the affected area is inevitably determined.)
NK1: The order of (5) and (6) is changed as commented.

(7) Environmental monitoring plan and methods to record the impact of Blasting on affected areas, buildings, structures and property.

(8) ~~Test~~ Trial Blasting.

NK1: Following BS, Test is replaced Trial.

~~(9) Environmental monitoring plan and methods to record the impact of Blasting on affected buildings, structures and property.~~

JC2: Isn't it necessary to combine (6) and (8)?
NK2: The contents of item (6) and (8) are closely related, however, they are different matters as actions. Therefore, it would be better to change the order of (7) and (8) so that identification and monitoring become clear to be closely related.

(9) Identification of the explosive engineer and shotfirers to distinguish from other workers.

(10) Placement of Spotters.

(11) Method of notification of the start date and time of Blasting work and notice immediately before Blasting to other Contractor's Personnel, Employer's Personnel and any other persons, the general public, neighbouring residents and building owners on or adjacent to the Site and who may be affected by the Blasting operations.

(12) Evacuation method of all personnel from the Exclusion Zone before Blasting.

JC1: The JC for (3) advise to replace all personnel with "Concerned Personnel" or another term
NK1: Personnel and persons in (3) is different from (12) as the latter is limited to personnel to leave Exclusion Zone. It is left as it is.

(13) Warning system at the time of Blasting.

(14) Procedures and methods for dealing with misfired Explosives (The plan for the treatment procedures for misfired Explosives shall be prepared by reference to BS5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10.5 Misfires.

(15) List of legal and administrative records.

7.6.6 ~~Information to~~ Risk Prevention of Workers and Neighbouring Residents

JC1: Revised title.

(1) ~~Dissemination of Information~~ Notice of Blasting

JC1: Revised title.

(4) Determination of Exclusion Zone.

(5) Identification of affected areas, buildings, structures and property.

(6) Environmental and health compliance requirements including vibration, noise, fire, and the like, required by Laws and the Contract.

(7) Environmental monitoring plan and methods to record the impact of Blasting on affected buildings, structures and property.

(8) Trial Blasting.

(9) Identification of the Explosives engineer and shotfirers to distinguish from other workers.

(10) Placement of Spotters.

(11) Method of notification of the start date and time of Blasting work and the serving of notice immediately before commencement of Blasting Works to other persons affected by the Blasting Works.

(12) Evacuation method of all personnel from the Exclusion Zone before Blasting.

(13) Warning system at the time of Blasting.

(14) Procedures and methods for dealing with misfired Explosives (The plan for the treatment procedures for misfired Explosives shall be prepared by reference to BS5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10.5 Misfires.

(15) List of legal and administrative records.

7.6.8 Risk Prevention of Workers and Neighbouring Residents

(1) Notice of Blasting

~~The Contractor shall assist the Employer when so requested by the Employer in giving briefings to neighbouring communities, residents and property owners by explaining the Blasting work scope, extent, duration, timing and safety measures and related information~~

(4) Determination of Exclusion Zone.

(5) Identification of affected areas, buildings, structures and property.

(6) Environmental and health compliance requirements including vibration, noise, fire, and the like, required by Laws and the Contract.

(7) Environmental monitoring plan and methods to record the impact of Blasting on affected buildings, structures and property.

(8) Trial Blasting.

(9) Identification of the Explosives engineer and shotfirers to distinguish from other workers.

(10) Placement of Spotters.

(11) Method of notification of the start date and time of Blasting work and the serving of notice immediately before commencement of Blasting Works to other persons affected by the Blasting Works.

(12) Evacuation method of all personnel from the Exclusion Zone before Blasting.

(13) Warning system at the time of Blasting.

(14) Procedures and methods for dealing with misfired Explosives (The plan for the treatment procedures for misfired Explosives shall be prepared by reference to BS5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10.5 Misfires.

(15) List of legal and administrative records.

7.5.8 Risk Prevention of Workers and Neighbouring Residents

(1) Notice of Blasting

The Contractor shall notify all persons affected by the Blasting Works. of the planned schedule and start dates and times for Blasting Works. Such information shall be updated as necessary, immediately before the Blasting Works commence.

~~The Contractor shall assist the Employer when so requested by the Employer in giving briefings to related authorities, neighbouring residents and building owners by explaining the Blasting work scope, extent, duration, timing and safety measures and related information.~~

JC1: deleted.

The Contractor shall notify~~, in appropriate manners,~~ all affected persons including neighbouring residents and building owners of the planned schedule and start dates and times for Blasting work, ~~the actual start dates and times and give notice~~ immediately Such information shall be updated as necessary, in particular, before the Blasting work commences.

JC1: Modified.

JC2: The term "notification" is used in also BS5607 6.6, therefore, "notify" is deemed to be right in this context. The term "update" is also derived from BS5606 6.6.
JC modified as above.

(2) Risk Prevention Measures

The Contractor shall take all necessary measures to prevent any injury or damage to all affected persons and property from the Blasting Works including the following:

(a) Prohibition of overcharging with Explosives more than specified in the Method Statement prepared based on the trial Blasting;

JC: It is not specific requirement though it is understandable. The Engineer shall check the explosive quantity planned by the Contractor based on the test blasting.
NK: The Contractor is responsible for planning of method of blasting. The Contractor shall check the quantity of explosive if necessary by an explosive design checker as same as design check for temporary works.
The Engineer may review Method Statement and Safety Plan whether the Contractor plan method and safety measures in accordance with the Contract.
Addition is made as above.

(b) Prevention of scattering of flying rock and other debris with materials, for example, sand, nets, steel plates, timber, etc. mentioned in 12.7.6 [Blast protection] of BS 5607 and as prescribed in the Contract (if any);

JC1: Phrase underlined is added.

JC1: It is not specific requirement. (Other clauses can be said commonly.) It shall be default for the Employer to determine the prevention measures of scattering of rocks. This concept that the Employer specify in the Contract cannot be read now. Please consider to specify specific requirements or to refer to the Particular Safety Specification.
NK1: As mentioned (a) above, the Contractor is responsible for the preparation of detail method of construction including the prevention measures. The Employer specify when there is special requirement. Modified as right.

JC1: Please describe specific methods. (Please refer to the contents of BS if available.)
NK1: added 12.7.6 Blast protection of BS 5607

~~(c) Prevention of collapse of surrounding rocks or ground areas more than planned in the Method Statement;~~

JC1: Is this meaning control blasting (presplitting/smooth blasting) or final excavation surfaces by blasting, or foundation of structures neighboring the Site? It is not clear. Blasting is originally tool to loosening the surrounding rocks and ground areas
NK1: This specifies prevention of collapse by excessive loosening of surrounding rocks or ground areas. Modified as above. "as prescribed …" is not added because the Employer will not specify more than this.

The Contractor shall notify all persons affected by the Blasting Works, of the planned schedule and start dates and times for Blasting Works. Such information shall be updated as necessary, immediately before the Blasting Works commence.

(2) Risk Prevention Measures

The Contractor shall take all necessary measures to prevent any injury or damage to all persons affected by the Blasting Works, including the following:

(a) Prohibition of overcharging with Explosives more than that specified in the Method Statement prepared based upon the trial Blasting;

~~(b)~~ Prevention of scattering of flying rock and other debris ~~including for example the provision of sand, nets, steel plates, timber, and the like as mentioned in 12.7.6 [Blast protection] of BS 5607 and as prescribed in the Contract (if any);~~

As a basic rule I do not suggest giving any examples, the Contractor is already required to comply with BS 5607 so it is not necessary to give any further reference.

I disagree that the Employer shall determine the prevention measures of scattering of rocks as a common basis as he is employing and paying the contractor as a qualified technical expert to do this work.

I recommend that the original wording should not be changed, the given examples are not specific and any attempt to define scope may compromise the employer and even JICA in the future.

(c) Prevention of collapse of surrounding rocks or ground areas;

This is based upon the NK draft and I do understand why it is deleted.

It may not be overcharging it could be for other reasons e.g. incorrect drilling and blasting location in the wrong place or direction according to geology.

Blasting must be controlled and contained within the area required without damaging surrounding areas. Aside from the risk of damage to other property, The

(2) Risk Prevention Measures

The Contractor shall take all necessary measures to prevent any injury or damage to all persons affected by the Blasting Works, including the following:

(a) Prohibition of overcharging with Explosives more than that specified in the Method Statement prepared based upon the trial Blasting;

(b) Prevention of scattering of flying rock and other debris.

(c) Prevention of collapse of surrounding rocks or ground areas;

JC1: "Risk Prevention" is not "Information to Workers and Neighbouring Residents" but points to pay attention in performing the work. Please move to proper place.
NK1: NK thinks that it is better to change the title of this section to "Risk Prevention of Workers and Neighbouring Residents" and title of (2) to "Risk Prevention Measures" so that the title and the contents coincide.

JC2: The required sentence is "the prevention of blasting more than planned by measures of ●●". If the "●●" cannot be described, (c above can be deleted because prohibition of overcharging is specified in (a).
NK2: deleted.

(d) ~~Define all Blasting as Dangerous Work and take measures in accordance with Section 2.3 [*Prohibition of Entry - Dangerous Work*];~~ Define Exclusion Zone for Blasting works and take necessary measures to prohibit the personnel affected by the Blasting works from entering the Exclusion Zone by a system of signs, signals and Spotters in accordance with 7.4.2 [Blast warning procedures] of BS BS5607 including the following:

JC: As JSSS 2.3 stipulates only prohibition of entry in general and is not proper to refer to in this clause. The evacuation area at the time of blasting should be stipulated concretely.
NK: Modified the clause (d) and located (e)(f) below (d).

~~(e) Provide audible warning sirens to warn of impending, current and completed Blasting operations;~~

~~(f) Place bulletin boards showing the Blasting time, siren code and other precautions at the boundary of the Dangerous Work area;~~

(i) Provide audible warning sirens to warn of impending, current and completed Blasting operations;

(ii) Place bulletin boards showing the Blasting time, siren code and other precautions at the boundary of the Dangerous Work area;

(e) Establish evacuation requirements, ~~routes~~ and assembly areas at blasting operation and inform all ~~workers and effected persons the~~ personnel affected by the Blasting Works; and

(f) Perform firing only after the Spotters have confirmed that all ~~workers~~ personnel affected by the Blasting Works have been evacuated; and

JC1: It gives an impression of an emergency evacuation route. Isn't it enough to simply check evacuation?
NK1: As a risk prevention measure, it is important to establish and inform evacuation requirement and routes etc.
Modified as right.

(g) Provide communication equipment between the shotfirer and the Spotter, maintain and test the equipment;

(h) ~~Perform firing only after the Spotters have confirmed that all workers have been evacuated; and~~ Prohibit bringing into the blasting areas any mobile phone that ~~is not guaranteed that it will not adversely affect the electric detonators;~~ may affect adversely the electric detonator; and

JC1: Combine (g) with (i) to make the procedure clear that only after evacuation, blasting shall be fired.
NK1: modified as (e) in right by combining former (g) and (i)

JC2: Modified to make the expression same as in BS.

employer should not be required to pay for repair or reinstatement of surrounding areas where the contractor has failed to control his own operations.

I suggest that the above is not deleted

NK: agreed.

~~(d) Define all Blasting Works as Dangerous Work and take measures in accordance with Section 2.3 [*Prohibition of Entry - Dangerous Work*];~~

(d) Demarcate the Exclusion Zone for Blasting Works and take necessary measures to prohibit the ~~personnel~~ persons affected by the Blasting works from entering the Exclusion Zone by a system of signs, signals and Spotters in accordance with 7.4.2 [Blast warning procedures] of BS BS5607 including the following:

The BS covers safety measures and more, is the following therefor necessary?

NK6/22: JICA wants JSSS to specify requirement and also concrete measures to guide the Contractor, so the following are left as original.

(i) Provide audible warning sirens to warn of impending, current and completed Blasting operations.

(ii) Place bulletin boards showing the Blasting time, siren code and other precautions at the boundary of the Dangerous Work area.

(e) Establish evacuation requirements, routes and assembly areas and inform all persons affected by the Blasting Works;

(f) Perform firing only after the Spotters have confirmed that all persons affected by the Blasting Works have been evacuated;

(g) Provide communication equipment between the shotfirer and the Spotter, maintain and test the equipment;

(h) Prohibit bringing into the Blasting areas any mobile phone that may affect adversely the electric detonator; and

(d) Demarcate the Exclusion Zone for Blasting Works and take necessary measures to prohibit the ~~personnel~~ persons affected by the Blasting works from entering the Exclusion Zone by a system of signs, signals and Spotters in accordance with 7.4.2 [Blast warning procedures] of BS BS5607 including the following:

(i) Provide audible warning sirens to warn of impending, current and completed Blasting operations.

(ii) Place bulletin boards showing the Blasting time, siren code and other precautions at the boundary of the Dangerous Work area.

(e) Establish evacuation requirements, routes and assembly areas and inform all persons affected by the Blasting Works;

(f) Perform firing only after the Spotters have confirmed that all persons affected by the Blasting Works have been evacuated;

(g) Provide communication equipment between the shotfirer and the Spotter, maintain and test the equipment;

(h) Prohibit bringing into the Blasting areas any mobile phone that may affect adversely the electric detonator; and

NK: modified.

(i) Unless otherwise specified in the Contract, perform Blasting Works only during the daytime.

7.6.7 Handling and Storing of Explosives

(1) Storage of Explosives

(a) The Explosive store to be constructed at the Site shall be a secure, substantial and fireproof building, environmentally controlled, locked, guarded and protected at all times and in accordance with the Laws of the Country;

JC1: added. "the Laws" in (a) is wrong. Should be "the laws of the Country".
NK: GC stipulate as 1.1.6.5 "Laws" means all national (or state) legislation… and 2.2 (a) copies of the Laws of the Country…,Modified as commented.

(b) Appropriate numbers and types of personnel shall be assigned by the Contractor for safekeeping and security of the stored Explosives and any other materials;

(c) The Contractor shall maintain records of the types and quantities of all Explosives received and issued at the store, listing the date and time of receipt and issue and the names of all personnel concerned; and

(d) The Contractor shall submit the records to the Engineer when the Engineer requests.

For other storage requirements, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 9.3 Storage.

JC1: As Blasting is soul of safety specification, it seems better to specify all items as mentioned in BS 5607 (OSHA) if referred to those. In addition, advise to refer to the allowable values influenced to structures of 3rd parties specified in Hongkong MTR M&W.
NK1: modified following the comments as much as possible.

(i) Unless otherwise specified in the Particular Safety Specification, perform Blasting Works only during the daytime.

7.6.9 **Handling and Storing of Explosives**

(1) Storage of Explosives

(a) The Explosive store to be constructed at the Site shall be a secure, substantial and fireproof building, environmentally controlled, locked, guarded and protected at all times and in accordance with the Laws of the Country;

(b) Appropriate numbers and types of personnel shall be assigned by the Contractor for safekeeping and security of the stored Explosives and any other materials;

(c) The Contractor shall maintain records of the types and quantities of all Explosives received and issued at the store, listing the date and time of receipt and issue and the names of all personnel concerned; and

(d) The Contractor shall submit the records to the Engineer when the Engineer requests.

For other storage requirements, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 9.3 Storage.

JICA have commented as follows:

JC1: As Blasting is soul of safety specification, it seems better to specify all items as mentioned in BS 5607 (OSHA) if referred to those. In addition, advise to refer to the allowable values influenced to structures of 3rd parties specified in Hongkong MTR M&W.

Please note:

1) The full HK blasting document contains no use or mention of the expression "allowable values" of any damage to "structures of 3rd parties"

2) The document includes criteria for measurement and recording but this does not state that any damage is allowable.

3) Similar to previous comments on Earthwork Support (see above), I suggest that the criteria is given to determine whether Blasting is likely to cause damage in which case the Blasting Works shall, stop and the contractor shall propose remedial measures before proceeding.

4) Pages 40 and 42 are missing from my copy of the HK MTR Conditions of Contract, therefore I cannot complete my review and give any final comments on the Contractor's basic obligation.

I do recommend that any such reference and addition is correct or justified particularly for blasting.

My suggestion is the same as for Earthwork Support (see above notes) namely:

"If anything, it would be better to state as originally drafted namely as a common default the Contractor shall cause NO damage to surrounding areas

(i) Unless otherwise specified in the Particular Safety Specification, perform Blasting Works only during the daytime.

7.5.9 **Handling and Storing of Explosives**

(1) Storage of Explosives

(a) The Explosive store to be constructed at the Site shall be a secure, substantial and fireproof building, environmentally controlled, locked, guarded and protected at all times and in accordance with the Laws of the Country;

(b) Appropriate numbers and types of personnel shall be assigned by the Contractor for safekeeping and security of the stored Explosives and any other materials;

(c) The Contractor shall maintain records of the types and quantities of all Explosives received and issued at the store, listing the date and time of receipt and issue and the names of all personnel concerned; and

(d) The Contractor shall submit the records to the Engineer when the Engineer requests.

For other storage requirements, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 9.3 Storage.

	and buildings, etc. etc.. when performing the Works, as this is the usual legal and contractual obligation of the Contractor., *If there is a chance of damage occurring due to an unavoidable method of execution, then I recommend that the default situation should be that the Contractor is instructed via JSSS to set up and manage monitoring to ensure his compliance i.e. that damage does not occur, subject to receiving the consent of the Engineer.* *Regarding the additional reference to BS 5607, the Contractor is already required to comply with this BS so it is not necessary and I do not recommend giving reference to further particular BS clauses in JSSS.*	
(2) Transportation of Explosives For transportation requirements, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 9.4 Transport of Explosives on Site.	(2) Transportation of Explosives For transportation requirements, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 9.4 Transport of Explosives on Site.	(2) Transportation of Explosives For transportation requirements, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 9.4 Transport of Explosives on Site.
(3) Quantity of Explosives at the Blasting site	(3) Quantity of Explosives at the Blasting site	(3) Quantity of Explosives at the Blasting site
(a) ~~The quantity of Explosives to be transported from store to the Blasting site shall not greatly exceed the estimated quantity of consumption for that day;~~ The quantity of Explosives to be transported from store to the Blasting site shall be suitable for the estimated quantity of consumption for the Basting; MM: The "greatly exceed" expression is not appropriate. NK1: modified as right. ("suitable" is agreed in the meeting)	~~(a) The quantity of Explosives to be transported from store to the Blasting site shall not greatly exceed the estimated quantity of consumption for that day;~~	
(b) No extra or surplus Explosives shall be stored at the Blasting site; and	(b) No ~~extra or surplus~~ Explosives shall be stored at the Blasting site; and	(a) No Explosives shall be stored at the Blasting site; and
(c) ~~Explosives not used on the day shall be returned to the Explosives store. Explosives not used on the day shall be returned to the Explosives store or a location where they can be stored legally until the following day.~~ JC1: Please confirm if the procedure (c) is a must to return unused explosives to magazine. Check with BS5607 (there is a provision for measures for such a case in BS 5607 9.6). NK1: BS 5607 9.6 is "Disposal of unwanted explosives or explosives which have deteriorated during storage", which is irrelevant. Rather, there is a procedure for returning unused explosives in 12.8.2 as follows: 12.8.2: Only the amount of explosive which can be readily charged in one day should be taken into the structure. Uncharged explosives should be removed to a location where they can be stored legally until the following day. Modified as above. JC2: BS5607 12.8.2 specify about demolition. JSS describes other various cases (excavation, underwater, tunnel, etc.), so it is not sure correct to adopt the description of 12.8.2 to (c). On the other hand, in BS5607 9 which stipulates general safety measures, 9.3.4 stipulates concretely as follows: "If more explosives have been issued than are required and the intention is to return them to the licensed store, they should be examined by the shotfirer before return・・・." It is better to refer to this 9.3.4. As JSSS 7.6.7 (1) regarding Storage of explosive, stipulates that BS 5607 9.3 shall be complied with in overall. Therefore, item (c) is not necessary. JC deleted. NK2: deleted as commented.	*I suggest the above is better* (c) Explosives not used on the day shall be returned to the Explosives store. *Ditto*	(b) Explosives not used on the day shall be returned to the Explosives store.

(4) Handling of Explosives

(d) Explosives shall be handled with extreme care ensuring that they are not hit, thrown or dropped;

(e) Containers for Explosives shall be solidly constructed from timber or non-conducting material and metals such as iron or foil must not be used on inner surfaces;

(f) Explosive and detonators shall be separately stored in lockable containers;

(g) The containers for Explosives shall protect against water ingress, impact damage; and

(h) Smoking, use of matches, lighters, flames, sparks etc. shall be prohibited in areas where Explosives are being transported, stored and handled, notice boards and warning signs shall be placed in suitable positions.

(5) Records of Blasting and Explosives

(a) ~~The Shotfirer shall prepare daily work records showing the date and time of each Blasting operation, quantity of Explosives received, consumed and remaining, number of blast holes and loading method for the Blasting;~~ The Shotfirer shall prepare daily work records showing the date and time of each Blasting operation, quantity of Explosives received, consumed, misfired and remaining, number of blast holes and ~~loading~~ charging method for the Blasting, and treatment of misfired Explosives;

JC1: modified.
JC2: modified loading to charging.

(b) The Explosive Engineer shall check and countersign the Blasting work records; and

(c) The Contractor shall submit the records to the Engineer when the Engineer requests.

(6) Notice to the Engineer

The Contractor shall notify the Engineer in writing as follows:

(a) Delivery of Explosives to the store and from the store to the Site, shall each be given to the Engineer by no later than noon on the day preceding the scheduled date of the arrival of Explosives at the store and the delivery to the Site;

(b) Notification of intended Blasting ~~W~~ works shall be given to the Engineer by no later than noon on the day preceding the scheduled date of the Blasting operation; and

(c) Notification of the schedule for the following week's Blasting shall be given to the Engineer by no later than Friday morning of the preceding week.

7.6.8 ~~Test~~ Trial Blasting

~~The Contractor shall perform test Blasting in accordance with the Blasting Safety Plan provided in 7.6.5 [*Blasting Safety Plan*] for the following purposes, and modify the said safety plan according to the results of the test Blasting:~~ The

(4) Handling of Explosives

(a) Explosives shall be handled with extreme care ensuring that they are not hit, thrown or dropped;

(b) Containers for Explosives shall be solidly constructed from timber or non-conducting material and metals such as iron or foil must not be used on inner surfaces;

(c) Explosive and detonators shall be separately stored in lockable containers;

(d) The containers for Explosives shall protect against water ingress, impact damage; and

(e) Smoking, use of matches, lighters, flames, sparks etc. shall be prohibited in areas where Explosives are being transported, stored and handled, notice boards and warning signs shall be placed in suitable positions.

(5) Records of Blasting and Explosives

(a) The Shotfirer shall prepare daily work records showing the date and time of each Blasting operation, quantity of Explosives received, consumed, misfired and remaining, number of blast holes, charging method for the Blasting and treatment of misfired Explosives;

(b) The Explosives engineer shall check and countersign the Blasting Works records; and

(c) The Contractor shall submit the records to the Engineer when the Engineer requests.

(6) Notice to the Engineer

The Contractor shall notify the Engineer in writing as follows:

(a) Delivery of Explosives to the store and from the store to the Site, shall each be given to the Engineer by no later than noon on the day preceding the scheduled date of the arrival of Explosives at the store and the delivery to the Site;

(b) Notification of intended Blasting Works shall be given to the Engineer by no later than noon on the day preceding the scheduled date of the Blasting operation; and

(c) Notification of the schedule for the following week's Blasting shall be given to the Engineer by no later than Friday morning of the preceding week.

7.6.10 **Trial Blasting**

The Contractor shall perform trial Blasting in accordance with the Blasting Safety Plan provided in 7.6.5 [*Blasting Safety Plan*] for the following purposes, and modify the said Blasting Safety Plan according to the results

(4) Handling of Explosives

(a) Explosives shall be handled with extreme care ensuring that they are not hit, thrown or dropped;

(b) Containers for Explosives shall be solidly constructed from timber or non-conducting material and metals such as iron or foil must not be used on inner surfaces;

(c) Explosive and detonators shall be separately stored in lockable containers;

(d) The containers for Explosives shall protect against water ingress, impact damage; and

(e) Smoking, use of matches, lighters, flames, sparks etc. shall be prohibited in areas where Explosives are being transported, stored and handled, notice boards and warning signs shall be placed in suitable positions.

(5) Records of Blasting and Explosives

(a) The Shotfirer shall prepare daily work records showing the date and time of each Blasting operation, quantity of Explosives received, consumed, misfired and remaining, number of blast holes, charging method for the Blasting and treatment of misfired Explosives;

(b) The Explosives engineer shall check and countersign the Blasting Works records; and

(c) The Contractor shall submit the records to the Engineer when the Engineer requests.

(6) Notice to the Engineer

The Contractor shall notify the Engineer in writing as follows:

(a) Delivery of Explosives to the store and from the store to the Site, shall each be given to the Engineer by no later than noon on the day preceding the scheduled date of the arrival of Explosives at the store and the delivery to the Site;

(b) Notification of intended Blasting Works shall be given to the Engineer by no later than noon on the day preceding the scheduled date of the Blasting operation; and

(c) Notification of the schedule for the following week's Blasting shall be given to the Engineer by no later than Friday morning of the preceding week.

7.5.10 **Trial Blasting**

The Contractor shall perform trial Blasting in accordance with the Blasting Safety Plan provided in 7.6.5 [*Blasting Safety Plan*] for the following purposes, and modify the said Blasting Safety Plan according to the results

Contractor shall perform ~~test~~ trial Blasting in accordance with the Blasting Safety Plan provided in 7.6.5 [*Blasting Safety Plan*] for the following purposes, and modify the said Safety Plan according to the results of the ~~test~~ trial Blasting:

(1) Confirm the characteristics of rock and topography at the Blasting site that will affect the Blasting operations.

(2) Confirm the suitability of the planned Blasting method, Explosives amount, ~~and~~ scattering prevention and other protection measures.

(3) Confirm the safety of ~~Contractor's Personnel, Employer's Personnel and any other persons, the general public, neighbouring residents and building owners on or adjacent to the Site and who may be~~ personnel affected by the Blasting works ~~affected by the Blasting operations.~~

NK1: as defined in 7.6.5 (3), the above is replaced with "personnel affected by the Blasting works"

(4) Confirm that the vibration value of the Blasting does not exceed the allowable vibration value for existing buildings, structures and other property on or adjacent to the Site and which may be affected by the Blasting operations, as specified in the Contract or instructed by the Engineer.

The Contractor shall submit the trial blasting reports and any changes to the Blasting Safety Plan to the Engineer before proceeding Blasting operation.

NK added responding JC comment for the Engineer to be involved in blasting works.

7.6.9 Monitoring Impact on Adjacent Buildings and Structures

~~The Contractor shall monitor the vibrations caused by the Blasting operations to measure the extent of vibration in all affected areas particularly in the position of existing buildings, structures and other property on or adjacent to the Site and which may be affected by the Blasting operations to ensure that no vibration damage or weakening is caused as specified in the Contract or instructed by the Engineer.~~

The Contractor shall monitor the vibrations caused by the Blasting operations in the affected areas, buildings, structures and properties identified in the Blasting Safety Plan to ensure that vibration damage or weakening caused by the Blasting operations will remain within the allowable values specified in the Contract or instructed by the Engineer.

JC1: The monitoring object shall be determined by the Contract or instruction by the Engineer. The allowable vibration value also shall be given by the Employer. Refer to MTR M&W 25.20(c), 25.30~25.35.

JC1： There should be relevant stipulation in the Contract. Please modify the expression including above, for example, inserting "as specified in the Contract".

NK1: The clause is modified as right.

JC2: The sentence is modified so that the description follows the context of JSSS as a whole such as relating with the Blasting Safety Plan. "No vibration damage" is too severe to stipulate. JC modified as above.

NK2: modifies.

For this purpose, the Contractor shall:

(1) Prepare an environmental monitoring plan as a part of the Blasting Safety Plan, which will:

JC2: In 7.6.5.(8), the term "Environment monitoring plan" is used. If "monitoring plan" in (1) above means same as 7.6.5.(8), terms shall be unified.

of the trial Blasting:

(1) Confirm the characteristics of rock and topography at the Blasting site that will affect the Blasting operations.

(2) Confirm the suitability of the planned Blasting method, Explosives amount, and scattering prevention and other protection measures.

(3) Confirm the safety of all persons affected by the Blasting Works.

~~(4) Confirm that the vibration values of the Blasting does not exceed the allowable vibration value for existing buildings, structures and other property on or adjacent to the Site and which may be affected by the Blasting operations, as specified in the Contract or instructed by the Engineer.~~

Please refer to following clause 7.6.11 and as a consequence I suggest that the above is modified as follows:

(5) Confirm that the Contractor's criteria ~~is~~ are adequate for the purpose of JSSS エラー！参照元が見つかりません。 [*Monitoring Impact on Other Properties*].

The Contractor shall submit the trial Blasting reports with any consequent changes to the Blasting Safety Plan to the Engineer before proceeding with the Blasting Works.

7.6.11 Monitoring Impact of Blasting Works on Other Properties

The Contractor shall comply with the requirements of JSSS 6.1.3 [*Monitoring Impact of Works on Other Properties*].

There are numerous references to the requirements for monitoring the impact of the Works on other properties so (as with Excavation) I have developed JSSS 6.1.3 to cover this as a Common Specification.

It is only necessary therefore to include the above cross reference here and the following can therefore be deleted.

NK6/22: The monitoring is specified in 2.1.7 following JICA comments, so monitoring is stipulated in 7.1.2 as noted above.

~~*The above Original (as re-edited)*~~

~~(1) The Contractor shall monitor the vibration, settlement and all other potential effects of the Blasting Works to ascertain any effect upon buildings, structures and other properties, paved areas, roads, footpaths, fences, railways, waterways, drainage, utilities and the like on the Site or outside the Site (collectively referred to in this Section as "other properties") to ensure that no damage or weakening is caused to such other properties.~~

~~*JICA require the following re-wording to the original text of this clause:*~~

~~The Contractor shall monitor the vibrations caused by the Blasting operations in the affected areas, buildings, structures and properties identified in the Blasting Safety Plan to ensure that vibration damage or weakening caused by the Blasting operations will remain within the allowable values specified in the Contract or instructed by the Engineer.~~

of the trial Blasting:

(1) Confirm the characteristics of rock and topography at the Blasting site that will affect the Blasting operations.

(2) Confirm the suitability of the planned Blasting method, Explosives amount, and scattering prevention and other protection measures.

(3) Confirm the safety of all persons affected by the Blasting Works.

(4) Confirm that the Contractor's criteria ~~is~~ are adequate for the purpose of JSSS エラー！参照元が見つかりません。 [*Monitoring Impact on Other Properties*].

The Contractor shall submit the trial Blasting reports with any consequent changes to the Blasting Safety Plan to the Engineer before proceeding with the Blasting Works.

7.5.11 Monitoring Impact of Blasting Works on Other Properties

The Contractor shall comply with the requirements of JSSS ~~6.1.3 [*Monitoring Impact of Works on Other Properties*].~~ 7.1.2 [Monitoring of Works and Surroundings].

NK2: As these two terms are the same meaning, modified to use “environment monitoring plan”.

(a) ~~Measure~~ Monitor the extent and impact of Blasting vibrations by vibration monitoring system and in terms of peak particle velocity and vibrational amplitude as specified in the Contract or instructed by the Engineer and as determined by the Contractor;

RC2: Even though the Employer specifies values, the Contractor cannot be avoidable being responsible for damage caused . Therefore, it is better to specify both values by the Employer and Contractor to monitor.
NK2: added “and as determined by the Contractor” to (a) and (c).

(b) Monitor the Blasting methods and equipment, showing the locations, measurement frequency and recording methods;

(c) Plan countermeasures in the instance that the actual measured vibration value is close to or exceeds the allowable vibration value specified in the Contract or instructed by the Engineer and as determined by the Contractor; and

JC1: In clause (c), there is a stipulation for allowable vibration value, however, no stipulation for the objects.
NK1: Regarding the objects to be monitored and apply countermeasures are stated in the top statement of this section. (in all affected areas particularly in the position of existing buildings, structures and other property on or adjacent to the Site… as specified in the Contract or instructed by the Engineer.), so leave it as it is.

(d) Unless otherwise specified in the Contract, perform ~~measurement~~ monitoring at each Blasting operation, at the first day and then every subsequent 3 days after the Engineer judges that the vibration value is as planned, then every 7 days, and every 1 month thereafter.

(2) ~~Measurement~~ Monitoring and Evaluation

JC1: What is the difference between “monitoring” and “measurement”?
NK1: “Measurement” in (2) is changed to “Monitoring” as the result of discussion in the meeting 2020/02/20.

The Contractor shall

(a) Provide and maintain ~~measurement~~ monitoring equipment;

(b) Calibrate the ~~measurement~~ monitoring equipment before test Blasting and other Blasting operations;

(c) Carry out ~~measurement~~ monitoring at the frequencies described above;

(d) Evaluate the ~~measurement~~ monitoring results;

(e) ~~Calibrate the measurement equipment before test Blasting and other Blasting operations; and~~

JC1: It is strange that (d) regarding calibration of measurement equipment is located at the bottom. This should be right after (a).
NK1: The content of (d) is moved to (b).

(f) Submit the evaluation report and if necessary, any changes to the Blasting Safety Plan to the Engineer before the next Blasting operation.

JC2: “measurement” should be “monitoring”.
NK2: Changed to “monitoring” to coincide as right.

7.6.10 **Particular Safety Measures for Blasting Work**

7.6.12 **Particular Safety Measures for Blasting Works**

7.5.12 **Particular Safety Measures for Blasting Works**

(1) Identification of Blasting workers

~~Provide armbands, uniforms or marked safety helmets to distinguish all workers engaged in Blasting operations from other workers.~~

~~Provide armbands, uniforms or marked safety helmets to distinguish the explosive engineer, shotfirer(s), Spotters and other workers engaged in Blasting operations from other workers.~~

Provide ~~armbands,~~ clear visible identification mark, uniforms or marked safety helmets to distinguish the explosive engineer and shotfirer(s) ~~Spotters and other workers~~ engaged in Blasting operations from other workers.

JC1: "all workers engaged in Blasting operations" should limited to the Blasting Engineer and Shotfirers.

NK1: As mentioned in JSSS 7.6.4 (3), the blasting work team consists of the explosive engineer, shotfirer(s), Spotters (sentries) and other workers involved in the blasting operations. There is no clause to specify Identification of Blasting workers in BS 5607. (1) is modified as right.

JC2: As there is no armbands, "clear visible identification mark", etc. is to be specified

The personnel for blasting work are limited as explosive engineer and shotfirer in 7.6.4.(3). Other than them are deleted.

NK2: "armbands" is changed as commended. Personnel other than explosive engineer and shotfirer are deleted.

(2) Drilling Work

(a) No drilling shall be allowed in the hole formed for previous Blasting; and

(b) If misfired explosive is found during the drilling operation, the drilling shall be stopped and the misfired explosive shall be treated in accordance with the procedures planned in 7.6.5 7.6.5 [*Blasting Safety Plan*] and 7.611 7.6.11 [*Measures after Blasting*], (2) [*Treatment of misfired Explosives*].

(3) Explosives Charging

JC1: This clause (3) is not provision of "charging" . Change the clause covering the contents of BS 5607 10.2 and delete the sentence for referring to BS.

NK1: Items (a)~(e) are "Points to care for loading explosives" in Japanese version which are derived from the Pre-study in 2019. They are left as they are. Added some clauses of BS 5607 10.2 so that the contents of BS can be included.

(a) ~~Electric detonator's leg wires shall be kept short circuited until they are connected into the circuit for firing;~~

(b) ~~Detonators shall be kept away from electric lighting supplies, power supplies and other electrical sources that may cause electric leakage;~~

NK: (a) and (b) are moved to (4) because they are specially for electric detonator.

(c) ~~No other activity such as drilling shall be permitted in the vicinity, whilst loading;~~ Drilling operation is not permitted during charging of explosive;

JC2: Drilling operation is not permitted during charging of explosive.のように簡潔に。Simple expression is to be made such as "Drilling operation is not permitted during charging of explosive".

NK2: Modified as commended.

(d) Before ~~loading~~ charging, thoroughly clean the holes and do not leave any dust or debris;

(1) Identification of Blasting workers

~~Provide armbands, uniforms or marked safety helmets to distinguish all workers engaged in Blasting Works from other workers.~~

Provide clear visible identification mark, uniforms or marked safety helmets to distinguish the Explosives engineer and shotfirer(s) engaged in Blasting Works from other workers.

(2) Drilling Work

(a) No drilling shall be allowed in the hole formed for previous Blasting; and

(b) If misfired explosive is found during the drilling operation, the drilling shall be stopped and the misfired explosive shall be treated in accordance with the procedures planned in 7.6.5 [*Blasting Safety Plan*] and 7.6.11 [*Measures after Blasting*], (2) [*Treatment of misfired Explosives*].

(3) Explosives Charging

(a) Drilling operations shall not be permitted during charging of Explosives.

(b) Before charging, thoroughly clean the holes and do not leave

(1) Identification of Blasting workers

Provide clear visible identification mark, uniforms or marked safety helmets to distinguish the Explosives engineer and shotfirer(s) engaged in Blasting Works from other workers.

(2) Drilling Work

(a) No drilling shall be allowed in the hole formed for previous Blasting; and

(b) If misfired explosive is found during the drilling operation, the drilling shall be stopped and the misfired explosive shall be treated in accordance with the procedures planned in 7.6.5 [*Blasting Safety Plan*] and 7.6.11 [*Measures after Blasting*], (2) [*Treatment of misfired Explosives*].

(3) Explosives Charging

(a) Drilling operations shall not be permitted during charging of Explosives.

(b) Before charging, thoroughly clean the holes and do not leave

(e) ~~Shock and friction which can cause accidental initiation of the charges such as below shall be avoided;~~ Shock and friction such as the following, which can cause accidental initiation of the charges, shall be avoided;	any dust or debris; and	any dust or debris; and
	(c) Shock and friction such as the following, which can cause accidental initiation of the charges, shall be avoided:	(c) Shock and friction such as the following, which can cause accidental initiation of the charges, shall be avoided:
JC2: Simple expression recommended such as “Explosive shall be treated gently without giving strong friction or shock.”		
JC2: Description in (d) to (h) is incorrect. Please review the whole and make the description a little simpler in case, and take measures such as referring to BS. NK2: The following (d) to (h) were incorrectly given numbered. Correct ones are (i) to (v). Therefore, the above (c) is strange sentence as JC commented. NK modified the (c) and revised numbers of following sentences: (iv) is deleted as it is not at time of explosive charging.		
(i) the over-vigorous use of stemming rods to force explosives into a shot hole;	(i) the over-vigorous use of stemming rods to force explosives into a shot hole.	(i) the over-vigorous use of stemming rods to force explosives into a shot hole.
(ii) the use of drill rods or other metal tools in a shot hole containing explosives;	(ii) the use of drill rods or other metal tools in a shot hole containing explosives.	(ii) the use of drill rods or other metal tools in a shot hole containing explosives.
(iii) vehicles running over explosives and other hazards involving impact or concussion;	(iii) vehicles running over explosives and other hazards involving impact or concussion.	(iii) vehicles running over explosives and other hazards involving impact or concussion.
(iv) ~~rock, stone or similar material being projected from the blast, causing an accidental detonation of explosives, so that excess explosives should be removed from the blast site to a place of safety before blasting takes place; and~~		
(v) shock tube detonators being initiated when subjected to "snap, slap and shoot".	(iv) shock tube detonators being initiated when subjected to "snap, slap and shoot".	(iv) shock tube detonators being initiated when subjected to "snap, slap and shoot".
(f) ~~No other activity such as drilling shall be permitted in the vicinity, whilst loading;~~		
(g) ~~Before loading, thoroughly clean the holes and do not leave any dust or debris; and~~		
(h) ~~Unused Explosives shall be returned to the Explosives store.~~		
For other safety measures for loading work, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10 Safety when using Explosives.	For other safety measures for charging work, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10 Safety when using Explosives.	For other safety measures for charging work, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10 Safety when using Explosives.
(4) Handling Detonators	(4) Handling Detonators	(4) Handling Detonators
JC1: Same as (3) above, state the clause by deriving from BS 5607 10.4.3. NK1: Same as (3) above, leave as it is and referring to BS 5607 10.4.3 as well.		
(a) Measures for Blasting using electric detonators	(a) Measures for Blasting using electric detonators:	(a) Measures for Blasting using electric detonators:
JC1: Could it (“bus wire”) be a mis-translation? NK1: In OSHA and ACE, there is the definition of “Bus wire: an expendable wire used in parallel or series-in-parallel circuits to which are connected the leg wires of electric blasting caps.” BS 5607 10.4.3.2 b) specifies “All firing lines should be short-circuited” and 10.501 a) shotfiring cable. The bus wire is replaced with shotfiring cable.		
JC1 Please modify the sentence so as to mean that if a danger by stray electric current is predicted, electric detonators shall not be used. NK1: Regarding prohibition of using electric detonator due to stray electric current is stated in (iii) above. (v) is written mistakenly separating a part of (iv), “unless otherwise specified in the Contract” is moved to (iv), and (v) is deleted. NK: (vi)is deleted and (iv) is modified as specified in BS 5607 10.2 below. 10.2 Handling and charging of explosives When shotfirers are handling and charging explosives at the blast site, they should at all times avoid shock, friction and static electricity or induced radio waves from		

mobile phones or other electronic devices which can cause accidental initiation of the charges, such as d) the use of mobile phones or other electronic devices; ~~(i) Make sure electric Check if the bus wire is not cut or damaged, and check its electrical continuity.~~ ~~(ii) Check if there are no missing or previous wiring connections or wrong wiring connections.~~ ~~(iii) Make sure there are no stray electric currents when using electric detonators.~~ ~~(iv) Do not use electric detonators if there is any danger of electrical interference for example from radio frequency radiation near radio communication facility, radar, wireless telephone including mobile type.~~ ~~(v) Do not use electric detonators unless otherwise specified in the Contract.~~ ~~(vi) Prohibit bringing all mobile phones and radios from the Blasting areas.~~ ~~(vii) Install a lightning detector near the Blasting area, stop Blasting work when there is a risk of lightning strike, and evacuate workers to a safe place.~~ NK1: It is complicated, so modified clauses are shown below. (i) Make sure electric detonator's leg wires shall be kept short-circuited until they are connected into the circuit for firing; (ii) Check if ~~the bus wire is~~ shotfiring cables are not cut or damaged~~, its electrical continuity and short-circuited~~ JC2: Status of short-circuit is already mentioned in (i), thus the part should be deleted. NK2: Deleted. (iii) Make sure electric detonators shall be kept away from electric lighting supplies, power supplies and other electrical sources that may cause electric leakage; (iv) ~~Check if the bus wire is all shotfiring cables are not cut or damaged, and check its electrical continuity.~~ JC2: (iv) is a duplication of (ii). NK2: Deleted. (v) Check if there are no missing or previous wiring connections ~~or wrong wiring connections.~~ or mis-connection with previous blast wires. JC2: What is “previous wiring connections”? NK2: The phrase “if there are previous wiring connections” means that “if the wire used for previous blasting is left and connected to the wiring this time. It is modified to “ mis-connection with previous blast wires.” (vi) Make sure there are no stray electric currents ~~when using electric detonators~~. JC2: This phrase is not necessary because (a) is for “Measures for Blasting using electric detonators.” NK2: Deleted as commented. (vii) Do not use electric detonators if there is any danger of	(i) Make sure electric detonator's leg wires shall be kept short-circuited until they are connected into the circuit for firing. (ii) Check if shotfiring cables are not cut or damaged. (iii) Make sure electric detonators shall be kept away from electric lighting supplies, power supplies and other electrical sources that may cause electric leakage. (iv) Check if there are no missing or wrong wiring connections or mis-connection with previous blast wires. (v) Make sure there are no stray electric currents. (vi) Do not use electric detonators if there is any danger of electrical interference for example from radio-	(i) Make sure electric detonator's leg wires shall be kept short-circuited until they are connected into the circuit for firing. (ii) Check if shotfiring cables are not cut or damaged. (iii) Make sure electric detonators shall be kept away from electric lighting supplies, power supplies and other electrical sources that may cause electric leakage. (iv) Check if there are no missing or wrong wiring connections or mis-connection with previous blast wires. (v) Make sure there are no stray electric currents. (vi) Do not use electric detonators if there is any danger of electrical interference for example from radio-

electrical interference for example from radio-frequency radiation near radio communication facility, radar~~, wireless telephone, mobile phones unless otherwise specified in the Contract~~.

JC2: If the purpose of this item is that electric detonators shall not be used in the exemplified circumstances, prohibition of wireless phones etc. is not necessary.
NK2: 7.6.10. Particular Safety Measures for Blasting Work (4) (a) (viii) specifies Prohibit bringing into the blasting areas any mobile phone unless it is guaranteed that it will not adversely affect the electric detonators. Delete as commented.

(viii) Install a lightning detector near the Blasting area, stop Blasting work when there is a risk of lightning strike, and evacuate workers to a safe place.

For other safety matters for Blasting with electric detonator, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10.4.3 Electric detonators.

(b) Measures for Blasting using non-electric detonators

(i) Do not cut or damage the shock tube.

(ii) Before firing, check the connections visually and make sure that there are no missing or previous wiring connections or wrong wiring connections.

(5) Measures in Ignition

(a) The connection between the shotfiring apparatus and ~~the bus wire~~ shotfiring cable shall be made just before ignition.

(b) Ignition shall be made at a safe place isolated and protected according to the degree of the blast;

(c) The handle shall be removed from the shotfiring apparatus except when igniting; and

(d) ~~The shotfiring apparatus shall be properly stored according to the safety plan.~~

JC1: Isn't it (b) about ignition?
NK1: It is deemed important to prevent misuse and theft of shotfiring apparatus due to improper storage. Orders of (a) to (d) are changed.

JC2: As shotfiring apparatus included in explosives as a matter of definition, it is already covered by 7.6.7. Storage. Deleted.
NK2: Deleted as commented.

(6) Measures when Blasting near existing buildings and structures

Blasting near existing buildings or structures shall not be carried out unless specified in the Contract or instructed by the Engineer~~, in which case the Contractor shall comply with the specified or instructed requirements.~~

JC2: Isn't this included in the specification / instruction?
NK2: It is deemed natural that requirements are included in the specification/instruction by the Engineer. The underlined part is deleted.

7.6.11 Measures after Blasting

(1) Confirmation of safety of Blasting area after Blasting

(e) No persons other than the shotfirer shall enter the Blasting site or its vicinity until ~~after~~ the shotfirer has inspected the

frequency radiation near radio communication facility or radar.

(vii) Install a lightning detector near the Blasting area, stop Blasting Works when there is a risk of lightning strike, and evacuate workers to a safe place.

For other safety matters for Blasting with electric detonator, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10.4.3 Electric detonators.

(b) Measures for Blasting using non-electric detonators:

(i) Do not cut or damage the shock tube.

(ii) Before firing, check the connections visually and make sure that there are no missing or previous wiring connections or wrong wiring connections.

(5) Measures in Ignition:

(a) The connection between the shotfiring apparatus and shotfiring cable shall be made just before ignition;

(b) Ignition shall be made at a safe place isolated and protected according to the degree of the blast; and

(c) The handle shall be removed from the shotfiring apparatus except when igniting.

I suggest that the following is not necessary as there are no requirements :

~~(5) Measures when Blasting near existing buildings and structures~~

~~Blasting near existing buildings or structures shall not be carried out unless specified in the Particular Safety Specification or instructed by the Engineer.~~

7.6.13 **Measures after Blasting**

(1) Confirmation of safety of Blasting area after Blasting:

(a) No persons other than the shotfirer shall enter the Blasting site or its vicinity until ~~after~~ the shotfirer has inspected the

frequency radiation near radio communication facility or radar.

(vii) Install a lightning detector near the Blasting area, stop Blasting Works when there is a risk of lightning strike, and evacuate workers to a safe place.

For other safety matters for Blasting with electric detonator, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10.4.3 Electric detonators.

(b) Measures for Blasting using non-electric detonators:

(i) Do not cut or damage the shock tube.

(ii) Before firing, check the connections visually and make sure that there are no missing or previous wiring connections or wrong wiring connections.

(5) Measures in Ignition:

(a) The connection between the shotfiring apparatus and shotfiring cable shall be made just before ignition;

(b) Ignition shall be made at a safe place isolated and protected according to the degree of the blast; and

(c) The handle shall be removed from the shotfiring apparatus except when igniting.

7.5.13 **Measures after Blasting**

(1) Confirmation of safety of Blasting area after Blasting:

(a) No persons other than the shotfirer shall enter the Blasting site or its vicinity until ~~after~~ the shotfirer has inspected the

area and confirmed that it is safe to re-enter; and

(f) The shotfirer shall inspect the area and surrounding area of the Blasting site to check that there is no danger of falling or collapsing of ground and rocks or misfired Explosives.

(2) Treatment of misfired Explosives

JC1: Please stipulate important items referring to BS5607 10.5 Misfire and in addition, specify to follow the requirements of BS. ex. re-firing, remove misfired explosives, procedure shown in flowchart in BS)
NK1: Taking into account the contents, modification is made as right.

JC1 : (e) Action such as (e) is not actually not made at the blasting site. Deleted.

JC1: (h) Is it possible?
NK1: modified them to the Contractor and within a week.

JC1:No need to specify (i) because 8.4.5(7) mentions about record (general).
NK: Deleted.

JC1: (j) ditto.
NK: Deleted.

~~If, after ignition, the loaded Explosives did not explode, or if it is difficult to confirm the explosion, the misfired Explosives shall be treated in accordance with the Blasting Safety plan and the following measures shall be adopted initially by the shotfirer:~~

(g) ~~Immediately remove the shotfiring apparatus such as the handle and the bus wire from the shotfiring apparatus;~~

(h) ~~Make short circuit or ground and completely isolate the bus wires;~~

(i) ~~Report to the Explosive Engineer for further instructions;~~

(j) ~~Prohibit anyone other than the shotfirer and other authorised personnel from entering the Blasting site. Entry to the Blasting site shall only be permitted after the elapsed time from the occurrence of misfire as specified in the Blasting Safety Plan;~~

(k) ~~Clearly indicate the presence of misfired Explosives and install barriers and signs and prevent anyone other than the shotfirer and authorised person(s) from approaching to the Blasting site;~~

(l) ~~Take appropriate procedures to identify the cause of the misfire and to determine the handling of the misfired explosive;~~

(m) ~~No other work shall be permitted until treatment of the misfired Explosives is completed;~~

(n) ~~The Explosive Engineer shall notify the Engineer immediately after any misfire event;~~

(o) ~~The Shotfirer shall prepare records of misfired Explosives showing the date and time of the Blasting Works and the result of the subsequent treatment. The Explosive Engineer shall check and countersign the records; and~~

(p) ~~The Contractor shall submit the records to the Engineer immediately after the successful treatment of the misfire event.~~

NK1: It is complicated, so modified clauses are shown below.

area and confirmed that it is safe to re-enter; and

(b) The shotfirer shall inspect the area and surrounding area of the Blasting site to check that there is no danger of falling or collapsing of ground and rocks or misfired Explosives.

(2) Treatment of misfired Explosives

area and confirmed that it is safe to re-enter; and

(b) The shotfirer shall inspect the area and surrounding area of the Blasting site to check that there is no danger of falling or collapsing of ground and rocks or misfired Explosives.

(2) Treatment of misfired Explosives

If, after ignition, the loaded Explosives did not explode, or if it is difficult to confirm the explosion, the misfired Explosives shall be treated in accordance with the treatment of misfired Explosives in the Blasting Safety Plan, and 10.5 [Misfires] of BS5607 including the following:

JC2: Terms of "Explosive" and "explosive" are both used in this section.
NK2: As "Explosive" is a defined word in 7.6.2. Thus, "Explosive" should be used in this section. However, it is questionable if it should be defined at all same as "Blasting". To MD: please review the above.

(a) Procedure of treatment of misfired Explosives

The following treatment procedure of misfires Explosive shall be taken:

(i) Immediate remedial action;

(ii) Delayed remedial action;

(iii) Further attempt at detonation; and

(iv) Inspection to confirm complete detonation.

The details of the above actions are stipulated in succeeding (b) to (d).

JC2: These four terms in (i) to (iv) cannot be understood well. Provisions are stated below for "immediate action" and "delayed action". What are the other two?

If provisions for treatment of misfire is necessary, it should be of simple contents.
NK2: (i) Immediate remedial action is specified in (b), (ii) Delayed remedial action and (iii)further attempt at detonation is in (c). (iv) Inspection to confirm complete is added this time.

The comment regarding "simple contents" is somewhat different from the following comment previously given by JICA.

"Please stipulate important items referring to BS5607 10.5 Misfire and in addition, specify to follow the requirements of BS. ex. re-firing, remove misfired explosives, procedure shown in flowchart in BS)" (Translation has been partially abbreviated.)

NK thinks that present provisions regarding the immediate remedial actions to take for misfire are concrete ones to be specified.
NK2: As above, additional sentences are added in right to meet the JC comments.

(b) Immediate remedial action

The following initial ~~remedial~~ actions shall be taken by the shotfirer:

(i) prohibit anyone other than the shotfirer and other authorized personnel from entering the Blasting site.

(ii) entry to the Blasting site shall only be permitted after the elapsed time from the occurrence of misfire as specified in the Blasting Safety Plan;

(iii) disconnect from the shotfiring apparatus any removable handle or key and the shotfiring cable, and short-circuit or ground the bare wires together;

(iv) when safe to do so, examine the cable and connections for any defects, and remedy any defect so found;

(v) make a further attempt to fire the shot; and

(vi) report to the explosive engineer for further instructions;

If, after ignition, the loaded Explosives did not explode, or if it is difficult to confirm the explosion, the misfired Explosive shall be treated in accordance with the treatment of misfired Explosives in the Blasting Safety Plan, and 10.5 [Misfires] of BS5607 including the following:

(a) Procedure of treatment of misfired Explosives;

The following treatment procedure of misfired Explosives shall be taken:

(i) Immediate remedial action.

(ii) Delayed remedial action.

(iii) Further attempt at detonation.

(iv) Inspection to confirm complete detonation.

The details of the above actions are stipulated in succeeding (b) to (d).

(b) Immediate remedial action;

The following initial actions shall be taken by the shotfirer:

(i) Prohibit anyone other than the shotfirer and other authorized personnel from entering the Blasting site.

(ii) Entry to the Blasting site shall only be permitted after the elapsed time from the occurrence of misfire as specified in the Blasting Safety Plan.

(iii) Disconnect from the shotfiring apparatus any removable handle or key and the shotfiring cable, and short-circuit or ground the bare wires together.

(iv) When safe to do so, examine the cable and connections for any defects, and remedy any defect so found.

(v) Make a further attempt to fire the shot.

(vi) Report to the explosive engineer for further instructions.

If, after ignition, the loaded Explosives did not explode, or if it is difficult to confirm the explosion, the misfired Explosive shall be treated in accordance with the treatment of misfired Explosives in the Blasting Safety Plan, and 10.5 [Misfires] of BS5607 including the following:

(a) Procedure of treatment of misfired Explosives;

The following treatment procedure of misfired Explosives shall be taken:

(i) Immediate remedial action.

(ii) Delayed remedial action.

(iii) Further attempt at detonation.

(iv) Inspection to confirm complete detonation.

The details of the above actions are stipulated in succeeding (b) to (d).

(b) Immediate remedial action;

The following initial actions shall be taken by the shotfirer:

(i) Prohibit anyone other than the shotfirer and other authorized personnel from entering the Blasting site.

(ii) Entry to the Blasting site shall only be permitted after the elapsed time from the occurrence of misfire as specified in the Blasting Safety Plan.

(iii) Disconnect from the shotfiring apparatus any removable handle or key and the shotfiring cable, and short-circuit or ground the bare wires together.

(iv) When safe to do so, examine the cable and connections for any defects, and remedy any defect so found.

(v) Make a further attempt to fire the shot.

(vi) Report to the explosive engineer for further instructions.

(vii) not collect any exposed explosives before further action is taken; (viii) not allow drilling or any other site work to be carried out in the vicinity of the misfire until the misfire has been remedied, unless this is directly involved in the treatment of the misfire; and (ix) other actions specified in 10.5.4.1 [Initial actions]in BS5607. After the initial actions, the following initial remedial actions shall be taken by the shotfirer: (i) when safe to do so, examine the cable and connections for any defects, and remedy any defect so found; and (ii) make a further attempt to fire the shot.	(vii) Do not collect any exposed explosives before further action is taken. (viii) Do not allow drilling or any other site work to be carried out in the vicinity of the misfire until the misfire has been remedied, unless this is directly involved in the treatment of the misfire. (ix) Other actions specified in 10.5.4.1 [Initial actions]in BS5607. After the initial actions, the following initial remedial actions shall be taken by the shotfirer: (i) When safe to do so, examine the cable and connections for any defects, and remedy any defect so found; and (ii) Make a further attempt to fire the shot.	(vii) Do not collect any exposed explosives before further action is taken. (viii) Do not allow drilling or any other site work to be carried out in the vicinity of the misfire until the misfire has been remedied, unless this is directly involved in the treatment of the misfire. (ix) Other actions specified in 10.5.4.1 [Initial actions]in BS5607. After the initial actions, the following initial remedial actions shall be taken by the shotfirer: (i) When safe to do so, examine the cable and connections for any defects, and remedy any defect so found; and (ii) Make a further attempt to fire the shot.
(c) Delayed remedial action and further attempt at detonation ~~After the immediate remedial action, the delayed remedial action and further attempt at detonation shall be taken in accordance with the Blasting Safety Plan, and 10.5.4.2 [Written instructions], 10.5.4.3 [Attempts to re-fire], 10.5.4.4 [Drilling relieving holes] and 10.5.5 [Drilling relieving holes] in BS5607.~~ After the immediate remedial action, when necessary, the delayed remedial action and further attempt at detonation shall be taken. The delayed remedial action and further attempt at detonation should be safe removal of the stemming to allow re-priming, or drilling and firing relieving holes placed so as to work away the rock surrounding the stemming and charge of the misfired shot holes. The action and attempt shall be taken in accordance with the Blasting Safety Plan, and 10.5.4.2 [Written instructions], 10.5.4.3 [Attempts to re-fire], 10.5.4.4 [Drilling relieving holes] and 10.5.5 [Drilling relieving holes] in BS5607.	(c) Delayed remedial action and further attempt at detonation: (i) After the immediate remedial action, when necessary, the delayed remedial action and further attempt at detonation shall be taken. (ii) The delayed remedial action and further attempt at detonation should be safe removal of the stemming to allow re-priming, or drilling and firing relieving holes placed so as to work away the rock surrounding the stemming and charge of the misfired shot holes. (iii) The action and attempt shall be taken in accordance with the Blasting Safety Plan, and 10.5.4.2 [Written instructions], 10.5.4.3 [Attempts to re-fire], 10.5.4.4 [Drilling relieving holes] and 10.5.5 [Drilling relieving holes] in BS5607.	(c) Delayed remedial action and further attempt at detonation: (i) After the immediate remedial action, when necessary, the delayed remedial action and further attempt at detonation shall be taken. (ii) The delayed remedial action and further attempt at detonation should be safe removal of the stemming to allow re-priming, or drilling and firing relieving holes placed so as to work away the rock surrounding the stemming and charge of the misfired shot holes. (iii) The action and attempt shall be taken in accordance with the Blasting Safety Plan, and 10.5.4.2 [Written instructions], 10.5.4.3 [Attempts to re-fire], 10.5.4.4 [Drilling relieving holes] and 10.5.5 [Drilling relieving holes] in BS5607.
(d) Inspection to confirm complete detonation After further attempt at detonation, inspection shall be made to confirm complete detonation. If any non or partial detonation is found, remedial measures shall be taken according to Figure-1 Procedure to remedy misfires in 10.5.1 [General] in BS 5607. (e) Take appropriate steps to prevent theft of Explosives and detonators or their initiation by an unauthorised person; (f) ~~The Contractor shall notify the Engineer within a week after any misfire event.~~ The Contractor shall promptly notify the Engineer of any misfire event and the remedial actions. JC2: modified (f) as above.	(d) Inspection to confirm complete detonation; After further attempt at detonation, inspection shall be made to confirm complete detonation. If any non or partial detonation is found, remedial measures shall be taken according to Figure-1 Procedure to remedy misfires in 10.5.1 [General] in BS 5607. (e) Take appropriate steps to prevent theft of Explosives and detonators or their initiation by an unauthorised person; and (f) The Contractor shall promptly notify the Engineer of any misfire event and the remedial actions.	(d) Inspection to confirm complete detonation; After further attempt at detonation, inspection shall be made to confirm complete detonation. If any non or partial detonation is found, remedial measures shall be taken according to Figure-1 Procedure to remedy misfires in 10.5.1 [General] in BS 5607. (e) Take appropriate steps to prevent theft of Explosives and detonators or their initiation by an unauthorised person; and (f) The Contractor shall promptly notify the Engineer of any misfire event and the remedial actions.

NK6/22 NK comments and revision proposed on 6/23
Changes since last issue
Comments/queries

JICA STANDARD SAFETY SPECIFICATION FOR PROJECT IMPLEMENTATION UNDER JAPANESE ODA

CHAPTER 7: EXCAVATION WORKS

Japan International Cooperation Agency (JICA)

Note to JICA and NK:

It is my understanding that Chapters 1 to 6 are functional specifications that cover most risks as general and prevailing reference documents.

Chapters 7 to 10 (and later), are "trade" type documents for which most risks have already been identified and covered in Chapters 1 to 6 and they will therefore be necessarily brief except for notable works such as blasting.

I suggest that excessive cross reference and duplication should be avoided and only particular additional requirements be described in these later chapters.

Excavation therefore is mainly covered already in Chapters 1 to 6 so there are not so many additional items but manual excavation and blasting for example are definite additional requirements.

JICA STANDARD SAFETY SPECIFICATION (JSSS)
CHAPTER 7: EXCAVATION WORKS

Table of Contents

7.1 GENERAL

7.1.1 Scope

Please note that this item is reformatted to be consistent with later Chapters.

The content of each Chapter are now correctly referred to as a heading, i,e, Excavation Works and also Blasting Works, which is a part of Excavation Works.

(1) This Chapter specifies the safety requirements for excavation works which include:

(a) Open-cut and all other types of surface excavation;

(b) Pits, trenches, basements and all other types of structural excavation;

(c) Excavation using all methods such as manual excavation and machine excavation;

(d) Excavation by Blasting (hereinafter referred to as "Blasting Works");

I suggest that the following is left in as it is as embankment filling and backfilling are an intrinsic part of the works in this chapter. If not to be covered by these rules where is it to be covered?

"Backfilling" has nothing to do with temporary excavations it is to excavation for permanent works whereby the contractor shall backfill working space and voids above foundations etc efficiently as soon as possible to ensure that openings are not left unsafe and open for excessive periods. It is also referred to in the later clause 7.2.1 (6).

(e) All associated embankment filling, backfilling and disposal; and

(f) Earthwork Support,

and which are hereinafter collectively referred to as "Excavation Works".

(2) Excavation in tunnelling is not included.

(3) General requirements for example for Contractor's Equipment, Temporary Works and other related works all which apply to the work in this Chapter, are included in other Chapters of JSSS.

Additional particular requirements are contained in this Chapter.

~~7.1.2 Safety Plan and Instructions to Workers~~

~~(1) Prepare a safety plan describing the safety requirements for Excavation Works and Inform all relevant workers of the content and requirements.~~

~~(2) Plan the execution of all Excavation Works by using Contractor's Equipment and/or sufficient numbers of workers so that overloading and consequent back injury and other injury is avoided.~~

NK6/22: 7.1.2 is added as MD proposed to stipulate at 7.5.1 Monitoring Impact of Excavation Works on Other Properties.
The Contractor shall comply with the requirements of JSSS 6.1.3 [Monitoring Impact of Works on Other Properties].

7.1.2 Monitoring of Works and Surroundings

(1) The Contractor shall monitor the Excavation Works to demonstrate that they are performing safely to the designed limits and for the intended purpose.

(2) For more details, refer to JSSS 2.1.7 [Monitoring and Records].

7.2 PARTICULAR SAFETY MEASURES

7.2.1 General

(1) The Contractor shall plan all Excavation Works so that they can be executed in a safe and methodical manner.

(2) Unless otherwise specified in the Particular Safety Specification, the Contractor shall be responsible for choosing manual or machine excavation, selecting types of Contractor's Equipment, types of Temporary Works, Earthwork Support, spoil removal, storage and handling, controlling ground and surface water, forming embankments and cuttings and the like, in conformity with GC 4.10.

The following added wording to the above is not recommended:

"taking into account of relevant information provided by the Bidding document and subsequently obtained through the investigation by the Contractor."

The addition appears to have no connection with safety.

"Relevant information" meaning what and to whom?

"Subsequently" meaning what and when?

As "Contractor" is used rather than "Bidder" it follows that subsequently means after the contract has been awarded and therefore, that the Bid is to be based only upon the "relevant information" provided in the Bidding document.

This is not correct and it is a potentially risky change as it transfers the responsibility for describing all site conditions to the Employer via the bidding documents and ignores the Contractor's basic obligations.

The Contractor has a fundamental obligation to satisfy himself of conditions (taking account of cost and time) before he submits his Tender (Bid) and the full and relevant requirements are stated in GC 4.10.

Many claims are founded on interpretation of this clause and I do not recommend any change such as you have suggested, it is actually not necessary and may compromise interpretation of this basic clause.

Although reference is perhaps not vital, this is why I had included reference to GC 4.10 to emphasise that we were not changing the contract but this has been deleted

Also, TW now becomes Temporary Works as I advised in January

(3) Sloping sides and benching to sides of excavations shall comply with the technical requirements of OSHA Subpart P—Excavations §1926.652 Requirements for protective systems, (b) only, dependant on the dimensional constraints of the Site and the nature of the soil, hydraulic and geological conditions.

(4) The Contractor shall be responsible for preserving the structural integrity of all sides and excavations and shall provide whatever Earthwork Support may be necessary to achieve this, in accordance with the requirements of JSSS 6.2 [*Earthwork Support*]

The following added wording (which is any case duplicated with JSSS 6.2 1 (4)) to the above is not recommended:

"earthwork support for the excavation of depth exceeding 1.5m unless it is possible to excavate with an adequate and stable slope taking account of the soil condition"

As already advised I do not recommend any such change or the placing of any restriction on when support shall or shall not be provided, there is no need to do this when it is 100% the Contractor's risk anyway.

It to some extent follows OSHA but is actually not compliant with OSHA.

I had previously advised as follows:

> *Problem is that OSHA appears to restrict to a 1.51 m minimum depth, unless "examination of the ground by a competent person provides no indication of a potential cave-in." There is no definition of "competent person" nor do we suggest that it is necessary.*
>
> *We also recommend that no such minimum should be stated and that the Contractor shall be responsible no matter what the depth, no such minimum is stated in JSSS 7.2.*

I have now included the "Competent Person" in the definition of operation leader in Annex 1.1, but I still do not feel comfortable that such a loosely defined minimum be applied in a standard specification.

There may be a risk of accident and injury to workers due to collapse of sides e.g. the effect of the load and vibration from road traffic on trenches and pits in roads which are less than 1.5 metres deep, and also an effect on adjacent buildings, structures or Contractors Equipment. If not foreseen by the "competent person" this then creates a problem for the HSO.

I also note that later, examples of Earthwork Support measures have been added for sides less than 1.5 m deep so I suggest that this threshold is no longer required.

Further to the above however, I suggest that there should be no mention in this Chapter 7 of requirements for earthwork support as this is duplication of the common requirements in Section 6.2 and which will inevitably create ambiguity and confusion.

I have therefore deleted all reference to the 1.5 m threshold in Chapter 7 and sloping/benched sides and dealt with this entirely in Section 6.2.

NK6/22: The 6.2.1 stipulates as follows:

6.2 EARTHWORK SUPPORT
6.2.1 General
(4) The requirements for providing Earthwork Support may be waived by the HSO for the following excavations which have been inspected at the Site by him and judged by him to be safe, stable and free from any risk of movement or collapse:
(a) Excavation in rock; and
(b) Excavation less than 1.5 m deep.

We agreed not to specify here about 1.5 m deep in this Chapter.

~~(5) The Contractor shall execute excavation under dry condition by providing appropriate drainage to drain surface water and water contained in the ground and spring water at the Site.~~

I had deleted the above clause in the draft giving the following reason:

It is not only drainage that must be provided, the Contractor shall design and provide everything necessary. In any event this is already mentioned in JSSS 1.26.2 in a more comprehensive manner and need not be repeated more simplistically here.

I have edited the following clauses to make the wording consistent with the Contract and with JSSS 6.1 3 and 6.2.

(6) The Contractor shall execute all Excavation Works and associated filling, backfilling and Earthwork Support without weakening any ground or causing any damage to any buildings, structures and other properties, paved areas, roads, footpaths, fences, railways, waterways, drainage, utilities or any other property on the Site or outside the Site (collectively referred to in this Chapter as "other properties").

The Contractor shall also ensure the safety of all persons, whilst they are working in, under or adjacent to any excavation on or outside the Site.

The Contractor shall take all necessary measures to prevent the occurrence of any such weakening or damage by other properties and obtain the prior consent of the Engineer to

such measures before commencing relevant parts of the Excavation Works.

The original text of the above clause has been suggested to be revised by JICA/NK as follows:

The Contractor shall execute all Excavation Works and associated filling, backfilling and support work so that the criteria of allowable values specified in the Contract (see the Particular Safety Specification) or instructed by the Engineer to avoid adverse effects to surrounding areas and buildings, including existing foundations, structures, roads, paved areas or the like, by excavation are to be respected. In this regard, the Contractor shall take all necessary measures to prevent the occurrence of such adverse effects by designing and providing permanent or temporary supports and reinforcement before commencing Excavation Works.

I do not recommend that the above change be made for the following reasons:

The essential basis of the Contract (and the rule of Law in most countries) is that the Works shall be executed by the Contractor without causing any damage at all to neighbouring properties.

If any damage is caused then the Employer is open to claim for repairing such damage from adjacent owners and for which the contractor should be liable subject to the requirements of the contract.

FIDIC GC 17.1 (b) applies.

Insurance may also be compromised if not handled properly under GC 18.3.(d) (ii).

The added text to this clause is not necessary, it confuses any meaning and implies that there is some flexibility i.e. that some damage or "adverse effect" is acceptable if it falls within "allowable values" when as a common basis this is not correct.

If anything, it would be better to state as originally drafted namely as a common default the Contractor shall cause NO damage to surrounding areas and buildings, etc. etc.. when performing the Works, as this is the usual legal and contractual obligation of the Contractor.,

I recommend that the default situation should be that the Contractor is instructed as a general rule via JSSS to set up and manage monitoring to ensure his compliance (i.e. that damage does not occur), This is in principle as the earlier draft of JSSS.

This will require further development of the contractor's monitoring requirements and I have drafted a new clause 7.5.3 to deal with this.

In any exceptional rare case for example on large projects in congested areas and where damage is likely and unavoidable then the Employer should already have consulted and agreed with the owners and residents that the Works can be executed in a manner that may cause some damage and has agreed that compensation will be paid for such damage in accordance with a scale of damage. However, I suggest that this should not be a norm or a usual situation and that JSSS or the User Guide should not imply that this is a common option and I suggest that it should be the exception rather than the norm. otherwise it will be misunderstood by some Executing Agencies that such damage may be allowable when actually it is isn't.

During our January 2020 discussion, I said I would research this further and requested JICA to provide examples of the reference documentation for the Hong Kong MTR.

I have briefly studied the information provided by JICA and consequently believe that this may have been wrongly interpreted. In reviewing I feel it is important to note that:

1) Damage is the responsibility of the Contractor and the Engineer has no authority to determine what damage is acceptable or not.

2) The Engineer is not part of the relationship between Site owner and adjacent owners and if any damage is caused to neighbouring property, the Engineer's opinion is not relevant, adjacent owners usually have a basic right of claim against the Employer.

JICA appear to consider that some damage to adjacent buildings, structures, railway, roads, footpaths slopes and utilities etc., is "allowable" within certain specified limits but I feel that this is not correct and not supportable under the HK MTR information provided.

It is apparent that:

1) No damage or deformation to buildings, paving and services, etc. is allowable

2) If any damage is caused, the Contractor shall stop the Works and shall then be responsible for proposing and implementing remedial measures.

I consider that monitoring of any movement is not for the purpose of judging whether damage is reasonable or not but is to predict whether any damage is likely to occur, in which case, it then in total becomes the contractor's responsibility to remedy.

Please note also that in the sample provided for the Hong Kong MTR, whilst sample monitoring ranges are provided, Clause 2.19 (3) on page 2/10, makes clear that this is for information only and that in any event, the Contractor must meet his obligations under the Contract:

"the Contractor shall satisfy himself that the specified criteria is adequate to fulfil his contractual obligations and shall take any additional measures necessary to avoid damage to property."

Pages 40 and 42 are missing from the provided copy of the HK MTR Conditions of Contract, therefore I cannot complete my review of the Contractor's obligations for care of the Works under Clause 22 of the Contract.

I do not in any event recommend the concept of the Employer or Engineer establishing measurement criteria as a general rule for predicting damage, as it is difficult to do and if wrong it could affect liability of the Employer and Engineer and even JICA if they are called upon to fund it.

This can be complex legal and contractual territory that I recommend should not be dealt with by JSSS as if it were a simple and common issue.

FIDIC GC 17.1 (b) applies and I suggest that it should not be compromised by the suggested addition to this clause.

NK6/22: We would like to specify this (6) as MD's proposed stipulation in accordance with GC and request JICA to review this again though JICA commented to include criteria of allowable values.

(7) If loose rocks, standing trees, etc. existing ~~outside the Site~~ above the excavation area ~~in the Site~~ may pose a danger to workers or construction equipment, take the following measures unless otherwise specified in the Contract;

(a) Consult with the Engineer about measures such as removal of loose rocks, installation of rockfall protection fences, etc.; and

(b) ~~Based on the consultation with the Engineer, propose safety measures including construction methods to the Engineer and~~ Take actions in accordance with the Engineer's instruction.

The above is difficult to understand, conditions outside the Site are not usually within the Scope of a Contract.

If such hazards exist and were apparent at or before Tender stage, then the neighbour is usually legally obliged to remove the risk at his own cost and should be requested to do so.

If the risk is created by the execution of the Permanent Works then this can mean that the Contractor has created the risk by his methods and it should be a part of the contractor's scope responsibility anyway.

Rather than concentrating upon the manner in which this is dealt with contractually, I suggest that JSSS should concentrate on safety i,e. by the HSO removing the risk and taking appropriate measures immediately.

I suggest as follows:

(8) If loose rock, boulders, trees and the like, are positioned above working areas and where there is any risk that these may pose a danger to workers, unless otherwise instructed by the Engineer, the HSO shall prohibit workers from entering the working areas and issue appropriate instructions including for example to:

(a) Provide protective overhead safety barriers or safety nets;

(b) Carefully remove loose rocks; and

(c) Provide (or improve existing) Earthwork Support to unstable areas~~;~~.

NK6/22: agreed to the above.

7.2.2 Safety Measures before Commencing Excavation Works

(1) The HSO shall inspect the Excavation Works area and surrounding areas before starting work each day and after adverse climatic conditions or earthquake as described in JSSS: 2.7 [*Adverse Weather Requirements*]. The inspection shall include the following areas and items:

In your draft for the above, "HSO" has been changed to "Contractor" which for reasons explained is not correct. I recommend that wherever an inspection is required for safety purposes it should state HSO as he is responsible. In practice he may delegate this internally e.g. to an operation leader but that is his choice.

NK6/22: agreed to the above (1) to specify the HSO because of the safety responsibilities of HSO.

(a) Potentially unsafe areas where there may be any risk of landslide;

(b) Loose rock or boulders which may be at risk of falling;

(c) Cracks in the Excavation Works area and the surrounding area;

(d) Changes in ground water level, surface or any spring water; and

(e) Deleterious effect due to freezing conditions.

(2) As a consequence of such inspections the HSO may prohibit the continuation of any affected work, take necessary corrective measures and make any necessary amendment to the Safety Plan and instruct all Contractor's Personnel of any revised safety measures before work is allowed to commence and continue in order to ensure their continued safety.

(3) Install facilities such as stairs and ramps as means of access or egress from the excavation site in accordance with JSSS 6.4.4 [*Vertical Access*] ~~7.4.2 [Setting of Passage];~~

Please note that I have added a new subclause in JSSS Section 6.4 Vertical Access, covering steps, stairs and ramps

(4) Provide support or protection for the underground services appropriately in accordance with JSSS Chapter 3 [*Existing Underground, Concealed and Overhead Services*], and take measures, according to the situation, such as indicating clearly the location and precautions of the underground service and providing protective fences for the services.

(5) Prevent workers and construction equipment/transport vehicles from their falling at the excavation site, in accordance with JSSS 2.3 [*Prohibition of Entry-Dangerous Work*], install entry prevention facilities (fences, temporary enclosures, etc.), warning flags, and signs, etc..

I suggest that the following are not now necessary as they are already covered by 7.2.1 (8)

~~(6) Take the following measures at the lower parts (bottom) of the excavation site when there is a risk of danger to third parties and workers, or damage to construction equipment, etc. by the fall of excavated soil/rock;~~

~~(a) Identify dangerous locations, install entry prevention facilities such as fences,~~

~~temporary enclosures, warning signs, etc. in accordance with JSSS 2.3 [*Prohibition of Entry-Dangerous Work*]; and~~

~~(b) Install protective fences that catch falling rocks, etc.~~

I suggest that the following are not now necessary as they are already covered by 7.2.1 (8)

~~(7) Risk prevention measures against falling rocks~~

~~(a) To protect workers from the dangers of falling of loose rocks and soils from the excavated surface, remove the loose rocks, etc. and take appropriate protective measures; and~~

~~(b) When there is a risk of falling of loose rocks/soils due to the excavation, take measures such as provision of earth retaining and protective net beforehand, and prohibiting workers from entering in the excavation site until the safety of the workers is confirmed.~~

NK6/22: confirmed.

7.2.3 Safety Measures during Excavation Works

During the Excavation Works, the Contractor shall:

(1) Not place excavated spoil, filling or Contractor's Equipment near the vertical edge of excavated surfaces.

(2) Stop the Excavation Works where ground collapse is possible during excavation, evacuate all Contractor's Personnel, implement all necessary safety measures, prohibit Contractor's Personnel from recommencing work until all safety measures have been taken.

(3) Backfill any temporary excavation area as soon as possible after the relevant work is completed.

The original clause had nothing to do with temporary excavations it is to excavation for permanent works whereby the contractor shall backfill working space and above foundations etc. efficiently as soon as possible to ensure that openings are not left open and unsafe for excessive periods.

I recommend that the original clause goes in.

NK6/22: confirmed.

(4) Backfill and compact excavated areas that require such backfill as soon as possible after the Permanent Works are completed.

(5) For places where open Excavation Works are performed, maintain the necessary illuminance to perform the work safely.

7.3. MANUAL EXCAVATION WORKS

7.3.1 General

During manual Excavation Works, the Contractor shall:

~~(1) Not permit any excavation without providing Earthwork Support unless otherwise permitted by the HSO in accordance with JSSS 6.2 [*Earthwork Support*].~~

The following added wording to the above is not recommended:

"depth exceeds 1.5m without providing Earthwork Support to all vertical surfaces as specified in 7.2.1 [General] (4). "

See above and previous notes, I do not recommend that the draft be changed in this way.

Please refer to my earlier notes; I do not recommend any reference here to the 1.5 m threshold and recommend that this is dealt with entirely in Section 6.2.

The original text of this clause (as edited above) has been transferred to 7.1 as a general item.

NK6/22: agreed as mentioned in 7.2.1 (4) not to specify 1.5 m limits.

~~(2) Not permit excavation of the vertical surface of the excavated area, or excavation of the ground under the foundation of existing structure~~

Above is edited as follows:

(3) Not undermine any excavation under and beyond the vertical face.

(4) Not excavate under existing foundations

(5) Maintain sufficient distance between workers.

(6) When breaking or removing loose rock, pay attention to the stability of the rock and the direction of its fall.

(7) When using a lever for removing rock, select equipment that has appropriate length and strength for the work.

The following clause has been added in the JICA draft:

All of the content (and more) is already included in Chapter 4 [Contractor's Equipment], it is not necessary to duplicate it here. Please confirm which is to be deleted, here or Chapter 4?

NK6/22: agreed to delete 7.4 Mechanical Excavation because the following provisions are mostly general ones and covered in Chapter 4.
Do we need to stipulate to refer to Chapter 4 for requirements of Mechanical Excavation as only manual excavation is specified?

~~**7.4. MECHANICAL EXCAVATION WORK**~~

7.4.1 General

The Contractor shall take the following measures for the safety of operators of excavating equipment (hereinafter referred to as "equipment") and workers engaged in the mechanical Excavation Works with the equipment:

(1) In accordance with JSSS 2.3 [*Prohibition of Entry-Dangerous Work*], prohibit workers from entering the places where workers are in danger due to the mechanical Excavation Works by placing notices of "No Entry" at easy-to-see locations, installing entry prevention facilities (fences, temporary enclosures, etc.) and placing Spotters.

As noted in the original draft, it is not good practice and there is no need to include such general cross reference to other sections. The referenced sections and chapters are of general application anyway.

Please refer to JSSS 1.4.9 (2) which explains this.

(2) Take the safety measures prescribed in JSSS Chapter 4 [*Contractor's Equipment*]

Cross reference is not necessary and references have changed.

(3) Ensure that the operators shall:

(a) Operate the equipment always paying careful attention to the position of workers near the working range;

(b) When moving the equipment backward, make sure that there are no workers behind and follow the instructions of the Spotters;

(c) After the work, not park the equipment on the slope where excavation is in progress or on the ground that has a possibility to collapse; and

(d) Make sure that the bucket of equipment shall not pass over the operator's seat of other equipment.

(4) Ensure that workers shall:

(a) Not enter under the bucket of equipment that is loading materials; and

(b) Keep away from dump trucks under loading or unloading materials.

The above and more is already included in Chapter 4 [Contractor's Equipment], why is it necessary to duplicate some of it here? I suggest that it is not necessary here.

7.5. TRENCHES, PITS AND OTHER TYPES OF STRUCTURAL EXCAVATION

In English international construction usage, "Trench excavation" is a classification of only one type of Excavation but there are many other accepted types which commonly include for example:

Pit excavation,

Basement excavation,

Excavation for deep piling

Oversite excavation, cuttings, reduce level excavation, etc etc

There is no great difference in the risks between collapse of a trench or collapse of a pit or basement excavation all are similar and the prescribed safety measures are the same so:

Why separate only "trench excavation"? and

What happens to the required measures for the other types?

To describe only trench excavation and ignore all others, looks unusual and appears incomplete.

Reference to OSHA is creating this problem as US and English usage are slightly different.

OSHA uses the phrase "Excavation and trenching" as if both are different. In English construction usage, "Excavation" alone is commonly used and the various types (e.g. trench, pit and basement excavation) will be understood to be covered by this term.

This is why 7.1.1 is all embracing.

The given definition of "Trench Excavation" in the draft is not necessary as the word "trench" is in common usage.

It is also not correct, Trench Excavation is not "excavation performed for laying gas pipes and water /sewage pipes, etc.". "Trench excavation" will also cover for example excavations for any linear structure or material such as :

strip foundations, ground beams, cables and ducts etc. etc.

There is not so much in this clause anyway but if considered necessary, I would suggest it would be better re-headed as Excavation Generally or even "Trenches, Pits and Other Excavations" as above.

NK6/22: agreed to change the title and specify as proposed above.

7.5.1 General

The Contractor shall take the following measures to prevent danger to workers due to the collapse of the excavation surface during ~~trench excavation~~ trenches, pits and other types of structural excavation..

NK6/22: Do we need to mention same as the title of this Section?

See notes above, the following definition is not sufficient or necessary.

~~Trench excavation means excavation performed for laying gas pipes and water /sewage pipes, etc. which depth is larger than its width. In general, excavation width is less than 4.6m (15feet).~~

~~(1) When performing trench excavation with depth of 1.5m or more, adequate and stable Earthwork Support shall be provided.; and~~

The above is not recommended as it conflicts with other clauses, please refer to earlier notes. It is deleted here and dealt with in Section 6.2

~~(2) For trench excavation with a depth of less than 1.5m, protective systems as shown below shall be installed, unless it is possible to excavate with an adequate and stable slope taking account of the soil condition.;~~

~~(a) Simple earth retaining (Trench box, Trench shield);~~

~~(b) Lightweight sheet pile earth retaining; and~~

~~(c) Aluminium hydraulic shoring, Timber shoring.~~

The above appears illogical as there are numerous statements that no support is required below 1.5 metre depth yet then this is provided which specifies requirements.

NK6/22: agreed as mentioned in 7.2.1 (4) not to specify 1.5 m limits.

I have not edited the added subclauses but suggest that they are deleted anyway.

7.5.2 Safety Measures during ~~Trench~~ Excavation

None of the following items are unique to trench excavation, all items apply to all types of excavation.

Also all of the following items are for Earthwork Support not Excavation and this would be better transferred to JSSS 6.2.4 to avoid duplication and ambiguity. I have already included relevant part of the following in 6.2.4 with suitable editing and this subclause can now be deleted.

Reference to "earth retaining systems" should be changed to "Earthwork Support".

(1) Materials and equipment to be used for Earthwork Support shall be appropriate for the width and depth of the excavation and free from damage or defects that might impair their proper function.

~~(2) Manufactured (prefabricated) materials for Earthwork Support shall be used in accordance with the instructions and recommendations given in the manual of the manufacturer.~~

No need already covered by JSSS 1.35

~~(3) Earthwork Support designed by the Contractor shall be installed in accordance with the design and construction procedure drawings.~~

There are no such drawings in JSSS and no meaning to this requirement. This is also all Contractor design.

NK6/22: Th Contractor will actually prepare such drawings to install Earthwork Support at the Site though JSSS does not mention about drawings in 1.37 Design and Management of Temporary Works. Japanese draft stipulates such drawings.
Now OK to delete (3).

~~(4) Earthwork Support with sufficient strength shall be provided to protect workers from collapse of the ground in and structures near the excavation site.~~

The above is not completely clear however it is already covered by 6.2.1 (2) above

(5) Workers shall not be allowed to enter any excavation ~~the trench~~ until Earthwork Support is installed prior to the work;

(6) Excavation to a level greater than 60cm below the bottom of the Earthwork Support shall not be allowed;

(7) If temporary removal of individual members of the Earthwork Support is necessary, safety measures shall be taken to ensure the safety of workers, such as installing temporary members to hold the loads imposed on the system;

(8) When removing Earthwork Support, the Contractor shall not allow anyone other than

the workers engaged in the removal work to enter the area and the vicinity; and

(9) The Contractor shall perform backfilling of any ~~trench~~ excavation in parallel with the removal of the Earthwork Support.

Please refer to the notes against Clause 7.2 (6) above.

I have added a comprehensive and common clause for contractor's monitoring of Excavation Works in JSSS 6.1.3 [*Temporary Inspection and Monitoring Systems*].

I think it should go here and not in Section 6.2 [Earthwork Support] as such settlement can be a result of excavation generally, including that caused by say water table lowering (e.g. well-point systems) and Earthwork Support, but not only for the Earthwork Support.

I ~~have added suitable mention in Section 6.2 so that this is coordinated.~~

~~7.5.3 Monitoring Impact of Excavation Works on Other Properties~~

~~The Contractor shall comply with the requirements of JSSS 6.1.3 [*Monitoring Impact of Works on Other Properties*].~~

NK6/22: As commented by JICA on Chapter 6 TW, the monitoring is moved to 2.1.7 [Monitoring and Records].
Instead of 7.5.1 above, we propose to specify at 7.1.2.

7.6. BLASTING WORKS

See above clause 7.1.1 where Blasting Works is defined. I have changed the following references accordingly:

7.6.1 Scope

(1) This Section specifies safety measures in connection with excavation in rock ~~open cut rock excavation~~ that cannot be undertaken using conventional excavation techniques.

The revised wording "open" or "open cut" are not correct or necessary, excavation in rock can apply to all types of excavation where rock can be encountered (e.g. trenches, pits and basements). Suggest that the original wording is correct.

The above definition is simple and clear but please advise if you need a other more detailed definition of "Rock"?

I suggest that the following is necessary:

(2) Blasting Works for tunnelling is not included in the scope of this Chapter. Any such work shall be performed in accordance with the Particular Safety Specification.

I suggest that also that some limitation shall be including in JSSS to restrict the use of blasting as it may otherwise assume that is an acceptable alternative to more expensive removal techniques.

I have therefore separated the clause, edited it and added further general requirements as follows:

7.6.2 General Blasting Requirements

(1) Blasting shall only be permitted to be performed by the Contractor:

(a) When it is safe to do so and when there is no risk of injury or damage being caused to persons or property within or outside the Site

(b) Where it specifically allowed or required by the Particular Safety Specification; and

(c) During the execution of the Works after the Contractor has received the Engineer's approval or instruction.

(2) Blasting when approved, shall only be permitted at times which have been predetermined and agreed with the Engineer and any relevant authority.

~~(3) The Blasting Works plan shall be described in the relevant Method Statement.~~

What does the above clause mean? The Blasting Safety Plan is described below. Please clarify?

NK6/22: Blasting works are made as a part of construction works consisting of clearing, excavation, concrete works, backfilling, etc. Method Statement will cover the whole parts of works, so above (3) stipulates the blasting work plan shall be a part of the relevant MS.

~~(4) This Section applies particularly to Blasting Works where there may be any risk of injury or damage to persons and property on adjacent areas due to the use of Explosives either within or outside the Site.~~

Ditto, why would the use of explosives be possible outside the Site? Please see above suggested added clause (3), it is assumed that this can be deleted please check.

NK6/22: It states the risk shall be not expected outside the Site by the flying rocks of the blasting in the Site. (1) (a) specifies same, so (4) can be deleted.

Noise: There appears to be no maximum criteria stated in the BS so I suggest the following:

7.6.3 Blasting Noise

Noise levels, measured in areas close to the Exclusion Zone and in areas accessible to other workers or the public shall not exceed a sound pressure level of 85 dB and/or a peak sound level of 110 dB

Noise levels measured ~~in areas close to the Exclusion Zone and in areas accessible to other workers or the public~~ at the boundary of the Project area shall not exceed a sound pressure level of 85 dB and/or a peak sound level of 110 dB.

NK6/22: Japanese Noise Regulation Act stipulates noise of the specific construction works shall not exceed 85 dB at the boundary of the Project area.
NK agree to the MD's proposed level.

To MD, May I know your basis of a sound pressure level of 85 dB and/or a peak sound level of 110 dB

7.6.4 Definitions

Definitions of terms for the purpose of this Chapter are as follows.

(1) "**Blasting**" means blowing-up or breaking apart solid rock with the use of Explosives.

(2) "**Explosives**" means any substance or mixture of substances that is manufactured to produce an explosive effect and which term includes any explosion explosive, Blasting agent and Blasting supplies such as detonators, cords and detonating equipment.

(3) "**Exclusion Zone**" means an area from which all unauthorised Contractor's Personnel, unauthorised Employer's Personnel and any other unauthorised persons or the general public are prohibited to enter due to the risk of their being affected by the Blasting Works. Unauthorised personnel in this context shall have the same meaning as that stated in Section 2.3 [*Prohibition of Entry – Dangerous Work*] Clause 2.3.1 (c).

7.6.5 Compliance Standards

Changed in 2.5 therefore for consistency to be changed everywhere;

(1) By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*], for any items in this Section or relevant to the subject of this Section and which are not fully covered by JSSS, the Contractor shall take necessary measures for Blasting Works complying with the technical requirements specified in BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry.

The above standard wording has been changed (for the better) as a consequence of JICA comment on Chapter 1 as above and I suggest for consistency that the same is applicable and should be used here.

I also suggest that more reliance should be placed upon the use of the BS and less on trying to repeat or "improve" parts of the BS in JSSS. If anything some of the clauses in JSSS could be omittec wgere the BS is more stringent or more clear.

.See later notes on survey and monitoring

(2) The Contractor shall obtain the necessary permits, licenses or approvals for Blasting work and the handling and storage of Explosives associated therewith. The Employer, at the request of the Contractor, shall provide such reasonable assistance to allow the Contractor to obtain properly such permits, licenses or approvals.

Part deleted.

7.6.6 Personnel for Blasting Works

Please refer to the BS with regard to the selection and qualification of blasting contractors to perform the blasting works, it seems logical but is this to apply? It seems insufficient that a contractor with no experience or proven capability can employ two blasting staff and then be qualified to perform the works.

(1) Further to the requirements of JSSS 1.18 [*Proper Placement of Contractor's Personnel*], the Contractor shall assign the following personnel for Blasting Works:

(a) Explosives engineer; and

(b) Shotfirer(s).

What about other team members e.g. blasting supervisor (see BS), explosives storekeeper, drivers carrying explosives, security staff, spotters

NK6/22: JICA specified as above after discussion on our proposal based on BS, so no change is made at this stage.

(2) Responsibilities and requirement of personnel for Blasting Works:

NK6/22: JICA commented "Blasting Works" is not defined, so requested to change to "Blasting works". Do you define it?

(a) The Explosives engineer shall plan the Blasting Works, lead the Blasting Works at Site and perform the safety management of the Blasting Works; and

(b) Shotfirer(s) shall perform safekeeping, transportation and storage of Explosives, and perform Blasting Works and site safety management.

(3) Safety education and guidance

Further to the requirements of JSSS 1.18 [*Proper Placement of Contractor's Personnel*], the Contractor shall ensure that the Explosives engineer and shotfirer(s) have sufficient knowledge of and are able to comply with the following:

"personnel engaged in Blasting Works" means "all persons" so engaged. Why make this restrictive? Can state "all personnel involved.."?

What about other team members e.g. blasting supervisor, explosives storekeeper, drivers carrying explosives, security staff, spotters? All and more need to be made aware and this is only safety training. I suggest the original wording is wider.

NK6/22: JICA specified as above after discussion on our proposal based on BS, so no change is made at this stage.

(a) Nature of hazards associated with Blasting;

(b) Unsafe conditions and conduct in performing Blasting Works;

(c) Procedures for Blasting Works;

(d) Evacuation and return procedures for any evacuated workers and personnel;

Change not necessary but added anyway

(e) Safety measures when misfiring of Explosives occurs; and

(f) Emergency response *(actions)*.

7.6.7 Blasting Safety Plan

The Contractor shall prepare a Blasting Safety Plan describing all required safety measures for Blasting Works in addition to the items prescribed in JSSS 1.7 [*Contractor's Safety Plans*] and including the following:

(1) Risk analysis and countermeasures.

(2) Safety measures for transportation, safekeeping, use and disposal of Explosives.

(3) Safety measures for Contractor's Personnel, Employer's Personnel and any other persons, the general public, neighbouring residents and building owners on or adjacent to the Site and who may be affected by the Blasting Works (hereinafter collectively referred to as "persons affected by the Blasting Works" in this Section).

"Personnel" needs to be changes to "Persons"

Edited as above.

(4) Determination of Exclusion Zone.

(5) Identification of affected areas, buildings, structures and property.

(6) Environmental and health compliance requirements including vibration, noise, fire, and the like, required by Laws and the Contract.

(7) Environmental monitoring plan and methods to record the impact of Blasting on affected buildings, structures and property.

(8) Trial Blasting.

(9) Identification of the Explosives engineer and shotfirers to distinguish from other workers.

(10) Placement of Spotters.

(11) Method of notification of the start date and time of Blasting work and the serving of notice immediately before commencement of Blasting Works to other persons affected by the Blasting Works.

(12) Evacuation method of all personnel from the Exclusion Zone before Blasting.

(13) Warning system at the time of Blasting.

(14) Procedures and methods for dealing with misfired Explosives (The plan for the treatment procedures for misfired Explosives shall be prepared by reference to BS5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10.5 Misfires.

(15) List of legal and administrative records.

7.6.8 Risk Prevention of Workers and Neighbouring Residents

(1) Notice of Blasting

~~The Contractor shall assist the Employer when so requested by the Employer in giving~~

~~briefings to neighbouring communities, residents and property owners by explaining the Blasting work scope, extent, duration, timing and safety measures and related information~~

The Contractor shall notify all persons affected by the Blasting Works. of the planned schedule and start dates and times for Blasting Works. Such information shall be updated as necessary, immediately before the Blasting Works commence.

(2) Risk Prevention Measures

The Contractor shall take all necessary measures to prevent any injury or damage to all persons affected by the Blasting Works.including the following:

(a) Prohibition of overcharging with Explosives more than that specified in the Method Statement prepared based upon the trial Blasting;

~~(b)~~ Prevention of scattering of flying rock and other debris ~~including for example the provision of sand, nets, steel plates, timber, and the like as mentioned in 12.7.6 [Blast protection] of BS 5607 and as prescribed in the Contract (if any);~~

As a basic rule I do not suggest giving any examples, the Contractor is already required to comply with BS 5607 so it is not necessary to give any further reference.

I disagree that the Employer shall determine the prevention measures of scattering of rocks as a common basis as he is employing and paying the contractor as a qualified technical expert to do this work.

I recommend that the original wording should not be changed, the given examples are not specific and any attempt to define scope may compromise the employer and even JICA in the future.

(c) Prevention of collapse of surrounding rocks or ground areas;

This is based upon the JICA/NK draft and I do understand why it is deleted.

It may not be overcharging it could be for other reasons e.g. incorrect drilling and blasting location in the wrong place or direction according to geology.

Blasting must be controlled and contained within the area required without damaging surrounding areas. Aside from the risk of damage to other property, The employer should not be required to pay for repair or reinstatement of surrounding areas where the contractor has failed to control his own operations.

I suggest that the above is not deleted

~~(d) Define all Blasting Works as Dangerous Work and take measures in accordance with Section 2.3 [*Prohibition of Entry – Dangerous Work*];~~

(e) Demarcate the Exclusion Zone for Blasting Works and take necessary measures to prohibit the ~~personnel~~ persons (?) affected by the Blasting works from entering the Exclusion Zone by a system of signs, signals and Spotters in accordance with 7.4.2 [Blast warning procedures] of BS BS5607 including the following:

The BS covers safety measures and more, is the following therefor necessary?

NK6/22: JICA wants JSSS to specify requirement and also concrete measures to guide the Contractor, so the following are left as original.

(i) Provide audible warning sirens to warn of impending, current and completed Blasting operations.

(ii) Place bulletin boards showing the Blasting time, siren code and other precautions at the boundary of the Dangerous Work area.

(f) Establish evacuation requirements, routes and assembly areas and inform all persons affected by the Blasting Works;

(g) Perform firing only after the Spotters have confirmed that all persons affected by the Blasting Works have been evacuated;

(h) Provide communication equipment between the shotfirer and the Spotter, maintain and test the equipment;

(i) Prohibit bringing into the Blasting areas any mobile phone that may affect adversely the electric detonator; and

(j) Unless otherwise specified in the Particular Safety Specification, perform Blasting Works only during the daytime.

7.6.9 Handling and Storing of Explosives

(1) Storage of Explosives

(a) The Explosive store to be constructed at the Site shall be a secure, substantial and fireproof building, environmentally controlled, locked, guarded and protected at all times and in accordance with the Laws of the Country;

(b) Appropriate numbers and types of personnel shall be assigned by the Contractor for safekeeping and security of the stored Explosives and any other materials;

(c) The Contractor shall maintain records of the types and quantities of all Explosives received and issued at the store, listing the date and time of receipt and issue and the names of all personnel concerned; and

(d) The Contractor shall submit the records to the Engineer when the Engineer requests.

For other storage requirements, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 9.3 Storage.

JICA have commented as follows:

JC1: As Blasting is soul of safety specification, it seems better to specify all items as mentioned in BS 5607 (OSHA) if referred to those. In addition, advise to refer to the allowable values influenced to structures of 3rd parties specified in Hongkong MTR M&W.

Please note:

1) *The full HK blasting document contains no use or mention of the expression "allowable values" of any damage to "structures of 3rd parties"*

2) *The document includes criteria for measurement and recording but this does not state that any damage is allowable.*

3) *Similar to previous comments on Earthwork Support (see above), I suggest that the criteria is given to determine whether Blasting is likely to cause damage in which case the Blasting Works shall, stop and the contractor shall propose remedial measures before proceeding.*

4) *Pages 40 and 42 are missing from my copy of the HK MTR Conditions of Contract, therefore I cannot complete my review and give any final comments on the Contractor's basic obligation.*

I do recommend that any such reference and addition is correct or justified particularly for blasting.

My suggestion is the same as for Earthwork Support (see above notes) namely:

"If anything, it would be better to state as originally drafted namely as a common default the Contractor shall cause NO damage to surrounding areas and buildings, etc. etc.. when performing the Works, as this is the usual legal and contractual obligation of the Contractor.,

If there is a chance of damage occurring due to an unavoidable method of execution, then I recommend that the default situation should be that the Contractor is instructed via JSSS to set up and manage monitoring to ensure his compliance i.e. that damage does not occur, subject to receiving the consent of the Engineer.

Regarding the additional reference to BS 5607, the Contractor is already required to comply with this BS so it is not necessary and I do not recommend giving reference to further particular BS clauses in JSSS.

(2) Transportation of Explosives

For transportation requirements, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 9.4 Transport of Explosives on Site.

(3) Quantity of Explosives at the Blasting site

(a) ~~The quantity of Explosives to be transported from store to the Blasting site shall not greatly exceed the estimated quantity of consumption for that day;~~

(b) No ~~extra or surplus~~ Explosives shall be stored at the Blasting site; and

I suggest the above is better

(c) Explosives not used on the day shall be returned to the Explosives store.

Ditto

(4) Handling of Explosives

(a) Explosives shall be handled with extreme care ensuring that they are not hit, thrown or dropped;

(b) Containers for Explosives shall be solidly constructed from timber or non-conducting material and metals such as iron or foil must not be used on inner surfaces;

(c) Explosive and detonators shall be separately stored in lockable containers;

(d) The containers for Explosives shall protect against water ingress, impact damage; and

(e) Smoking, use of matches, lighters, flames, sparks etc. shall be prohibited in areas where Explosives are being transported, stored and handled, notice boards and warning signs shall be placed in suitable positions.

(5) Records of Blasting and Explosives

(a) The Shotfirer shall prepare daily work records showing the date and time of each Blasting operation, quantity of Explosives received, consumed, misfired and remaining, number of blast holes, charging method for the Blasting and treatment of misfired Explosives;

(b) The Explosives engineer shall check and countersign the Blasting Works records; and

(c) The Contractor shall submit the records to the Engineer when the Engineer requests.

(6) Notice to the Engineer

The Contractor shall notify the Engineer in writing as follows:

(a) Delivery of Explosives to the store and from the store to the Site, shall each be given to the Engineer by no later than noon on the day preceding the scheduled date of the arrival of Explosives at the store and the delivery to the Site;

(b) Notification of intended Blasting Works shall be given to the Engineer by no later than noon on the day preceding the scheduled date of the Blasting operation; and

(c) Notification of the schedule for the following week's Blasting shall be given to the Engineer by no later than Friday morning of the preceding week.

7.6.10 Trial Blasting

The Contractor shall perform trial Blasting in accordance with the Blasting Safety Plan provided in 7.6.7 [*Blasting Safety Plan*] for the following purposes, and modify the said Blasting Safety Plan according to the results of the trial Blasting:

(1) Confirm the characteristics of rock and topography at the Blasting site that will affect the Blasting operations.

(2) Confirm the suitability of the planned Blasting method, Explosives amount, and scattering prevention and other protection measures.

(3) Confirm the safety of all persons affected by the Blasting Works.

~~(4) Confirm that the vibration values of the Blasting does not exceed the allowable vibration value for existing buildings, structures and other property on or adjacent to the Site and which may be affected by the Blasting operations, as specified in the Contract or instructed by the Engineer.~~

Please refer to following clause 7.6.11 and as a consequence I suggest that the above is modified as follows:

(5) Confirm that the Contractor's criteria ~~is~~ are adequate for the purpose of JSSS エラー! 参照元が見つかりません。[*Monitoring Impact on Other Properties*].

The Contractor shall submit the trial Blasting reports with any consequent changes to the Blasting Safety Plan to the Engineer before proceeding with the Blasting Works.

7.6.11 Monitoring Impact of Blasting Works on Other Properties

The Contractor shall comply with the requirements of ~~6.1.3 [*Monitoring Impact of Works on Other Properties*].~~ 7.1.2 [Monitoring of Works and Surroundings].

NK6/22: The monitoring is specified in 2.1.7 following JICA comments, so monitoring is stipulated in 7.1.2 as noted above.

There are numerous references to the requirements for monitoring the impact of the Works on other properties so (as with Excavation) I have developed JSSS 6.1.3 to cover this as a Common Specification.

It is only necessary therefore to include the above cross reference here and the following can therefore be deleted.

~~*The above Original (as re-edited)*~~

~~(1) The Contractor shall monitor the vibration, settlement and all other potential effects of the Blasting Works to ascertain any effect upon buildings, structures and other properties, paved areas, roads, footpaths, fences, railways, waterways, drainage, utilities and the like on the Site or outside the Site (collectively referred to in this Section as "other properties") to ensure that no damage or weakening is caused to such other properties.~~

~~*JICA require the following re-wording to the original text of this clause:*~~

~~The Contractor shall monitor the vibrations caused by the Blasting operations in the affected areas, buildings, structures and properties identified in the Blasting Safety Plan to ensure that vibration damage or weakening caused by the Blasting operations will remain within the allowable values specified in the Contract or instructed by the Engineer.~~

7.6.12 Particular Safety Measures for Blasting Works

(1) Identification of Blasting workers

~~Provide armbands, uniforms or marked safety helmets to distinguish all workers engaged in Blasting Works from other workers.~~

Provide clear visible identification mark, uniforms or marked safety helmets to

distinguish the Explosives engineer and shotfirer(s) engaged in Blasting Works from other workers.

(2) Drilling Work

(a) No drilling shall be allowed in the hole formed for previous Blasting; and

(b) If misfired explosive is found during the drilling operation, the drilling shall be stopped and the misfired explosive shall be treated in accordance with the procedures planned in 7.6.7 [*Blasting Safety Plan*] and 7.6.13 [*Measures after Blasting*], (2) [*Treatment of misfired Explosives*].

(3) Explosives Charging

(a) Drilling operations shall not be permitted during charging of Explosives.

(b) Before charging, thoroughly clean the holes and do not leave any dust or debris; and

(c) Shock and friction such as the following, which can cause accidental initiation of the charges, shall be avoided:

(i) the over-vigorous use of stemming rods to force explosives into a shot hole.

(ii) the use of drill rods or other metal tools in a shot hole containing explosives.

(iii) vehicles running over explosives and other hazards involving impact or concussion.

(iv) shock tube detonators being initiated when subjected to "snap, slap and shoot".

For other safety measures for charging work, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10 Safety when using Explosives.

(4) Handling Detonators

(a) Measures for Blasting using electric detonators:

(i) Make sure electric detonator's leg wires shall be kept short-circuited until they are connected into the circuit for firing.

(ii) Check if shotfiring cables are not cut or damaged.

(iii) Make sure electric detonators shall be kept away from electric lighting supplies, power supplies and other electrical sources that may cause electric leakage.

(iv) Check if there are no missing or wrong wiring connections or mis-connection with previous blast wires.

(v) Make sure there are no stray electric currents.

(vi) Do not use electric detonators if there is any danger of electrical interference for example from radio-frequency radiation near radio communication facility or radar.

(vii) Install a lightning detector near the Blasting area, stop Blasting Works when there is a risk of lightning strike, and evacuate workers to a safe place.

For other safety matters for Blasting with electric detonator, the Contractor shall comply with BS 5607: Code of Practice for the Safe Use of Explosives in the Construction Industry, 10.4.3 Electric detonators.

(b) Measures for Blasting using non-electric detonators:

(i) Do not cut or damage the shock tube.

(ii) Before firing, check the connections visually and make sure that there are no missing or previous wiring connections or wrong wiring connections.

(5) Measures in Ignition:

(a) The connection between the shotfiring apparatus and shotfiring cable shall be made just before ignition;

(b) Ignition shall be made at a safe place isolated and protected according to the degree of the blast; and

(c) The handle shall be removed from the shotfiring apparatus except when igniting.

I suggest that the following is not necessary as there are no requirements :

~~(6) Measures when Blasting near existing buildings and structures~~

~~Blasting near existing buildings or structures shall not be carried out unless specified in the Particular Safety Specification or instructed by the Engineer.~~

7.6.13 Measures after Blasting

(1) Confirmation of safety of Blasting area after Blasting:

(a) No persons other than the shotfirer shall enter the Blasting site or its vicinity until ~~after~~ the shotfirer has inspected the area and confirmed that it is safe to re-enter; and

(b) The shotfirer shall inspect the area and surrounding area of the Blasting site to check that there is no danger of falling or collapsing of ground and rocks or misfired Explosives.

(2) Treatment of misfired Explosives

If, after ignition, the loaded Explosives did not explode, or if it is difficult to confirm the explosion, the misfired Explosive shall be treated in accordance with the treatment of misfired Explosives in the Blasting Safety Plan, and 10.5 [Misfires] of BS5607 including the following:

(a) Procedure of treatment of misfired Explosives;

The following treatment procedure of misfired Explosives shall be taken:

(i) Immediate remedial action.

(ii) Delayed remedial action.

(iii) Further attempt at detonation.

(iv) Inspection to confirm complete detonation.

The details of the above actions are stipulated in succeeding (b) to (d).

(b) Immediate remedial action;

The following initial actions shall be taken by the shotfirer:

(i) Prohibit anyone other than the shotfirer and other authorized personnel from entering the Blasting site.

(ii) Entry to the Blasting site shall only be permitted after the elapsed time from the occurrence of misfire as specified in the Blasting Safety Plan.

(iii) Disconnect from the shotfiring apparatus any removable handle or key and the shotfiring cable, and short-circuit or ground the bare wires together.

(iv) When safe to do so, examine the cable and connections for any defects, and remedy any defect so found.

(v) Make a further attempt to fire the shot.

(vi) Report to the explosive engineer for further instructions.

(vii) Do not collect any exposed explosives before further action is taken.

(viii) Do not allow drilling or any other site work to be carried out in the vicinity of the misfire until the misfire has been remedied, unless this is directly involved in the treatment of the misfire.

(ix) Other actions specified in 10.5.4.1 [Initial actions]in BS5607.

After the initial actions, the following initial remedial actions shall be taken by the shotfirer:

(i) When safe to do so, examine the cable and connections for any defects, and remedy any defect so found; and

(ii) Make a further attempt to fire the shot.

(c) Delayed remedial action and further attempt at detonation:

(i) After the immediate remedial action, when necessary, the delayed remedial action and further attempt at detonation shall be taken.

(ii) The delayed remedial action and further attempt at detonation should be safe removal of the stemming to allow re-priming, or drilling and firing relieving holes placed so as to work away the rock surrounding the stemming and charge of the misfired shot holes.

(iii) The action and attempt shall be taken in accordance with the Blasting Safety Plan, and 10.5.4.2 [Written instructions], 10.5.4.3 [Attempts to re-fire], 10.5.4.4 [Drilling relieving holes] and 10.5.5 [Drilling relieving holes] in BS5607.

(d) Inspection to confirm complete detonation;

After further attempt at detonation, inspection shall be made to confirm complete detonation. If any non or partial detonation is found, remedial measures shall be taken according to Figure-1 Procedure to remedy misfires in 10.5.1 [General] in BS 5607.

(e) Take appropriate steps to prevent theft of Explosives and detonators or their initiation by an unauthorised person; and

(f) The Contractor shall promptly notify the Engineer of any misfire event and the remedial actions.

検討経緯書

8 Foundation Piling Works

JSSS in Japanese (R2-R1/ProFinal 1/7)	JSSS in English R0 (1/7)	JSSS in English (R1 1/9)
		9 Foundation Works 9.1 General 9.2 Safety Measures for Machines and Materials 9.2.1 Transportation of Machines and Materials 9.2.2 Assembly, Removal and Inspection of Machines 9.3 Safety Measures for Prefabricated Pile Foundation Works 9.4 Safety Measures for Cast-in-place Piling Works 9.4.1 General 9.4.2 All-Casing Method 9.4.3 Reverse Circulation Drilling Method 9.4.4 Earth Drill Method and Earth Auger Method 9.4.5 Concrete Placement Works 9.5 Safety Measures for Deep Foundation Works
9 基礎工事 **9.1 一般事項** (1) 本章では、既成杭基礎、現場打ち杭基礎、深礎を建設する作業を扱う。 (2) 本仕様書で使用する用語の定義は以下のとおりである。 (a) 既成杭基礎とは、既成コンクリート杭、鋼管杭、鋼矢板、木杭等を、機械により地盤中に打込み、埋込み等により設置した杭を使用して建設する基礎をいう。 (b) 現場打ち杭基礎とは、機械により地盤中に杭孔を掘削し、コンクリートを現場打ちして作製した杭を使用して建設する基礎をいう。 (c) 深礎とは、人又は小型の掘削機械が円形の立坑の中に入り、掘削、掘削土砂の排出、ライナープレート等の土留めの設置を行いながら、必要な深さまで掘り下げ、これにコンクリートを充填して建設する基礎をいう。 (3) 基礎工事に伴う機械・材料の運搬、機械の組み立て・撤去、杭打ち、杭コンクリート打設等の各作業において、本仕様書の下記各節に従い、必要な安全上の対策をとること。 (a) 本仕様書 2.1.4[閉鎖空間における安全措置]、2.1.6[作業環境の把握]、2.4[監視員、誘導員の配置] (b) 本仕様書 3.1[地下埋設物一般]、3.2[架空線等上空施設一般] (c) 本仕様書 4［機械一般］ (d) 本仕様書 5［運搬作業］ (e) 本仕様書 6［揚貨・玉掛け作業］ (f) ~~本仕様書 9.4.1［機械の据付作業］~~ (4) 既成杭の杭打ち作業、現場打ち杭の掘削作業、機械の据付け、組立て、移動及び解体の作業は、本仕様書 1.8[請負者の要員の適正配置]に従	**9 Foundation Works** **9.1 General** (1) This Chapter specify the safety requirements for the works on prefabricated pile foundation, cast-in-place pile foundation and deep foundation. (2) Definitions of terms used in this chapter are as follows. (a) Prefabricated pile foundation refers to the foundation on which precast concrete piles, steel pipe piles, steel sheet piles, wooden piles, etc. are driven or embedded into the ground using machinery. (b) Cast-in-place pile foundation refers to a foundation by excavating pile holes in the ground with a machine and casting concrete in place. (c) Deep foundation refers to a foundation that is excavated the inside of a circular shaft by workers or a small excavating machine, discharging excavated soil, installing a retaining liner plate, etc., digging down to the required depth, filling it with concrete to build as a foundation. (3) The Contractor shall take necessary safety measures in accordance with the following sections of this specification in each work such as transporting machines and materials, assembling and removing machines, pile driving, pile concrete placing, etc. accompanying foundation work. (a) JSSS 2.1.4［Further Requirements for Dangerous Work］, 2.1.6［Monitoring and Records］& 2.4［Spotters, Flagmen and The Like］ (b) JSSS 3.1［Underground Services］& 3.2［Overhead Services］ (c) JSSS Chapter 4［Contractor's Equipment］ (d) JSSS Chapter 5［Transportation Works］ (e) JSSS Chapter 6［Hoisting and Rigging Works］ (f) ~~JSSS 9.4.1［Equipment Installation Work］~~	**9 Foundation Works** **9.1 General** (1) This Chapter specifies the safety requirements for the works on prefabricated pile foundation, cast-in-place pile foundation and deep foundation. *To MD: Please see sketches and photos at last pages for deep foundation constructed for foundations of transmission lines in mountainous areas where heavy piling equipment cannot enter. I am not sure the naming of deep foundation is correct or not in English. This is not caisson foundation.* (2) Definitions of terms used in this Chapter are as follows. (a) Prefabricated pile foundation means the foundation constructed on precast concrete piles, steel pipe piles, steel sheet piles, wooden piles, etc. driven or embedded in the ground with machine. (b) Cast-in-place pile foundation means the foundation constructed on piles made by excavating pile holes in the ground with machine and casting concrete in the holes in place. (c) Deep foundation means the foundation constructed by the way of excavation of circular shaft in the ground by manpower and/or machine, discharging excavated materials, installing liner plates for retaining earth, digging down to the required depth, installing reinforcing bars, casting concrete to build as a foundation. (3) The Contractor shall take necessary safety measures specified in the following JSSS for each work such as transporting machines and materials, assembling and removing machines, pile driving, pile concrete placing, etc. for foundation works: (a) JSSS 2.1.4［Further Requirements for Dangerous Work］, 2.1.6［Monitoring and Records］ and 2.4［Spotters, Flagmen and The Like］;

い、作業主任を配置し、作業を直接指揮させること。	(4) In the case of pile driving works of prefabricated piles, excavating works of cast-in-place pile, works for machine installation, assembling, transportation and removing, an operation leader shall be assigned in accordance with JSSS 1.8[Proper Placement of Contractor's Personnel] to direct works.	(b) JSSS 3.1［Underground Services］& 3.2［Overhead Services］; (c) JSSS Chapter 4［Contractor's Equipment］; (d) JSSS Chapter 5［Transportation Works］; and (e) JSSS Chapter 6［Hoisting and Rigging Works］. *To MD: Chapter 5 may not exist according your mail on 1/7.* (4) An Operation Leader shall be assigned in accordance with JSSS 1.8 [Proper Placement of Contractor's Personnel] to directly lead works for installation, assembling, transportation and removing of machine, pile driving works of prefabricated piles, excavation works of cast-in-place piles.
9.2 機械・材料に関する安全措置 **9.2.1 機械・材料の運搬** 請負者は、杭打ち機械、杭等材料の運搬については、次の措置を講じなければならない。 (1) 本仕様書 5.4.2[運搬車両の運搬作業時の安全措置]に規定の措置を講じること。 (2) 重量物や長尺ものを公道上で運搬するときは、一般交通、第三者、運搬経路に隣接する構造物等に危険を及ぼさない道路を選定し、警察や道路管理者等の関係機関からの事前許可を得て、運搬作業を行うこと。 (3) 重量物や長尺ものを現場で運搬するときは、現場内の構造物、他の作業に危険を及ぼすことのない運搬経路を選定し、エンジニアの同意を得た上で運搬作業を行うこと。 (4) 杭材、ケーシング等の運搬はクレーンを使用すること。 (5) 杭打ち機械や杭孔掘削機で、杭材、ケーシングの運搬を行なわないこと。 **9.2.2 機械の組み立て・撤去・点検** 請負者は、機械の組み立て、撤去、点検については、次の措置を講じなければならない。 (1) 杭打ち作業に適するように地盤を整備すること。軟弱な地盤に据え付けるときは、必要に応じ、地盤の改良を行ったうえで機械の脚部又は架台の沈下、転倒を防止するため、敷鉄板、敷角等を使用すること。 (2) 機械を据付けた箇所は、常に排水をよくすること。 (3) 機械の製造業者のマニュアルに従って、組み立て・解体を行うこと (4) 本仕様書 4.2.1［建設機械の点検・整備］(2)[建設機械の日常点検]及び6.5.3［玉掛け作業時の安全措置］に従い、作業に使用する機械、機器等の現場搬入時の整備・点検、作業開始前点検を行うこと。不具合のある機械・機器等は使用しないこと。	**9.2 Safety Measures for Machinery and Material** **9.2.1 Transportation of Machinery and Material** The Contractor shall take the following measures for transporting pile driving machines, piles and other materials. (1) Take measures stipulated in JSSS 5.4.2[Safety Measures in Operations]. (2) When transporting heavy or long items on public roads, select roads that do not pose a danger to general traffic, third parties, structures adjacent to the transportation route, etc. Carry out transportation work with the prior permission of the relevant organizations. (3) When transporting heavy or long items within the site, select a transport route that does not pose a danger to structures on the site or other work, and carry out transportation work after obtaining the consent of the Engineer. (4) Use cranes to transport piles and casings. (5) The pile material and casing shall not be transported by a pile driving machine or a hole drilling machine. **9.2.2 Assembly, Removal and Inspection of Machinery** The Contractor shall take the following measures for the assembly, removal and inspection of the machinery on foundation works. (1) To prepare the ground suitable for pile driving work. When installing on soft ground, use an iron plate, floor angle, etc. to prevent sinking and over turning of the machine's legs or gantry after improving the ground as necessary. (2) Drain the area where the machine is installed. (3) Assemble and disassemble according to the machine manufacturer's manual. (4) In accordance with (2)[Daily Inspections and Check] on 4.2.1[Inspections and Maintenances of Construction Equipment] and 6.5.3[Safety Measures in Hoisting and Rigging Works], carry out inspection and maintenance of the machines and equipment for the work at the time of delivery to the site before starting the work. Defective machinery and equipment shall not be used.	**9.2 Safety Measures for Machines and Materials** **9.2.1 Transportation of Machines and Materials** The Contractor shall take the following measures for transporting pile driving machines, piles and other materials: (1) Take measures stipulated in JSSS 5 [Transportation Works], 5.4.2 [Safety Measures in Operations]; (2) When transporting heavy or long goods on public roads, select roads on which the transportation does not pose danger to general traffic, third parties, structures adjacent to the transportation route, etc. Carry out transportation work after obtained the prior permission of the relevant authorities such as police, road administrator; (3) When transporting heavy or long goods within the Site, select transport route on which the transportation does not pose danger to structures in the Site or other works, and carry out transportation after obtaining the consent of the Engineer; (4) Use cranes to transport prefabricated piles and casings for in-situ-piling works; and (5) Piles and casings shall not be transported by pile driving machines or hole drilling machines. **9.2.2 Assembly, Removal and Inspection of Machines** The Contractor shall take the following measures for the assembly, removal and inspection of the machines for the foundation works: (1) Prepare the ground suitable for the works before the installation or assembly of machines. When machines are installed on soft ground, improve the ground as necessary for the works and place steel plates, steel planking, etc. for machines and temporary piling stages on the ground to prevent their sinking or over turning; (2) Drain the area where the machine is installed; (3) Assemble and disassemble in accordance with the machine manufacturer's manual and instructions; and (4) In accordance with JSSS 4.2.1[Inspections and Maintenances of Construction Equipment], (2) [Daily Inspections and Check] and 6.5.3 [Safety Measures in Hoisting and Rigging Works], carry out inspection of the machines and equipment for the works at the time of delivery to the Site, and daily inspection and maintenance

		before starting the works. Defective machinery and equipment shall not be used.
9.3 既成杭基礎工事の安全措置 請負者は、既成杭基礎工事を行うとき、次の安全措置を講じなければならない。 (1) 杭材の吊込みを行うときは、吊込み用機械の特性に応じ、杭材が落下、転倒しないよう、玉掛け方法、玉掛け用具を選定すること。 (2) 吊り上げ・杭打ち作業を行っている近くは、当該作業員以外の作業員の立入禁止措置を取ること。 (3) 2m 以上の高所で作業を行うときは、本仕様書 2.5[墜落防止]を遵守すること。杭打ち機のリーダーに登るときには、親綱の設置等の墜落制止用器具を取り付けるものを設け、作業員に墜落制止器具を使用させること。 (4) ~~杭打ち機の巻上げ装置に荷重をかけたままで巻上げ装置を停止しておくときは、歯止め装置により歯止めを行い、止め金付きブレーキを用いて制動しておく等確実に停止しておくこと。~~*(NK: ウインチを想定した規定であるが、次の(5)で、荷重をかけたままにしないという規定と齟齬があることから(4)は削除します。)* (5) 杭打ち機の操作者は、吊り上げ装置に荷重をかけたまま運転位置を離れないこと。 (6) 強風時は、杭打ち機、クレーンのブームは倒したうえで、ワイヤー等でアンカー等へ緊結し、杭打ち機ややぐらはケーシングと連結する等により転倒防止を図ること。	**9.3 Safety Measures for Prefabricated Pile Foundation Works** The Contractor shall take the following safety measures when performing prefabricated pile foundation works. (1) When suspending piles, select a slinging method and slinging equipment according to the characteristics of the lifting machine so that the piles do not fall or fall. (2) Take measures to prohibit the entry of workers other than the workers involved in pile foundation works where lifting and pile driving work is being performed. (3) When working at a height of 2 m or more, follow the JSSS 2.5 [Fall Prevention]. When climbing the pile driver leader, provide equipment to attach fall prevention equipment such as installation of a master rope, and have workers use the fall prevention equipment. (4) ~~When leaving a hoisting device of a pile driving equipment, the pawl is stopped by the pawl device, securely stop it by applying latchets, brake with holdfast.~~ (5) The operator of the pile driving machinery shall not leave the operating position while applying a load to the lifting device. (6) When under strong wind, the boom of the pile driving machine and crane should be lowered, then tied to an anchor, etc. with a wire or the like, and the pile driver or drilling tower should be connected to the casing to prevent turnover.	**9.3 Safety Measures for Prefabricated Pile Foundation Works** The Contractor shall take the following safety measures when performing prefabricated pile foundation works: (1) When suspending piles, select proper rigging method and rigging equipment according to the characteristics of the lifting machine or pile driving machine so that the piles do not drop or fall; (2) Take measures to prohibit the entry of workers other than the workers engaged in pile foundation works in and near the place where lifting of piles and pile driving works are being performed; (3) When working at the height of 2 m or more, take measures in accordance with JSSS 2.5 [Fall Prevention]. When climbing the leader of pile driving machine, provide PFAS such as installation of a master rope, and make the workers use the PPE for PFRS. (4) The operator of the pile driving machine shall not leave the operating position while keeping the load on the lifting device. (5) When under strong wind, the boom of the pile driving machine and crane shall be lowered, then tied to an anchor, etc. with a wire or the like, and the drilling rig shall be connected to the casing to prevent its overturn.
9.4 場所打ち杭工事の安全措置 **9.4.1 一般事項** 本款では、オールケーシング工法、リバースサーキュレーション工法、アースドリル工法、アースオーガー工法で建設する場所打ち杭を建設する際の作業員の安全措置を規定する。その他の工法における安全措置に関しては、請負者は本款に準じて安全措置を講じなければならない。 **9.4.2 オールケーシング工法** 請負者は、オールケーシング工法による作業を行うときは、次の安全措置を講じなければならない。 (1) 掘削用のハンマーグラブの操作中は、作業員を掘削機に近寄らせないこと。その必要があるときは、ハンマーグラブがケーシング内に入り、停止した後に近づかせること。 (2) 作業員をケーシング内に入らせる必要があるときは、本仕様書 2.1.4[閉鎖空間における安全措置]に従い、危険のないことを確認すること。 (3) ケーシング打込み又は引抜き中は、当該作業員以外の者を機械又はやぐらに近づけさせないこと。危険な場所には立入禁止の柵等を設置するこ	**9.4 Safety Measures for Cast-in-place Piling Works** **9.4.1 General** This clause stipulates safety measures for workers when involving in casing type piling works, reverse circulation drilling works, earth drilling works & earth auger drilling works. For other piling works, the Contractor shall take safety measures for securing safety according to this clause. **9.4.2 All Casing Method** The Contractor shall take the following safety measures when performing all-casing method piling works. (1) Keep workers away from excavators while operating the hammer grab. If it is necessary for workers to approach, bring the hammer glove into the casing, stop, and then have them approach. (2) If workers need to enter the casing, confirm that there is no danger in accordance with 2.1.4 [Safety Measures in Confined Spaces]. (3) Keep anyone other than the workers involving in the casing works away from the machine or scaffold while driving or pulling out the casing. Fences, etc. should be installed in dangerous places. **9.4.3 Reverse Circulation Drilling Method** The Contractor shall take the following safety measures when performing	**9.4 Safety Measures for Cast-in-place Piling Works** **9.4.1 General** This Section stipulates the safety measures for workers engaged in all-casing method piling works, reverse circulation drilling method works, earth drilling method works and earth auger drilling method works. For other piling method works, the Contractor shall take safety measures to secure the safety referring to this Section. **9.4.2 All-Casing Method** The Contractor shall take the following safety measures when performing drilling works with all-casing method: (1) Keep the workers away from the hole excavation machine while operating its hammer grab. When it is necessary for the workers to access to the machine, put and keep the hammer grab in the casing and then have them access it. (2) When the workers need to enter the casing, confirm that there is no danger in accordance with 2.1.4 [Further Requirements for Dangerous Work]. (3) Keep anyone other than the workers engaged in the casing works away from the machine or rig while driving or pulling out the casing. Provide fences, etc. around the dangerous places.

と。 **9.4.3 リバースサーキュレーションドリル工法** 請負者は、リバースサーキュレーション工法による作業を行うとき、次の安全措置を講なければならない。 (1) ドリルのロッドの継ぎ足し又は撤去の作業中の作業員の手や指がはさまれ防止のため、機械の運転手への合図を行う者を配置すること。 (2) 坑内水位と泥水濃度の変動に注意を払い、逸水の挙動が認められる場合には作泥の準備をすること。 (3) 作泥・排泥ピットを設ける場合は、柵の設置など作業員の転落防止措置を講じること。 **9.4.4 アースドリル・アースオーガー工法** 請負者は、アースドリル工法、アースオーガー工法による作業を行うとき、次の安全措置を講じなければならない。 (1) アースドリルやアースオーガーの転倒防止のために、アースドリルのドリリングバケット内の掘削土砂、アースオーガーのオーガー上の掘削土砂の重量を考慮に入れて、これらの機械を運転すること。 (2) 作業員の危険防止するため、他の作業に従事する作業員を作業範囲に入らせないこと。 **9.4.5 コンクリート打設作業** 請負者は、コンクリート打設作業を行うとき、次の安全措置を講じなければならない。 (1) 鉄筋籠の製作は変形が生じないように製作し、鉄筋籠の接合は落下・脱落しないようにすること。 (2) 鉄筋籠、コンクリート打設トレミー管等の落下を防止するため、吊りバンドや吊り金具は、施工計画に定められた取付け・外し方法、作業順序によること。 (3) 鉄筋籠、トレミー管を取り扱う作業員の挟まれ防止のため、機械の運転手への合図を行う者を配置すること。	reverse circulation drilling works. (1) During the work of adding or removing the rod of the drill, take measures such as performing the work according to the signal of the Spotters so that the hands and fingers of the worker do not get caught. (2) Pay attention to fluctuations in underground water level and mud concentration, and prepare for mud cultivation if lost water behavior is observed. (3) When installing a mud pit or pit for mud discharge, take measures to prevent workers from falling, such as installing fences. **9.4.4 Earth Drill & Earth Auger Method** The Contractor shall take the following safety measures when performing earth drilling works or earth auger works. (1) In order to prevent turnover of earth drill equipment or earth auger equipment, operate these machines taking into account the weight of the excavated sediment in the drilling bucket or on the auger. (2) To prevent danger to workers, keep workers engaged in other works away from the working space for earth drill or earth auger works. **9.4.4 Concrete Placement Works** The Contractor shall take the following safety measures when performing concrete placement work. (1) Reinforced baskets shall be manufactured so that they will not deform and so as not to fall or drop off. (2) In order to prevent dropping of reinforced baskets, concrete casting trummy pipes, etc., suspending bands and metal fittings shall be in accordance with the installation / removal method and work order specified in the method statement. (3) Personnel who signal the operator of the machine shall be assigned to prevent the workers handling the reinforced baskets and tremie tubes from being pinched.	**9.4.3 Reverse Circulation Drilling Method** The Contractor shall take the following safety measures when performing reverse circulation drilling works: (1) During the work of adding or removing the rods of the drill, locate a Spotter to give signals to the operator of the drill machine so that the hands and fingers of the workers do not get caught in the work; (2) Pay attention to fluctuations in water level in the drilled hole and mud (bentonite solution) concentration level and prepare for mud creation if water loss behavior in the dilled hole is observed; and (3) When providing a mud creation pit or a mud discharge pit, take measures to prevent the workers from falling such as providing fences. **9.4.4 Earth Drill Method and Earth Auger Method** The Contractor shall take the following safety measures when performing earth drilling method works or earth auger method works: (1) To prevent overturn of earth drill equipment or earth auger equipment, operate these machines taking into account the weight of the excavated materials in the drilling bucket or on the auger; and (2) To prevent danger to workers, keep the workers other than those engaged in the works away from the working place for earth drill or earth auger works. **9.4.5 Concrete Placement Works** The Contractor shall take the following safety measures when performing concrete placement work in the drilled holes: (1) Reinforcing bars baskets shall be manufactured so that they will not deform, fall or drop off; (2) To prevent dropping of reinforcing bars baskets, concrete casting tremie pipes, etc., suspending bands and metal fittings shall be fixed in accordance with the installation/removal method and work order planned in the Method Statement; and (3) Locate a Spotter to give signals to the operator of the machine so that the hands and fingers of the worker do not get caught in the handling work of reinforcing bars baskets and tremie pipes.
9.5 深礎工事の安全措置 本節では深礎を建設する際の作業の安全措置事項について規定する。請負者は、深礎工の作業を行うとき、本仕様書 9.4.5[コンクリート打設作業]の措置及び次の措置を講じなければならない。 (1) 作業環境に関する措置 (a) 深礎内には作業員が昇降するための昇降設備を設けること。鉛直はしごによる昇降設備の場合、安全ブロックを設置したはしごとすること、又は背かごを設けたはしごとすること。背かごを設けたはしごの長さが 10m 以上のものには 5m 以内ごとに踏棚を設けること。鉛直はしごを含め、昇降用のはしごの上端は坑口の床、踏棚から 100cm 以上突出させること。	**9.5 Safety Measures for Deep Foundation Works** This section stipulates safety measures for deep foundation works. The Contractor shall take the measures stipulated in 9.4.5 [Concrete Placement Works] and the following measures. (1) Measures for work environment (a) Lift facility shall be provided in the deep foundation for workers to go up and down. In the case of vertical ladder lifting facility, use a ladder with a safety block or a ladder with a back cage. If the length of the ladder with the back cage is 10 m or more, a tread shelf should be provided every 5 m. The upper end of the ladder for raising and lowering, including the vertical ladder, must protrude more than 100 cm from the floor of the pit or the tread shelf.	**9.5 Safety Measures for Deep Foundation Works** This section stipulates the safety measures for deep foundation works. The Contractor shall take the measures stipulated in 9.4.5 [Concrete Placement Works] and the following measures: (1) Measures for work environment (a) Access facility shall be provided in the deep foundation work site (called as “shaft”)for the workers to go up and down. In the case of vertical ladder as access facility, provide a ladder with a safety block or a ladder with a back cage. When the length of the ladder with the back cage is 10 m or more, a landing place shall be provided at every 5 m. The upper end of ladders including the vertical ladder shall protrude more

(b) 坑内作業員と昇降中の土砂搬出用バケット等の機械との接触防止の措置を講じること。

(2) 作業の合図に関する措置

(a) 材料・機材の積み上げ・下ろし時の合図を定め、これを作業員に使用させること。

(b) 緊急時の合図及び、退避の方法をあらかじめ定め、作業員に周知しておくこと。

(3) 作業開始前の措置

(a) 本仕様書 2.1.4[閉鎖空間における安全措置]、2.1.6[作業環境の把握]に規定の措置を講じ、坑内環境の測定、換気による坑内環境の維持に努めること。

(b) 作業開始前に、掘削面の土質状況、ライナープレート等土留めの異常の有無を点検すること。

(4) 作業中の措置

(a) 坑内作業員が入坑中は、坑口に監視員を配置すること。

(b) 地下水位以下を掘進するときは、排水設備等を用い、湧水対策等を確立してから作業を進めること。

(c) 掘削時においては土質等の変化に常に留意し、作業中の掘削面や、深礎工の土留めに異常があった場合は作業を直ちに中断し、異常に対する適切な対策を講じ、異常が無いことを確認したうえで作業を再開すること。

(b) Measures shall be taken to prevent contact accidents between workers in the shaft and baskets of the sediment carrying equipment that are moving up and down.

(2) Measures for work signal

(a) Signals for stacking and unloading materials and equipment shall be determined and used by workers.

(b) Emergency cueing and evacuation methods shall be determined in advance and made known to workers.

(3) Measures before starting the work

(a) Take measures stipulated in 2.1.4 [Safety Measures in Confined Spaces] and 2.1.6 [Monitoring of Work Environment] in this specification, and maintain work environment in the shaft through ventilation and monitoring the working condition.

(b) Before starting the work, check the condition of the excavated soil surface and whether there is any abnormality in the retaining material such as the liner plate.

(4) Measures during the work

(a) While workers are in the shaft, spotters shall be allocated at the upper edge of the shaft.

(b) When excavating below the groundwater level, use drainage equipment and the like to secure countermeasures against spout of underground water before proceeding.

(c) At the time of excavation, always pay attention to changes in soil properties, etc. If any abnormality in identified on the excavated surface during work or earth retaining of the deep foundation work, immediately suspend the work and take appropriate measures against abnormalities. Check that there is no abnormality before resuming work.

than 100 cm from the floor of the entrance of the site or the landing places.

(b) Measures shall be taken to prevent collision accidents of the workers by transportation equipment such as the basket for excavated materials, etc. When they move up and down in the shaft.

(2) Measures for work signals

(a) Signals for transporting materials and equipment in the shaft shall be determined in advance and used by the workers.

(b) Signals and evacuation methods at emergency shall be determined in advance and made known to the workers.

(3) Measures before starting the work

(a) Take measures stipulated in JSSS 2.1.4 [Further Requirements for Dangerous Work] and 2.1.6 [Monitoring and Records], and maintain work environment in the shaft by ventilation and monitoring the working condition.

(b) Before starting the work, check the condition of the excavated ground surface in the shaft and whether there is any abnormality in the earth retaining materials such as liner plates.

(4) Measures during the work

(a) While the workers are in the shaft, a Spotter shall be allocated at the upper edge of the shaft.

(b) When excavating below the groundwater level, provide drainage equipment and the like to secure countermeasures against spout of underground water before proceeding the excavation work.

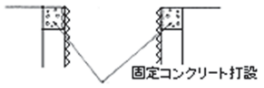
(c) At the time of excavation, always pay attention to changes in soil properties, etc. If any abnormality is identified on the excavated surface during work or earth retaining of the shaft, immediately stop the work and take appropriate measures against abnormalities. Resume the work after confirmation that there is no abnormality.

Explanation of Deep Foundation

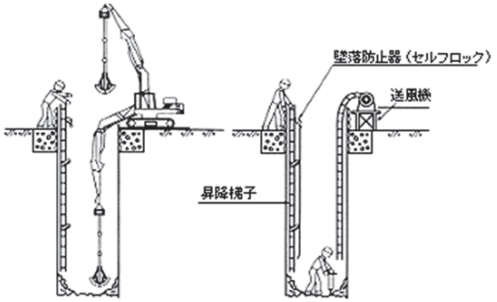
Construction Steps of Deep Foundation

1. Setting

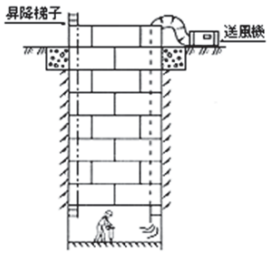
2 Concrete at the top of hole



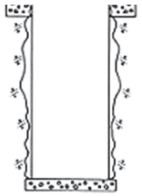
3 Excavation Manpower/Equipment



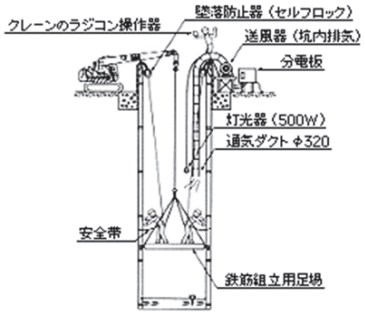
4 Earth retaining such as liner plates



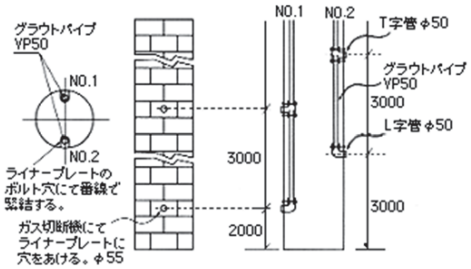
5 Concrete placing at bottom after Excavation



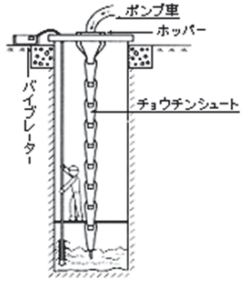
6 Placing re-bars cage



7 Installation of backfill grouting pipes



5 Concrete placing



Photos of Deep Foundation http://www.mizunotec.co.jp/doboku/doboku_kouza/doboku_kouza_15.html https://www.jasdim.or.jp/gijutsu/jisuberi_joho/sekkei/syaftkui/syftkui.html

図３　掘削概念図 ②

図４　主鉄筋の組み立て ③

図５　コンクリート打設 ③

Liner Plates https://www.ns-kenzai.co.jp/english/042liner_plates.html

JICA Standard Safety Specification Preparation Study
8 FOUNDATION PILING WORKS (English R2 for Issue 2)

2020.1.8 Japanese Final
2020.1.21 NK Draft Eng. R1
2020.2.19 JICA Comment
2020.3.31 NK Eng.R2

JSSS in Japanese (2020/1/8)	JSSS in English (2020/1/21)	JICA Comments (2020/2/19) JC: JICA Comments NK: NK actions	JSSS in English R2 for Issue 2(2020/3/31) Words in red color are added or modified from the last version.
9 基礎工事 **9.1 一般事項** **9.2 機械・材料に関する安全措置** 9.2.1 機械・材料の運搬 9.2.2 機械の組み立て・撤去・点検 **9.3 既成杭基礎工事の安全措置** **9.4 場所打ち杭工事の安全措置** 9.4.1 一般事項 9.4.2 オールケーシング工法 9.4.3 リバースサーキュレーションドリル工法 9.4.4. アースドリル工法、アースオーガー工法 9.4.5 コンクリート打設作業 **9.5 深礎工の安全措置**	**9. FOUDATION PILING WORKS** **9.1 GENERAL** 9.1.1 Scope **9.2 PARTICULAR SAFETY MEASURES FOR FOUNDATION PILING** 9.2.1 General 9.2.2 Safety Measures at Planning Stage 9.2.3 Safety Measures Before Commencement 9.2.4 Safety Measures for Transportation 9.2.5 Safety Measures for Driven Foundation Piling Works 9.2.6 Safety Measures for Cast-in-place Piling Works 9.2.7 Placement of Concrete 9.2.8 Safety Measures for Deep Foundation Insitu Concrete Piling →第 9 章について MD 氏から下記コメントあり。 *MD:* I have simplified this chapter to reduce the number of piling types. The safety aspects are basically governed by whether the Piling is: Driven (PCC, steel or timber) Insitu Piling whether bored or hand excavated) Sub-types and specialist types may not really affect the safety aspects. I have also edited this Chapter so that it follows a similar format and layout to Excavation Works.	NK: 章番号は、他章の変更により、9 章を 8 章へ変更。 Chapter No. is changed from 9 to 8 NK: 英語の追記部分は MD 氏が校閲致します。 Additional parts in English will be efited by MD.	**8. FOUDATION PILING WORKS** **8.1 GENERAL** **8.1.1 Scope** **8.2 PARTICULAR SAFETY MEASURES FOR FOUNDATION PILING** 8.2.1 General 8.2.2 Safety Measures Before Commencement 8.2.3 Safety Measures for Transportation on Site - Prohibition of Use Other than for Intended Purposes 8.2.4 Safety Measures for Driven Foundation Piling Works 8.2.5 Safety Measures for Cast-in-place Piling Works 8.2.6 Placement of Concrete 8.2.7 Safety Measures for Deep Foundation Insitu Concrete Piling Works
9 基礎工事 **9.1 一般事項** (1) 本章では、既成杭基礎、現場打ち杭基礎、深礎を建設する作業を扱う。 →E 9.1.1 に規定済み。(英語版に“深礎”に係る記述なし) →MD 氏の国際的に「深礎」は現場打ちの一部とみなす意見に同意し、記述しない。 (2) 本仕様書で使用する用語の定義は以下のとおりである。 →規定なし。→理由：杭基礎工法は、既成杭(打設工法)と現場打工法の 2 種類でき規定すべき、と MD 氏提案。 →国際的に通用する用語を使用すれば定義不要と考え、定義は無しとする。 (a) 既成杭基礎とは、既成コンクリート杭、鋼管杭、鋼矢板、木杭等を、機械により地盤中に打込み、埋込み等により設置した杭を使用して建設する基礎をいう。 (b) 現場打ち杭基礎とは、機械により地盤中に杭孔を掘削し、コンクリートを現場打ちして作製した杭を使用して建設する基礎をいう。	**9 FOUDATION PILING WORKS** **9.1 GENERAL** **9.1.1 Scope** This Chapter specifies the safety requirements for Foundation Piling Works which shall include driven piling and insitu concrete piling.	**9 FOUDATION PILING WORKS** **9.1 GENERAL** **9.1.1 Scope** This Chapter specifies the safety requirements for Foundation Piling Works which shall include driven piling and insitu concrete piling.	**8 FOUDATION PILING WORKS** **8.1 GENERAL** **8.1.1 Scope** This Chapter specifies the safety requirements for Foundation Piling Works which shall include driven piling and insitu concrete piling.

(c) 深礎とは、人又は小型の掘削機械が円形の立坑の中に入り、掘削、掘削土砂の排出、ライナープレート等の土留めの設置を行いながら、必要な深さまで掘り下げ、これにコンクリートを充填して建設する基礎をいう。

(3) 基礎工事に伴う機械・材料の運搬、機械の組み立て・撤去、杭打ち、杭コンクリート打設等の各作業において、本仕様書の次の各節に従い、必要な安全上の対策をとること。

→規定なし。→理由：重複しての規定は不要である。

(a) 本仕様書 2.1.4[閉鎖空間における安全措置]、2.1.6[作業環境の把握]、2.4[監視員、誘導員の配置]

(b) 本仕様書 3.1[地下埋設物一般]、3.2[架空線等上空施設一般]

(c) 本仕様書 4[機械一般]

(d) 本仕様書 5[運搬作業]

(e) 本仕様書 6[揚貨・玉掛け作業]

(4) 既成杭の杭打ち作業、現場打ち杭の掘削作業、機械の据付け、組立て、移動及び解体の作業は、本仕様書 1.8[請負者の要員の適正配置]に従い、作業主任を配置し、作業を直接指揮させること。

→規定なし。→理由：次の 1.22 及び 4.3.1(10)で規定済みであるため、規定しない。9.2.1 危険な作業と指定していることから、作業主任の配置は自動的に行われる。

1. General
1.22 Dangerous Work
1.22.4. A specially trained Operation Leader shall always be assigned to work full-time with every worker or team of workers engaged upon Dangerous Work.

4 CONTRACTOR'S EQUIPMENT
4.3 SAFETY REQUIREMENTS
4.3.1 General Safety Measures
(10) Ensure that installation, assembly, testing commissioning, operation and dismantling of all major equipment including static equipment, personnel and goods elevators and the like, is carried out under the direction of an Operation Leader appropriately qualified, skilled and experienced in such activities for the particular type and capacity of equipment and strictly in accordance with the manufacturer's printed instructions.

9.2 機械・材料に関する安全措置

9.2.1 機械・材料の運搬

→下記(1)-(3))に対応する規定は無し。→Chap 4 Contractor's Equipment に重量物や長尺物の運搬等を追記していることから、第 4 章で以下の(1)-(3)を網羅しているかを別途確認する。

請負者は、杭打ち機械、杭等材料の運搬については、次の措置を講じなければならない。

(1) 本仕様書 5.4.2[運搬車両の運搬作業時の安全措置]に規定の措置を講じること。

(2) 重量物や長尺ものを公道上で運搬するときは、一般交通、第三者、運搬経路に隣接する構造物等

9.2 PARTICULAR SAFETY MEASURES FOR FOUNDATION PILING

9.2.1. General

(1) Foundation Piling Works and all operations connected therewith shall be designated as Dangerous Work and the Contractor shall enclose the working area with temporary

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8.2.1 General

(1) Foundation Piling Works and all operations connected therewith shall be designated as Dangerous Work and the Contractor shall enclose the working area with temporary

に危険を及ぼさない道路を選定し、警察や道路管理者等の関係機関からの事前許可を得て、運搬作業を行うこと。

(3) 重量物や長尺ものを現場内で運搬するときは、現場内の構造物、他の作業に危険を及ぼすことのない運搬経路を選定し、エンジニアの同意を得た上で運搬作業を行うこと。

(4) 杭材、ケーシング等の運搬はクレーンを使用すること。

(5) 杭打ち機械や杭孔掘削機で、杭材、ケーシングの運搬を行なわいこと。

9.2.2 機械の組み立て・撤去・点検

→英語版で直接対応する規定無し。→理由 :No need to duplicate the first paragraph and the following two paragraphs are now added in Contractor's Equipment as a General Requirement. →下記に示す個々の対応とする。

請負者は、杭打ち機械の組み立て・撤去・点検については、次の措置を講じなければならない。

(1) 杭打ち作業に適するように地盤を整備すること。軟弱な地盤に据え付けるときは、必要に応じ、地盤の改良を行ったうえで機械の脚部又は架台の沈下、転倒を防止するため、敷鉄板、敷角等を使用すること。→E 4.3.4 (3)(a)に下記規定あり。

E 4.3.4 (3)(a):
The surfaces upon which the Contractor's Equipment is working, and any adjacent surfaces and areas over which access is required, are sound, safe and suitable to support the equipment and the Contractor shall provide any temporary foundations, hard standing or other surfaces, sleepers or steel plates as are necessary to ensure safety and stability of the equipment at all times.

(2) 機械を据付けた箇所は、常に排水をよくすること。→E 4.3.1(1)(c)に下記規定あり。

(3) 機械の製造業者のマニュアルに従って、組み立て・解体を行うこと。
→規定なし。 E 4.3.1(10)に規定あり。→本章に規定しない。

(4) 本仕様書4.2.1[建設機械の点検・整備]及び6.5.3[玉掛け作業時の安全措置]に従い、作業に使用する機械、機器等の現場搬入時の整備・点検、作業開始前点検を行うこと。不具合のある機械・機器等は使用しないこと。
→規定なし。→第 4 章 Contractor's Equipment に規定があることから重複しては規定しない。

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fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) Unless otherwise specified in the Contract, the Contractor shall be responsible for selecting methods of working and types of Contractor's Equipment and Temporary Works suitable for the purpose in conformity with GC 4.10.

(3) Earthwork Support
In accordance with JSSS 7.2 [*Earthwork Support*] the Contractor shall be responsible for the maintaining the structural integrity of the sides of all excavated or drilled pile excavations and shall provide whatever temporary or permanent Earthwork Support may be necessary to achieve this.

(4) The Contractor shall execute all Foundation Piling Works without causing any damage to or weakening of surrounding subsurface conditions or ground bearing capability, any existing foundations, structures, buildings, roads, paved areas or the like, either on or

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JC: 1) JSSS 7.2 ではカバーされていないのではないか。

Isn't it covered by JSSS 7.2?

NK: 1) In the latest JSSS draft of E 7.2 covers piling works as follows: Therefore it leaves as it is.

7.2.1 (2) The Contractor must protect the structural integrity of ground, buildings, structures, roads, railways, waterways, services and adjacent surfaces that may be affected by excavation or Earthwork Support works and ensure the safety of all persons, whilst they are working in, under or adjacent to any excavation and the avoidance of any damage to property.

7.3.2 (6) Avoidance of any damage by piling operations and the protection and improvement of the structural integrity of existing river or canals, banks, dykes and the like.

JC: 2) drilled pile あるいは slurry wall foundation においては slurry の比重や水位のコントロールを、請負者任せにはできないと考える。

In the case of drilled pile or slurry wall foundation, I think that control of the specific gravity and water level of the slurry cannot be left to the Contractor.

NK: 2) スラーリーの管理は施工計画・管理の一つであり、請負者の責任である。エンジニアは、請負者が提出した施工計画を把握している。異常が生じた場合はエンジニアへ報告する。そのため、追記は行っていない。

The Contractor is responsible for work method of piling operation. The Contractor shall design and manage the control of the specific gravity and water level of the slurry by his designer, checker and supervisor. The Engineer know the method from the Method Statement. When abnormal and dangerous case occurs, the Contractor shall inform the Engineer of it. Therefore, no addition to JSSS is made.

(4) The Contractor shall execute all Foundation Piling Works without causing any damage to or weakening of surrounding subsurface conditions or ground bearing capability, any existing foundations, structures, buildings, roads, paved areas or the like, either on or adjacent to the Site ~~and unless otherwise~~

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fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) Unless otherwise specified in the Contract, the Contractor shall be responsible for selecting methods of working and types of Contractor's Equipment and Temporary Works suitable for the purpose in conformity with GC 4.10.

(3) Earthwork Support
In accordance with JSSS 7.2 [*Earthwork Support*] the Contractor shall be responsible for the maintaining the structural integrity of the sides of all excavated or drilled pile excavations and shall provide whatever temporary or permanent Earthwork Support may be necessary to achieve this.

(4) The Contractor shall execute all Foundation Piling Works without causing ~~any~~ damage to or weakening of surrounding subsurface conditions or ground bearing capability, any existing foundations, structures, buildings, roads, paved areas or the like, either on or adjacent to the Site ~~and unless otherwise~~

	adjacent to the Site and unless otherwise specified in the Contract, the Contractor shall take all necessary measures to prevent the occurrence of such damage or weakening by carrying out all Foundation Piling Works, designing and providing permanent or temporary supports and reinforcement to such foundations, structures, buildings, roads or paved and obtain the prior consent of the Engineer before commencing Excavation Piling Works.	~~specified in the Contract,~~ the Contractor shall take all necessary measures to prevent the occurrence of such damage or weakening by carrying out all Foundation Piling Works, designing and providing permanent or temporary supports and reinforcement to such foundations, structures, buildings, roads or paved and obtain the prior consent of the Engineer before commencing Excavation Piling Works. JC: 本設杭施工に対する周囲に与える影響(振動、騒音、沈下)の許容量を見極めるのは発注者の責務である。その許容量と環境及び杭の設計条件から発注者自身で想定される工法を選定すべきである。 作業構台の基礎のような杭に対しては、請負者自身が Site Data と与えられた環境に対する許容量に適する工法の選択が求められる。 ここではそれらを分けて議論すべきである。 It is the responsibility of the Employer to determine the permissible range of ambient effects (vibration, noise, settlement) caused by the Permanent Work. Based on the permissible amount, environment and pile design conditions, the Employer should select the assumed construction method. For piles such as elevated access structures, the Contractor is required to select a construction method that is appropriate for the Site Data and the given environmental capacity. We should keep this in mind. NK: "as specified", "in accordance with", "unless otherwise specified"の使用に関しまして、再検討のお願い。 一般的に、発注者が杭の種類・施工法を入札書に規定し、その施工についての詳細は請負者が計画し、施工します。 大規模な工事では、周囲への影響の許容値は発注者が規定すべきと考えますが、例えば市街地の狭い道路での下水管の敷設等における周辺の多くの建物への影響は、各建物毎に規定できるものでないため、原則悪影響がでないように施工することと規定すべきかと考えます。 そのため、"as specified", "in accordance with", "unless otherwise specified"の使用について、次のように考えてみました。 貴機構では、例えば許容値等は、発注者が規定すべきであること、及び発注者が請負者任せにしないために、発注者が Particular Safety Specification (PSS)に、許容値を規定し"as specified in PSS"又は"in accordance with PSS"を使い JSSS に規定し、User Guide で発注者に規定することをガイドされる方針です。 一方、NK は、発注者が規定する許容値がある場合はその規定に従い、無い場合は請負者が遵守すべき原則を規定する"unless otherwise specified in PSSS"を使用することを推奨致します。これは、発注者が PSS の中で規定することを無視したり、規定できない場合に、現場で請負者がとるべき措置を JSSS の中で規定しておく方が漏れのないスペックになると考えるためです。	~~specified in the Contract~~, in accordance with the Particular Safety Specification regarding the allowable values of vibration, noise, settlement and other negative impacts to those by the Foundation Piling Works. The Contractor shall take all necessary measures to prevent the occurrence of such damage or weakening by carrying out all Foundation Piling Works, designing and providing permanent or temporary supports and reinforcement to such foundations, structures, buildings, roads or paved areas or the like either on or adjacent to the Site as specified in the Particular Safety Specification and obtain the prior consent of the Engineer before commencing ~~Excavation~~ Foundation Piling Works.

	9.2.2. Safety Measures at Planning Stage The Contractor shall plan all Foundation Piling Works so that they are executed in a safe and methodical manner.	(尚、次の GC の周辺環境の影響に関する条項が参考になると考えております。 4.18 Protection of the Environment The Contractor shall take all reasonable steps to protect the environment (both on and off the Site) and to limit damage and nuisance to people and property resulting from pollution, noise and other results of his operations. The Contractor shall ensure that emissions, surface discharges and effluent from the Contractor's activities shall not exceed the values stated in the Specification or prescribed by applicable Laws. 再度、"as specified", "in accordance with", "unless otherwise specified"の使用に関しまして、ご検討よろしくお願いいたします。 **9.2.2. Safety Measures at Planning Stage** JC: 具体性が無い。つまり前項 9.2.1 General の要求を満たす施工機械の選定と、付随する環境順守規定対策のことと考える。ここの書きぶりに違和感を覚える。 →9.2.2 と 9.2.3 を統合することを検討ください。 This part is lack of concreteness. In other words, it is considered to be the selection of construction equipment that satisfies the requirements of the previous section 9.2.1 General and the accompanying environmental compliance regulations. Is there any room for improvement here? → Consider integrating 9.2.2 and 9.2.3. NK: Integrated 9.2.2 and 9.2.3 as 8.2.2 in right. The Contractor shall plan all Foundation Piling Works so that they are executed in a safe and methodical manner. JCD: 杭打ち作業は、クレーン作業、杭打ち作業、あるいは掘削運搬作業、等複数の作業により継続的に行われる。各作業あるいは全般を指揮する作業指揮者の配置や、各要素の作業に必要な専門職の配置確認が以降のいずれかに必要。 The pile driving operation is continuously performed by a plurality of operations such as a crane operation, a pile driving operation, and an excavation transportation operation. It is necessary to confirm the assignment of operation leaders who conduct each work or the whole and the assignment of professionals necessary for the work of each element in any of the following. NK: 杭打ち作業に限らず全ての作業が、段階毎に各種の作業を行う。そのため、杭打ち作業だけに作業指揮者の配置を特に規定せず、第 1 章で規定することが良いと考えます。現時点の第 1 章(Issue 7)は次のように規定しています。 1.18 Proper Placement of Contractor's Personnel 1.18.3.Labourers and unskilled workers shall never be assigned to any work on Site on their own, all shall be assigned in groups and each work group must always include an Operation Leader to ensure compliance with the Contractor's safety regulations. 1.22 Dangerous Work 1.22.5.A specially trained Operation Leader shall always be assigned to work full-time with every worker or team of	**8.2.2 Safety Measures Before Commencement** The Contractor shall plan all Foundation Piling Works before commencement so that they are executed in a safe and methodical manner. The safety measures before commencement of the Works shall be as follows:

9.3 既成杭基礎工事の安全措置

請負者は、既成杭基礎工事を行うとき、次の安全措置を講じなければならない。
→規定なし。追記不要。

(1) 杭材の吊込みを行うときは、吊込み用機械の特性に応じ、杭材が落下、転倒しないよう、玉掛け方法、玉掛け用具を選定すること。
→E 9.2.5 (1)に規定済み

(2) 吊り上げ・杭打ち作業を行っている近くは、当該作業員以外の者の立入禁止措置を講じること。
→E 9.2.5 (2)に規定済み

(3) 2m 以上の高所で作業を行うときは、本仕様書 2.5 [墜落防止]を遵守すること。杭打ち機のリーダーに登るときには、親綱の設置等の墜落制止用器具を取り付けるものを設け、作業員に墜落制止器具を使用させること。
→規定なし。→理由:E 4.3.1(3)で規定済みで重複記述の必要なし→杭打機特有であり追記する。

(4) 杭打ち機の巻上げ装置に荷重をかけたままで巻上げ装置を停止しておくときは、歯止め装置により歯止めを行い、止め金付きブレーキを用いて制動しておく等確実に停止しておくこと。
→規定なし。→理由:(5)に記述。

(5) 杭打ち機の操作者は、吊り上げ装置に荷重をかけたまま運転位置を離れないこと。
→規定なし。→理由:(4)及び(5)を英文で規定していない理由は Contractor's Equipment で規定済み。(3)は上述のとおりだが、(4)及び(5)は明示的には第 4 章で規定されていないと考えるため、当該箇所で規定する。

(6) 強風時は、杭打ち機、クレーンのブームは倒したうえで、ワイヤー等でアンカー等へ緊結し、杭打ち機ややぐらはケーシングと連結する等により転倒防止を図ること。
→規定なし。→理由: 2.7.3. Measures for Strong Wind and Storms で規定済み。→規定しない。

9.2.3. Safety Measures Before Commencement

(1) The HSO shall inspect the Foundation Piling Work working area and surrounding areas before starting the assembly and installation of the Contractor's Equipment for the Foundation Piling Works to ensure that:

(a) The ground is level and capable of supporting the loading of the Contractor's Equipment including any dynamic effect of the Foundation Piling Works and the load of any materials to be placed thereon. If necessary the Contractor shall improve the ground as necessary by stabilising, paving and/or placing steel decking and temporary piling to provide a suitable surface without risk of Contractor's Equipment or materials, sinking or overturning;

(b) The area is clear of any obstructions; and

(c) The areas are properly drained and free from standing water.

(2) As a consequence of such inspections the HSO prohibit the commencement and continuation of Foundation Piling Works, take necessary corrective measures and make any necessary amendment to the Safety Plan and instruct all Contractor's Personnel of the any revised safety measures before work is allowed to commence and continue in order to ensure their continued safety.

workers engaged upon Dangerous Work.
上記の理由で追記は行っておりません。
All works including piling works are executed with some stages by step by step. Allocation of Operation Leader (OL) shall be specified in Chapter 1 General but not especially in the piling works.
With the above reason, we don't add a clause for assignment of OL.

9.2.3. Safety Measures Before Commencement

(1) The ~~HSO~~ Contractor shall inspect for permit of the HSO the Foundation Piling Work working area and surrounding areas before starting the assembly and installation of the Contractor's Equipment for the Foundation Piling Works to ensure that:

JC: これが HSO の業務内容なのか疑問。Site Engineer が確認して HSO の了解を得る方が自然ではないか。その意味で the Contractor を主語にしてはどうか。
I wonder if this is the task of HSO. Wouldn't it be more natural for site engineers to check and get HSO's consent?
In that sense, why not put the Contractor as the subject in that sense?

NK: HSO は安全計画通りに現場担当者が現場の安全管理を行っているかを管理する立場とする規定していることから、HSO の作業開始の許可は不要と考えます。そのため、HSO を請負者に変更します。

(a) The ground is level and capable of supporting the loading of the Contractor's Equipment including any dynamic effect of the Foundation Piling Works and the load of any materials to be placed thereon. If necessary the Contractor shall improve the ground as necessary by stabilizing, paving and/or placing steel decking and temporary piling to provide a suitable surface without risk of Contractor's Equipment or materials, sinking or overturning;

(b) The area is clear of any obstructions; and

(c) The areas are properly drained and free from standing water.

(2) As a consequence of such inspections the HSO prohibit the commencement and continuation of Foundation Piling Works, take necessary corrective measures and make any necessary amendment to the Safety Plan and instruct all Contractor's Personnel of the any revised safety measures before work is allowed to commence and continue in order to ensure their continued safety.

JC: 前項(a)～(c)を確認して作業開始を許可する、とまとめられ

(1) The Contractor shall inspect the Foundation Piling Work working area and surrounding areas before starting the assembly and installation of the Contractor's Equipment for the Foundation Piling Works to ensure that:

(a) The ground is level and capable of supporting the loading of the Contractor's Equipment including any dynamic effect of the Foundation Piling Works and the load of any materials to be placed thereon. If necessary the Contractor shall improve the ground as necessary by stabilising, paving and/or placing steel decking and temporary piling to provide a suitable surface without risk of Contractor's Equipment or materials, sinking or overturning;

(b) The area is clear of any obstructions; and

(c) The areas are properly drained and free from standing water.

(2) After ensure all above items (a) to (c) in the inspections, the HSO shall permit to commence and continue the Foundation Piling Works.

		ないか。 Is it possible to integrate with checking the previous paragraphs (a) to (c) and permitting the start of work? NK: Modified as right.	
	9.2.4. Safety Measures for Transportation	**9.2.4. Safety Measures for Transportation on Site - Prohibition of Unintended Use** JC: 目的外使用の禁止。英語で同趣旨のサブタイトルを付けてください。 Prohibition of Unintended Use. Please add a subtitle with the same meaning in English. NK: add the subtitle as commented.	**8.2.3 Safety Measures for Transportation on Site - Prohibition of Use Other Than for Intended Purposes**
	Piles and pile casings, liners, reinforcement cages and the like shall not be transported or relocated by use of pile driving or drilling machines; in all cases the Contractor shall use cranes accompanied where necessary by trucks and flatbed trailers.	Piles and pile casings, liners, reinforcement cages and the like shall not be transported or relocated by use of pile driving or drilling machines; in all cases the Contractor shall use cranes accompanied where necessary by trucks and flatbed trailers. NK: The above sentence is modified for simple subscription.	Piles and pile casings, liners, reinforcement cages and the like shall not be transported or relocated by use of pile driving or drilling machines. In all cases the Contractor shall use cranes accompanied or where necessary, trucks and flatbed trailers for the transportation or relocation.
	9.2.5. Safety Measures for Driven Foundation Piling Works (1) Select correct rigging method and appropriate Rigging Equipment to suit the characteristics of the lifting or pile driving machine and the piles, so that piles are mishandled or dropped.	**9.2.5. Safety Measures for Driven Foundation Piling Works** (1) The Contractor shall select correct rigging method and appropriate Rigging Equipment to suit the characteristics of the lifting or pile driving machine and the piles, so that piles are mishandled or dropped. JC: Inserted "The Contractor shall". NK: Modified as right to make specify measures clear..	**8.2.4 Safety Measures for Driven Foundation Piling Works** (1) The Contractor shall select correct rigging method and appropriate Rigging Equipment to suit the characteristics of the lifting or pile driving machine and the piles, so that piles are mishandled or dropped.
	(2) Keep all workers away from the direct working location when driving operations are taking place.	(2) The Contractor shall keep workers other than those directly engaged in the driving operations~~. Keep all workers~~ away from the direct working location when driving operations are taking place. JC: 杭打ち作業員・オペレータ以外の人払いの規定と考えるが、all workers でよいのか？また、9.2.6 項と共通した内容ではないのか It is considered that it is a rule to keep avoiding people other than workers who engage in piling works and operators from approaching. Is it ok to avoid all workers? In addition, isn't the content common with 9.2.6? JC: Inserted "The Contractor shall keep workers other than those directly engaged in the driving operations NK: Modified (2) as commented.	(2) The Contractor shall keep workers other than those directly engaged in the driving operations away from the direct working location when driving operations are taking place.
		NK: (3) is added for fall prevention from lead of piling driving machine as required for specific requirement for the lead.	(3) In addition to the fall prevention measures stipulated in JSSS 2.5[FALL PREVENTION], when the worker works on the lead of pile driving machine, the Contractor shall provide facility to install lifelines on the lead and fix the PFAS and make the worker use the PFAS.

9.4 場所打ち杭工事の安全措置

9.4.1 一般事項

本款では、オールケーシング工法、リバースサーキュレーション工法、アースドリル工法、アースオーガー工法で建設する場所打ち杭を建設する際の作業員の安全措置を規定する。その他の工法における安全措置に関しては、請負者は本款に準じて安全措置を講じなければならない。

→E 9.2.6 冒頭部に対応する規定あり。(但し工法の具体名は記載なし。)

9.4.2 オールケーシング工法

~~請負者は、オールケーシング工法による作業を行うとき、次の安全措置を講じなければならない。~~

→規定なし。

→(NK の方針:標題で対象とする工法を明示しているので削除する。)

(1) 掘削用のハンマーグラブの操作中は、作業員を掘削機に近寄らせないこと。その必要があるときは、ハンマーグラブがケーシング内に入り、停止した後に近づかせること。

→E 9.2.6 (1)(a)に規定済み

(2) 作業員をケーシング内に入らせる必要があるときは、本仕様書 2.1.4[閉鎖空間における安全措置]に従い、危険のないことを確認すること。

→E 9.2.6 (1)(b)に規定済み

(3) ケーシング打込み又は引抜き中は、当該作業員以外の者を機械又はやぐらに近づけさせないこと。危険な場所には立入禁止の柵等を設置すること。

→規定なし。→理由: Piling work を次のように Dangerous work と規定している。 9.2.1.General (1) Foundation Piling Works and all operations connected therewith shall be designated as Dangerous Work. →追記しない。

9.4.3 リバースサーキュレーションドリル工法

~~請負者は、リバースサーキュレーション工法による作業を行うとき、次の安全措置を講じなければならない。~~

→規定なし。→標題で対象とする工法を明示しているので削除する。

(1) ドリルのロッドの継ぎ足し又は撤去の作業中の作業員の手や指のはさまれ防止のため、機械の運転手への合図を行う者を配置すること。

→E 9.2.6 (2)(a)に規定済み

(2) 坑内水位と泥水濃度の変動に注意を払い、逸水の挙動が認められる場合には作泥の準備をすること。**→E 9.2.6 (2)(b)に規定済み**

9.2.6. Safety Measures for Cast-in-place Piling Works

The following items specify example safety measures for workers engaged in various methods of Foundation Piling Works. For any other piling methods, the Contractor shall take appropriate safety measures including those referred to in the following requirements.

(1) Pile Excavation Works using All-Casing Piling Method.

(a) Keep all workers away from the pile excavation machine while installing the casing and operating the drop hammer grab. Before any worker is allowed to access the casing or equipment, ensure that the hammer grab is secured in the casing; and

(b) When any worker needs to enter the casing, confirm that there is no danger in accordance with JSSS 2.1.4 [*Further Requirements for Dangerous Work*].

(2) Pile Excavation Works for Reverse Circulation Bored Piling

(a) When adding or removing drill lengths, ensure that a Spotter is present to signal the operator of the drilling machine so that the hands and fingers of workers do not get caught in the work;

(b) Pay attention to any fluctuation in water level in the drilled hole and the mud (bentonite solution) concentration level and prepare for addition or discharge of mud consequent to any fluctuation; and

9.2.6. Safety Measures for Cast-in-place Piling Works

The following items specify ~~example~~ safety measures for workers engaged in various methods of ~~Foundation Piling Works~~ Cast-in-place Piling Works mentioned below. For any other ~~piling~~ Cast-in-place Piling methods, the Contractor shall take appropriate safety measures including those referred to in the following requirements.

JC: deleted "example", "Foundation Piling Works "and "piling".
NK: Delete it as indicated. And suggest specific piling methods are to be added.

(1) Pile Excavation Works using All-Casing Piling Method.

(a) Keep all workers away from the pile excavation machine while installing the casing and operating the drop hammer grab. Before any worker is allowed to access the casing or equipment, ensure that the hammer grab is secured in the casing; and

JC: 日本語版では 3 つ目の項目が付いていたはずです。MD 氏は General の部分と重複があるとして削除していますが、復活させてください。

In the Japanese version, there are 3 items, however Issue 6 has removed them because of duplication with the General part in Chapter 1. Please revive them.

NK: 和文 9.4.2 (3)は、右に追記しました。

The Japanese 9.4.2 (3) is specified by adding to (1) in right.

(b) When any worker needs to enter the casing, confirm that there is no danger in accordance with JSSS 2.1.4 [*Further Requirements for Dangerous Work*].

JC: このようなケースは異常事態にしか想定されないため、滅多にないというニュアンスを出した文に更新してください。

Such case in (b) is only expected in abnormal situation, so please rephase it with nuance of abnormal situation.

NK:ケーシングに入る時は規定通りであり、特別に異常事態と記載する必要はないと考えます。規定のままとします。

(2) Pile Excavation Works for Reverse Circulation Bored Piling Method

(a) When adding or removing drill lengths, ensure that a Spotter is present to signal the operator of the drilling machine so that the hands and fingers of workers do not get caught in the work;

(b) ~~Pay attention to any fluctuation in water level~~ Keep head and density of slurry as planed in the drilled hole and the mud (bentonite solution) concentration level and prepare for addition or discharge of mud consequent to any fluctuation; and

8.2.5 Safety Measures for Cast-in-place Piling Works

The following items specify ~~example~~ safety measures for workers engaged in ~~various methods of Foundation Piling Works~~ Cast-in-place Piling Works mentioned below. For any other ~~piling~~ Cast-in-place Piling methods than specified below, the Contractor shall take appropriate safety measures including those referred to in the following requirements.

(1) Pile Excavation Works using All-Casing Piling Method.

(a) Keep ~~all~~ workers other than those directly engaged in the piling operations away from the pile excavation machine while installing and removing the casing, and operating the drop hammer grab. Before any worker is allowed to access the casing or equipment during the hammer grab is being operated, ensure that the hammer grab is secured in the casing; and

(b) When any worker needs to enter the casing, confirm that there is no danger in accordance with JSSS 2.1.4 [*Further Requirements for Dangerous Work*].

(2) Pile Excavation Works for Reverse Circulation Bored Piling Method

(a) When adding or removing drill lengths, ensure that a Spotter is present to signal the operator of the drilling machine so that the hands and fingers of workers do not get caught in the work;

(b) Keep water level and concentration level of slurry (bentonite solution) in the drilled hole as planned and prepare for addition or discharge of slurry consequent to any fluctuation; and

(3) 作泥・排泥ピットを設ける場合は、柵の設置など作業員の転落防止措置を講じること。
→E 9.2.6 (2)(c)に規定済み

9.4.4. アースドリル工法、アースオーダー工法

~~請負者は、アースドリル工法、アースオーガー工法による作業を行うとき、次の安全措置を講じなければならない。~~
→規定なし。→(NK の方針：標題で対象とする工法を明示しているので削除する。)
(1) アースドリルやアースオーガーの転倒防止のために、アースドリルのドリリングバケット内の掘削土砂、アースオーガーのオーガー上の掘削土砂の重量を考慮に入れて、これらの機械を運転すること。
→E 9.2.6 (3)(a)に規定済み
(2) アースドリルやアースオーガーの転倒、土砂の落下等による作業員への危険がある作業範囲には、作業員を入らせないこと。
→E 9.2.6 (3)(b)に定済み

9.4.5 コンクリート打設作業

請負者は、コンクリート打設作業を行うとき、次の安全措置を講じなければならない。
(1) 鉄筋籠の製作は変形が生じないように製作し、鉄筋籠の接合は落下・脱落しないようにすること。
→E 9.2.7 (1)に規定済み
(2) 鉄筋籠、コンクリート打設トレミー管等の落下を防止するため、吊りバンドや吊り金具は、施工計画に定められた取付け・外し方法、作業順序によること。
→E 9.2.7 (2)に規定済み
(3) 鉄筋籠、トレミー管を取り扱う作業員の挟まれ防止のため、機械の運転手への合図を行う者を配意すること。
→E 9.2.7 (3)に規定済み

9.5 深礎工の安全措置

本節では深礎を建設する際の作業の安全措置事項について規定する。請負者は、深礎工の作業をおこなうとき、本仕様書 9.4.5[コンクリート打設作業]の措置及び次の措置を講じなければならない。
→E 9.2.8 冒頭部に規定済み

(c) When providing a mud creation pit or a mud discharge pit, take measures to prevent workers from falling into such pits by providing barriers and signage.

(3) Pile Excavation Works for Auger Piling
(a) To prevent overturn of drilling or auger equipment, consider the weight of excavated material in the drilling bucket or on the auger during operation; and
(b) Keep workers other than those directly engaged in the drilling works away from the drill or auger.

9.2.7. Placement of Concrete

(1) Reinforcement cages shall be designed, manufactured and hoisted into place so that they do not deform and slip or drop off the Hoisting Equipment.
(2) Provide secure rigging slings and welded metal fixings to ensure that reinforcement cages, tremie pipes are secure and do not slip or drop off the Hoisting Equipment.
(3) When handling reinforcement cages and tremie pipes, ensure that a Spotter is present to signal the operator of the machine so that the hands and fingers of workers do not get caught in the work.

9.2.8. Safety Measures for Deep Foundation Insitu Concrete Piling

This Section contains example safety measures for large diameter deep foundation piling works with continuous shaft lining, shaft access for workers, usually executed by manual excavation.

JC: Keep head and density of slurry as planned のような書きぶりが良い。
It is better to stipulate like “Keep head and density of slurry as planned”.
NK: Modified as commented.

(c) When providing a mud creation pit or a mud discharge pit, take measures to prevent workers from falling into such pits by providing barriers and signage.

(3) Pile Excavation Works for Auger Piling
(a) To prevent overturn of drilling or auger equipment, consider the weight of excavated material in the drilling bucket or on the auger during operation; and
(b) Keep workers other than those directly engaged in the drilling works away from the drill or auger.

9.2.7. Placement of Concrete

(1) Reinforcement cages shall be designed, manufactured and hoisted into place so that they do not deform and slip or drop off the Hoisting Equipment.
(2) Provide secure rigging slings and welded metal fixings to ensure that reinforcement cages, tremie pipes are secure and do not slip or drop off the Hoisting Equipment.
(3) When handling reinforcement cages and tremie pipes, ensure that a Spotter is present to signal the operator of the machine so that the hands and fingers of workers do not get caught in the work.

9.2.8. Safety Measures for Deep Foundation Insitu Concrete Piling

JC: この英訳で「深礎」と一般的に通じるものでしょうか。
Can international readers understand this English term translated from "Sin-so" in Japanese?
NK: 深礎は次のように英語で表記されていると考えます。また、以下で通常人力掘削であると規定していますので通じると考えます。
We consider "Sin-so" in Japanese is “deep foundation as shown in Wikipedia and also JSSS specified as usually executed by manual excavation.

“A deep foundation is a type of foundation that transfers building loads to the earth. A pile or piling is a vertical structural element of a deep foundation, driven or drilled deep into the ground at the building site”.

(c) When providing a mud creation pit or a mud discharge pit, take measures to prevent workers from falling into such pits by providing barriers and signage.

(3) Pile Excavation Works for Auger Piling Method
(a) To prevent overturn of drilling or auger equipment, consider the weight of excavated material in the drilling bucket or on the auger during operation; and
(b) Keep workers other than those directly engaged in the drilling works away from the drill or auger.

8.2.6 Placement of Concrete

(1) Reinforcement cages shall be designed, manufactured and hoisted into place so that they do not deform and slip or drop off the Hoisting Equipment.
(2) Provide secure rigging slings and welded metal fixings to ensure that reinforcement cages, tremie pipes are secure and do not slip or drop off the Hoisting Equipment.
(3) When handling reinforcement cages and tremie pipes, ensure that a Spotter is present to signal the operator of the machine so that the hands and fingers of workers do not get caught in the work.

8.2.7 Safety Measures for Deep Foundation Insitu Concrete Piling Works

This Section contains ~~example~~ safety measures for large diameter deep foundation piling works with continuous shaft lining, shaft access for workers, usually executed by manual excavation.

(1) 作業環境に関する措置

(a) 深礎内には作業員が昇降するための昇降設備を設けること。鉛直はしごによる昇降設備の場合、安全ブロックを設置したはしごとすること、又は背かごを設けたはしごとすること。背かごを設けたはしごの長さが 10m以上のものには 5m 以内ごとに踏棚を設けること。鉛直はしごを含め、昇降用のはしごの上端は坑口の床、踏棚から 100 ㎝以上突出させること。
→E 9.2.8(1)(a)～(d)に規定済み。OSHA Subpart X 1926.1053 を追記する。

(b) 坑内作業員と昇降中の土砂搬出用バケット等の機械との接触防止の措置を講じること。
→E 9.2.8(1)(f)に規定済み。

(1) General Safety Measures

(a) Provide safe and efficient access/emergency exit facilities in the shaft for workers;

(b) Provide vertical ladders, securely anchored to framework or shaft lining and complete with a ladder safety system;

(c) Provide a landing rest platform every 5 m, when the length of any ladder exceeds 10 m, a landing rest platform shall be provided every 5 m;

(d) Ensure that the upper end of vertical ladders projects at least 1m above the ground and any landing rest platforms;

(e) Provide appropriate and adequate pumps to remove all water from the base of the shafts; and

(f) Take measures to prevent any accidents involving workers with the spoil removal containers and any other equipment particularly throughout the bucket hoisting and descending operations.

(2) Ladder Safety System

(a) The ladder safety system shall be designed to eliminate or reduce the possibility of a worker falling off the ladder and shall comprise a carrier, safety sleeve, lanyard, connectors, and body harness.

(b) Workers shall be trained in the use.
For further information refer to:
https://www.osha.gov/Publications/OSHA3903.pdf

This Section contains ~~example~~ safety measures for large diameter deep foundation piling works with continuous shaft lining, shaft access for workers, usually executed by manual excavation.

JC(Mr. Ito): deleted “example”
NK: revised.

(1) General Safety Measures

(a) Provide safe and efficient access/emergency exit facilities in the shaft for workers;

(b) Provide vertical ladders, securely anchored to framework or shaft lining and complete with a ladder safety system;

(c) Provide a landing rest platform every 5 m, when the length of any ladder exceeds 10 m, ~~a landing rest platform shall be provided every 5 m~~;

JC: 重複していませんか？Isn’t it a duplicate expression?
NK: Deleted.

(d) Ensure that the upper end of vertical ladders projects at least 1m above the ground and any landing rest platforms;

(e) Provide appropriate and adequate pumps to remove all water from the base of the shafts; and

(f) Take measures to prevent any accidents involving workers with the spoil removal containers and any other equipment particularly throughout the bucket hoisting and descending operations.

(2) Ladder Safety System

(a) The ladder safety system shall be designed to eliminate or reduce the possibility of a worker falling off the ladder and shall comprise a carrier, safety sleeve, lanyard, connectors, and body harness.

(b) Workers shall be trained in the use.
~~For further information refer to:~~
https://www.osha.gov/Publications/OSHA3903.pdf

JC: この言い方は二重の意味で中途半端です。

① この OSHA の publication に対して comply しろということなのか、これを参考にして安全対策を独自に施せということなのかがはっきりしません。

「OSHA や BS については引用するならば comply、但し無用な部分はエンジニアの同意があれば除外できる」という総則の定めには従う･･･ことになっていると思うので Comply

(1) General Safety Measures

(a) Provide safe and efficient access/emergency exit facilities in the shaft for workers;

(b) Provide vertical ladders, securely anchored to framework or shaft lining and complete with a ladder safety system;

(c) Provide a landing rest platform every 5 m, when the length of any ladder exceeds 10 m~~, a landing rest platform shall be provided every 5 m~~;

(d) Comply with the requirements provided in OSHA 1926.1053 Ladders other than specified in JSSS 8.2.7.

(e) Ensure that the upper end of vertical ladders projects at least 1m above the ground and any landing rest platforms;

(f) Provide appropriate and adequate pumps to remove all water from the base of the shafts; and

(g) Take measures to prevent any accidents involving workers with the spoil removal containers and any other equipment particularly throughout the bucket hoisting and descending operations.

(2) Ladder Safety System

(a) The ladder safety system shall be designed to eliminate or reduce the possibility of a worker falling off the ladder and shall comprise a carrier, safety sleeve, lanyard, connectors, and body harness.

(b) Workers shall be trained in the use.
~~For further information refer to:~~
~~https://www.osha.gov/Publications/OSHA3903.pdf~~

		でよいと思います。 ② この OSHA の文書にはいろいろなことが記述されており、comply する範囲を ladder system に限定した記述にするべきです。 (1) It is not clear whether the Contractor shall comply with the OSHA's publication or take safety measures by himself with reference to it. It is basic concept that in case to quote OSHA or BS, "comply" shall be used and inapplicable parts can be excepted if the Engineer agrees as stipulated in Chapter 1 General. Therefore, this clause van be "comply" but not "refer to". (2) This OSHA's publication includes various items, so it is necessary to limit items to be complied with for the ladder system. NK: (a) JSSS 2.5FALL PREVENTION では Fixed ladder について規定はないため、Ladder の安全措置について OSHA1926.1053 の条項の順守を(d)として追加します。 (b)は深礎での墜落のリスクは高いため、教育訓練は残しますが、OSHA Fact Sheet は、一般的な規定のため、特に遵守を本項で規定する必要はないため、削除致します。 (a) JSSS 2.5FALL PREVENTION does not specify about fixed ladder, so safety measures for ladders in OSHA1926.1053 is added as (d)/	
(2) 作業の合図に関する措置 (a) 材料・機材の積み上げ・下ろし時の合図を定め、これを作業員に使用させること。 →E 9.2.8(3)(a)に規定済み。 (b) 緊急時の合図及び、退避の方法をあらかじめ定め、作業員に周知しておくこと。 →E 9.2.8(3)(b)に規定済み。 (3) 作業開始前の措置 (a) 本仕様書 2.1.4[閉鎖空間における安全措置]、2.1.6[作業環境の把握]に規定の措置を講じ、坑内環境の測定、換気による坑内環境の維持に努めること。 →E 9.2.7(4)に規定済み。 (b) 作業開始前に、掘削面の土質状況、ライナープレート等土留めの異常の有無を点検すること。→E 9.2.8 (5)(a)に規定済み。 (4) 作業中の措置	(3) Communication and Signalling Measures (a) Signals for delivering materials and equipment to and down the shaft shall be determined in advance and all workers shall be trained in their use; (b) Signals and evacuation methods during emergencies shall also be determined in in advance and all workers shall be trained in their use with regular evacuation training; and (c) Where considered necessary by the HSO handheld radios shall be provided to the Operation Leader working at the base of the shaft and a Spotter at the ground level for all communications. (4) Environmental Measures (a) Ensure a continuous, adequate and safe air supply to workers located at the bottom of the shaft; (b) Provide monitoring equipment, set up alarms if air quality deteriorates and keep records in accordance with JSSS 2.1. [*Work Environment*]; and (c) Provide adequate temporary lighting (5) Measures before Commencing Work (a) Check the condition of the excavated ground surface in the shaft and whether there is any abnormality in the shaft lining. (6) Measures during the work	(3) Communication and Signalling Measures (a) Signals for delivering materials and equipment to and down the shaft shall be determined in advance and all workers shall be trained in their use; (b) Signals and evacuation methods during emergencies shall also be determined in in advance and all workers shall be trained in their use with regular evacuation training; and (c) Where considered necessary by the HSO handheld radios shall be provided to the Operation Leader working at the base of the shaft and a Spotter at the ground level for all communications. (4) Environmental Measures (a) Ensure a continuous, adequate and safe air supply to workers located at the bottom of the shaft; (b) Provide monitoring equipment, set up alarms if air quality deteriorates and keep records in accordance with JSSS 2.1. [*Work Environment*]; and (c) Provide adequate temporary lighting (5) Measures before Commencing Work (a) Check the condition of the excavated ground surface in the shaft and whether there is any abnormality in the shaft lining. (6) Measures during the work (a) When workers are in the shaft, assign a	(3) Communication and Signalling Measures (a) Signals for delivering materials and equipment to and down the shaft shall be determined in advance and all workers shall be trained in their use; (b) Signals and evacuation methods during emergencies shall also be determined in in advance and all workers shall be trained in their use with regular evacuation training; and (c) Where considered necessary by the HSO handheld radios shall be provided to the Operation Leader working at the base of the shaft and a Spotter at the ground level for all communications. (4) Environmental Measures (a) Ensure a continuous, adequate and safe air supply to workers located at the bottom of the shaft; (b) Provide monitoring equipment, set up alarms if air quality deteriorates and keep records in accordance with JSSS 2.1. [*Work Environment*]; and (c) Provide adequate temporary lighting (5) Measures before Commencing Work (a) Check the condition of the excavated ground surface in the shaft and whether there is any abnormality in the shaft lining. (6) Measures during the work (a) When workers are in the shaft, assign a

(a) 坑内作業員が入坑中は、坑口に監視員を配置すること。 →E 9.2.8 (6)(a)に規定済み。 (b) 地下水位以下を掘進するときは、排水設備等を用い、湧水対策等を確立してから作業を進めること。 →E 9.2.8 (6)(b)に対応する規定あり。 →「地下水位以下を掘進する場合には」という条件を追記する。 (c) 掘削時においては土質等の変化に常に留意し、作業中の掘削面や、深礎工の土留めに異常があった場合は作業を直ちに中断し、異常に対する適切な対策を講じ、異常が無いことを確認したうえで作業を再開すること。 →E 9.2.8 (6)(c)に規定済み。	(a) When workers are in the shaft, assign a Spotter at ground level and located within direct view at the upper edge of the shaft; (b) Stop the work, evacuate workers and provide remedial measures to deal with ground water particularly when under pressure, resume the work only after confirming that there is no further risk; (c) Pay constant attention to any changes in soil types, properties, etc. and if any abnormality is identified at the excavated surface during work or in the shaft lining, immediately stop the work, evacuate workers and take appropriate remedial measures, resume the work only after confirming that there is no further risk; and (d) Ensure nothing is dropped into the shaft that may injure workers.	Spotter at ground level and located within direct view at the upper edge of the shaft; (b) Stop the work, evacuate workers and provide remedial measures to deal with ground water particularly when under pressure, resume the work only after confirming that there is no further risk; NK: Modified. (c) Pay constant attention to any changes in soil types, properties, etc. and if any abnormality is identified at the excavated surface during work or in the shaft lining, immediately stop the work, evacuate workers and take appropriate remedial measures, resume the work only after confirming that there is no further risk; and (d) Ensure nothing is dropped into the shaft that may injure workers.	Spotter at ground level and located within direct view at the upper edge of the shaft; (b) When excavating below the groundwater level, provide measures to drain the water in the shaft, and stop the work, evacuate workers in case abnormal water inflow in the shaft and resume the work only after taking countermeasures and confirming that there is no risk due to water; (c) Pay constant attention to any changes in soil types, properties, etc. and if any abnormality is identified at the excavated surface during work or in the shaft lining, immediately stop the work, evacuate workers and take appropriate remedial measures, resume the work only after confirming that there is no further risk; and (d) Ensure nothing is dropped into the shaft that may injure workers.

NK R2 with JICA comments and NK modification (2020/3/31, NK actioned for JICA comments to Issue 1 on 2020/2/29 submitted to JICA on 2020/3/31 as A1 and sent to MD on 2020/4/9 as C1)	JICA Comments to NK R2 (2020/4/22) JC: JICA comments, NK: NK actions	Issue 2 & updated 2 with MD notes based on NK R2 (2020/4/16&/24)	NK R3 for Issue 3 (2020/4/29, Modified issue 2 reflecting JICA comments on 2020/4/22 to NK R2 2020/3/31) Red letters: NK Modification
9. Foundation Piling Works **9.1. GENERAL** 9.1.1. Scope **9.2. PARTICULAR SAFETY MEASURES FOR FOUNDATION PILING** 9.2.1. General 9.2.2. Safety Measures at Planning Stage 9.2.3. Safety Measures Before Commencement 9.2.4. Safety Measures for Transportation 9.2.5. Safety Measures for Driven Foundation Piling Works 9.2.6. Safety Measures for Cast-in-place Piling Works 9.2.7. Placement of Concrete 9.2.8. Safety Measures for Deep Foundation Insitu Concrete Piling	**8. FOUDATION PILING WORKS** **8.1 GENERAL** **8.1.1 Scope** **8.2 PARTICULAR SAFETY MEASURES FOR FOUNDATION PILING** 8.2.1 General 8.2.2 Safety Measures Before Commencement 8.2.3 Safety Measures for Transportation on Site - Prohibition of Use Other than for Intended Purposes 8.2.4 Safety Measures for Driven Foundation Piling Works 8.2.5 Safety Measures for Cast-in-place Piling Works 8.2.6 Placement of Concrete 8.2.7 Safety Measures for Deep Foundation Insitu Concrete Piling Works	**8.1 GENERAL** 8.1.1 Scope **8.2 PARTICULAR SAFETY MEASURES** 8.2.1 General 8.2.2 Safety Measures at Planning Stage 8.2.3 Safety Measures for Transportation on Site - Prohibition of Use Other Than for Intended Purposes 8.2.4 Safety Measures for Driven Foundation Piling Works 8.2.5 Safety Measures for Cast-in-place Piling Works 8.2.6 Placement of Concrete 8.2.7 Safety Measures for Deep Foundation Insitu Concrete Piling 8.2.8 Monitoring Impact of Foundation Piling Works on Other Properties	**8.1 GENERAL** 8.1.1 Scope **8.2 PARTICULAR SAFETY MEASURES** 8.2.1 General 8.2.2 Safety Measures at Planning Stage 8.2.3 Safety Measures for Transportation on Site - ~~Prohibition of Use Other Than for Intended Purposes~~ Use of Appropriate Equipment and Vehicle 8.2.4 Safety Measures for Driven Foundation Piling Works 8.2.5 Safety Measures for Cast-in-place Piling Works 8.2.6 Placement of Concrete 8.2.7 Safety Measures for ~~Deep Foundation Insitu Concrete Piling~~ Hand-Dug Caisson Works 8.2.8 Monitoring Impact of Foundation Piling Works on Other Properties
9.1. GENERAL	**8 FOUDATION PILING WORKS** **8.1 GENERAL** JC2: 「Chicago Method」の定義を General の中（8.1.2？）で以下の 2 のとおり記載してください。出典は1にあるとおりです。 Please stipulate the definition of "Chicago Method" in the General (8.1.2?) as mentioned in the following 2. The source of the term is 1. below. 1．深礎工法：Chicago (board) method:土木和英辞典近代図書 1. Deep foundation method: Chicago (board) method: Civil Engineering Japanese English dictionary, Kindai 2．Chicago caisson (Chicago well): A small cofferdam used in medium stiff clays lined with planks sunk to hard ground for pier foundations. The plank sheeting is held in place by steel rings wedged against the side. : CONSTRUCTION DICTIONARY : The National Association of Women in Construction NK2: Chicago Method に関し調べました。上記の情報の他に次の記述があります。 We studied Chicago Method and found the following information: (1) International Conference on Case Histories in Geotechnical Engineering の論文で、Chicago Hand-Dug Caisson がドリル掘削坑基礎の発展の元であると記述しています。 120 YEARS OF CAISSON FOUNDATIONS IN CHICAGO the origin of the modem Drilled Shaft Foundation, which has its evolutionary roots in the Chicago Hand-Dug Caisson (2) Dictionary Of Civil Engineering (USA, John S. Scott)は、Chicago caisson と Deep foundation を次のように記述しています(Chicago Method 無し)。Chicago caisson は Deep foundation の一種と考えています。	**8. FOUDATION PILING WORKS** **8.1 GENERAL**	**8. FOUDATION PILING WORKS** **8.1 GENERAL**

	https://books.google.co.jp/books?id=C7oIHQDDrxsC&pg=PA72&lpg=PA72&dq=Wiki+Chicago+caisson&source=bl&ots=lirG_aHP_d&sig=ACfU3U1WxQvUZIYSScGhwQGQRaHZuIdcbQ&hl=ja&sa=X&ved=2ahUKEwiL-fXsrYfpAhWUd94KHWaiAocQ6AEwBHoECAoQAQ#v=onepage&q&f=false Chicago caisson: A small cofferdam used in medium staff clays, of about 1.2 m dia. Lined with planks added in 1.5m lengths and sunk to hard ground for pier foundations. The vertical plank supporters are held in place by steel rings wedged against the sides. (JC で参照の1と同じ記述である。この cofferdam は仮締切の意味もあるが、ここでは caisson (large watertight chamber used for construction under water)の意味である。) Deep foundation: a foundation, usually on some type of pile or caisson, generally more than 3 m below ground. Deep foundations are often needed in conjunction with ground engineering work. (3) BS ISO 6707-1:2017 直接基礎と深い基礎(Deep foundation として piled foundation と caisson)が規定されています。 BS defines shallow and deep foundations. The latter consists piled foundation and caisson (4) Hongkong and Malaysia Report 1) Hong Kong Technical Guidance : hand-dug caissons http://www.devb.gov.hk/filemanager/technicalcirculars/en/upload/231/2/WB09941.pdf 2) Malaysia Design, Construction & Performance of Hand-Dug Caissons https://pdfs.semanticscholar.org/c4bd/2bc8985ffcd0b2ac7c7daa9659acaf9fbecb.pdf NK2: 基礎工法としての Chicago Method はインターネットで容易に検索できない。土木和英辞典に用語としてありますが、用語が古くまた国際的な用語とは考えられない。そのため、次を参考に基礎を Shallow foundation と Deep foundation と分け、深礎は Caisson の一つとして Hand dig caisson として規定することを提案します。 The Chicago Method as foundation type cannot be found in internet. It seems that the term is out of date and not international one. Types of Foundation for Buildings and their Uses https://theconstructor.org/geotechnical/foundation-types-and-uses/9237/ 1. Shallow foundation: ◦Individual footing or isolated footing ◦Combined footing ◦Strip foundation ◦Raft or mat foundation 2. Deep Foundation: ◦Pile foundation ◦Drilled Shafts or caissons NK2: Therefore, referring to the above information, we propose to consider the foundation consists of shallow and deep foundation and " deep foundation" used at present is replaced "hand dig caisson" as one of caisson.		
9.1.1. Scope This Chapter specifies the safety requirements for Foundation Piling Works which shall include driven piling and insitu concrete piling.	**8.1.1 Scope** This Chapter specifies the safety requirements for Foundation Piling Works which shall include driven piling and insitu concrete piling. JC2: Cast-in-place Piling Works 一般用語で混在するのは構わないが、一番最初ぐらいはタイトルに合わせたら？ "insitu concrete piling" and "Cast-in-place Piling Works" are mixed. They shall be consistent use. NK2: 上記指摘は MD 氏の issue 2 案にて変更されています。	**8.1.1 Scope** *As noted in Chapter 7 Excavation Works, this item is reformatted to be consistent with later Chapters.* *The content of each Chapter 7 to 10 are now correctly referred to as a heading, i,e. Excavation Works, Foundation Piling Works, etc.* (1) This Chapter specifies the safety requirements for piling works which include: (a) Driven Piling; (b) Cast in place Piling; and	**8.1.1 Scope** (1) This Chapter specifies the safety requirements for piling works which include: (a) Driven Piling; (b) Cast in place Piling; and

	The above has been by MD in last version.	(c) ~~Deep Foundation Piling,~~ Hand-Dug Caisson NK2: The "deep foundation piling" is replaced with "Hand-Dug Caisson" as explained. and which are hereinafter collectively referred to as "Foundation Piling Works". (2) General requirements for example for Contractor's Equipment, Temporary Works and other related works all which apply to the work in this Chapter, are included in other Chapters of JSSS. Additional particular requirements are contained in this Chapter.	(c) ~~Deep Foundation Piling,~~ Hand-Dug Caisson and which are hereinafter collectively referred to as "Foundation Piling Works". (2) General requirements for example for Contractor's Equipment, Temporary Works and other related works all which apply to the work in this Chapter, are included in other Chapters of JSSS. Additional particular requirements are contained in this Chapter.
9.2. PARTICULAR SAFETY MEASURES FOR FOUNDATION PILING **9.2.1. General** (1) Foundation Piling Works and all operations connected therewith shall be designated as Dangerous Work and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*]. (2) Unless otherwise specified in the Contract, the Contractor shall be responsible for selecting methods of working and types of Contractor's Equipment and Temporary Works suitable for the purpose in conformity with GC 4.10. (3) Earthwork Support In accordance with JSSS 7.2 [*Earthwork Support*] the Contractor shall be responsible for the maintaining the structural integrity of the sides of all excavated or drilled pile excavations and shall provide whatever temporary or permanent Earthwork Support may be necessary to achieve this. JC1: 1) JSSS 7.2 ではカバーされていないのではないか。 Isn't it covered by JSSS 7.2? NK: 1) In the latest JSSS draft of E 7.2 covers piling works as follows: Therefore it leaves as it is. 7.2.1 (2) The Contractor must protect the structural integrity of ground, buildings, structures, roads, railways, waterways, services and adjacent surfaces that may be affected by excavation or Earthwork Support works and ensure the safety of all persons, whilst they are	**8.2 PARTICULAR SAFETY MEASURES FOR FOUNDATION PILING** **8.2.1 General** (1) Foundation Piling Works and all operations connected therewith shall be designated as Dangerous Work and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*]. (2) Unless otherwise specified in the Contract, the Contractor shall be responsible for selecting methods of working and types of Contractor's Equipment and Temporary Works suitable for the purpose in conformity with GC 4.10. (3) Earthwork Support In accordance with JSSS 7.2 [*Earthwork Support*] the Contractor shall be responsible for the maintaining the structural integrity of the sides of all excavated or drilled pile excavations and shall provide whatever temporary or permanent Earthwork Support may be necessary to achieve this.	**8.2 PARTICULAR SAFETY MEASURES** **8.2.1 General** (1) Foundation Piling Works and all operations connected therewith shall be designated as Dangerous Work and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*]. (2) Unless otherwise specified in the Particular Safety Specification, the Contractor shall be responsible for selecting methods of working and types of Contractor's Equipment and Temporary Works suitable for the purpose in conformity with GC 4.10. *Please note that the above reference to the Particular Safety Specification, is for the case where piling is engineer designed and specified or is to be performed by another specialist contractor.* ~~(3) Earthwork Support~~ *Above separate heading is not necessary* (3) In accordance with JSSS 6.2 [Earthwork Support] the Contractor shall be responsible for ~~the~~ maintaining the structural integrity of the sides of all excavated or drilled pile excavations and shall provide whatever temporary or permanent Earthwork Support that may be necessary to achieve this.	**8.2 PARTICULAR SAFETY MEASURES** **8.2.1 General** (1) Foundation Piling Works and all operations connected therewith shall be designated as Dangerous Work and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*]. (2) Unless otherwise specified in the Particular Safety Specification, the Contractor shall be responsible for selecting methods of working and types of Contractor's Equipment and Temporary Works suitable for the purpose in conformity with GC 4.10. (3) In accordance with JSSS 6.2 [Earthwork Support] the Contractor shall be responsible for maintaining the structural integrity of the sides of all excavated or drilled pile excavations and shall provide whatever temporary or permanent Earthwork Support that may be necessary to achieve this.

working in, under or adjacent to any excavation and the avoidance of any damage to property.
7.3.2 (6) Avoidance of any damage by piling operations and the protection and improvement of the structural integrity of existing river or canals, banks, dykes and the like.

JC: 2) drilled pile あるいは slurry wall foundation においては slurry の比重や水位のコントロールを、請負者任せにはできないと考える。

In the case of drilled pile or slurry wall foundation, I think that control of the specific gravity and water level of the slurry cannot be left to the Contractor.

NK: 2) スラーリーの管理は施工計画・管理の一つであり、請負者の責任である。エンジニアは、請負者が提出した施工計画を把握している。異常が生じた場合はエンジニアへ報告する。そのため、追記は行っていない。

The Contractor is responsible for work method of piling operation. The Contractor shall design and manage the control of the specific gravity and water level of the slurry by his designer, checker and supervisor. The Engineer know the method from the Method Statement. When abnormal and dangerous case occurs, the Contractor shall inform the Engineer of it.

Therefore, no addition to JSSS is made.

(4) The Contractor shall execute all Foundation Piling Works without causing any damage to or weakening of surrounding subsurface conditions or ground bearing capability, ~~any~~ existing foundations, structures, buildings, roads, paved areas or the like, either on or adjacent to the Site and unless otherwise specified in the Contract, in accordance with the Particular Safety Specification regarding the allowable values of vibration, noise, settlement and other negative impacts to those by the Foundation Piling Works. the Contractor shall take all necessary measures to prevent the occurrence of such damage or weakening by carrying out all Foundation Piling Works, designing and providing permanent or temporary supports and reinforcement to such foundations, structures, buildings, roads or paved areas or the like either on or adjacent to the Site as specified in the Particular Safety Specification and obtain the prior consent of the Engineer before commencing ~~Excavation~~ Foundation Piling Works.

JC: 本設杭施工に対する周囲に与える影響(振動、騒音、沈下)の許容量を見極めるのは発注者の責務である。その許容量と環境及び杭の設計条件から発注者自身で想定される工法を選定すべきである。

作業構台の基礎のような杭に対しては、請負者自身が Site Data と与えられた環境に対する許容量に適する工法の選択が求められる。ここではそれらを分けて議論すべきである。

It is the responsibility of the Employer to determine the

(4) The Contractor shall execute all Foundation Piling Works without causing ~~any~~ damage to or weakening of surrounding subsurface conditions or ground bearing capability, any existing foundations, structures, buildings, roads, paved areas or the like, either on or adjacent to the Site ~~and unless otherwise specified in the Contract~~, in accordance with the Particular Safety Specification or any other part of the Contract documens regarding the allowable values of vibration, noise, settlement and other negative impacts to those by the Foundation Piling Works.

The Contractor shall take all necessary measures to prevent the occurrence of such damage or weakening by carrying out all Foundation Piling Works, designing and providing permanent or temporary supports and reinforcement to such foundations, structures, buildings, roads or paved areas or the like either on or adjacent to the Site as specified in the Particular Safety Specification and obtain the prior consent of the Engineer before commencing ~~Excavation~~ Foundation Piling Works.

JC2: 3 行目の weakening について。工学的にこのような表現でよろしいものかどうか、MD 氏に確認願います。

"weakening" in the 3rd line on (4). Please check with MD if this is the correct wording from an engineering standpoint.

NK2: MD 氏へも確認します。周囲の地盤強度の低下 loss/degrade/reduce of subsurface ground strength 等か？

(4) The Contractor shall execute all Piling Works without weakening any ground or causing any damage to any buildings, structures and other properties, paved areas, roads, footpaths, fences, railways, waterways, drainage, utilities or any other property on the Site or outside the Site (collectively referred to in this Chapter as "other properties").

The Contractor shall also ensure the safety of all persons, whilst they are working in, under or adjacent to any piling excavation on or outside the Site.

The Contractor shall take all necessary measures to prevent the occurrence of any such weakening or damage to other properties and obtain the prior consent of the Engineer to such measures before commencing relevant parts of the Piling Works.

I suggest that the above is correct as a separate statement in a standard safety specification.

Please also note that it is not "the responsibility of the Employer to determine the permissible range of ambient effects (vibration, noise, settlement) caused by the Permanent Work."

Moreover, there are no standard "allowable values" for acceptable damage to third party properties. Please refer to comments on this in JSSS 7.2.1 (6)

The following is the second part of the original paragraph which I suggest is edited as shown:

(4) The Contractor shall execute all Piling Works without weakening (JC) any ground or causing any damage to any buildings, structures and other properties, paved areas, roads, footpaths, fences, railways, waterways, drainage, utilities or any other property on the Site or outside the Site (collectively referred to in this Chapter as "other properties").

The Contractor shall also ensure the safety of all persons, whilst they are working in, under or adjacent to any piling excavation on or outside the Site.

The Contractor shall take all necessary measures to prevent the occurrence of any such weakening (JC) or ~~damage~~ to limit damage and nuisance to other properties and obtain the prior consent of the Engineer to such measures before commencing relevant parts of the Piling Works.

To MD: JC inquired if the wording of "weakening" above is appropriate in the meaning of sentences from the point of civil engineering. It is appreciated to review.

permissible range of ambient effects (vibration, noise, settlement) caused by the Permanent Work.

Based on the permissible amount, environment and pile design conditions, the Employer should select the assumed construction method.

For piles such as elevated access structures, the Contractor is required to select a construction method that is appropriate for the Site Data and the given environmental capacity. We should keep this in mind.

NK1: Modified and added.

9.2.2. Safety Measures at Planning Stage

~~The Contractor shall plan all Foundation Piling Works so that they are executed in a safe and methodical manner.~~

The Contractor shall plan all Foundation Piling Works before commencement so that they are executed in a safe and methodical manner. The safety measures before commencement of the Works shall be as follows:

We will ask MD to review the wording of weakening. It may be "loss/degrade/reduce of subsurface ground strength is suitable.

JC2: 7-8 行目の "and unless otherwise specified in the Contract"について。NK がこの復活を推奨。

"and unless otherwise specified in the Contract" in the 7th to 8th line on (4), NK recommend reviving the description.

NK2: We understand JC accepted our proposal, so we stipulate "unless otherwise specified in the Contract".

JC:(4) 10-13 行目の"regarding the allowable values of vibration, noise, settlement and other negative impacts to those by the Foundation Piling Works"について。このような悪影響に関するモニタリングについて以前別の章で議論しておりましたが、基礎工事もカバーされていましたでしょうか。されていなければ、モニタリングについての規定を追記願います。

Regarding the allowable values of vibration, noise, settlement and other negative impacts to those by the Foundation Piling Works" from the 10th to 13th line on (4), we have discussed monitoring for such adverse effects in the other Chapter earlier, but did it also cover foundation work? If not, please add a provision on monitoring.

NK2: 指摘箇所は MD 氏の Issue 2 では削除し、代わりに 8.2.8 でモニタリングを追記済み。

The commented part of description has been deleted by MD's Issue 2 and added 8.2.8 Monitoring Impact of Foundation Piling Works on Other Properties.

JC: (4)13 行目の限定は不要。特に the は不要かと。

About "by the Foundation Piling Works." in the 13th line in (4). Not necessary for limiting by "the".

NK2: 指摘通り削除します。Issue 2 では当該部分は削除済み。

We will delete "the" as commented. This has been deleted in the issue 2.

JC: (4)16 行目の"weakening"について。発生は「防げない」ものもあるので、mitigate adverse effects も入れる必要あるのでは？"to limit damage and nuisance"等の表現も良いのでは？

"weakening" in the 16th line in (4). Since some phenomena are not "preventable", we need to include "mitigate adverse effects" as well. Like as "to limit damage and nuisance" seems to be also appropriate.

NK: ご指摘通り"mitigate adverse effects"を挿入します。

We will insert "mitigate adverse effects" as commented.

8.2.2 Safety Measures Before Commencement

The Contractor shall plan all Foundation Piling Works before commencement so that they are executed in a safe and methodical manner. The safety measures before commencement of the Works shall be as follows:

(5) The Contractor shall execute all Foundation Piling Works without causing any damage to or weakening of surrounding subsurface conditions or ground bearing capability of any existing foundations, structures, buildings, roads, paved areas or the like, either on or outside the Site

I suggest that the above is correct as a separate statement of fact in a standard safety specification.

Please also note that it is not "the responsibility of the Employer to determine the permissible range of ambient effects (vibration, noise, settlement) caused by the Permanent Work."

Moreover there are no standard "allowable values" for acceptable damage to third party properties. Please refer to comments on this in JSSS 7.2.1 (6)

The following is the second part of the original paragraph which I suggest is edited as shown:

(6) ~~and unless otherwise specified in the Particular Safety Specification.~~ The Contractor shall take all necessary measures to prevent the occurrence of any damage or weakening by ~~carrying out all Foundation Piling Works,~~ designing and providing permanent or temporary supports and reinforcement to such foundations, structures, buildings, roads or paved areas or the like, either on or adjacent to the Site and obtain the prior consent of the Engineer before commencing such Foundation Piling Works.

8.2.2 Safety Measures at Planning Stage

The Contractor shall plan all Foundation Piling Works before commencement so that they are executed in a safe and methodical manner. The safety measures before commencement of the Works shall be as follows:

Regarding the suggested change of HSO to Contractor in the following clause, please refer to my comments against JSSS 1.3 and 1.14:

(5) The Contractor shall execute all Foundation Piling Works without causing damage to or weakening (JC) of surrounding subsurface conditions or ground bearing capability of any existing foundations, structures, buildings, roads, paved areas or the like, either on or outside the Site

(6) The Contractor shall take all necessary measures to prevent the occurrence of any damage or weakening (JC) and mitigate adverse effects by designing and providing permanent or temporary supports and reinforcement to such foundations, structures, buildings, roads or paved areas or the like, either on or adjacent to the Site and obtain the prior consent of the Engineer before commencing such Foundation Piling Works.

8.2.2 Safety Measures at Planning Stage

The Contractor shall plan all Foundation Piling Works before commencement so that they are executed in a safe and methodical manner. The safety measures before commencement of the Works shall be as follows:

JC: 具体性が無い。つまり前項 9.2.1 General の要求を満たす施工機械の選定と、付随する環境順守規定対策のことと考える。ここの書きぶりに違和感を覚える。

→9.2.2 と 9.2.3 を統合することを検討ください。

This part is lack of concreteness. In other words, it is considered to be the selection of construction equipment that satisfies the requirements of the previous section 9.2.1 General and the accompanying environmental compliance regulations. Is there any room for improvement here?

→ Consider integrating 9.2.2 and 9.2.3.

NK: Integrated 9.2.2 and 9.2.3 as 8.2.2 in right.

JCD: 杭打ち作業は、クレーン作業、杭打ち作業、あるいは掘削運搬作業、等複数の作業により継続的に行われる。各作業あるいは全般を指揮する作業指揮者の配置や、各要素の作業に必要な専門職の配置確認が以降のいずれかに必要。

The pile driving operation is continuously performed by a plurality of operations such as a crane operation, a pile driving operation, and an excavation transportation operation. It is necessary to confirm the assignment of operation leaders who conduct each work or the whole and the assignment of professionals necessary for the work of each element in any of the following.

NK: 杭打ち作業に限らず全ての作業が、段階毎に各種の作業を行う。そのため、杭打ち作業だけに作業指揮者の配置を特に規定せず、第 1 章で規定することが良いと考えます。現時点の第 1 章（Issue 7）は次のように規定しています。

1.18 Proper Placement of Contractor's Personnel

1.18.3.Labourers and unskilled workers shall never be assigned to any work on Site on their own, all shall be assigned in groups and each work group must always include an Operation Leader to ensure compliance with the Contractor's safety regulations.

1.22 Dangerous Work

1.22.5.A specially trained Operation Leader shall always be assigned to work full-time with every worker or team of workers engaged upon Dangerous Work.

上記の理由で追記は行っておりません。

All works including piling works are executed with some stages by step by step. Allocation of Operation Leader (OL) shall be specified in Chapter 1 General but not especially in the piling works.

With the above reason, we don't add a clause for assignment of OL.

~~**9.2.3. Safety Measures Before Commencement**~~

(1) The ~~HSO~~[1] Contractor shall inspect the Foundation Piling Work working area and surrounding areas before starting the assembly and installation of the Contractor's Equipment for the Foundation Piling Works to ensure that:

(1) The Contractor shall inspect the Foundation Piling Work working area and surrounding areas before starting the assembly and installation of the Contractor's Equipment for the Foundation Piling Works to ensure that:

"….The position and authority of the HSO for the health safety on the Works should not be compromised. Who he requires assistance from is really his choice and it is dependent upon many factors such as the contractor's organisation, who is available, the general experience, capability and skill level of workers. We or the Engineer should have no interest in who he delegates support to providing the HSO does his job properly."

And "For further understanding, the Contractor's Representative has similar in fact heavier responsibilities but we (nor FIDIC) consider defining which of his staff do what to support him, I do not recommend that we try to do it."

The HSO should remain responsible for maintaining safety at all times; if he delegates and who he delegates to and how they communicate, is his choice and responsibility.

Regarding the management of construction performance, quality, quantity and environmental compliance etc. etc. other persons are independently responsible.

I suggest that the Engineer has no duty to advise or direct the Contractor how to manage his internal affairs and I advise against trying to do this.

In terms of 8.2.(3) JSSS is for safety matters, so the HSO must inspect this and other works to assess that all is safe.

The construction staff must also inspect and give instructions etc. for other purposes but surely it is not within the scope of JSSS to advise on that.

Sometimes also, opinions will differ because interests are different, for example the HSO may not allow piling work to start if he perceives any risk to safety.

On the other hand a construction manager or site engineer may choose to take risks for example to speed up he start if work is running late.

If we state "the Contractor shall.." this unnecessarily introduces ambiguity to JSSS and I do advise against it.

I suggest that if any change is to be made (which I do not think necessary) it should however be in Chapter 1 which prevails.

All other chapters of JSSS would be better confined to safety and therefore generally refer to HSO.

(1) The HSO shall inspect the Foundation Piling Works working area and surrounding areas and ensure that all of the following is acceptable before allowing the Foundation Piling Works to commence:

(a) The ground is level and capable of supporting the loading of the Contractor's

(1) The HSO shall inspect the Foundation Piling Works working area and surrounding areas and ensure that all of the following is acceptable before allowing the Foundation Piling Works to commence:

(a) The ground is level and capable of supporting the loading of the Contractor's Equipment including any dynamic effect of

[1] Refer to JSSS 1.10 [*Contractor's Health and Safety Officer at the Site*]

JC1: これが HSO の業務内容なのか疑問。Site Engineer が確認して HSO の了解を得る方が自然ではないか。その意味で the Contractor を主語にしてはどうか。

I wonder if this is the task of HSO. Wouldn't it be more natural for site engineers to check and get HSO's consent? In that sense, why not put the Contractor as the subject in that sense?

NK: HSO は安全計画通りに現場担当者が現場の安全管理を行っているかを管理する立場とする規定していることから、HSO の作業開始の許可は不要と考えます。そのため、HSO を請負者に変更します。

It is specified that HSO shall manage that the site staff execute the safety measures in accordance with the Safety Plan, so it seems not necessary of approval by the HSO before the commencement of work. The HSO is replaced with the Contractor.

(After submission of the above reply to JICA, I started preparing R2 for TW and found the above reply is not correct. I am preparing revised explanation to JICA.)

(a) The ground is level and capable of supporting the loading of the Contractor's Equipment including any dynamic effect of the Foundation Piling Works and the load of any materials to be placed thereon. If necessary the Contractor shall improve the ground as necessary by stabilising, paving and/or placing steel decking and temporary piling to provide a suitable surface without risk of Contractor's Equipment or materials, sinking or overturning;

(b) The area is clear of any obstructions; and

(c) The areas are properly drained and free from standing water.

(2) ~~As a consequence of such inspections the HSO prohibit the commencement and continuation of Foundation Piling Works, take necessary corrective measures and make any necessary amendment to the Safety Plan and instruct all Contractor's Personnel of the any revised safety measures before work is allowed to commence and continue in order to ensure their continued safety.~~ After ensure all above items (a) to (c) in the inspections, the HSO shall permit to commence and continue the Foundation Piling Works.

JC: 前項(a)～(c)を確認して作業開始を許可する、とまとめられないか。

Is it possible to integrate with checking the previous paragraphs (a) to (c) and permitting the start of work?

(a) The ground is level and capable of supporting the loading of the Contractor's Equipment including any dynamic effect of the Foundation Piling Works and the load of any materials to be placed thereon. If necessary the Contractor shall improve the ground as necessary by stabilising, paving and/or placing steel decking and temporary piling to provide a suitable surface without risk of Contractor's Equipment or materials, sinking or overturning;

(b) The area is clear of any obstructions; and

(c) The areas are properly drained and free from standing water.

JC2: (1)(a) 6-7 行目の"if necessary"について。重複ではないか？

About " if necessary" in the 6th to 7th line in (1)(a). Isn't it duplicated expression?

NK2: 指摘どおり、if necessary の前後で文意が重複しているが、具体的方策を示しており、残した方が良いと考えます。

There seems to be some duplicate meaning of sentences. Comparing (a) with (b) and (c), (a) stipulate measures in case more than (b) and (c). However, it is recommendable to specify concrete counter measures.

(2) After ensure all above items (a) to (c) in the inspections, the HSO shall permit to commence and continue the Foundation Piling Works.

JC: (2)は削除し次の表現で置き換えること。

Delete (2) and replace with the sentence below.

The Contractor shall commence the Foundation Piling Works only after (a) to (c) above have been accomplished.

NK: 指摘通り変更します。will modify as commented.

Equipment including any dynamic effect of the Foundation Piling Works and the load of any materials to be placed thereon. If necessary the Contractor shall improve the ground as necessary by stabilising, paving and/or placing steel decking and temporary piling to provide a suitable surface without risk of Contractor's Equipment or materials, sinking or overturning;

(b) The area is clear of any obstructions; and

(c) The areas are properly drained and free from standing water.

~~(2) As a consequence of such inspections the HSO prohibit the commencement and continuation of Foundation Piling Works, take necessary corrective measures and make any necessary amendment to the Safety Plan and instruct all Contractor's Personnel of the any revised safety measures before work is allowed to commence and continue in order to ensure their continued safety.~~

The following additional wording is now already covered by the editing of the first paragraph above.

~~(3) After ensure all above items (a) to (c) in the inspections, the HSO shall permit to commence and continue the Foundation Piling Works.~~

the Foundation Piling Works and the load of any materials to be placed thereon. If necessary the Contractor shall improve the ground as necessary by stabilising, paving and/or placing steel decking and temporary piling to provide a suitable surface without risk of Contractor's Equipment or materials, sinking or overturning;

To MD, Please review the (a) from the view point of JC that the sentences are duplicated. Comparing (a) with (b) and (c), (a) stipulate measures in case more than (b) and (c). However, it is recommendable to specify concrete counter measures.

(b) The area is clear of any obstructions; and

(c) The areas are properly drained and free from standing water.

(2) The Contractor shall commence the Foundation Piling Works only after (a) to (c) above have been accomplished.

NK: Modified as above.

9.2.4. Safety Measures for Transportation on Site - Prohibition of Use Other Than for Intended Purposes

JC: 目的外使用の禁止。英語で同趣旨のサブタイトルを付けてください。

Prohibition of Unintended Use. Please add a subtitle with the same meaning in English.

NK: add the subtitle as commented.

Piles and pile casings, liners, reinforcement cages and the like shall not be transported or relocated by use of pile driving or drilling machines. In all cases the Contractor shall use cranes accompanied or where necessary, trucks and flatbed trailers for the transportation or relocation.

NK: The above sentence is modified for simple subscription.

9.2.5. Safety Measures for Driven Foundation Piling Works

(1) The Contractor shall select correct rigging method and appropriate Rigging Equipment to suit the characteristics of the lifting or pile driving machine and the piles, so that piles are mishandled or dropped.

JC: Inserted "The Contractor shall".

NK: Modified as right to make specify measures clear..

(2) ~~Keep all workers~~ The Contractor shall keep workers other than those directly engaged in the driving operations away from the direct working location when driving operations are taking place.

JC: 杭打ち作業員・オペレータ以外の人払いの規定と考えるが、all workers でよいのか？また、9.2.6 項と共通した内容ではないのか

It is considered that it is a rule to keep avoiding people other than workers who engage in piling works and operators from approaching. Is it ok to avoid all workers? In addition, isn't the content common with 9.2.6?

JC: Inserted "The Contractor shall keep workers other than those directly engaged in the driving operations

NK: Modified (2) as commented.

(3) In addition to the fall prevention measures stipulated in JSSS 2.5[FALL PREVENTION], when the worker works on the lead of pile driving machine, the Contractor shall provide facility to

8.2.3 Safety Measures for Transportation on Site - Prohibition of Use Other Than for Intended Purposes

Piles and pile casings, liners, reinforcement cages and the like shall not be transported or relocated by use of pile driving or drilling machines. In all cases the Contractor shall use cranes accompanied or where necessary, trucks and flatbed trailers for the transportation or relocation.

JC2: 8.2.3 の見出しは、次に変更する。

Please revise the title as follows:

Safety Measures for Transportation on Site Prohibition of Unintended Use → "Safety Measures for Transportation on Site -Use of appropriate equipment and vehicle"

NK: 指摘通り変更.

Modify as commented.

8.2.4 Safety Measures for Driven Foundation Piling Works

(1) The Contractor shall select correct rigging method and appropriate Rigging Equipment to suit the characteristics of the lifting or pile driving machine and the piles in accordance with (Quote here the appropriate provisions of Chapter 5), so that piles are mishandled or dropped.

JC: (1)5 行目の()の箇所へ 5 章の適切な規定を挿入すること。

For the position of ( ) in the 5th line on (1), insert the appropriate description of Chapter 5.

NK: Issue 3 では対象箇所の規定は削除済み。

The designated part has been deleted in Issue 3.

(2) The Contractor shall keep workers other than those directly engaged in the driving operations away from the direct working location when driving operations are taking place.

(3) In addition to the fall prevention measures stipulated in JSSS 2.5[FALL PREVENTION], when the worker works on the lead of pile driving machine, the Contractor shall provide a facility to ~~install~~ lifelines ~~on the lead and~~ to fix the PFAS and make the worker use the PFAS.

JC: 少し変。日本語を正確に読めば Provide a facility to は不要なのがわかるかと。 親綱の設置等の墜落制止用器具を取り付けるものを設け、] 日本語は、命綱を設置するような施設を設置することを求めてはないし、そういうものを溶接してつけるようなことでもないのかと（safety block とか命綱とか使えということ） また、論理的にはリーダーに命綱を取り付ける必要もない（ついでに作業員単数なら命綱は普通1本）

8.2.3 Safety Measures for Transportation on Site - Prohibition of Use Other Than for Intended Purposes

Is above additional wording necessary? I have tried to make headings brief,

Piles and pile casings, liners, reinforcement cages and the like shall not be transported or relocated by use of pile driving or drilling machines. In all cases the Contractor shall use cranes accompanied or where necessary, trucks and flatbed trailers for the transportation or relocation.

8.2.4 Safety Measures for Driven Foundation Piling Works

The Contractor shall:

(1) Select correct rigging method and appropriate Rigging Equipment to suit the characteristics of the lifting or pile driving machine and the piles, so that piles are mishandled or dropped.

(2) Keep workers other than those directly engaged in the driving operations away from the direct working location when driving operations are taking place.

8.2.3 Safety Measures for Transportation on Site – Use of Appropriate Equipment and Vehicle

Piles and pile casings, liners, reinforcement cages and the like shall not be transported or relocated by use of pile driving or drilling machines. In all cases the Contractor shall use cranes accompanied or where necessary, trucks and flatbed trailers for the transportation or relocation.

8.2.4 Safety Measures for Driven Foundation Piling Works

The Contractor shall:

(1) Select correct rigging method and appropriate Rigging Equipment to suit the characteristics of the lifting or pile driving machine and the piles, so that piles are mishandled or dropped.

(2) Keep workers other than those directly engaged in the driving operations away from the direct working location when driving operations are taking place.

(3) Provide a lifeline to fix PFAS on the lead when the worker works on the lead of pile driving machine in addition to the fall prevention measures stipulated in JSSS 2.5[FALL PREVENTION]

install lifelines on the lead and fix the PFAS and make the worker use the PFAS.

NK: (3) is added for fall prevention from lead of piling driving machine as required for specific requirement for the lead.

9.2.6. Safety Measures for Cast-in-place Piling Works

~~The following items specify example safety measures for workers engaged in various methods of Foundation Piling Works. For any other piling methods, the Contractor shall take appropriate safety measures including those referred to in the following requirements.~~

The following items specify ~~example~~ safety measures for workers engaged in ~~various methods of Foundation Piling Works~~ Cast-in-place Piling Works mentioned below. For any other ~~piling~~ Cast-in-place Piling methods than specified below, the Contractor shall take appropriate safety measures including those referred to in the following requirements.

JC: deleted "example", "Foundation Piling Works "and "piling".
NK: Delete it as indicated. And suggest specific piling methods are to be added.

(1) Pile Excavation Works using All-Casing Piling Method.

~~(a) Keep all workers away from the pile excavation machine while installing the casing and operating the drop hammer grab. Before any worker is allowed to access the casing or equipment, ensure that the hammer grab is secured in the casing; and~~

Keep ~~all~~ workers other than those directly engaged in the piling operations away from the pile excavation machine while installing and removing the casing, and operating the drop hammer grab. Before any worker is allowed to access the casing or equipment during the hammer grab is being operated, ensure that the hammer grab is secured in the casing; and

JC: 日本語版では 3 つ目の項目が付いていたはずです。MD 氏は General の部分と重複があるとして削除していますが、復活させてください。

In the Japanese version, there are 3 items, however Issue 6 has removed them because of duplication with the General part in Chapter 1. Please revive them.

NK: 和文 9.4.2 (3)は、右に追記しました。

provide a lifeline to fix PFAS が正しい。
JC2: That's not exactly right. If it is read correctly, it can be understood "provide a facility to" is not necessary. "provide a lifeline to fix PFAS" only is correct.
NK: 指摘通り修正。
We will modify it as commented. (3) is not included in Issue 2. We added it.

8.2.5 Safety Measures for Cast-in-place Piling Works

~~The following items specify safety measures for workers engaged in Cast-in-place Piling Works mentioned below. For any other Cast-in-place Piling methods than specified below, the Contractor shall take appropriate safety measures including those referred to in the following requirements.~~

When any Cast-in-place Piling Works are adopted, the Contractor shall take appropriate safety measures taking account of features of different methods of work, in particular:

JC: 黄色ハイライト部は削除し上記へ変更すること。
Replace the yellow highlighted part with the above sentences.
NK: 指摘通り変更。
Modify as directed and MD will review and edit them.

(1) Pile Excavation Works using All-Casing Piling Method.

(a) Keep ~~all~~ workers other than those directly engaged in the piling operations away from the pile excavation machine while installing and removing the casing, and operating the drop hammer grab. Before any worker is allowed to access the casing or equipment during the hammer grab is being operated, ensure that the hammer grab is secured in the casing; and

(b) In case ~~When~~ any worker needs to enter the casing, confirm that there is no danger in accordance with JSSS 2.1.4 [*Further Requirements for Dangerous Work*].

8.2.5 Safety Measures for Cast-in-place Piling Works

The following items specify example safety measures for workers engaged in Cast-in-place Piling Works. ~~For any other Cast-in-place Piling Works, the Contractor shall take appropriate safety measures including those referred to in the following requirements.~~

(1) Pile Excavation Works using All-Casing Piling Method:

(a) Keep workers other than those directly engaged in the piling operations away from the pile excavation machine while installing and removing the casing and operating the drop hammer grab. Before any worker is allowed to access the casing or equipment whilst the hammer grab is being operated, ensure that the hammer grab is secured in the casing; and

(b) When any worker needs to enter the casing, confirm that there is no danger in accordance with JSSS 2.1.5 [*Further Requirements for Dangerous Work*].

8.2.5 Safety Measures for Cast-in-place Piling Works

When any Cast-in-place Piling Works are adopted, the Contractor shall take appropriate safety measures taking account of features of different methods of work, in particular:

(1) Pile Excavation Works using All-Casing Piling Method.

(a) Keep workers other than those directly engaged in the piling operations away from the pile excavation machine while installing and removing the casing and operating the drop hammer grab. Before any worker is allowed to access the casing or equipment whilst the hammer grab is being operated, ensure that the hammer grab is secured in the casing; and

(b) When any worker needs to enter the casing, confirm that there is no danger in accordance with JSSS 2.1.5 [*Further Requirements for Dangerous Work*].

The Japanese 9.4.2 (3) is specified by adding to (1) in right.

(b) When any worker needs to enter the casing, confirm that there is no danger in accordance with JSSS 2.1.4 [*Further Requirements for Dangerous Work*].

JC: このようなケースは異常事態にしか想定されないため、滅多にないというニュアンスを出した文に更新してください。

Such case in (b) is only expected in abnormal situation, so please rephase it with nuance of abnormal situation.

NK:ケーシングに入る時は規定通りであり、特別に異常事態と記載する必要はないと考えます。規定のままとします。

Entering in casing is as specified, so not necessary to stipulate as abnormal condition. It is not modified.

(2) Pile Excavation Works for Reverse Circulation Bored Piling Method

(a) When adding or removing drill lengths, ensure that a Spotter is present to signal the operator of the drilling machine so that the hands and fingers of workers do not get caught in the work;

(b) ~~Pay attention to any fluctuation in water level in the drilled hole and the mud (bentonite solution) concentration level and prepare for addition or discharge of mud~~ Keep water level and concentration level of slurry (bentonite solution) in the drilled hole as planned and prepare for addition or discharge of slurry consequent to any fluctuation; and

JC: Keep head and density of slurry as planned のような書きぶりが良い。

It is better to stipulate like “Keep head and density of slurry as planned”.

NK: Modified as commented.

(c) When providing a mud creation pit or a mud discharge pit, take measures to prevent workers from falling into such pits by providing barriers and signage.

(3) Pile Excavation Works for Auger Piling Method

(a) To prevent overturn of drilling or auger equipment, consider the weight of excavated material in the drilling bucket or on the auger during operation; and

(b) Keep workers other than those directly engaged in the drilling works away from the drill or auger.

(2) Pile Excavation Works for Reverse Circulation Bored Piling Method

(a) When adding or removing drill ~~length~~ rods, ensure that a Spotter is present to signal the operator of the drilling machine so that the hands and fingers of workers do not get caught in the work;

(b) Keep water level and concentration level of slurry (bentonite solution) in the drilled hole as planned in the Method Statement and prepare for addition or discharge of slurry consequent to any fluctuation; and

(c) When providing a mud creation pit or a mud discharge pit, take measures to prevent workers from falling into such pits by providing barriers and signage.

(3) Pile Excavation Works for Auger Piling Method

(a) To prevent overturn of drilling or auger equipment, consider the weight of excavated material in the drilling bucket or on the auger during operation; and

(b) Keep workers other than those directly engaged in the drilling works away from the drill or auger.

JC2: (1)～(3)の赤文字表記は JICA による直接の更新。

Red letters in (1)-(3) are directly modified by JICA.

(2) Pile Excavation Works for Reverse Circulation Bored Piling Method:

(c) When adding or removing drill lengths, ensure that a Spotter is present to signal the operator of the drilling machine so that the hands and fingers of workers do not get caught in the work;

(d) Maintain the water level and concentration level of slurry (bentonite solution) in the drilled hole as planned and prepare for addition or discharge of slurry, consequent to any fluctuation; and

(e) When providing a mud creation pit or a mud discharge pit, take measures to prevent workers from falling into such pits by providing barriers and signage.

(3) Pile Excavation Works for Auger Piling Method:

(f) To prevent overturn of drilling or auger equipment, consider the weight of excavated material in the drilling bucket or on the auger during operation; and

(g) Keep workers other than those directly engaged in the drilling works away from the drill or auger.

(2) Pile Excavation Works for Reverse Circulation Bored Piling Method.

(a) When adding or removing drill lengths, ensure that a Spotter is present to signal the operator of the drilling machine so that the hands and fingers of workers do not get caught in the work;

(b) Maintain the water level and concentration level of slurry (bentonite solution) in the drilled hole as planned in the Method Statement and prepare for addition or discharge of slurry, consequent to any fluctuation; and

(c) When providing a mud creation pit or a mud discharge pit, take measures to prevent workers from falling into such pits by providing barriers and signage.

(3) Pile Excavation Works for Auger Piling Method:

(a) To prevent overturn of drilling or auger equipment, consider the weight of excavated material in the drilling bucket or on the auger during operation; and

(b) Keep workers other than those directly engaged in the drilling works away from the drill or auger to prevent injury from splashing or falling of mud or earth from and collision by them .

9.2.7. Placement of Concrete

(1) Reinforcement cages shall be designed, manufactured and hoisted into place so that they do not deform and slip or drop off the Hoisting Equipment.

(2) Provide secure rigging slings and welded metal fixings to ensure that reinforcement cages, tremie pipes are secure and do not slip or drop off the Hoisting Equipment.

(3) When handling reinforcement cages and tremie pipes, ensure that a Spotter is present to signal the operator of the machine so that the hands and fingers of workers do not get caught in the work.

9.2.8. Safety Measures for Deep Foundation Insitu Concrete Piling Works

JC: この英訳で「深礎」と一般的に通じるものでしょうか。

Can international readers understand this English term translated from "Sin-so" in Japanese?

NK: 深礎は次のように英語で表記されていると考えます。また、以下で通常人力掘削であると規定していますので通じると考えます。

We consider "Sin-so" in Japanese is “deep foundation as shown in Wikipedia and also JSSS specified as usually executed by manual excavation.

JC2: (3)(b)について。一般的になりすぎて機械に近寄らないはあまり意味ない。ハザードとは何か？オーガーの場合は土砂の落下による危険がもともとの焦点で、その下に入らないことに意味があるので、その旨を明記してください。

For (3)(b), the expression "keep workers away from the drill or auger" doesn't make much meaning because it's general description. It needs what could be a hazard in this case. In the case of augers, falling earth/mud from the auger would be hazard. So please state that.

NK2: 追記します。Added the hazard referring to the comments.

8.2.6 Placement of Concrete

(1) Reinforcement cages shall be designed, manufactured and hoisted into place so that they do not deform.

(2) Provide secure rigging slings and welded metal fixings to ensure that reinforcement cages, tremie pipes are secure and do not slip or drop off from the Hoisting Equipment.

(3) When handling reinforcement cages and tremie pipes, ensure that a Spotter is present to signal the operator of the machine so that the hands and fingers of workers do not get caught in the work.

JC2: that reinforcement cages について。(1)にあるので、違いがわからなくなっている。(2)は強度のある吊り器具を提供・使用というより（それは当たり前）、籠の場合はどういう風に吊るか、トレミーならどう滑らないようにつるかということで、「決められた手順・吊り方で行う」というのが元文の主旨のはず。これだと(1)とあわせてごちゃごちゃで、鉄筋籠の重複もあり、どちらかを消し忘れたようにしか見えない。

About “that reinforcement cages”, it is stipulated both in (1) and (2), so it’s hard to tell the difference of (1) & (2). For (2), it should show how to install the reinforcement cages and how to hang the tremie so that it does not slip.

NK: (1)は鉄筋篭の設計、(2)は鉄筋籠とトレミー管の吊り作業について分けて規定します。

Separately stipulate (1) about cage and (2) hoisting cage and tremie.

8.2.7 Safety Measures for Deep Foundation Insitu Concrete Piling Works

This Section contains ~~example~~ safety measures for large diameter deep foundation piling works with continuous shaft lining, shaft access for workers, usually executed by manual excavation.

JC2: 深礎に適した径の規定があるはずですので、調べたうえで、可能であるならば具体的な数値を書き入れてください。

There is a provision for a suitable diameter for the deep foundation (hand dug piles), so please research and if

8.2.6 Placement of Concrete

(1) Reinforcement cages shall be designed, manufactured and hoisted into place so that they do not deform and slip or drop off the Hoisting Equipment.

(2) Provide secure rigging slings and welded metal fixings to ensure that reinforcement cages, tremie pipes are secure and do not slip or drop off the Hoisting Equipment.

(3) When handling reinforcement cages and tremie pipes, ensure that a Spotter is present to signal the operator of the machine so that the hands and fingers of workers do not get caught in the work.

8.2.7 Safety Measures for Deep Foundation Insitu Concrete Piling

This Section contains example safety measures for large diameter deep foundation piling works with continuous shaft lining, shaft access for workers, usually executed by manual excavation.

I suggest that you leave “example” as it is, it is intentional. It is a simple and brief way of stating that the following measures are not restrictive and that whatever else is necessary shall be provided by the contractor.

8.2.6 Placement of Concrete

(1) Reinforcement cages shall be designed, manufactured and hoisted into place so that they do not deform. ~~and slip or drop off from the Hoisting Equipment.~~

(2) Provide secure rigging equipment and operate hoisting ~~slings and welded metal fixings~~ to ensure that reinforcement cages and tremie pipes ~~are secure and~~ do not slip or drop off from the Hoisting Equipment in accordance with the Method Statement and Safety Plan.

(3) When handling reinforcement cages and tremie pipes, ensure that a Spotter is present to signal the operator of the machine so that the hands and fingers of workers do not get caught in the work.

8.2.7 Safety Measures for Hand-Dug Piling Works

This Section contains safety measures for ~~Deep Foundation Piling Works~~, hand-dug piling works which shall be a diameter of 2m or more, with continuous shaft lining, shaft access for workers, usually executed by manual excavation.

"A deep foundation is a type of foundation that transfers building loads to the earth. A pile or piling is a vertical structural element of a deep foundation, driven or drilled deep into the ground at the building site".

This Section contains ~~example~~ safety measures for large diameter deep foundation piling works with continuous shaft lining, shaft access for workers, usually executed by manual excavation.

JC: deleted "example"
NK: Revised.

(1) General Safety Measures

(a) Provide safe and efficient access/emergency exit facilities in the shaft for workers;

(b) Provide vertical ladders, securely anchored to framework or shaft lining and complete with a ladder safety system;

(c) Provide a landing rest platform every 5 m, when the length of any ladder exceeds 10 m, ~~a landing rest platform shall be provided every 5 m~~;

JC: 重複していませんか？Isn't it a duplicate expression?
NK: Deleted.

(d) Comply with the requirements provided in OSHA 1926.1053 Ladders other than specified in JSSS 8.2.7.

NK: added.

(d) Ensure that the upper end of vertical ladders projects at least 1m above the ground and any landing rest platforms;

(e) Provide appropriate and adequate pumps to remove all water from the base of the shafts; and

(f) Take measures to prevent any accidents involving workers with the spoil removal containers and any other equipment particularly throughout the

possible, stipulate specific diameter.

NK2: MLIT 近畿地方整備局設計便覧「第 10 章基礎工」では、基礎杭の種類と杭径について下表のとおり掲載しています。

In the Road and Bridge Specifications, Kinki Regional Bureau, MLIT, Japan, specify the type and diameter of foundation piles as shown below. Diameter of Deep Foundation Piles is 2,000mm and more.

NK2: Because of workers' safe working circumstance and that small diameter has risk to the workers, Hand-Dug Piling pile of diameter of 2m or more is defined here

Table Pile Type and Applicable Diameter
表 杭種と杭径の使用範囲 (unit:mm)

杭 種 (Pile type)			Diam.杭径
既製杭 Precast piles	打込み・プレボーリング Driven and Pre-excavated piles	RC 杭 RC piles	300-600
		PHC 杭・SC 杭 PHC and SC piles	300-1,000
		鋼管杭 Steel pipe piles	400-
	中堀り		500-1,000
鋼管ソイルセメント杭 Steel pipe and soil cement piles		ソイルセメント柱径 Soil cement diam.	700-1,500
		鋼管径 Steel pipe	500-1,200
場所うちコンクリート杭 In-situ concrete piles			1,000-
深礎杭 Hand-Dug Pile			**2,000-**

出典：MLIT 近畿地方整備局 設計便覧「基礎工」
https://www.kkr.mlit.go.jp/plan/jigyousya/technical_information/consultant/binran/etsuran/qgl8vl0000005ecr-att/sekkei03_10.pdf

(1) General Safety Measures

(a) Provide safe and efficient access/emergency exit facilities in the shaft for workers;

(b) Provide vertical ladders, securely anchored to framework or shaft lining and complete with a ladder safety system;

(c) Provide a landing rest platform every 5 m, when the length of any ladder exceeds 10 m, ~~a landing rest platform shall be provided every 5 m~~;

(d) Comply with the requirements provided in OSHA 1926.1053 Ladders other than specified in JSSS 8.2.7.

(e) Ensure that the upper end of vertical ladders projects at least 1m above the ground and any landing rest platforms;

(f) Provide appropriate and adequate pumps to remove all water from the base of the shafts; and

(g) Take measures to prevent any accidents involving workers with the spoil removal containers and any other equipment particularly throughout the bucket hoisting and descending operations.

(1) General Safety Measures

(a) Provide safe and efficient access/emergency exit facilities in the shaft for workers;

(b) Provide vertical ladders, securely anchored to framework or shaft lining and complete with a ladder safety system;

(c) Provide a landing rest platform every 5 m, when the length of any ladder exceeds 10 m and otherwise comply with the requirements provided in OSHA 1926.1053 Ladders where such requirements exceed those specified in JSSS 8.2.7;

(d) Ensure that the upper end of vertical ladders projects at least 1m above the ground and any landing rest platforms;

(e) Provide appropriate and adequate pumps to remove all water from the base of the shafts; and

(f) Take measures to prevent any accidents involving workers with the spoil removal containers and any other equipment particularly throughout the bucket hoisting and descending operations.

(2) Ladder Safety System

(1) General Safety Measures

(a) Provide safe and efficient access/emergency exit facilities in the shaft for workers;

(b) Provide vertical ladders, securely anchored to framework or shaft lining and complete with a ladder safety system;

(c) Provide a landing rest platform every 5 m, when the length of any ladder exceeds 10 m and otherwise comply with the requirements provided in OSHA 1926.1053 Ladders where such requirements exceed those specified in JSSS 8.2.7;

(d) Ensure that the upper end of vertical ladders projects at least 1m above the ground and any landing rest platforms;

(e) Provide appropriate and adequate pumps to remove all water from the base of the shafts; and

(f) Take measures to prevent any accidents involving workers with the spoil removal containers and any other equipment particularly throughout the bucket hoisting and descending operations.

bucket hoisting and descending operations.

(2) Ladder Safety System

(a) The ladder safety system shall be designed to eliminate or reduce the possibility of a worker falling off the ladder and shall comprise a carrier, safety sleeve, lanyard, connectors, and body harness.

(b) Workers shall be trained in the use.

~~For further information refer to: https://www.osha.gov/Publications/OSHA3903.pdf~~

JC: この言い方は二重の意味で中途半端です。

① この OSHA の publication に対して comply しろということなのか、これを参考にして安全対策を独自に施せということなのかがはっきりしません。

「OSHA や BS については引用するならば comply、但し無用な部分はエンジニアの同意があれば除外できる」という総則の定めには従う・・・ことになっていると思うので Comply でよいと思います。

② この OSHA の文書にはいろいろなことが記述されており、comply する範囲を ladder system に限定した記述にするべきです。

(1) It is not clear whether the Contractor shall comply with the OSHA's publication or take safety measures by himself with reference to it.

It is basic concept that in case to quote OSHA or BS, "comply" shall be used and inapplicable parts can be excepted if the Engineer agrees as stipulated in Chapter 1 General. Therefore, this clause van be "comply" but not "refer to".

(2) This OSHA's publication includes various items, so it is necessary to limit items to be complied with for the ladder system.

NK: (a) JSSS 2.5FALL PREVENTION では Fixed ladder について規定はないため、Ladder の安全措置について OSHA1926.1053 の条項の順守を(d)として追加します。

(b)は深礎での墜落のリスクは高いため、教育訓練は残しますが、OSHA Fact Sheet は、一般的な規定のため、特に遵守を本項で規定する必要はないため、削除致します。

(a) JSSS 2.5FALL PREVENTION does not specify about fixed ladder, so safety measures for ladders in OSHA1926.1053 is added as (d).

(b) There is risk of fall in the deep foundation, so training is left. As the OSHA Fact Sheet describes general requirements, we think no need to especially stipulate to comply to the Sheet. Therefore, they are deleted.

(2) Ladder Safety System

(a) The ladder safety system shall be designed to eliminate or reduce the possibility of a worker falling off the ladder and shall comprise a carrier, safety sleeve, lanyard, connectors, and body harness.

(b) Workers shall be trained in the use.

~~For further information refer to: https://www.osha.gov/Publications/OSHA3903.pdf~~

(3) Communication and Signalling Measures

(a) Signals for delivering materials and

(a) A ladder safety system shall be provided to eliminate the risk of injury to any worker falling off the ladder.

(b) The ladder safety system shall comprise a carrier, safety sleeve, lanyard, connectors, and body harness and all workers shall be trained in its use.

(3) Communication and Signalling Measures

(a) Signals for delivering materials and equipment to and down the shaft shall be determined in advance and all workers shall

(2) Ladder Safety System

(a) A ladder safety system shall be provided to eliminate the risk of injury to any worker falling off the ladder.

(b) The ladder safety system shall comprise a carrier, safety sleeve, lanyard, connectors, and body harness and all workers shall be trained in its use.

(3) Communication and Signalling Measures

(a) Signals for delivering materials and equipment ~~to and down the shaft shall be~~

(3) Communication and Signalling Measures

(a) Signals for delivering materials and equipment to and down the shaft shall be determined in advance and all workers shall be trained in their use;

(b) Signals and evacuation methods during emergencies shall also be determined in in advance and all workers shall be trained in their use with regular evacuation training; and

(c) Where considered necessary by the HSO handheld radios shall be provided to the Operation Leader working at the base of the shaft and a Spotter at the ground level for all communications.

(4) Environmental Measures

(a) Ensure a continuous, adequate and safe air supply to workers located at the bottom of the shaft;

(b) Provide monitoring equipment, set up alarms if air quality deteriorates and keep records in accordance with JSSS 2.1. [*Work Environment*]; and

(c) Provide adequate temporary lighting

(5) Measures before Commencing Work

(a) Check the condition of the excavated ground surface in the shaft and whether there is any abnormality in the shaft lining.

(6) Measures during the work

(a) When workers are in the shaft, assign a Spotter at ground level and located within direct view at the upper edge of the shaft;

~~(b) Stop the work, evacuate workers and provide remedial measures to deal with ground water particularly when under pressure, resume the work only after confirming that there is no further risk;~~

When excavating below the groundwater level, provide measures to drain the water in the shaft, and stop the work, evacuate workers in case abnormal water inflow in the shaft and equipment or discharging excavated materials to and down or from the shaft shall be determined in advance and all workers shall be trained in their use;

JC2: (1)～(3)の赤文字表記は JICA による直接の更新。
Red letters in (1)-(3) are directly updated by JICA.

(b) Signals and evacuation methods during emergencies shall also be determined in advance and all workers shall be trained in their use with regular evacuation training; and

(c) Where considered necessary by the HSO handheld radios shall be provided to the Operation Leader working at the base of the shaft and a Spotter at the ground level for all communications.

(4) Environmental Measures

(a) Ensure a continuous, adequate and safe air supply to workers located at the bottom of the shaft;

(b) Provide monitoring equipment, set up alarms if air quality deteriorates and keep records in accordance with JSSS 2.1. [*Work Environment*]; and

(c) Provide adequate temporary lighting

(5) Measures before Commencing Work

(a) Check the condition of the excavated ground surface in the shaft and whether there is any abnormality in the shaft lining.

(6) Measures during the work

(a) When workers are in the shaft, assign a Spotter at ground level and located within direct view at the upper edge of the shaft;

(b) ~~When excavating below the groundwater level, provide measures to drain the water in the shaft.~~ Stop the work, evacuate workers in case abnormal water inflow in the shaft and resume the work only after taking countermeasures and confirming that there is no ~~risk due to~~ water seepage;

JC2: 黄色ハイライト箇所について。現場の水処理のためにこのような作業が想定されるかもしれませんが、ここは杭打ちの話なので不要です。
For the yellow highlight part, we assume you wrote this for be trained in their use;

(b) Signals and evacuation methods during emergencies shall also be determined in in advance and all workers shall be trained in their use with regular evacuation training; and

(c) Where considered necessary by the HSO handheld radios shall be provided to the Operation Leader working at the base of the shaft and a Spotter at the ground level for all communications.

(4) Environmental Measures

(a) Ensure a continuous, adequate and safe air supply to workers located at the bottom of the shaft;

(b) Provide monitoring equipment, set up alarms if air quality deteriorates and keep records in accordance with JSSS 2.1. [*Work Site Environment*]; and

(c) Provide adequate temporary lighting

(5) Measures before Commencing Work

(a) Check the condition of the excavated ground surface in the shaft and whether there is any abnormality in the shaft lining.

(6) Measures during the work

(a) When workers are in the shaft, assign a Spotter at ground level and located within direct view at the upper edge of the shaft;

(b) When excavating below the groundwater level, provide measures to drain water from the shaft, stop the work and evacuate workers when abnormal water inflow occurs in the shaft and resume work only after taking countermeasures and confirming that there is no risk due to water;

~~determined~~ or discharging excavated materials to and down or from the shaft shall be determined in advance and all workers shall be trained in their use;

(b) Signals and evacuation methods during emergencies shall also be determined in in advance and all workers shall be trained in their use with regular evacuation training; and

(c) Where considered necessary by the HSO handheld radios shall be provided to the Operation Leader working at the base of the shaft and a Spotter at the ground level for all communications.

(4) Environmental Measures

(a) Ensure a continuous, adequate and safe air supply to workers located at the bottom of the shaft;

(b) Provide monitoring equipment, set up alarms if air quality deteriorates and keep records in accordance with JSSS 2.1. [*Work Site Environment*]; and

(c) Provide adequate temporary lighting

(5) Measures before Commencing Work

(a) Check the condition of the excavated ground surface in the shaft and whether there is any abnormality in the shaft lining.

(6) Measures during the work

(a) When workers are in the shaft, assign a Spotter at ground level and located within direct view at the upper edge of the shaft;

(b) Stop the work and evacuate workers when abnormal water inflow occurs in the shaft and resume work only after taking countermeasures and confirming ~~that there is no risk due to~~ the safety of the site and the effectiveness of the measures;

resume the work only after taking countermeasures and confirming that there is no risk due to water; NK: Modified. (c) Pay constant attention to any changes in soil types, properties, etc. and if any abnormality is identified at the excavated surface during work or in the shaft lining, immediately stop the work, evacuate workers and take appropriate remedial measures, resume the work only after confirming that there is no further risk; and (d) Ensure nothing is dropped into the shaft that may injure workers.	on-site water treatment, but it's unnecessary because this clause is dealing with pile driving works. NK2 削除します。 Deleted as commented. JC2: 黄色ハイライト箇所：there is no risk とは一般的に使わない言い方。現場の安全・対策の有効性・止水を確認した後などの別の言い方へ変更する。 For the another yellow highlight part: there is no risk. This is not common way of expression. Modify it to another way of saying, such as “resume the work only after confirming the safety of the site, the effectiveness of the measures, and the sealing of the water etc. NK2: 変更します。Modify as commented. (c) Pay constant attention to any changes in soil types, properties, etc. and if any abnormality is identified at the excavated surface during work or in the shaft lining, immediately stop the work, evacuate workers and take appropriate remedial measures, resume the work only after confirming that such abnomality is not observed anymore; and (d) Ensure nothing is dropped into the shaft that may injure workers.	(c) Pay constant attention to any changes in soil types, properties, etc. and if any abnormality is identified at the excavated surface during work or in the shaft lining, immediately stop the work, evacuate workers and take appropriate remedial measures, resume the work only after confirming that there is no further risk; and (d) Ensure nothing is dropped into the shaft that may injure workers. **8.2.8 Monitoring Impact of Foundation Piling Works on Other Properties** The Contractor shall comply with the requirements of JSSS 6.1.3 [*Monitoring Impact of Works on Other Properties*].	(c) Pay constant attention to any changes in soil types, properties, etc. and if any abnormality is identified at the excavated surface during work or in the shaft lining, immediately stop the work, evacuate workers and take appropriate remedial measures, resume the work only after confirming that there is no further risk; and (d) Ensure nothing is dropped into the shaft that may injure workers. **8.2.8 Monitoring Impact of Foundation Piling Works on Other Properties** The Contractor shall comply with the requirements of JSSS 6.1.3 [*Monitoring Impact of Works on Other Properties*].

JSSS in English (NK R3 2020/4/29) (JICA Comments & NK Actions)	JSSS in English Issue 3 (2020/4/30 by MD)	JSSS in English Issue 3 (Clean Copy, Draft Final R0 2020/4/30 by MD)
CHAPTER 5: FOUNDATION PILING WORKS	CHAPTER 5: FOUNDATION PILING WORKS	CHAPTER 5: FOUNDATION PILING WORKS

伊藤様

(1) 原稿から直接コピーしていますので、フォントや様式が違っていますが、時間節約のために、フォントや様式の変更は不要です。
(2) 番号が乱れていますので、番号だけを修正願います。
(3) 左欄と中央欄は色網掛とコメント付き、右欄は Issue 3 の色網掛とコメントを削除したクリーンコピーとしております。

上記よろしくお願いいたします。

8.1 GENERAL

JC2: 「Chicago Method」の定義を General の中 (8.1.2？) で以下の 2 のとおり記載してください。出典は1にあるとおりです。
Regarding Deep Foundation Insitu Concrete Piling please use the term of "Chicago Method" and stipulate the definition of "Chicago Method" in the General (8.1.2?) as mentioned in the following 2. The source of the term is 1. below.
1. 深礎工法：Chicago (board) method:土木和英辞典近代図書
1. Deep foundation method: Chicago (board) method: Civil Engineering Japanese English dictionary, Kindai
2. Chicago caisson (Chicago well): A small cofferdam used in medium stiff clays lined with planks sunk to hard ground for pier foundations. The plank sheeting is held in place by steel rings wedged against the side. : CONSTRUCTION DICTIONARY : The National Association of Women in Construction

NK2: Chicago Method に関し調べました。上記の情報の他に次の記述があります。
We studied Chicago Method and found the following information:

(1) International Conference on Case Histories in Geotechnical Engineering の論文で、Chicago Hand-Dug Caisson がドリル掘削坑基礎の発展の元であると記述しています。
120 YEARS OF CAISSON FOUNDATIONS IN CHICAGO
the origin of the modem Drilled Shaft Foundation, which has its evolutionary roots in the Chicago Hand-Dug Caisson
(2) Dictionary Of Civil Engineering (USA, John S. Scott)は、Chicago caisson と Deep foundation を次のように記述しています(Chicago Method 無し)。Chicago caisson は Deep foundation の一種と考えています。
https://books.google.co.jp/books?id=C7oIHQDDrxsC&pg=PA72&lpg=PA72&dq=Wiki+Chicago+caisson&source=bl&ots=lirG_aHP_d&sig=ACfU3U1WxQvUZIYSScGhwQGQRaHZuIdcbQ&hl=ja&sa=X&ved=2ahUKEwiL-fXsrYfpAhWUd94KHWaiAocQ6AEwBHoECAoQAQ#v=onepage&q&f=false
Chicago caisson: A small cofferdam used in medium staff clays, of about 1.2 m dia. Lined with planks added in 1.5m lengths and sunk to hard ground for pier foundations. The vertical plank supporters are held in place by steel rings wedged against the sides. (JC で参照の1と同じ記述である。この cofferdam は仮締切の意味もあるが、ここでは caisson (large

8.1 GENERAL

8.1.1 Scope

(1) This Chapter specifies the safety requirements for piling works which include:

(a) Driven Piling;

(b) Cast in place Piling; and

(c) Hand-Dug Piling

and which are hereinafter collectively referred to as “Foundation Piling Works”.

In researching this briefly, there may be some difficulties in using this term, particularly “hand-dug”, for example in Hong Kong this was a traditional method of piling which was very unsafe and was therefore effectively banned in the mid 1990’s (see attachments).

Up to that time there were strict conditions imposed by some organisations on such manual works (see attachment).

8.3 GENERAL

8.1.2 Scope

(3) This Chapter specifies the safety requirements for piling works which include:

(d) Driven Piling;

(e) Cast in place Piling; and

(f) Hand-Dug Piling

and which are hereinafter collectively referred to as “Foundation Piling Works”.

(4) General requirements for example for Contractor’s Equipment, Temporary Works and other related works all which apply to the work in this Chapter, are included in other Chapters of JSSS.

Additional particular requirements are contained in this Chapter.

8.4 PARTICULAR SAFETY MEASURES

8.2.9 General

(7) Foundation Piling Works and all operations connected therewith

watertight chamber used for construction under water)の意味である。)
Deep foundation: a foundation, usually on some type of pile or caisson, generally more than 3 m below ground. Deep foundations are often needed in conjunction with ground engineering work.
(3) BS ISO 6707-1:2017
直接基礎と深い基礎(Deep foundation として piled foundation と caisson)が規定されています。
BS defines shallow and deep foundations. The latter consists piled foundation and caisson
(4) Hongkong and Malaysia Report
1) Hong Kong Technical Guidance : hand-dug caissons
http://www.devb.gov.hk/filemanager/technicalcirculars/en/upload/231/2/WB09941.pdf
2) Malaysia Design, Construction & Performance of Hand-Dug Caissons
https://pdfs.semanticscholar.org/c4bd/2bc8985ffcd0b2ac7c7daa9659acaf9fbecb.pdf

NK2: 基礎工法としての Chicago Method はインターネットで容易に検索できない。土木和英辞典に用語としてありますが、用語が古くまた国際的な用語とは考えられない。そのため、次を参考に基礎を Shallow foundation と Deep foundation と分け、深礎は Caisson の一つとして Hand dug caisson として規定することを提案します。
The Chicago Method as foundation type cannot be found in internet. It seems that the term is out of date and not international one.
Types of Foundation for Buildings and their Uses
https://theconstructor.org/geotechnical/foundation-types-and-uses/9237/
1. Shallow foundation: ◦Individual footing or isolated footing ◦Combined footing ◦Strip foundation ◦Raft or mat foundation
2. Deep Foundation: ◦Pile foundation ◦Drilled Shafts or caissons
NK2: Therefore, referring to the above information, we propose to consider the foundation consists of shallow and deep foundation and "Deep Foundation" used at present is replaced "Hand-Dug Caisson" as one of caisson.

8.1.1 Scope

As noted in Chapter 7 Excavation Works, this item is reformatted to be consistent with later Chapters.

The content of each Chapter 7 to 10 are now correctly referred to as a heading, i,e. Excavation Works, Foundation Piling Works, etc.

JC2: Cast-in-place Piling Works
一般用語で混在するのは構わないが、一番最初ぐらいはタイトルに合わせたら？
"insitu concrete piling" and "Cast-in-place Piling Works" are mixed. They shall be consistent use.
NK2: 上記指摘は MD 氏の issue 2 案にて変更されています。The above has been by MD in last version.

(1) This Chapter specifies the safety requirements for piling works which include:

(a) Driven Piling;

(b) Cast in place Piling; and

(c) ~~Deep Foundation Piling,~~ Hand-Dug Caisson

NK2: The "deep foundation piling" is replaced with "Hand-Dug Caisson" as explained above.

and which are hereinafter collectively referred to as "Foundation Piling Works".

(2) General requirements for example for Contractor's Equipment, Temporary Works and other related works all which apply to the work in this Chapter, are included in other Chapters of JSSS.

Additional particular requirements are contained in this Chapter.

I suggest that this type of piling should not be commonly allowed except in exceptional cases and unless strict conditions are applied and complied with otherwise it may not be a safe method. This is not emphasised in JSSS at present and I think it should be. I have drafted some additional clauses for this is 8.2.7, please review and modify as you think fit.

As Piling is frequently Contractor Design (even under the Pink Book) it needs mention here and as it is permanent work and therefore basically Employer design it also requires appropriate mention in the User Guide. I will draft this

The pictures in the original JICA/NK draft were not solely "Hand-Dug". Although labour is shown and is necessary in the shaft, the excavation and removal is by clamshell not entirely by hand.

"Chicago Method" is not really an internationally accepted term.

This is not "Caisson Piling" as this is not work in a caisson, i.e. it is not relying upon air pressure to exclude water.

On balance I agree that "Hand-Dug Piling" is probably the most appropriate as this is understandable and descriptive of the basic method.

Please refer to the HK example which I have used as a basis and carefully review and revise as you think necessary:

8.2 PARTICULAR SAFETY MEASURES

8.2.1 General

(1) Foundation Piling Works and all operations connected therewith shall be designated as Dangerous Work and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) Unless otherwise specified in the Particular Safety Specification, the Contractor shall be responsible for selecting methods of working and types of Contractor's Equipment and Temporary Works suitable for the purpose in conformity with GC 4.10.

shall be designated as Dangerous Work and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(8) Unless otherwise specified in the Particular Safety Specification, the Contractor shall be responsible for selecting methods of working and types of Contractor's Equipment and Temporary Works suitable for the purpose in conformity with GC 4.10.

(9) In accordance with JSSS 6.2 [*Earthwork Support*] the Contractor shall be responsible for maintaining the structural integrity of the sides of all excavated or drilled pile excavations and shall provide whatever temporary or permanent Earthwork Support that may be necessary to achieve this.

(10) The Contractor shall execute all Piling Works without weakening any ground or causing any damage to any buildings, structures and other properties, paved areas, roads, footpaths, fences, railways, waterways, drainage, utilities or any other property on the Site or outside the Site (collectively referred to in this Chapter as "other properties").

(11) The Contractor shall also ensure the safety of all persons, whilst they are working in, under or adjacent to any piling excavation on or outside the Site.

(12) Unless otherwise specified in the Particular Safety Specification, the Contractor shall take all necessary measures to prevent the occurrence of any such weakening or damage to other properties and obtain the prior consent of the Engineer to such measures before commencing relevant parts of the Foundation Piling Works.

Unless otherwise specified in the Particular Safety Specification, such measures shall include design by the Contractor and provision of permanent or temporary supports and reinforcing of such foundations, structures, buildings, roads or paved areas or the like, either on or adjacent to the Site and obtaining the prior consent of the Engineer before commencing such Foundation Piling Works.

8.2.10 Safety Measures Before Commencement

The Contractor shall plan all Foundation Piling Works before commencement so that they are executed in a safe and methodical manner. The safety measures before commencement of the Works shall be as follows:

Temporary Works and other related works all which apply to the work in this Chapter, are included in other Chapters of JSSS.

Additional particular requirements are contained in this Chapter.

8.2 PARTICULAR SAFETY MEASURES

8.2.1 General

(1) Foundation Piling Works and all operations connected therewith shall be designated as Dangerous Work and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) Unless otherwise specified in the Particular Safety Specification, the Contractor shall be responsible for selecting methods of working and types of Contractor's Equipment and Temporary Works suitable for the purpose in conformity with GC 4.10.

Please note that the above reference to the Particular Safety Specification, is for the case where piling is engineer designed and specified or is to be performed by another specialist contractor.

~~(3) Earthwork Support~~

Above separate heading is not necessary

(3) In accordance with JSSS 6.2 [Earthwork Support] the Contractor shall be responsible for ~~the~~ maintaining the structural integrity of the sides of all excavated or drilled pile excavations and shall provide whatever temporary or permanent Earthwork Support that may be necessary to achieve this.

(4) The Contractor shall execute all Piling Works without weakening (JC) any ground or causing any damage to any buildings, structures and other properties, paved areas, roads, footpaths, fences, railways, waterways, drainage, utilities or any other property on the Site or outside the Site (collectively referred to in this Chapter as "other properties").

JC2: weakening について。工学的にこのような表現でよろしいものかどうか、MD 氏に確認願います。
"weakening" in the 3rd line on (4). Please check with MD if this is the correct wording from an engineering standpoint.
NK2: MD 氏へ確認します。周囲の地盤強度の低下等か？
We will ask MD to review the wording of weakening. It may be "loss/degrade/reduce of subsurface ground strength is suitable.

(3) In accordance with JSSS 6.2 [*Earthwork Support*] the Contractor shall be responsible for maintaining the structural integrity of the sides of all excavated or drilled pile excavations and shall provide whatever temporary or permanent Earthwork Support that may be necessary to achieve this.

(4) The Contractor shall execute all Piling Works without weakening any ground or causing any damage to any buildings, structures and other properties, paved areas, roads, footpaths, fences, railways, waterways, drainage, utilities or any other property on the Site or outside the Site (collectively referred to in this Chapter as "other properties").

Weakening" is the present participle, of the verb, "weaken" which generally means "to make or become weaker in physical strength".

"Weakening" is a correct and meaningful term in this sense and is an appropriate term for use in this document. "weak" or "weakened" ground caused by "weakening" for example may not be able to adequately support the weight of structures, thereby causing subsidence.

(5) The Contractor shall also ensure the safety of all persons, whilst they are working in, under or adjacent to any piling excavation on or outside the Site.

(6) Unless otherwise specified in the Particular Safety Specification, the Contractor shall take all necessary measures to prevent the occurrence of any such weakening or damage to other properties and obtain the prior consent of the Engineer to such measures before commencing relevant parts of the Foundation Piling Works.

I do not recommend the re-insertion of the wording "unless otherwise specified in the Particular Safety Specification" in the above as this will not normally be a default. However, upon further study, the following paragraph (see below) will benefit from revision and should correctly include this wording. I have edited as shown.

"Weakening" as explained above is correct.

The use of the word "damage" is correct. It is a fundamental contractual obligation of the Contractor NOT to cause any damage in this sense and to change this to "limit", introduces unnecessary and inadvisable ambiguity and suggests that to some extent, damage is allowable.

(2) The HSO shall inspect the Foundation Piling Works' working area and surrounding areas and ensure that all of the following is acceptable before allowing the Foundation Piling Works to commence:

(d) The ground is level and capable of supporting the loading of the Contractor's Equipment including any dynamic effect of the Foundation Piling Works and the load of any materials to be placed thereon;

(e) The area is clear of any obstructions; and

(f) The areas are properly drained and free from standing water.

If necessary, the Contractor shall improve the ground by stabilising, cleaning, draining, providing paving and/or placing steel decking and temporary piling and the like to provide a suitable, clean, dry and safe working area without causing any risk to the stability of Contractor's Equipment or materials.

8.2.11 Safety Measures for Transportation on Site - Use of Appropriate Equipment and Vehicle

Piles and pile casings, liners, reinforcement cages and the like shall not be transported or relocated by use of pile driving or drilling machines. In all cases the Contractor shall use cranes accompanied or where necessary, trucks and flatbed trailers for the transportation or relocation.

8.2.12 Safety Measures for Driven Piling

The Contractor shall:

(4) Select correct rigging method and appropriate Rigging Equipment to suit the characteristics of the lifting or pile driving machine and the piles, so that piles are mishandled or dropped.

(5) Keep workers other than those directly engaged in the driving operations away from the direct working location when driving operations are taking place.

(6) Provide a lifeline to fix PFAS on the lead when the worker works on the lead of pile driving machine in addition to the fall prevention measures stipulated in JSSS 2.5 [*Fall Prevention*].

8.2.13 Safety Measures for Cast-in-place Piling

When any Cast-in-place Piling Works are adopted, the Contractor shall take appropriate safety measures taking account of features of different methods of work, in particular:

(4) Pile Excavation Works using All-Casing Piling Method:

To MD: JC inquired if the wording of "weakening" above is appropriate in the meaning of sentences from the point of civil engineering. It is appreciated to review

The Contractor shall also ensure the safety of all persons, whilst they are working in, under or adjacent to any piling excavation on or outside the Site.

The Contractor shall take all necessary measures to prevent the occurrence of any such weakening (JC) or ~~damage~~ to limit damage and nuisance to other properties and obtain the prior consent of the Engineer to such measures before commencing relevant parts of the Piling Works.

I suggest that the above is correct as a separate statement in a standard safety specification.

Please also note that it is not "the responsibility of the Employer to determine the permissible range of ambient effects (vibration, noise, settlement) caused by the Permanent Work."

Moreover, there are no standard "allowable values" for acceptable damage to third party properties. Please refer to comments on this in JSSS 7.2.1 (6)

The following is the second part of the original paragraph which I suggest is edited as shown:

JC2: "regarding the allowable values of vibration, noise, settlement and other negative impacts to those by the Foundation Piling Works"について。このような悪影響に関するモニタリングについて以前別の章で議論しておりましたが、基礎工事もカバーされていましたでしょうか。されていなければ、モニタリングについての規定を追記願います。
Regarding the allowable values of vibration, noise, settlement and other negative impacts to those by the Foundation Piling Works", we have discussed monitoring for such adverse effects in the other Chapter earlier, but did it also cover foundation work? If not, please add a provision on monitoring.
NK2: 指摘箇所は MD 氏の Issue 2 では削除し、代わりに 8.2.8 でモニタリングを追記済み。
The commented part of description has been deleted by MD's Issue 2 and added 8.2.8 Monitoring Impact of Foundation Piling Works on Other Properties.

JC: (4)の限定は不要。特に the は不要かと。
About "by the Foundation Piling Works." in (4). Not necessary for limiting by "the".
NK2: 指摘通り削除します。Issue 2 では当該部分は削除済み。
We will delete "the" as commented. This has been deleted in the issue 2.

JC: (4)の"weakening"について。発生は「防げない」ものもあるので、mitigate adverse effects も入れる必要あるのでは？"to limit damage and nuisance"等の表現も良いのでは？
"weakening" in (4). Since some phenomena are not "preventable", we need to include "mitigate adverse effects" as well. Like as "to limit damage and nuisance" seems to be also appropriate.
NK: ご指摘通り"mitigate adverse effects"を挿入します。
We will insert "mitigate adverse effects" as commented.

The introduction of the word "nuisance" likewise is not necessary as it has little or no meaning in relation to property.

To add "mitigate adverse effects" meaning reduce and not eliminate "any adverse effects" means that some adverse effect is acceptable. This is not recommendable and not contractually correct.

The use of the word "the" is correct as the term is now defined in JSSS 8.1.1 (1), however the term does require correction to the "Foundation Piling Works".

Unless otherwise specified in the Particular Safety Specification, such measures shall include design by the Contractor and provision of permanent or temporary supports and reinforcing of such foundations, structures, buildings, roads or paved areas or the like, either on or adjacent to the Site and obtaining the prior consent of the Engineer before commencing such Foundation Piling Works.

8.2.2 Safety Measures Before Commencement

The above heading as suggested in an earlier JICA draft, is more appropriate

The Contractor shall plan all Foundation Piling Works before commencement so that they are executed in a safe and methodical manner. The safety measures before commencement of the Works shall be as follows:

(1) The HSO shall inspect the Foundation Piling Works' working area and surrounding areas and ensure that all of the following is acceptable before allowing the Foundation Piling Works to commence:

(a) The ground is level and capable of supporting the loading of the Contractor's Equipment including any dynamic effect of the Foundation Piling Works and the load of any materials to be placed thereon;

(b) The area is clear of any obstructions; and

(c) The areas are properly drained and free from standing water.

If necessary, the Contractor shall improve the ground by stabilising, cleaning, draining, providing paving and/or placing steel decking and temporary piling and the like to provide a suitable, clean, dry and safe working area without causing any risk to the stability of Contractor's Equipment or materials.

Following your comment, I have redrafted the above.

(c) Keep workers other than those directly engaged in the piling operations away from the pile excavation machine while installing and removing the casing and operating the drop hammer grab. Before any worker is allowed to access the casing or equipment whilst the hammer grab is being operated, ensure that the hammer grab is secured in the casing; and

(d) When any worker needs to enter the casing, confirm that there is no danger in accordance with JSSS 2.1.5 [*Further Requirements for Dangerous Work*].

(5) Pile Excavation Works for Reverse Circulation Bored Piling Method:

(d) When adding or removing drill rods, ensure that a Spotter is present to signal the operator of the drilling machine so that the hands and fingers of workers do not get caught in the work;

(e) Maintain the water level and concentration level of slurry (bentonite solution) in the drilled hole as planned in the Method Statement and prepare for addition or discharge of slurry, consequent to any fluctuation; and

(f) When providing a mud creation pit or a mud discharge pit, take measures to prevent workers from falling into such pits by providing barriers and signage.

(6) Pile Excavation Works for Auger Piling Method:

(c) To prevent overturn of drilling or auger equipment, consider the weight of excavated material in the drilling bucket or on the auger during operation; and

(d) Keep workers other than those directly engaged in the drilling works, away from the drill or auger to prevent injury through splashing or falling of mud or earth or through contact with drill or auger.

8.2.14 Placement of Concrete

(4) Reinforcement cages shall be designed, manufactured and hoisted into place so that they do not deform.

(5) Provide secure rigging slings and welded metal fixings to ensure that reinforcement cages, tremie pipes are secure and do not slip or drop off the Hoisting Equipment. Provide secure rigging

To MD: JC inquired if the wording of "weakening" above is appropriate in the meaning of sentences from the point of civil engineering. Please review the wording..

(5) ~~and unless otherwise specified in the Particular Safety Specification,~~ The Contractor shall take all necessary measures to prevent the occurrence of any damage or weakening (JC) and mitigate adverse effects by ~~carrying out all Foundation Piling Works,~~ designing and providing permanent or temporary supports and reinforcement to such foundations, structures, buildings, roads or paved areas or the like, either on or adjacent to the Site and obtain the prior consent of the Engineer before commencing such Foundation Piling Works.

JC2: "and unless otherwise specified in the Contract"について。NK がこの復活を推奨。
"and unless otherwise specified in the Contract" in (4), NK recommend reviving the description.
NK2: We understand JC accepted our proposal, so we stipulate "unless otherwise specified in the Contract".

8.2.2 Safety Measures at Planning Stage

The Contractor shall plan all Foundation Piling Works before commencement so that they are executed in a safe and methodical manner. The safety measures before commencement of the Works shall be as follows:

Regarding the suggested change of HSO to Contractor in the following clause, please refer to my comments against JSSS 1.3 and 1.14:

"…. The position and authority of the HSO for the health safety on the Works should not be compromised. Who he requires assistance from is really his choice and it is dependent upon many factors such as the contractor's organisation, who is available, the general experience, capability and skill level of workers. We or the Engineer should have no interest in who he delegates support to providing the HSO does his job properly."

And "For further understanding, the Contractor's Representative has similar in fact heavier responsibilities but we (nor FIDIC) consider defining which of his staff do what to support him, I do not recommend that we try to do it."

The HSO should remain responsible for maintaining safety at all times; if he delegates and who he delegates to and how they communicate, is his choice and responsibility.

The addition of the following is not necessary as it is already covered by the opening paragraph of this subclause and is therefore duplicated.

"The Contractor shall commence the Foundation Piling Works only after (a) to (c) above have been accomplished."

8.2.3 Safety Measures for Transportation on Site - Use of Appropriate Equipment and Vehicle

Piles and pile casings, liners, reinforcement cages and the like shall not be transported or relocated by use of pile driving or drilling machines. In all cases the Contractor shall use cranes accompanied or where necessary, trucks and flatbed trailers for the transportation or relocation.

8.2.4 Safety Measures for Driven Piling

The Contractor shall:

(1) Select correct rigging method and appropriate Rigging Equipment to suit the characteristics of the lifting or pile driving machine and the piles, so that piles are mishandled or dropped.

(2) Keep workers other than those directly engaged in the driving operations away from the direct working location when driving operations are taking place.

(3) Provide a lifeline to fix PFAS on the lead when the worker works on the lead of pile driving machine in addition to the fall prevention measures stipulated in JSSS 2.5 [*Fall Prevention*].

8.2.5 Safety Measures for Cast-in-place Piling

When any Cast-in-place Piling Works are adopted, the Contractor shall take appropriate safety measures taking account of features of different methods of work, in particular:

(1) Pile Excavation Works using All-Casing Piling Method:

(a) Keep workers other than those directly engaged in the piling operations away from the pile excavation machine while installing and removing the casing and operating the drop hammer grab. Before any worker is allowed to access the casing or equipment whilst the hammer grab is being operated, ensure that the hammer grab is secured in the casing; and

(b) When any worker needs to enter the casing, confirm that there is no danger in accordance with JSSS 2.1.5 [*Further Requirements for Dangerous Work*].

(2) Pile Excavation Works for Reverse Circulation Bored Piling equipment and operate hoisting to ensure that reinforcement cages and tremie pipes do not slip or drop off from the Hoisting Equipment in accordance with the Method Statement and Safety Plan.

(6) When handling reinforcement cages and tremie pipes, ensure that a Spotter is present to signal the operator of the machine so that the hands and fingers of workers do not get caught in the work.

8.2.15 Safety Measures for Hand-Dug Piling

Unless otherwise specified in the Particular Safety Specification, the Contractor shall comply with the requirements of the following subclauses (1) to (3):

(5) Hand-Dug Piling shall not normally be permitted in ground with unfavourable conditions such as:

(h) High ground water levels;

(i) Weak geological structure including the possible presence of voids or caverns;

(j) Reclamation, landfill or chemically-contaminated sites,

(k) Containing loose fill in depths exceeding 10 m;

(l) In areas with history of deep-seated ground movement;

(m) Close proximity to water or sewage tunnels; and

(n) Close proximity to shallow foundations.

(6) Hand-Dug Piling may for example be permitted in the following situations where there are no unfavourable conditions:

(d) Steeply-sloping sites with pile depths less than 25 m in depth in soil;

(e) Sites with difficult access or insufficient working room where it may be impractical or unsafe to use mechanical plant; and

(f) Where noise, vibration or damage may be caused by driven or bored piling and which must be avoided.

(7) Hand-Dug Piling shall:

(d) Be not less than 2 m diameter;

(e) Be not more than 25m deep; and.

(f) Have continuous shaft lining.

Regarding the management of construction performance, quality, quantity and environmental compliance etc. etc. other persons are independently responsible.

I suggest that the Engineer has no duty to advise or direct the Contractor how to manage his internal affairs and I advise against trying to do this.

In terms of 8.2.(3) JSSS is for safety matters, so the HSO must inspect this and other works to assess that all is safe.

The construction staff must also inspect and give instructions etc. for other purposes but surely it is not within the scope of JSSS to advise on that.

Sometimes also, opinions will differ because interests are different, for example the HSO may not allow piling work to start if he perceives any risk to safety.

On the other hand a construction manager or site engineer may choose to take risks for example to speed up he start if work is running late.

If we state "the Contractor shall.." this unnecessarily introduces ambiguity to JSSS and I do advise against it.

I suggest that if any change is to be made (which I do not think necessary) it should however be in Chapter 1 which prevails.

All other chapters of JSSS would be better confined to safety and therefore generally refer to HSO.

(1) The HSO shall inspect the Foundation Piling Works working area and surrounding areas and ensure that all of the following is acceptable before allowing the Foundation Piling Works to commence:

(a) The ground is level and capable of supporting the loading of the Contractor's Equipment including any dynamic effect of the Foundation Piling Works and the load of any materials to be placed thereon. If necessary the Contractor shall improve the ground as necessary by stabilising, paving and/or placing steel decking and temporary piling to provide a suitable surface without risk of Contractor's Equipment or materials, sinking or overturning;

JC2: (1)(a) 6-7 行目の"if necessary"について。重複ではないか？
About " if necessary" in the 6th to 7th line in (1)(a). Isn't it duplicated expression?
NK2: 指摘どおり、if necessary の前後で文意が重複しているが、具体的方策を示しており、残した方が良いと考えます。

Method:

(a) When adding or removing drill rods, ensure that a Spotter is present to signal the operator of the drilling machine so that the hands and fingers of workers do not get caught in the work;

(b) Maintain the water level and concentration level of slurry (bentonite solution) in the drilled hole as planned in the Method Statement and prepare for addition or discharge of slurry, consequent to any fluctuation; and

(c) When providing a mud creation pit or a mud discharge pit, take measures to prevent workers from falling into such pits by providing barriers and signage.

(3) Pile Excavation Works for Auger Piling Method:

(a) To prevent overturn of drilling or auger equipment, consider the weight of excavated material in the drilling bucket or on the auger during operation; and

(b) Keep workers other than those directly engaged in the drilling works, away from the drill or auger to prevent injury through splashing or falling of mud or earth or through contact with drill or auger.

8.2.6 Placement of Concrete

(1) Reinforcement cages shall be designed, manufactured and hoisted into place so that they do not deform.

(2) Provide secure rigging slings and welded metal fixings to ensure that reinforcement cages, tremie pipes are secure and do not slip or drop off the Hoisting Equipment. Provide secure rigging equipment and operate hoisting to ensure that reinforcement cages and tremie pipes do not slip or drop off from the Hoisting Equipment in accordance with the Method Statement and Safety Plan.

(3) When handling reinforcement cages and tremie pipes, ensure that a Spotter is present to signal the operator of the machine so that the hands and fingers of workers do not get caught in the work.

8.2.7 Safety Measures for Hand-Dug Piling

See notes in JSSS 8.1.1 above regarding the heading.

(8) Access/Exit Facilities

The Contractor shall:

(g) Provide safe and efficient access, egress and emergency exit facilities in the shaft for workers;

(h) Provide vertical ladders, securely anchored to framework or shaft lining and complete with a ladder safety system;

(i) Provide a landing rest platform every 5 m, when the length of any ladder exceeds 10 m and otherwise comply with the requirements provided in OSHA 1926.1053 Ladders where such requirements exceed those specified in this subclause;

(j) Ensure that the upper end of vertical ladders projects at least 1m above the ground and any landing rest platforms;

(k) Provide appropriate and adequate pumps to remove all water from the base of the shafts; and

(l) Take measures to prevent any accidents involving workers with the spoil removal containers and any other equipment particularly throughout the bucket hoisting and descending operations.

(6) Ladder Safety System

(c) A ladder safety system shall be provided to eliminate the risk of injury to any worker falling off the ladder; and

(d) The ladder safety system shall comprise a carrier, safety sleeve, lanyard, connectors, and body harness and all workers shall be trained in its use.

(7) Communication and Signalling Measures

(d) Signals for delivering materials and equipment to and down the shaft shall be determined in advance and all workers shall be trained in their use;

(e) Signals for delivering materials and equipment or discharging excavated materials to and down or from the shaft shall be determined in advance and all workers shall be trained in their use; and

(f) Where considered necessary by the HSO handheld radios shall be provided to the Operation Leader working at the base of the shaft and a Spotter at the ground level for all

There seems to be some duplicate meaning of sentences. Comparing (a) with (b) and (c), (a) stipulate measures in case more than (b) and (c). However, it is recommendable to specify concrete counter measures.
To MD, Please review the (a) from the view point of JC that the sentences are duplicated. Comparing (a) with (b) and (c), (a) stipulate measures in case more than (b) and (c). However, it is recommendable to specify concrete counter measures.

(b) The area is clear of any obstructions; and

(c) The areas are properly drained and free from standing water.

~~(2) As a consequence of such inspections the HSO prohibit the commencement and continuation of Foundation Piling Works, take necessary corrective measures and make any necessary amendment to the Safety Plan and instruct all Contractor's Personnel of the any revised safety measures before work is allowed to commence and continue in order to ensure their continued safety.~~

The following additional wording is now already covered by the editing of the first paragraph above.

~~(3) After ensure all above items (a) to (c) in the inspections, the HSO shall permit to commence and continue the Foundation Piling Works.~~

(2) The Contractor shall commence the Foundation Piling Works only after (a) to (c) above have been accomplished.

JC: (2)は削除し次の表現で置き換えること。
Delete (2) and replace with the sentence below.
The Contractor shall commence the Foundation Piling Works only after (a) to (c) above have been accomplished.
NK: 指摘通り変更します。will modify as commented.
To MD, though you deleted (3), JC want to leave it with some modification.

8.2.3 Safety Measures for Transportation ~~on Site – Prohibition of Use Other Than for Intended Purposes~~ Use of Appropriate Equipment and Vehicle

Is above additional wording necessary? I have tried to make headings brief,

JC2: 8.2.3 の見出しは、次に変更する。
Please revise the title as follows:
Safety Measures for Transportation on Site Prohibition of Unintended Use →
"Safety Measures for Transportation on Site -Use of appropriate equipment and vehicle"
NK: 指摘通り変更.
Modify as commented.
To MD, I think not necessary, but JICA want to revise as above.

Piles and pile casings, liners, reinforcement cages and the like shall not be transported or relocated by use of pile driving or drilling machines. In all cases the Contractor shall use cranes accompanied or where

As noted in 8.1.1, I suggest that there is a need for JSSS (and User Guide) to include more stringent safety measures for Hand-Dug Piling, possibly to prevent the use of this type of piling if certain conditions exist and if certain measures cannot be provided.

I suggest therefore that something like the following could also be added (please review, edit and confirm:

Unless otherwise specified in the Particular Safety Specification, the Contractor shall comply with the requirements of the following subclauses (1) to (3):

(1) Hand-Dug Piling shall not normally be permitted in ground with unfavourable conditions such as:

(a) High ground water levels;

(b) Weak geological structure including the possible presence of voids or caverns;

(c) Reclamation, landfill or chemically-contaminated sites;

(d) Containing loose fill in depths exceeding 10 m;

(e) In areas with history of deep-seated ground movement;

(f) Close proximity to water or sewage tunnels; and

(g) Close proximity to shallow foundations.

(2) Hand-Dug Piling may for example be permitted in the following situations where there are no unfavourable conditions:

(a) Steeply-sloping sites with pile depths less than 25 m in depth in soil;

(b) Sites with difficult access or insufficient working room where it may be impractical or unsafe to use mechanical plant; and

(c) Where noise, vibration or damage may be caused by driven or bored piling and which must be avoided.

(3) Hand-Dug Piling shall:

(a) Be not less than 2 m diameter;

(b) Be not more than 25m deep; and.

(c) Have continuous shaft lining.

(4) Access/Exit Facilities

communications.

(8) Environmental Measures

(d) Ensure a continuous, adequate and safe air supply to workers located at the bottom of the shaft;

(e) Provide monitoring equipment, set up alarms and evacuate workers if air quality deteriorates and keep records in accordance with JSSS 2.1. [*Work Environment*]; and

(f) Provide adequate temporary lighting

(9) Measures before Commencing Work

Check the condition of the excavated ground surface in the shaft and whether there is any abnormality in the shaft lining.

(10) Measures during Execution of the Work

(j) When workers are in the shaft, assign a Spotter at ground level and located within direct view at the upper edge of the shaft;

(k) Minimise the depth of each stage of excavation;

(l) Avoid introducing new teams of workers or changing over teams until each stage of excavation is completed and temporary support or shaft lining has been installed;

(m) Provide immediate temporary support for the excavated faces prior to casting the liner;

(n) Providing reinforcement to the concrete liner;

(o) Providing drainage to each stage of excavation with relief wells, sumps and pumping as appropriate:

(p) Stop the work and evacuate workers when abnormal water inflow occurs in the shaft and resume work only after taking countermeasures and confirming the safety of the Site and the effectiveness of the measures;

(q) Pay constant attention to any changes in soil types, properties, etc. and if any abnormality is identified at the excavated surface during work or in the shaft lining, immediately stop the work, evacuate workers and take appropriate remedial measures, resume the work only after confirming that there is no further risk; and

(r) Ensure nothing is dropped into the shaft that may injure

necessary, trucks and flatbed trailers for the transportation or relocation.

8.2.4 Safety Measures for Driven Foundation Piling Works

The Contractor shall:

(1) Select correct rigging method and appropriate Rigging Equipment to suit the characteristics of the lifting or pile driving machine and the piles, so that piles are mishandled or dropped.

(2) Keep workers other than those directly engaged in the driving operations away from the direct working location when driving operations are taking place.

(3) Provide a lifeline to fix PFAS on the lead when the worker works on the lead of pile driving machine in addition to the fall prevention measures stipulated in JSSS 2.5[FALL PREVENTION]

JC2: 少し変。日本語を正確に読めば Provide a facility to は不要なのがわかるかと。親綱の設置等の墜落制止用器具を取り付けるものを設け、] 日本語は、命綱を設置するような施設を設置することを求めてはないし、そういうものを溶接してつけるようなことでもないのかと（safety block とか命綱とか使えということ） また、論理的にはリーダーに命綱を取り付ける必要もない（ついでに作業員単数なら命綱は普通1本）
provide a lifeline to fix PFAS が正しい。

JC2: That's not exactly right. If it is read correctly, it can be understood “provide a facility to” is not necessary. “provide a lifeline to fix PFAS” only is correct.
NK: 指摘通り修正。
We will modify it as commented. (3) is not included in Issue 2. We added it.

8.2.5 Safety Measures for Cast-in-place Piling Works

~~The following items specify example safety measures for workers engaged in Cast-in-place Piling Works. For any other Cast-in-place Piling Works, the Contractor shall take appropriate safety measures including those referred to in the following requirements.~~

When any Cast-in-place Piling Works are adopted, the Contractor shall take appropriate safety measures taking account of features of different methods of work, in particular:

JC: 黄色ハイライト部は削除し上記へ変更すること。
Replace the yellow highlighted part with the above sentences.
NK: 指摘通り変更。Modify as directed and MD will review and edit them.

(1) Pile Excavation Works using All-Casing Piling Method:

(a) Keep workers other than those directly engaged in the piling operations away from the pile excavation machine while installing and removing the casing and operating the drop hammer grab. Before any worker is allowed to access the casing or equipment whilst the hammer grab is being

The Contractor shall:

(a) Provide safe and efficient access, egress and emergency exit facilities in the shaft for workers;

(b) Provide vertical ladders, securely anchored to framework or shaft lining and complete with a ladder safety system;

(c) Provide a landing rest platform every 5 m, when the length of any ladder exceeds 10 m and otherwise comply with the requirements provided in OSHA 1926.1053 Ladders where such requirements exceed those specified in this subclause;

(d) Ensure that the upper end of vertical ladders projects at least 1m above the ground and any landing rest platforms;

(e) Provide appropriate and adequate pumps to remove all water from the base of the shafts; and

(f) Take measures to prevent any accidents involving workers with the spoil removal containers and any other equipment particularly throughout the bucket hoisting and descending operations.

(1) Ladder Safety System

(a) A ladder safety system shall be provided to eliminate the risk of injury to any worker falling off the ladder; and

(b) The ladder safety system shall comprise a carrier, safety sleeve, lanyard, connectors, and body harness and all workers shall be trained in its use.

(2) Communication and Signalling Measures

(a) Signals for delivering materials and equipment to and down the shaft shall be determined in advance and all workers shall be trained in their use;

(b) Signals for delivering materials and equipment or discharging excavated materials to and down or from the shaft shall be determined in advance and all workers shall be trained in their use; and

(c) Where considered necessary by the HSO handheld radios shall be provided to the Operation Leader working at the base of the shaft and a Spotter at the ground level for all communications.

workers.

8.2.16 Monitoring Impact of Foundation Piling Works on Other Properties

The Contractor shall comply with the requirements of JSSS 6.1.3 [*Monitoring Impact of Works on Other Properties*].

operated, ensure that the hammer grab is secured in the casing; and

(b) When any worker needs to enter the casing, confirm that there is no danger in accordance with JSSS 2.1.5 [*Further Requirements for Dangerous Work*].

(2) Pile Excavation Works for Reverse Circulation Bored Piling Method:

(a) When adding or removing drill ~~length~~ rods ensure that a Spotter is present to signal the operator of the drilling machine so that the hands and fingers of workers do not get caught in the work;

JC: revised.

(b) Maintain the water level and concentration level of slurry (bentonite solution) in the drilled hole as planned in the Method Statement and prepare for addition or discharge of slurry, consequent to any fluctuation; and

JC: revised.

(c) When providing a mud creation pit or a mud discharge pit, take measures to prevent workers from falling into such pits by providing barriers and signage.

(3) Pile Excavation Works for Auger Piling Method:

(a) To prevent overturn of drilling or auger equipment, consider the weight of excavated material in the drilling bucket or on the auger during operation; and

(b) Keep workers other than those directly engaged in the drilling works away from the drill or auger to prevent injury from splashing or falling of mud or earth from and collision by them.

JC2: 一般的になりすぎて機械に近寄らないはあまり意味ない。ハザードとは何か？オーガーの場合は土砂の落下による危険がもともとの焦点で、その下に入らないことに意味があるので、その旨を明記してください。
The expression "keep workers away from the drill or auger" doesn't make much meaning because it's general description. It needs what could be a hazard in this case. In the case of augers, falling earth/mud from the auger would be hazard. So please state that.
NK2: 追記します。 Added the hazard referring to the comments.

8.2.6 Placement of Concrete

(1) Reinforcement cages shall be designed, manufactured and hoisted into place so that they do not deform ~~and slip or drop off the~~

(3) Environmental Measures

(a) Ensure a continuous, adequate and safe air supply to workers located at the bottom of the shaft;

(b) Provide monitoring equipment, set up alarms and evacuate workers if air quality deteriorates and keep records in accordance with JSSS 2.1. [*Work Environment*]; and

(c) Provide adequate temporary lighting

(4) Measures before Commencing Work

Check the condition of the excavated ground surface in the shaft and whether there is any abnormality in the shaft lining.

(5) Measures during Execution of the Work

(a) When workers are in the shaft, assign a Spotter at ground level and located within direct view at the upper edge of the shaft;

(b) Minimise the depth of each stage of excavation;

(c) Avoid introducing new teams of workers or changing over teams until each stage of excavation is completed and temporary support or shaft lining has been installed;

(d) Provide immediate temporary support for the excavated faces prior to casting the liner;

(e) Providing reinforcement to the concrete liner;

(f) Providing drainage to each stage of excavation with relief wells, sumps and pumping as appropriate;

I suggest the addition of the above clauses based upon my further research

(g) Stop the work and evacuate workers when abnormal water inflow occurs in the shaft and resume work only after taking countermeasures and confirming the safety of the Site and the effectiveness of the measures;

(h) Pay constant attention to any changes in soil types, properties, etc. and if any abnormality is identified at the excavated surface during work or in the shaft lining, immediately stop the work, evacuate workers and take appropriate remedial measures, resume the work only after confirming that there is no further risk; and

(i) Ensure nothing is dropped into the shaft that may injure

~~Hoisting Equipment~~.

(2) Provide secure rigging slings and welded metal fixings to ensure that reinforcement cages, tremie pipes are secure and do not slip or drop off the Hoisting Equipment. Provide secure rigging equipment and operate hoisting ~~slings and welded metal fixings~~ to ensure that reinforcement cages and tremie pipes ~~are secure and~~ do not slip or drop off from the Hoisting Equipment in accordance with the Method Statement and Safety Plan.

JC2: that reinforcement cages について。(1)にあるので、違いがわからなくなっている。(2)は強度のある吊り器具を提供・使用というより(それは当たり前)、籠の場合はどういう風に吊るか、トレミーならどう滑らないようにつるかということで、「決められた手順・吊り方で行う」というのが元文の主旨のはず。これだと(1)とあわせてごちゃごちゃで、鉄筋籠の重複もあり、どちらかを消し忘れたようにしか見えない。

About "that reinforcement cages", it is stipulated both in (1) and (2), so it's hard to tell the difference of (1) & (2). For (2), it should show how to install the reinforcement cages and how to hang the tremie so that it does not slip.

NK: (1)は鉄筋篭の設計、(2)は鉄筋籠とトレミー管の吊り作業について分けて規定します。

Separately stipulate (1) about cage and (2) hoisting cage and tremie.

(3) When handling reinforcement cages and tremie pipes, ensure that a Spotter is present to signal the operator of the machine so that the hands and fingers of workers do not get caught in the work.

8.2.7 Safety Measures for ~~Deep Foundation Insitu Concrete Piling~~ Hand-Dug Piling Works

This Section contains example safety measures for ~~Deep Foundation Piling Works~~, hand-dug piling works which shall be a diameter of 2m or more, with continuous shaft lining, shaft access for workers, usually executed by manual excavation.

I suggest that you leave "example" as it is, it is intentional. It is a simple and brief way of stating that the following measures are not restrictive and that whatever else is necessary shall be provided by the contractor.

NK2: I agree to leave example.

JC2: 深礎に適した径の規定があるはずですので、調べたうえで可能であるならば具体的な数値を書き入れてください。

There is a provision for a suitable diameter for the deep foundation (hand dug piles), so please research and if possible, stipulate specific diameter.

NK2: MLIT 近畿地方整備局設計便覧「第 10 章基礎工」では、基礎杭の種類と杭径について下表のとおり掲載しています。

In the Road and Bridge Specifications, Kinki Regional Bureau, MLIT, Japan, specify the type and diameter of foundation piles as shown below. Diameter of Deep Foundation Piles is 2,000mm and more.

NK2: Because of workers' safe working circumstance and that small diameter has risk to the workers, Hand-Dug Piling pile of diameter of 2m or more is defined here.

Table Pile Type and Applicable Diameter 表 杭種と杭径の使用範囲

(unit:mm)

workers.

8.2.8 Monitoring Impact of Foundation Piling Works on Other Properties

The Contractor shall comply with the requirements of JSSS 6.1.3 [*Monitoring Impact of Works on Other Properties*].

I suggest the above is left here as it is a secondary item and the positioning is consistent now with 7.5.3 and 7.6.11.

杭 種 (Pile type)			Diam.杭径	
既製杭 Precast piles	打込み・ﾌﾟﾚﾎﾞｰﾘﾝｸﾞ Driven and Pre-excavated piles	RC 杭 RC piles	300-600	
		PHC 杭・SC 杭 PHC and SC piles	300-1,000	
		鋼管杭 Steel pipe piles	400-	
	中堀り		500-1,000	
鋼管ｿｲﾙｾﾒﾝﾄ杭 Steel pipe and soil cement piles		ｿｲﾙｾﾒﾝﾄ柱径 Soil cement diam.	700-1,500	
		鋼管径 Steel pipe	500-1,200	
場所うちｺﾝｸﾘｰﾄ杭 In-situ concrete piles			1,000-	
深礎杭 Hand-Dug Pile			**2,000-**	

出典:MLIT 近畿地方整備局 設計便覧「基礎工」

https://www.kkr.mlit.go.jp/plan/jigyousya/technical_information/consultant/binran/etsuran/qgl8vl0000005ecr-att/sekkei03_10.pdf

(1) General Safety Measures

(a) Provide safe and efficient access/emergency exit facilities in the shaft for workers;

(b) Provide vertical ladders, securely anchored to framework or shaft lining and complete with a ladder safety system;

(c) Provide a landing rest platform every 5 m, when the length of any ladder exceeds 10 m and otherwise comply with the requirements provided in OSHA 1926.1053 Ladders where such requirements exceed those specified in JSSS 8.2.7;

(d) Ensure that the upper end of vertical ladders projects at least 1m above the ground and any landing rest platforms;

(e) Provide appropriate and adequate pumps to remove all water from the base of the shafts; and

(f) Take measures to prevent any accidents involving workers with the spoil removal containers and any other equipment particularly throughout the bucket hoisting and descending operations.

(2) Ladder Safety System

(a) A ladder safety system shall be provided to eliminate the risk of injury to any worker falling off the ladder.

(b) The ladder safety system shall comprise a carrier, safety sleeve, lanyard, connectors, and body harness and all workers shall be trained in its use.

(3) Communication and Signalling Measures

(a) Signals for delivering materials and equipment or discharging excavated materials to and down or from the shaft shall be determined in advance and all workers shall be

trained in their use;

JC: revised.
To MD, please review this revision.

(b) Signals and evacuation methods during emergencies shall also be determined in in advance and all workers shall be trained in their use with regular evacuation training; and

(c) Where considered necessary by the HSO handheld radios shall be provided to the Operation Leader working at the base of the shaft and a Spotter at the ground level for all communications.

(4) Environmental Measures

(a) Ensure a continuous, adequate and safe air supply to workers located at the bottom of the shaft;

(b) Provide monitoring equipment, set up alarms if air quality deteriorates and keep records in accordance with JSSS 2.1. [*Work Site Environment*]; and

(c) Provide adequate temporary lighting

(5) Measures before Commencing Work

(a) Check the condition of the excavated ground surface in the shaft and whether there is any abnormality in the shaft lining.

(6) Measures during the work

(a) When workers are in the shaft, assign a Spotter at ground level and located within direct view at the upper edge of the shaft;

(b) ~~When excavating below the groundwater level, provide measures to drain water from the shaft,~~ Stop the work and evacuate workers when abnormal water inflow occurs in the shaft and resume work only after taking countermeasures and confirming ~~that there is no risk due to~~ the safety of the site and the effectiveness of the measures;

JC2: 現場の水処理のためにこのような作業が想定されるかもしれませんが、ここは杭打ちの話なので不要です。
We assume you wrote this for on-site water treatment, but it's unnecessary because this clause is dealing with pile driving works.
NK2 削除します。 Deleted as commented.

JC2: there is no risk とは一般的に使わない言い方。現場の安全・対策の有効性・止水を確認した後などの別の言い方へ変更する。
"there is no risk" is not common way of expression. Modify it to another way of saying, such as "resume the work only after confirming the safety of the site, the

effectiveness of the measures, and the sealing of the water etc. NK2: 変更します。Modified as commented. (c) Pay constant attention to any changes in soil types, properties, etc. and if any abnormality is identified at the excavated surface during work or in the shaft lining, immediately stop the work, evacuate workers and take appropriate remedial measures, resume the work only after confirming that there is no further risk; and (d) Ensure nothing is dropped into the shaft that may injure workers. 8.2.8 Monitoring Impact of Foundation Piling Works on Other Properties The Contractor shall comply with the requirements of JSSS 6.1.3 [*Monitoring Impact of Works on Other Properties*]. To MD, I wonder 8.2.8 Monitoring can be specified as 8.1.2. Please let me know your opinion.		

JSSS in English R3 for Issue 3 (2020/4/29) JC1&2: JICA comment Issue 1 & R2, NK1 &2: NK Comment 1 to Issue1 & R2	JSSS in English Issue 3 (2020/4/30 by MD) With comments by MD *MD Comments* NK6/23: Comments	JSSS in English R4 for Issue 4 DFR on Issue 3 of 2020/4/30 (2020/6/23) NK: Comment and Revision
8. FOUNDATION PILING WORKS **8.1 GENERAL** 8.1.1 Scope **8.2 PARTICULAR SAFETY MEASURES** 8.2.1 General 8.2.2 Safety Measures at Planning Stage 8.2.3 Safety Measures for Transportation on Site - Prohibition of Use Other Than for Intended Purposes Use of Appropriate Equipment and Vehicle 8.2.4 Safety Measures for Driven Foundation Piling Works 8.2.5 Safety Measures for Cast-in-place Piling Works 8.2.6 Placement of Concrete 8.2.7 Safety Measures for Deep Foundation Insitu Concrete Piling Hand-Dug Piling Works 8.2.8 Monitoring Impact of Foundation Piling Works on Other Properties	**8. FOUNDATION PILING WORKS** **8.1 GENERAL** 8.1.1 Scope **8.2 PARTICULAR SAFETY MEASURES** 8.2.1 General 8.2.2 Safety Measures Before Commencement 8.2.3 Safety Measures for Transportation on Site - Use of Appropriate Equipment and Vehicle 8.2.4 Safety Measures for Driven Piling 8.2.5 Safety Measures for Cast-in-place Piling 8.2.6 Placement of Concrete 8.2.7 Safety Measures for Hand-Dug Piling 8.2.8 Monitoring Impact of Foundation Piling Works on Other Properties	**8. FOUNDATION PILING WORKS** **8.1 GENERAL** 8.1.1 Scope **8.2 PARTICULAR SAFETY MEASURES** 8.2.1 General 8.2.2 Safety Measures Before Commencement 8.2.3 Safety Measures for Transportation on Site - Use of Appropriate Equipment and Vehicle 8.2.4 Safety Measures for Driven Piling 8.2.5 Safety Measures for Cast-in-place Piling 8.2.6 Placement of Concrete 8.2.7 Safety Measures for Hand-Dug Piling 8.2.8 Monitoring Impact of Foundation Piling Works on Other Properties
8. FOUNDATION PILING WORKS **8.1 GENERAL** JC2:「Chicago Method」の定義を General の中(8.1.2？)で以下の 2 のとおり記載してください。出典は1にあるとおりです。 Regarding Deep Foundation Insitu Concrete Piling please use the term of "Chicago Method" and stipulate the definition of "Chicago Method" in the General (8.1.2?) as mentioned in the following 2. The source of the term is 1. below. 1. 深礎工法:Chicago (board) method:土木和英辞典近代図書 1. Deep foundation method: Chicago (board) method: Civil Engineering Japanese English dictionary, Kindai 2. Chicago caisson (Chicago well): A small cofferdam used in medium stiff clays lined with planks sunk to hard ground for pier foundations. The plank sheeting is held in place by steel rings wedged against the side. : CONSTRUCTION DICTIONARY : The National Association of Women in Construction NK2: Chicago Method に関し調べました。上記の情報の他に次の記述があります。 We studied Chicago Method and found the following information: (1) International Conference on Case Histories in Geotechnical Engineering の論文で、Chicago Hand-Dug Caisson がドリル掘削坑基礎の発展の元であると記述しています。 120 YEARS OF CAISSON FOUNDATIONS IN CHICAGO the origin of the modem Drilled Shaft Foundation, which has its evolutionary roots in the Chicago Hand-Dug Caisson (2) Dictionary Of Civil Engineering (USA, John S. Scott)は、Chicago caisson と Deep foundation を次のように記述しています(Chicago Method 無し)。Chicago caisson は Deep foundation の一種と考えています。 https://books.google.co.jp/books?id=C7oIHODDrxsC&pg=PA72&lpg=PA72&dq=Wiki+Chicago+caisson&source=bl&ots=lirG_aHP_d&sig=ACfU3U1WxQvUZlYSScGhwQGQRaHZuIdcbQ&hl=ja&sa=X&ved=2ahUKEwiL-fXsrYfpAhWUd94KHWaiAocQ6AEwBHoECAoQAQ#v=onepage&q&f=false Chicago caisson: A small cofferdam used in medium staff clays, of about 1.2 m dia. Lined with planks added in 1.5m lengths and sunk to hard ground for pier foundations. The vertical plank supporters are held in place by steel rings wedged against the sides. (JC で参照の1と同じ記述である。この cofferdam は仮締切の意味もあるが、ここでは caisson (large watertight chamber used for construction under water)の意味である。) Deep foundation: a foundation, usually on some type of pile or caisson, generally more than 3 m below ground. Deep foundations are often needed in conjunction with ground engineering work. (3) BS ISO 6707-1:2017 直接基礎と深い基礎(Deep foundation として piled foundation と caisson)が規定されています。 BS defines shallow and deep foundations. The latter consists piled foundation and caisson	**8. FOUNDATION PILING WORKS** **8.1 GENERAL**	**8. FOUNDATION PILING WORKS** **8.1 GENERAL**

(4) Hongkong and Malaysia Report
1) Hong Kong Technical Guidance : hand-dug caissons
http://www.devb.gov.hk/filemanager/technicalcirculars/en/upload/231/2/WB09941.pdf
2) Malaysia Design, Construction & Performance of Hand-Dug Caissons
https://pdfs.semanticscholar.org/c4bd/2bc8985ffcd0b2ac7c7daa9659acaf9fbecb.pdf

NK2: 基礎工法としての Chicago Method はインターネットで容易に検索できない。土木和英辞典に用語としてありますが、用語が古くまた国際的な用語とは考えられない。そのため、次を参考に基礎を Shallow foundation と Deep foundation と分け、深礎は Caisson の一つとして Hand dug caisson として規定することを提案します。
The Chicago Method as foundation type cannot be found in internet. It seems that the term is out of date and not international one.
Types of Foundation for Buildings and their Uses
https://theconstructor.org/geotechnical/foundation-types-and-uses/9237/
1. Shallow foundation: ◦Individual footing or isolated footing ◦Combined footing ◦Strip foundation ◦Raft or mat foundation
2. Deep Foundation: ◦Pile foundation ◦Drilled Shafts or caissons
NK2: Therefore, referring to the above information, we propose to consider the foundation consists of shallow and deep foundation and "Deep Foundation" used at present is replaced "Hand-Dug Caisson" as one of caisson.

8.1.1 Scope

As noted in Chapter 7 Excavation Works, this item is reformatted to be consistent with later Chapters.

The content of each Chapter 7 to 10 are now correctly referred to as a heading, i,e. Excavation Works, Foundation Piling Works, etc.

JC2: Cast-in-place Piling Works
一般用語で混在するのは構わないが、一番最初ぐらいはタイトルに合わせたら？
"insitu concrete piling" and "Cast-in-place Piling Works" are mixed. They shall be consistent use.
NK2: 上記指摘は MD 氏の issue 2 案にて変更されています。The above has been by MD in last version.

(1) This Chapter specifies the safety requirements for piling works which include:

(a) Driven Piling;

(b) Cast in place Piling; and

(c) ~~Deep Foundation Piling,~~ Hand-Dug Caisson

NK2: The "deep foundation piling" is replaced with "Hand-Dug Caisson" as explained above.

and which are hereinafter collectively referred to as "Foundation Piling Works".

8.1.1 Scope

(1) This Chapter specifies the safety requirements for piling works which include:

(a) Driven Piling;

(b) Cast in place Piling; and

(c) Hand-Dug Piling

and which are hereinafter collectively referred to as "Foundation Piling Works".

In researching this briefly, there may be some difficulties in using this term, particularly "hand-dug", for example in Hong Kong this was a traditional method of piling which was very unsafe and was therefore effectively banned in the mid 1990's (see attachments).

Up to that time there were strict conditions imposed by some organisations on such manual works (see attachment).

I suggest that this type of piling should not be commonly allowed except in exceptional cases and unless strict conditions are applied and complied with otherwise it may not be a safe method. This is not emphasised in JSSS at present and I think it should be. I have drafted some additional clauses for this is 8.2.7, please review and modify as you think fit.

As Piling is frequently Contractor Design (even under the Pink Book) it needs mention here and as it is permanent work and therefore basically Employer design it also requires appropriate mention in the User Guide. I will draft this

8.1.1 Scope

(1) This Chapter specifies the safety requirements for piling works which include:

(a) Driven Piling;

(b) Cast in place Piling; and

(c) Hand-Dug Piling

and which are hereinafter collectively referred to as "Foundation Piling Works".

(2) General requirements for example for Contractor's Equipment, Temporary Works and other related works all which apply to the work in this Chapter, are included in other Chapters of JSSS.

Additional particular requirements are contained in this Chapter.

8.2 **PARTICULAR SAFETY MEASURES**

8.2.1 **General**

(1) Foundation Piling Works and all operations connected therewith shall be designated as Dangerous Work and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) Unless otherwise specified in the Particular Safety Specification, the Contractor shall be responsible for selecting methods of working and types of Contractor's Equipment and Temporary Works suitable for the purpose in conformity with GC 4.10.

Please note that the above reference to the Particular Safety Specification, is for the case where piling is engineer designed and specified or is to be performed by another specialist contractor.

~~(3) Earthwork Support~~

Above separate heading is not necessary

(3) In accordance with JSSS 6.2 [Earthwork Support] the Contractor shall be responsible for ~~the~~ maintaining the structural integrity of the sides of all excavated or drilled pile excavations and shall provide whatever temporary or permanent Earthwork Support that may be necessary to achieve this.

(4) The Contractor shall execute all Piling Works without weakening (JC) any ground or causing any damage to any buildings, structures and other properties, paved areas, roads, footpaths, fences, railways, waterways, drainage, utilities or any other property on the Site or outside the Site (collectively referred to in this Chapter as "other properties").

JC2: weakening について。工学的にこのような表現でよろしいものかどうか、MD 氏に確認願います。
"weakening" in the 3rd line on (4). Please check with MD if this is the correct

The pictures in the original JICA/NK draft were not solely "Hand-Dug". Although labour is shown and is necessary in the shaft, the excavation and removal is by clamshell not entirely by hand.

"Chicago Method" is not really an internationally accepted term.

This is not "Caisson Piling" as this is not work in a caisson, i.e. it is not relying upon air pressure to exclude water.

On balance I agree that "Hand-Dug Piling" is probably the most appropriate as this is understandable and descriptive of the basic method.

Please refer to the HK example which I have used as a basis and carefully review and revise as you think necessary:

NK6/23: understood.

(2) General requirements for example for Contractor's Equipment, Temporary Works and other related works all which apply to the work in this Chapter, are included in other Chapters of JSSS.

Additional particular requirements are contained in this Chapter.

8.2 **PARTICULAR SAFETY MEASURES**

8.2.1 **General**

(1) Foundation Piling Works and all operations connected therewith shall be designated as Dangerous Work and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) Unless otherwise specified in the Particular Safety Specification, the Contractor shall be responsible for selecting methods of working and types of Contractor's Equipment and Temporary Works suitable for the purpose in conformity with GC 4.10.

(3) In accordance with JSSS 6.2 [*Earthwork Support*] the Contractor shall be responsible for maintaining the structural integrity of the sides of all excavated or drilled pile excavations and shall provide whatever temporary or permanent Earthwork Support that may be necessary to achieve this.

(4) The Contractor shall execute all Piling Works without weakening any ground or causing any damage to any buildings, structures and other properties, paved areas, roads, footpaths, fences, railways, waterways, drainage, utilities or any other property on the Site or outside the Site (collectively referred to in this Chapter as "other properties").

Weakening" is the present participle, of the verb, "weaken" which generally means "to make or become weaker in physical strength".

"Weakening" is a correct and meaningful term in this sense and is an appropriate term for use in this document. "weak" or "weakened" ground

(2) General requirements for example for Contractor's Equipment, Temporary Works and other related works all which apply to the work in this Chapter, are included in other Chapters of JSSS.

Additional particular requirements are contained in this Chapter.

8.2 **PARTICULAR SAFETY MEASURES**

8.2.1 **General**

(1) Foundation Piling Works and all operations connected therewith shall be designated as Dangerous Work and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) Unless otherwise specified in the Particular Safety Specification, the Contractor shall be responsible for selecting methods of working and types of Contractor's Equipment and Temporary Works suitable for the purpose in conformity with GC 4.10.

(3) In accordance with JSSS 6.2 [*Earthwork Support*] the Contractor shall be responsible for maintaining the structural integrity of the sides of all excavated or drilled pile excavations and shall provide whatever temporary or permanent Earthwork Support that may be necessary to achieve this.

(4) The Contractor shall execute all Piling Works without weakening any ground or causing any damage to any buildings, structures and other properties, paved areas, roads, footpaths, fences, railways, waterways, drainage, utilities or any other property on the Site or outside the Site (collectively referred to in this Chapter as "other properties").

wording from an engineering standpoint.

NK2: MD 氏へ確認します。周囲の地盤強度の低下等か？
We will ask MD to review the wording of weakening. It may be "loss/degrade/reduce of subsurface ground strength is suitable.

To MD: JC inquired if the wording of "weakening" above is appropriate in the meaning of sentences from the point of civil engineering. It is appreciated to review

The Contractor shall also ensure the safety of all persons, whilst they are working in, under or adjacent to any piling excavation on or outside the Site.

The Contractor shall take all necessary measures to prevent the occurrence of any such weakening (JC) or ~~damage~~ to limit damage and nuisance to other properties and obtain the prior consent of the Engineer to such measures before commencing relevant parts of the Piling Works.

I suggest that the above is correct as a separate statement in a standard safety specification.

Please also note that it is not "the responsibility of the Employer to determine the permissible range of ambient effects (vibration, noise, settlement) caused by the Permanent Work."

Moreover, there are no standard "allowable values" for acceptable damage to third party properties. Please refer to comments on this in JSSS 7.2.1 (6)

The following is the second part of the original paragraph which I suggest is edited as shown:

JC2: "regarding the allowable values of vibration, noise, settlement and other negative impacts to those by the Foundation Piling Works"について。このような悪影響に関するモニタリングについて以前別の章で議論しておりましたが、基礎工事もカバーされていましたでしょうか。されていなければ、モニタリングについての規定を追記願います。
Regarding the allowable values of vibration, noise, settlement and other negative impacts to those by the Foundation Piling Works", we have discussed monitoring for such adverse effects in the other Chapter earlier, but did it also cover foundation work? If not, please add a provision on monitoring.

NK2: 指摘箇所は MD 氏の Issue 2 では削除し、代わりに 8.2.8 でモニタリングを追記済み。
The commented part of description has been deleted by MD's Issue 2 and added 8.2.8 Monitoring Impact of Foundation Piling Works on Other Properties.

JC: (4)の限定は不要。特に the は不要かと。
About "by the Foundation Piling Works." in (4). Not necessary for limiting by "the".

NK2: 指摘通り削除します。Issue 2 では当該部分は削除済み。
We will delete "the" as commented. This has been deleted in the issue 2.

JC: (4)の"weakening"について。発生は「防げない」ものもあるので、mitigate adverse effects も入れる必要あるのでは？"to limit damage and nuisance"等の表現も良いのでは？
"weakening" in (4). Since some phenomena are not "preventable", we need to include "mitigate adverse effects" as well. Like as "to limit damage and nuisance" seems to be also appropriate.

NK: ご指摘通り"mitigate adverse effects"を挿入します。
We will insert "mitigate adverse effects" as commented.

To MD: JC inquired if the wording of "weakening" above is appropriate in the meaning of sentences from the point of civil engineering. Please review the wording.

(5) ~~and unless otherwise specified in the Particular Safety Specification,~~ The Contractor shall take all necessary measures to prevent the occurrence of any damage or weakening (JC) and *caused by "weakening" for example may not be able to adequately support the weight of structures, thereby causing subsidence.*

NK6/23: understood.

(5) The Contractor shall also ensure the safety of all persons, whilst they are working in, under or adjacent to any piling excavation on or outside the Site.

(6) Unless otherwise specified in the Particular Safety Specification, the Contractor shall take all necessary measures to prevent the occurrence of any such weakening or damage to other properties and obtain the prior consent of the Engineer to such measures before commencing relevant parts of the Foundation Piling Works.

1) I do not recommend the re-insertion of the wording "unless otherwise specified in the Particular Safety Specification" in the above as this will not normally be a default. However, upon further study, the following paragraph (see below) will benefit from revision and should correctly include this wording. I have edited as shown.

2) "Weakening" as explained above is correct.

3) The use of the word "damage" is correct. It is a fundamental contractual obligation of the Contractor NOT to cause any damage in this sense and to change this to "limit", introduces unnecessary and inadvisable ambiguity and suggests that to some extent, damage is allowable.

4) The introduction of the word "nuisance" likewise is not necessary as it has little or no meaning in relation to property.

5) To add "mitigate adverse effects" meaning reduce and not eliminate "any adverse effects" means that some adverse effect is acceptable. This is not recommendable and not contractually correct.

6) The use of the word "the" is correct as the term is now defined in JSSS 8.1.1 (1), however the term does require correction to the "Foundation Piling Works".

NK6/23: already discussed in other Chapters, so we agreed the above comments:

Unless otherwise specified in the Particular Safety Specification, such measures shall include design by the Contractor and provision of permanent or temporary supports and reinforcing of such

(5) The Contractor shall also ensure the safety of all persons, whilst they are working in, under or adjacent to any piling excavation on or outside the Site.

(6) Unless otherwise specified in the Particular Safety Specification, the Contractor shall take all necessary measures to prevent the occurrence of any such weakening or damage to other properties and obtain the prior consent of the Engineer to such measures before commencing relevant parts of the Foundation Piling Works.

(7) Unless otherwise specified in the Particular Safety Specification, such measures shall include design by the Contractor and provision of permanent or temporary supports and reinforcing of such

mitigate adverse effects by ~~carrying out all Foundation Piling Works,~~ designing and providing permanent or temporary supports and reinforcement to such foundations, structures, buildings, roads or paved areas or the like, either on or adjacent to the Site and obtain the prior consent of the Engineer before commencing such Foundation Piling Works.

JC2: "and unless otherwise specified in the Contract"について。NK がこの復活を推奨。
"and unless otherwise specified in the Contract" in (4), NK recommend reviving the description.

NK2: We understand JC accepted our proposal, so we stipulate "unless otherwise specified in the Contract".

8.2.2 **Safety Measures at Planning Stage**

The Contractor shall plan all Foundation Piling Works before commencement so that they are executed in a safe and methodical manner. The safety measures before commencement of the Works shall be as follows:

Regarding the suggested change of HSO to Contractor in the following clause, please refer to my comments against JSSS 1.3 and 1.14:

"…. The position and authority of the HSO for the health safety on the Works should not be compromised. Who he requires assistance from is really his choice and it is dependent upon many factors such as the contractor's organisation, who is available, the general experience, capability and skill level of workers. We or the Engineer should have no interest in who he delegates support to providing the HSO does his job properly."

And "For further understanding, the Contractor's Representative has similar in fact heavier responsibilities but we (nor FIDIC) consider defining which of his staff do what to support him, I do not recommend that we try to do it."

The HSO should remain responsible for maintaining safety at all times; if he delegates and who he delegates to and how they communicate, is his choice and responsibility.

Regarding the management of construction performance, quality, quantity and environmental compliance etc. etc. other persons are independently responsible.

I suggest that the Engineer has no duty to advise or direct the Contractor how to manage his internal affairs and I advise against trying to do this.

In terms of 8.2.(3) JSSS is for safety matters, so the HSO must inspect this and other works to assess that all is safe.

The construction staff must also inspect and give instructions etc. for other purposes but surely it is not within the scope of JSSS to advise on that.

Sometimes also, opinions will differ because interests are different, for example the HSO may not allow piling work to start if he perceives any risk to safety.

On the other hand a construction manager or site engineer may choose to take risks for example to speed up he start if work is running late.

If we state "the Contractor shall.." this unnecessarily introduces ambiguity to JSSS and I do advise against it.

foundations, structures, buildings, roads or paved areas or the like, either on or adjacent to the Site and obtaining the prior consent of the Engineer before commencing such Foundation Piling Works.

8.2.2 **Safety Measures Before Commencement**

The above heading as suggested in an earlier JICA draft, is more appropriate.

NK6/23: agreed.

The Contractor shall plan all Foundation Piling Works before commencement so that they are executed in a safe and methodical manner. The safety measures before commencement of the Works shall be as follows:

foundations, structures, buildings, roads or paved areas or the like, either on or adjacent to the Site and obtaining the prior consent of the Engineer before commencing such Foundation Piling Works.

8.2.2 **Safety Measures Before Commencement**

The Contractor shall plan all Foundation Piling Works before commencement so that they are executed in a safe and methodical manner. The safety measures before commencement of the Works shall be as follows:

I suggest that if any change is to be made (which I do not think necessary) it should however be in Chapter 1 which prevails.

All other chapters of JSSS would be better confined to safety and therefore generally refer to HSO.

(1) The HSO shall inspect the Foundation Piling Works working area and surrounding areas and ensure that all of the following is acceptable before allowing the Foundation Piling Works to commence:

(a) The ground is level and capable of supporting the loading of the Contractor's Equipment including any dynamic effect of the Foundation Piling Works and the load of any materials to be placed thereon. If necessary the Contractor shall improve the ground as necessary by stabilising, paving and/or placing steel decking and temporary piling to provide a suitable surface without risk of Contractor's Equipment or materials, sinking or overturning;

JC2: (1)(a) 6-7 行目の"if necessary"について。重複ではないか？
About " if necessary" in the 6th to 7th line in (1)(a). Isn't it duplicated expression?
NK2: 指摘どおり、if necessary の前後で文意が重複しているが、具体的方策を示しており、残した方が良いと考えます。
There seems to be some duplicate meaning of sentences. Comparing (a) with (b) and (c), (a) stipulate measures in case more than (b) and (c). However, it is recommendable to specify concrete counter measures.
To MD, Please review the (a) from the view point of JC that the sentences are duplicated. Comparing (a) with (b) and (c), (a) stipulate measures in case more than (b) and (c). However, it is recommendable to specify concrete counter measures.

(b) The area is clear of any obstructions; and

(c) The areas are properly drained and free from standing water.

~~(2) As a consequence of such inspections the HSO prohibit the commencement and continuation of Foundation Piling Works, take necessary corrective measures and make any necessary amendment to the Safety Plan and instruct all Contractor's Personnel of the any revised safety measures before work is allowed to commence and continue in order to ensure their continued safety.~~

The following additional wording is now already covered by the editing of the first paragraph above.

~~(3) After ensure all above items (a) to (c) in the inspections, the HSO shall permit to commence and continue the Foundation Piling Works.~~

(2) The Contractor shall commence the Foundation Piling Works only after (a) to (c) above have been accomplished.

JC: (2)は削除し次の表現で置き換えること。
Delete (2) and replace with the sentence below.
The Contractor shall commence the Foundation Piling Works only after (a) to (c) above have been accomplished.
NK: 指摘通り変更します。will modify as commented.
To MD, though you deleted (3), JC want to leave it with some modification.

(1) The HSO shall inspect the Foundation Piling Works' working area and surrounding areas and ensure that all of the following is acceptable before allowing the Foundation Piling Works to commence:

(a) The ground is level and capable of supporting the loading of the Contractor's Equipment including any dynamic effect of the Foundation Piling Works and the load of any materials to be placed thereon;

(b) The area is clear of any obstructions; and

(c) The areas are properly drained and free from standing water.

If necessary, the Contractor shall improve the ground by stabilising, cleaning, draining, providing paving and/or placing steel decking and temporary piling and the like to provide a suitable, clean, dry and safe working area without causing any risk to the stability of Contractor's Equipment or materials.

Following your comment, I have redrafted the above.

The addition of the following is not necessary as it is already covered by the opening paragraph of this subclause and is therefore duplicated.

"The Contractor shall commence the Foundation Piling Works only after (a) to (c) above have been accomplished."

NK6/23: agreed to the above modification.

(1) The HSO shall inspect the Foundation Piling Works' working area and surrounding areas and ensure that all of the following is acceptable before allowing the Foundation Piling Works to commence:

(a) The ground is level and capable of supporting the loading of the Contractor's Equipment including any dynamic effect of the Foundation Piling Works and the load of any materials to be placed thereon;

(b) The area is clear of any obstructions; and

(c) The areas are properly drained and free from standing water.

(2) If necessary, the Contractor shall improve the ground by stabilising, cleaning, draining, providing paving and/or placing steel decking and temporary piling and the like to provide a suitable, clean, dry and safe working area without causing any risk to the stability of Contractor's Equipment or materials.

8.2.3 Safety Measures for Transportation ~~on Site - Prohibition of Use Other Than for Intended Purposes~~ Use of Appropriate Equipment and Vehicle

Is above additional wording necessary? I have tried to make headings brief,

JC2: 8.2.3 の見出しは、次に変更する。
Please revise the title as follows:
Safety Measures for Transportation on Site Prohibition of Unintended Use → "Safety Measures for Transportation on Site -Use of appropriate equipment and vehicle"
NK: 指摘通り変更.
Modify as commented.
To MD, I think not necessary, but JICA want to revise as above.

Piles and pile casings, liners, reinforcement cages and the like shall not be transported or relocated by use of pile driving or drilling machines. In all cases the Contractor shall use cranes accompanied or where necessary, trucks and flatbed trailers for the transportation or relocation.

8.2.4 Safety Measures for Driven Foundation Piling Works

The Contractor shall:

(1) Select correct rigging method and appropriate Rigging Equipment to suit the characteristics of the lifting or pile driving machine and the piles, so that piles are mishandled or dropped.

(2) Keep workers other than those directly engaged in the driving operations away from the direct working location when driving operations are taking place.

(3) Provide a lifeline to fix PFAS on the lead when the worker works on the lead of pile driving machine in addition to the fall prevention measures stipulated in JSSS 2.5[FALL PREVENTION]

JC2: 少し変。日本語を正確に読めば Provide a facility to は不要なのがわかるかと。親綱の設置等の墜落制止用器具を取り付けるものを設け、] 日本語は、命綱を設置するような施設を設置することを求めてはないし、そういうものを溶接してつけるようなことでもないのかと（safety block とか命綱とか使えということ）また、論理的にはリーダーに命綱を取り付ける必要もない（ついでに作業員単数なら命綱は普通1本）
provide a lifeline to fix PFAS が正しい。

JC2: That's not exactly right. If it is read correctly, it can be understood "provide a facility to" is not necessary. "provide a lifeline to fix PFAS" only is correct.
NK: 指摘通り修正。
We will modify it as commented. (3) is not included in Issue 2. We added it.

8.2.5 Safety Measures for Cast-in-place Piling Works

~~The following items specify example safety measures for workers engaged in Cast-in-place Piling Works. For any other Cast-in-place Piling Works, the Contractor shall take appropriate safety measures including those referred to in the following requirements.~~

When any Cast-in-place Piling Works are adopted, the Contractor shall take appropriate safety measures taking account of features of different methods of work, in particular:

JC: 黄色ハイライト部は削除し上記へ変更すること。
Replace the yellow highlighted part with the above sentences.
NK: 指摘通り変更。Modify as directed and MD will review and edit them.

8.2.3 Safety Measures for Transportation on Site - Use of Appropriate Equipment and Vehicle

Piles and pile casings, liners, reinforcement cages and the like shall not be transported or relocated by use of pile driving or drilling machines. In all cases the Contractor shall use cranes accompanied or where necessary, trucks and flatbed trailers for the transportation or relocation.

8.2.4 Safety Measures for Driven Piling

The Contractor shall:

(1) Select correct rigging method and appropriate Rigging Equipment to suit the characteristics of the lifting or pile driving machine and the piles, so that piles are mishandled or dropped.

(2) Keep workers other than those directly engaged in the driving operations away from the direct working location when driving operations are taking place.

(3) Provide a lifeline to fix PFAS on the lead when the worker works on the lead of pile driving machine in addition to the fall prevention measures stipulated in JSSS 2.5 [*Fall Prevention*].

8.2.5 Safety Measures for Cast-in-place Piling

When any Cast-in-place Piling Works are adopted, the Contractor shall take appropriate safety measures taking account of features of different methods of work, in particular:

8.2.3 Safety Measures for Transportation on Site - Use of Appropriate Equipment and Vehicle

Piles and pile casings, liners, reinforcement cages and the like shall not be transported or relocated by use of pile driving or drilling machines. In all cases the Contractor shall use cranes accompanied or where necessary, trucks and flatbed trailers for the transportation or relocation.

8.2.4 Safety Measures for Driven Piling

The Contractor shall:

(1) Select correct rigging method and appropriate Rigging Equipment to suit the characteristics of the lifting or pile driving machine and the piles, so that piles are mishandled or dropped.

(2) Keep workers other than those directly engaged in the driving operations away from the direct working location when driving operations are taking place.

(3) Provide a lifeline to fix PFAS on the lead when the worker works on the lead of pile driving machine in addition to the fall prevention measures stipulated in JSSS 2.5 [*Fall Prevention*].

8.2.5 Safety Measures for Cast-in-place Piling

When any Cast-in-place Piling Works are adopted, the Contractor shall take appropriate safety measures taking account of features of different methods of work, in particular:

(1) Pile Excavation Works using All-Casing Piling Method:

(a) Keep workers other than those directly engaged in the piling operations away from the pile excavation machine while installing and removing the casing and operating the drop hammer grab. Before any worker is allowed to access the casing or equipment whilst the hammer grab is being operated, ensure that the hammer grab is secured in the casing; and

(b) When any worker needs to enter the casing, confirm that there is no danger in accordance with JSSS 2.1.5 [*Further Requirements for Dangerous Work*].

(2) Pile Excavation Works for Reverse Circulation Bored Piling Method:

(a) When adding or removing drill ~~length~~ rods ensure that a Spotter is present to signal the operator of the drilling machine so that the hands and fingers of workers do not get caught in the work;

JC: revised.

(b) Maintain the water level and concentration level of slurry (bentonite solution) in the drilled hole as planned in the Method Statement and prepare for addition or discharge of slurry, consequent to any fluctuation; and

JC: revised.

(c) When providing a mud creation pit or a mud discharge pit, take measures to prevent workers from falling into such pits by providing barriers and signage.

(3) Pile Excavation Works for Auger Piling Method:

(a) To prevent overturn of drilling or auger equipment, consider the weight of excavated material in the drilling bucket or on the auger during operation; and

(b) Keep workers other than those directly engaged in the drilling works away from the drill or auger to prevent injury from splashing or falling of mud or earth from and collision by them.

JC2: 一般的になりすぎて機械に近寄らないはあまり意味ない。ハザードとは何か？オーガーの場合は土砂の落下による危険がもともとの焦点で、その下に入らないことに意味があるので、その旨を明記してください。
The expression "keep workers away from the drill or auger" doesn't make much meaning because it's general description. It needs what could be a hazard in this case. In the case of augers, falling earth/mud from the auger would be hazard. So please state that.

NK2: 追記します。 Added the hazard referring to the comments.

8.2.6 Placement of Concrete

(1) Reinforcement cages shall be designed, manufactured and hoisted into place so that they do not deform ~~and slip or drop off the Hoisting Equipment~~.

(2) Provide secure rigging slings and welded metal fixings to ensure that reinforcement cages, tremie pipes are secure and do not slip or drop off the Hoisting Equipment. Provide secure rigging equipment and operate hoisting ~~slings and welded metal fixings~~ to ensure that

(1) Pile Excavation Works using All-Casing Piling Method:

(a) Keep workers other than those directly engaged in the piling operations away from the pile excavation machine while installing and removing the casing and operating the drop hammer grab. Before any worker is allowed to access the casing or equipment whilst the hammer grab is being operated, ensure that the hammer grab is secured in the casing; and

(b) When any worker needs to enter the casing, confirm that there is no danger in accordance with JSSS 2.1.5 [*Further Requirements for Dangerous Work*].

(2) Pile Excavation Works for Reverse Circulation Bored Piling Method:

(a) When adding or removing drill rods, ensure that a Spotter is present to signal the operator of the drilling machine so that the hands and fingers of workers do not get caught in the work;

(b) Maintain the water level and concentration level of slurry (bentonite solution) in the drilled hole as planned in the Method Statement and prepare for addition or discharge of slurry, consequent to any fluctuation; and

(c) When providing a mud creation pit or a mud discharge pit, take measures to prevent workers from falling into such pits by providing barriers and signage.

(3) Pile Excavation Works for Auger Piling Method:

(a) To prevent overturn of drilling or auger equipment, consider the weight of excavated material in the drilling bucket or on the auger during operation; and

(b) Keep workers other than those directly engaged in the drilling works, away from the drill or auger to prevent injury through splashing or falling of mud or earth or through contact with drill or auger.

8.2.6 Placement of Concrete

(1) Reinforcement cages shall be designed, manufactured and hoisted into place so that they do not deform.

(2) Provide secure rigging slings and welded metal fixings to ensure that reinforcement cages, tremie pipes are secure and do not slip or drop off the Hoisting Equipment. Provide secure rigging equipment and

(1) Pile Excavation Works using All-Casing Piling Method:

(a) Keep workers other than those directly engaged in the piling operations away from the pile excavation machine while installing and removing the casing and operating the drop hammer grab. Before any worker is allowed to access the casing or equipment whilst the hammer grab is being operated, ensure that the hammer grab is secured in the casing; and

(b) When any worker needs to enter the casing, confirm that there is no danger in accordance with JSSS 2.1.5 [*Further Requirements for Dangerous Work*].

(2) Pile Excavation Works for Reverse Circulation Bored Piling Method:

(a) When adding or removing drill rods, ensure that a Spotter is present to signal the operator of the drilling machine so that the hands and fingers of workers do not get caught in the work;

(b) Maintain the water level and concentration level of slurry (bentonite solution) in the drilled hole as planned in the Method Statement and prepare for addition or discharge of slurry, consequent to any fluctuation; and

(c) When providing a mud creation pit or a mud discharge pit, take measures to prevent workers from falling into such pits by providing barriers and signage.

(3) Pile Excavation Works for Auger Piling Method:

(a) To prevent overturn of drilling or auger equipment, consider the weight of excavated material in the drilling bucket or on the auger during operation; and

(b) Keep workers other than those directly engaged in the drilling works, away from the drill or auger to prevent injury through splashing or falling of mud or earth or through contact with drill or auger.

8.2.6 Placement of Concrete

(1) Reinforcement cages shall be designed, manufactured and hoisted into place so that they do not deform.

(2) Provide secure rigging slings and welded metal fixings to ensure that reinforcement cages, tremie pipes are secure and do not slip or drop off the Hoisting Equipment. Provide secure rigging equipment and

reinforcement cages and tremie pipes ~~are secure and~~ do not slip or drop off from the Hoisting Equipment in accordance with the Method Statement and Safety Plan.

JC2: that reinforcement cages について。(1)にあるので、違いがわからなくなっている。(2)は強度のある吊り器具を提供・使用というより(それは当たり前)、籠の場合はどういう風に吊るか、トレミーならどう滑らないようにつるかとういことで、「決められた手順・吊り方で行う」というのが元文の主旨のはず。これだと(1)とあわせてごちゃごちゃで、鉄筋籠の重複もあり、どちらかを消し忘れたようにしか見えない。

About "that reinforcement cages", it is stipulated both in (1) and (2), so it's hard to tell the difference of (1) & (2). For (2), it should show how to install the reinforcement cages and how to hang the tremie so that it does not slip.

NK: (1)は鉄筋篭の設計、(2)は鉄筋籠とトレミー管の吊り作業について分けて規定します。

Separately stipulate (1) about cage and (2) hoisting cage and tremie.

(3) When handling reinforcement cages and tremie pipes, ensure that a Spotter is present to signal the operator of the machine so that the hands and fingers of workers do not get caught in the work.

8.2.7 **Safety Measures for ~~Deep Foundation Insitu Concrete Piling~~ Hand-Dug Piling Works**

This Section contains example safety measures for ~~Deep Foundation Piling Works~~, hand-dug piling works which shall be a diameter of 2m or more, with continuous shaft lining, shaft access for workers, usually executed by manual excavation.

I suggest that you leave "example" as it is, it is intentional. It is a simple and brief way of stating that the following measures are not restrictive and that whatever else is necessary shall be provided by the contractor.

NK2: I agree to leave example.

JC2: 深礎に適した径の規定があるはずですので、調べたうえで可能であるならば具体的な数値を書き入れてください。

There is a provision for a suitable diameter for the deep foundation (hand dug piles), so please research and if possible, stipulate specific diameter.

NK2: MLIT 近畿地方整備局設計便覧「第 10 章基礎工」では、基礎杭の種類と杭径について下表のとおり掲載しています。

drop off the Hoisting Equipment. Provide secure rigging equipment and operate hoisting to ensure that reinforcement cages and tremie pipes do not slip or drop off from the Hoisting Equipment in accordance with the Method Statement and Safety Plan.

(3) When handling reinforcement cages and tremie pipes, ensure that a Spotter is present to signal the operator of the machine so that the hands and fingers of workers do not get caught in the work.

8.2.7 **Safety Measures for Hand-Dug Piling**

See notes in JSSS 8.1.1 above regarding the heading.

As noted in 8.1.1, I suggest that there is a need for JSSS (and User Guide) to include more stringent safety measures for Hand-Dug Piling, possibly to prevent the use of this type of piling if certain conditions exist and if certain measures cannot be provided.

I suggest therefore that something like the following could also be added (please review, edit and confirm:

NK6/23: 1) My understanding is that foundation pile types ad piling methods are basically specified in Bid Documents by the Employer. When cast-in-place Piling is specified, there is a possibility that pile construction method is option to select among All-Casing Piling Method, Reverse Circulation Bored Piling Method, Auger Piling Method, Hand-Dug Piling, etc.
2) JSSS will specify when the Contractor shall select piling method, he shall not select the Hand-Dug Piling method under the conditions below.
3) When the Hand-Dug Piling method is adopted by the Employer/Contractor, the Contractor shall take measures specified in JSSS.
4) The User Guide shall mention about the same conditions to select Hand-Dug Piling as mentioned in JSSS.
My draft is as follows:

Unless otherwise specified in the Particular Safety Specification, the Contractor shall comply with the requirements of the following ~~subclauses~~ (1) to (3):

(1) Hand-Dug Piling shall not ~~normally~~ be ~~permitted~~ adopted by the Contractor in ground with unfavourable conditions such as:

(a) High ground water levels;

(b) Weak geological structure including the possible presence of voids or caverns;

(c) Reclamation, landfill or chemically-contaminated sites,

(d) Containing loose fill in depths exceeding 10 m;

operate hoisting to ensure that reinforcement cages and tremie pipes do not slip or drop off from the Hoisting Equipment in accordance with the Method Statement and Safety Plan.

(3) When handling reinforcement cages and tremie pipes, ensure that a Spotter is present to signal the operator of the machine so that the hands and fingers of workers do not get caught in the work.

8.2.7 **Safety Measures for Hand-Dug Piling**

Unless otherwise specified in the Particular Safety Specification, the Contractor shall comply with the requirements of the following ~~subclauses~~ (1) to (3):

(1) Hand-Dug Piling shall not ~~normally~~ be ~~permitted~~ adopted by the Contractor in ground with unfavourable conditions such as:

(a) High ground water levels;

(b) Weak geological structure including the possible presence of voids or caverns;

(c) Reclamation, landfill or chemically-contaminated sites,

(d) Containing loose fill in depths exceeding 10 m;

(e) In areas with history of deep-seated ground movement;

In the Road and Bridge Specifications, Kinki Regional Bureau, MLIT, Japan, specify the type and diameter of foundation piles as shown below. Diameter of Deep Foundation Piles is 2,000mm and more.

NK2: Because of workers' safe working circumstance and that small diameter has risk to the workers, Hand-Dug Piling pile of diameter of 2m or more is defined here.

Table Pile Type and Applicable Diameter 表 杭種と杭径の使用範囲

(unit:mm)

杭 種 (Pile type)			Diam.杭径
既製杭 Precast piles	打込み・ﾌﾟﾚﾎﾞｰﾘﾝｸﾞ Driven and Pre-excavated piles	RC 杭 RC piles	300-600
		PHC 杭・SC 杭 PHC and SC piles	300-1,000
		鋼管杭 Steel pipe piles	400-
	中堀り		500-1,000
鋼管ｿｲﾙｾﾒﾝﾄ杭 Steel pipe and soil cement piles		ｿｲﾙｾﾒﾝﾄ柱径 Soil cement diam.	700-1,500
		鋼管径 Steel pipe	500-1,200
場所うちｺﾝｸﾘｰﾄ杭 In-situ concrete piles			1,000-
深礎杭 Hand-Dug Pile			**2,000-**

出典:MLIT 近畿地方整備局 設計便覧「基礎工」

https://www.kkr.mlit.go.jp/plan/jigyousya/technical_information/consultant/binran/etsuran/qgl8vl0000005ecr-att/sekkei03_10.pdf

(1) General Safety Measures

(a) Provide safe and efficient access/emergency exit facilities in the shaft for workers;

(b) Provide vertical ladders, securely anchored to framework or shaft lining and complete with a ladder safety system;

(c) Provide a landing rest platform every 5 m, when the length of any ladder exceeds 10 m and otherwise comply with the requirements provided in OSHA 1926.1053 Ladders where such requirements exceed those specified in JSSS 8.2.7;

(d) Ensure that the upper end of vertical ladders projects at least 1m above the ground and any landing rest platforms;

(e) Provide appropriate and adequate pumps to remove all water from the base of the shafts; and

(f) Take measures to prevent any accidents involving workers with the spoil removal containers and any other equipment particularly throughout the bucket hoisting and descending operations.

(2) Ladder Safety System

(a) A ladder safety system shall be provided to eliminate the risk of injury to any worker falling off the ladder.

(b) The ladder safety system shall comprise a carrier, safety sleeve, lanyard, connectors, and body harness and all workers shall be trained in its use.

(3) Communication and Signalling Measures

(a) Signals for delivering materials and equipment or discharging excavated materials to and down or from the shaft shall be determined in advance and all workers shall be trained in their use;

JC: revised.
To MD, please review this revision.

(e) In areas with history of deep-seated ground movement;

(f) Close proximity to water or sewage tunnels; and

(g) Close proximity to shallow foundations.

(2) Hand-Dug Piling may for example be ~~permitted~~ adopted by the Contractor in the following situations where there are no unfavourable conditions:

(a) Steeply-sloping sites with pile depths less than 25 m in depth in soil;

(b) Sites with difficult access or insufficient working room where it may be impractical or unsafe to use mechanical plant; and

(c) Where noise, vibration or damage may be caused by driven or bored piling and which must be avoided.

(3) Hand-Dug Piling shall:

(a) Be not less than 2 m diameter;

(b) Be not more than 25m deep; and.

(c) Have continuous shaft lining.

(4) Access/Exit Facilities
The Contractor shall:

(a) Provide safe and efficient access, egress and emergency exit facilities in the shaft for workers;

(b) Provide vertical ladders, securely anchored to framework or shaft lining and complete with a ladder safety system;

(c) Provide a landing rest platform every 5 m, when the length of any ladder exceeds 10 m and otherwise comply with the requirements provided in OSHA 1926.1053 Ladders where such requirements exceed those specified in this subclause;

(d) Ensure that the upper end of vertical ladders projects at least 1m above the ground and any landing rest platforms;

(e) Provide appropriate and adequate pumps to remove all water from the base of the shafts; and

(f) Take measures to prevent any accidents involving workers with the spoil removal containers and any other equipment particularly throughout the bucket hoisting and descending operations.

(5) Ladder Safety System

(a) A ladder safety system shall be provided to eliminate the risk of injury to any worker falling off the ladder; and

(b) The ladder safety system shall comprise a carrier, safety sleeve, lanyard, connectors, and body harness and all workers shall be trained in its use.

(6) Communication and Signalling Measures

~~(a) Signals for delivering materials and equipment to and down the shaft shall be determined in advance and all workers shall be trained in their use;~~

(a) Signals for delivering materials and equipment or

(f) Close proximity to water or sewage tunnels; and

(g) Close proximity to shallow foundations.

(2) Hand-Dug Piling may for example be ~~permitted~~ adopted by the Contractor in the following situations where there are no unfavourable conditions:

(a) Steeply-sloping sites with pile depths less than 25 m in depth in soil;

(b) Sites with difficult access or insufficient working room where it may be impractical or unsafe to use mechanical plant; and

(c) Where noise, vibration or damage may be caused by driven or bored piling and which must be avoided.

(3) Hand-Dug Piling shall:

(a) Be not less than 2 m diameter;

(b) Be not more than 25m deep; and.

(c) Have continuous shaft lining.

(4) Access/Exit Facilities
The Contractor shall:

(a) Provide safe and efficient access, egress and emergency exit facilities in the shaft for workers;

(b) Provide vertical ladders, securely anchored to framework or shaft lining and complete with a ladder safety system;

(c) Provide a landing rest platform every 5 m, when the length of any ladder exceeds 10 m and otherwise comply with the requirements provided in OSHA 1926.1053 Ladders where such requirements exceed those specified in this subclause;

(d) Ensure that the upper end of vertical ladders projects at least 1m above the ground and any landing rest platforms;

(e) Provide appropriate and adequate pumps to remove all water from the base of the shafts; and

(f) Take measures to prevent any accidents involving workers with the spoil removal containers and any other equipment particularly throughout the bucket hoisting and descending operations.

(5) Ladder Safety System

(a) A ladder safety system shall be provided to eliminate the risk of injury to any worker falling off the ladder; and

(b) The ladder safety system shall comprise a carrier, safety sleeve, lanyard, connectors, and body harness and all workers shall be trained in its use.

(6) Communication and Signalling Measures

~~(a) Signals for delivering materials and equipment to and down the shaft shall be determined in advance and all workers shall be trained in their use;~~

(a) Signals for delivering materials and equipment or discharging

(b) Signals and evacuation methods during emergencies shall also be determined in in advance and all workers shall be trained in their use with regular evacuation training; and

(c) Where considered necessary by the HSO handheld radios shall be provided to the Operation Leader working at the base of the shaft and a Spotter at the ground level for all communications.

(4) Environmental Measures

(a) Ensure a continuous, adequate and safe air supply to workers located at the bottom of the shaft;

(b) Provide monitoring equipment, set up alarms if air quality deteriorates and keep records in accordance with JSSS 2.1. [*Work Site Environment*]; and

(c) Provide adequate temporary lighting

(5) Measures before Commencing Work

(a) Check the condition of the excavated ground surface in the shaft and whether there is any abnormality in the shaft lining.

(6) Measures during the work

(a) When workers are in the shaft, assign a Spotter at ground level and located within direct view at the upper edge of the shaft;.

(b) ~~When excavating below the groundwater level, provide measures to drain water from the shaft,~~ Stop the work and evacuate workers when abnormal water inflow occurs in the shaft and resume work only after taking countermeasures and confirming ~~that there is no risk due to~~ the safety of the site and the effectiveness of the measures;

JC2: 現場の水処理のためにこのような作業が想定されるかもしれませんが、ここは杭打ちの話なので不要です。
We assume you wrote this for on-site water treatment, but it's unnecessary because this clause is dealing with pile driving works.

NK2 削除します。 Deleted as commented.

JC2: there is no risk とは一般的に使わない言い方。現場の安全・対策の有効性・止水を確認した後などの別の言い方へ変更する。
"there is no risk" is not common way of expression. Modify it to another way of saying, such as "resume the work only after confirming the safety of the site, the effectiveness of the measures, and the sealing of the water etc.

discharging excavated materials to and down or from the shaft shall be determined in advance and all workers shall be trained in their use;

(b) Signals and evacuation methods during emergencies shall also be determined in in advance and all workers shall be trained in their use with regular evacuation training; and

(c) Where considered necessary by the HSO handheld radios shall be provided to the Operation Leader working at the base of the shaft and a Spotter at the ground level for all communications.

(7) Environmental Measures

(a) Ensure a continuous, adequate and safe air supply to workers located at the bottom of the shaft;

(b) Provide monitoring equipment, set up alarms and evacuate workers if air quality deteriorates and keep records in accordance with JSSS 2.1. [*Work Environment*]; and

(c) Provide adequate temporary lighting

(8) Measures before Commencing Work

Check the condition of the excavated ground surface in the shaft and whether there is any abnormality in the shaft lining.

(9) Measures during Execution of the Work

(a) When workers are in the shaft, assign a Spotter at ground level and located within direct view at the upper edge of the shaft;

(b) Minimise the depth of each stage of excavation;

(c) Avoid introducing new teams of workers or changing over teams until each stage of excavation is completed and temporary support or shaft lining has been installed;

(d) Provide immediate temporary support for the excavated faces prior to casting the liner;

(e) Providing reinforcement to the concrete liner;

(f) Providing drainage to each stage of excavation with relief wells, sumps and pumping as appropriate:

I suggest the addition of the above clauses based upon my further research.

(g) Stop the work and evacuate workers when abnormal water inflow occurs in the shaft and resume work only after taking countermeasures and confirming the safety of the Site and the effectiveness of the measures:

excavated materials to and down or from the shaft shall be determined in advance and all workers shall be trained in their use; ~~and~~

(b) Signals and evacuation methods during emergencies shall also be determined in in advance and all workers shall be trained in their use with regular evacuation training; and

(c) Where considered necessary by the HSO handheld radios shall be provided to the Operation Leader working at the base of the shaft and a Spotter at the ground level for all communications.

(7) Environmental Measures

(a) Ensure a continuous, adequate and safe air supply to workers located at the bottom of the shaft;

(b) Provide monitoring equipment, set up alarms and evacuate workers if air quality deteriorates and keep records in accordance with JSSS 2.1. [*Work Environment*]; and

(c) Provide adequate temporary lighting

(8) Measures before Commencing Work

Check the condition of the excavated ground surface in the shaft and whether there is any abnormality in the shaft lining.

(9) Measures during Execution of the Work

(a) When workers are in the shaft, assign a Spotter at ground level and located within direct view at the upper edge of the shaft;

(b) Minimise the depth of each stage of excavation;

(c) Avoid introducing new teams of workers or changing over teams until each stage of excavation is completed and temporary support or shaft lining has been installed;

(d) Provide immediate temporary support for the excavated faces prior to casting the liner;

(e) Providing reinforcement to the concrete liner;

(f) Providing drainage to each stage of excavation with relief wells, sumps and pumping as appropriate:

(g) Stop the work and evacuate workers when abnormal water inflow occurs in the shaft and resume work only after taking countermeasures and confirming the safety of the Site and the effectiveness of the measures;

NK2: 変更します。Modified as commented. (c) Pay constant attention to any changes in soil types, properties, etc. and if any abnormality is identified at the excavated surface during work or in the shaft lining, immediately stop the work, evacuate workers and take appropriate remedial measures, resume the work only after confirming that there is no further risk; and (d) Ensure nothing is dropped into the shaft that may injure workers. 8.2.8 **Monitoring Impact of Foundation Piling Works on Other Properties** The Contractor shall comply with the requirements of JSSS 6.1.3 [*Monitoring Impact of Works on Other Properties*]. To MD, I wonder 8.2.8 Monitoring can be specified as 8.1.2. Please let me know your opinion.	(h) Pay constant attention to any changes in soil types, properties, etc. and if any abnormality is identified at the excavated surface during work or in the shaft lining, immediately stop the work, evacuate workers and take appropriate remedial measures, resume the work only after confirming that there is no further risk; and (i) Ensure nothing is dropped into the shaft that may injure workers. 8.2.8 **Monitoring Impact of Foundation Piling Works on Other Properties** The Contractor shall comply with the requirements of JSSS 6.1.3 [*Monitoring Impact of Works on Other Properties*]. *I suggest the above is left here as it is a secondary item and the positioning is consistent now with 7.5.3 and 7.6.11.* NK6/23: As commented by JICA on Chapter 6 TW, the monitoring is moved to 2.1.7 [Monitoring and Records]. We propose to specify as follows: The Contractor shall comply with the requirements of JSSS 2.1.7 [Monitoring and Records].	(h) Pay constant attention to any changes in soil types, properties, etc. and if any abnormality is identified at the excavated surface during work or in the shaft lining, immediately stop the work, evacuate workers and take appropriate remedial measures, resume the work only after confirming that there is no further risk; and (i) Ensure nothing is dropped into the shaft that may injure workers. 8.2.8 **Monitoring Impact of Foundation Piling Works on Other Properties** The Contractor shall comply with the requirements of JSSS ~~6.1.3 [*Monitoring Impact of Works on Other Properties*].~~ 2.1.7 *[Monitoring and Records]*.

NK9/23 NK comments and revision for issue 4 DFR on 6/23
Changes to or editing of previous Issue 2
(includes NK comments)
Query or comment

JICA STANDARD SAFETY SPECIFICATION FOR PROJECT IMPLEMENTATION UNDER JAPANESE ODA

CHAPTER 8: FOUNDATION PILING WORKS

Japan International Cooperation Agency (JICA)

JICA STANDARD SAFETY SPECIFICATION (JSSS)
CHAPTER 8: FOUNDATION PILING WORKS

Table of Contents

8.1 GENERAL

8.1.1 Scope

(1) This Chapter specifies the safety requirements for piling works which include:

(a) Driven Piling;

(b) Cast in place Piling; and

(c) Hand-Dug Piling

and which are hereinafter collectively referred to as “Foundation Piling Works”.

In researching this briefly, there may be some difficulties in using this term, particularly “hand-dug”, for example in Hong Kong this was a traditional method of piling which was very unsafe and was therefore effectively banned in the mid 1990’s (see attachments).

Up to that time there were strict conditions imposed by some organisations on such manual works (see attachment).

I suggest that this type of piling should not be commonly allowed except in exceptional cases and unless strict conditions are applied and complied with otherwise it may not be a safe method. This is not emphasised in JSSS at present and I think it should be. I have drafted some additional clauses for this is 8.2.7, please review and modify as you think fit.

As Piling is frequently Contractor Design (even under the Pink Book) it needs mention here and as it is permanent work and therefore basically Employer design it also requires appropriate mention in the User Guide. I will draft this

The pictures in the original JICA/NK draft were not solely “Hand-Dug”. Although labour is shown and is necessary in the shaft, the excavation and removal is by clamshell not entirely by hand.

“Chicago Method” is not really an internationally accepted term.

This is not “Caisson Piling” as this is not work in a caisson, i.e. it is not relying upon air pressure to exclude water.

On balance I agree that “Hand-Dug Piling” is probably the most appropriate as this is understandable and descriptive of the basic method.

Please refer to the HK example which I have used as a basis and carefully review and revise as you think necessary:

NK6/23: understood.

(2) General requirements for example for Contractor’s Equipment, Temporary Works and other related works all which apply to the work in this Chapter, are included in other Chapters of JSSS.

Additional particular requirements are contained in this Chapter.

8.2 PARTICULAR SAFETY MEASURES

8.2.1 General

(1) Foundation Piling Works and all operations connected therewith shall be designated as Dangerous Work and the Contractor shall enclose the working area with temporary fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) Unless otherwise specified in the Particular Safety Specification, the Contractor shall be responsible for selecting methods of working and types of Contractor’s Equipment and Temporary Works suitable for the purpose in conformity with GC 4.10.

(3) In accordance with JSSS 6.2 [*Earthwork Support*] the Contractor shall be responsible for maintaining the structural integrity of the sides of all excavated or drilled pile excavations and shall provide whatever temporary or permanent Earthwork Support that may be necessary to achieve this.

(4) The Contractor shall execute all Piling Works without weakening any ground or causing any damage to any buildings, structures and other properties, paved areas, roads, footpaths, fences, railways, waterways, drainage, utilities or any other property on the Site or outside the Site (collectively referred to in this Chapter as "other properties").

Weakening" is the present participle, of the verb, "weaken" which generally means "to make or become weaker in physical strength".

"Weakening" is a correct and meaningful term in this sense and is an appropriate term for use in this document. "weak" or "weakened" ground caused by "weakening" for example may not be able to adequately support the weight of structures, thereby causing subsidence.

NK6/23: understood.

(5) The Contractor shall also ensure the safety of all persons, whilst they are working in, under or adjacent to any piling excavation on or outside the Site.

(6) Unless otherwise specified in the Particular Safety Specification, the Contractor shall take all necessary measures to prevent the occurrence of any such weakening or damage to other properties and obtain the prior consent of the Engineer to such measures before commencing relevant parts of the Foundation Piling Works.

I do not recommend the re-insertion of the wording "unless otherwise specified in the Particular Safety Specification" in the above as this will not normally be a default. However, upon further study, the following paragraph (see below) will benefit from revision and should correctly include this wording. I have edited as shown.

"Weakening" as explained above is correct.

The use of the word "damage" is correct. It is a fundamental contractual obligation of the Contractor NOT to cause any damage in this sense and to change this to "limit", introduces unnecessary and inadvisable ambiguity and suggests that to some extent, damage is allowable.

The introduction of the word "nuisance" likewise is not necessary as it has little or no meaning in relation to property.

To add "mitigate adverse effects" meaning reduce and not eliminate "any adverse effects" means that some adverse effect is acceptable. This is not recommendable and not contractually correct.

The use of the word "the" is correct as the term is now defined in JSSS 8.1.1 (1), however the term does require correction to the "Foundation Piling Works".

NK6/23: already discussed in other Chapters, so we agreed the above comments:

Unless otherwise specified in the Particular Safety Specification, such measures shall include design by the Contractor and provision of permanent or temporary supports and reinforcing of such foundations, structures, buildings, roads or paved areas or the like, either on or adjacent to the Site and obtaining the prior consent of the Engineer before commencing such Foundation Piling Works.

8.2.2 Safety Measures Before Commencement

The above heading as suggested in an earlier JICA draft, is more appropriate.

NK6/23: agreed.

The Contractor shall plan all Foundation Piling Works before commencement so that they are executed in a safe and methodical manner. The safety measures before commencement of the Works shall be as follows:

(1) The HSO shall inspect the Foundation Piling Works' working area and surrounding areas and ensure that all of the following is acceptable before allowing the Foundation Piling Works to commence:

(a) The ground is level and capable of supporting the loading of the Contractor's Equipment including any dynamic effect of the Foundation Piling Works and the load of any materials to be placed thereon;

(b) The area is clear of any obstructions; and

(c) The areas are properly drained and free from standing water.

If necessary, the Contractor shall improve the ground by stabilising, cleaning, draining, providing paving and/or placing steel decking and temporary piling and the like to provide a suitable, clean, dry and safe working area without causing any risk to the stability of Contractor's Equipment or materials.

Following your comment, I have redrafted the above.

The addition of the following is not necessary as it is already covered by the opening paragraph of this subclause and is therefore duplicated.

"The Contractor shall commence the Foundation Piling Works only after (a) to (c) above have been accomplished."

NK6/23: agreed to the above modification.

8.2.3 Safety Measures for Transportation on Site - Use of Appropriate Equipment and Vehicle

Piles and pile casings, liners, reinforcement cages and the like shall not be transported or relocated by use of pile driving or drilling machines. In all cases the Contractor shall use cranes accompanied or where necessary, trucks and flatbed trailers for the transportation or relocation.

8.2.4 Safety Measures for Driven Piling

The Contractor shall:

(1) Select correct rigging method and appropriate Rigging Equipment to suit the characteristics of the lifting or pile driving machine and the piles, so that piles are mishandled or dropped.

(2) Keep workers other than those directly engaged in the driving operations away from the direct working location when driving operations are taking place.

(3) Provide a lifeline to fix PFAS on the lead when the worker works on the lead of pile driving machine in addition to the fall prevention measures stipulated in JSSS 2.5 [*Fall Prevention*].

8.2.5 Safety Measures for Cast-in-place Piling

When any Cast-in-place Piling Works are adopted, the Contractor shall take appropriate safety measures taking account of features of different methods of work, in particular:

(1) Pile Excavation Works using All-Casing Piling Method:

(a) Keep workers other than those directly engaged in the piling operations away from the pile excavation machine while installing and removing the casing and operating the drop hammer grab. Before any worker is allowed to access the casing or equipment whilst the hammer grab is being operated, ensure that the hammer grab is secured in the casing; and

(b) When any worker needs to enter the casing, confirm that there is no danger in accordance with JSSS 2.1.5 [*Further Requirements for Dangerous Work*].

(2) Pile Excavation Works for Reverse Circulation Bored Piling Method:

(a) When adding or removing drill rods, ensure that a Spotter is present to signal the operator of the drilling machine so that the hands and fingers of workers do not get caught in the work;

(b) Maintain the water level and concentration level of slurry (bentonite solution) in the drilled hole as planned in the Method Statement and prepare for addition or discharge of slurry, consequent to any fluctuation; and

(c) When providing a mud creation pit or a mud discharge pit, take measures to prevent workers from falling into such pits by providing barriers and signage.

(3) Pile Excavation Works for Auger Piling Method:

(a) To prevent overturn of drilling or auger equipment, consider the weight of excavated material in the drilling bucket or on the auger during operation; and

(b) Keep workers other than those directly engaged in the drilling works, away from the drill or auger to prevent injury through splashing or falling of mud or earth or through contact with drill or auger.

8.2.6 Placement of Concrete

(1) Reinforcement cages shall be designed, manufactured and hoisted into place so that they do not deform.

(2) Provide secure rigging slings and welded metal fixings to ensure that reinforcement cages, tremie pipes are secure and do not slip or drop off the Hoisting Equipment. Provide secure rigging equipment and operate hoisting to ensure that reinforcement cages and tremie pipes do not slip or drop off from the Hoisting Equipment in accordance with the Method Statement and Safety Plan.

(3) When handling reinforcement cages and tremie pipes, ensure that a Spotter is present to signal the operator of the machine so that the hands and fingers of workers do not get caught in the work.

8.2.7 Safety Measures for Hand-Dug Piling

See notes in JSSS 8.1.1 above regarding the heading.

As noted in 8.1.1, I suggest that there is a need for JSSS (and User Guide) to include more stringent safety measures for Hand-Dug Piling, possibly to prevent the use of this type of piling if certain conditions exist and if certain measures cannot be provided.

I suggest therefore that something like the following could also be added (please review, edit and confirm:

NK6/23: 1) My understanding is that foundation pile types ad piling methods are basically specified in Bid Documents by the Employer. When cast-in-place Piling is specified, there is a possibility that pile construction method is option to select among All-Casing Piling Method, Reverse Circulation Bored Piling Method, Auger Piling Method, Hand-Dug Piling, etc.
2) JSSS will specify when the Contractor shall select piling method, he shall not select the Hand-Dug Piling method under the conditions below.
3) When the Hand-Dug Piling method is adopted by the Employer/Contractor, the Contractor shall take measures specified in JSSS.
4) The User Guide shall mention about the same conditions to select Hand-Dug Piling as mentioned in JSSS.
My draft is as follows:

Unless otherwise specified in the Particular Safety Specification, the Contractor shall comply with the requirements of the following ~~subclauses~~ (1) to (3):

(1) Hand-Dug Piling shall not ~~normally be permitted~~ be adopted by the Contractor in ground

with unfavourable conditions such as:

(a) High ground water levels;

(b) Weak geological structure including the possible presence of voids or caverns;

(c) Reclamation, landfill or chemically-contaminated sites,

(d) Containing loose fill in depths exceeding 10 m;

(e) In areas with history of deep-seated ground movement;

(f) Close proximity to water or sewage tunnels; and

(g) Close proximity to shallow foundations.

(2) Hand-Dug Piling may for example ~~be permitted~~ be adopted by the Contractor in the following situations where there are no unfavourable conditions:

(a) Steeply-sloping sites with pile depths less than 25 m in depth in soil;

(b) Sites with difficult access or insufficient working room where it may be impractical or unsafe to use mechanical plant; and

(c) Where noise, vibration or damage may be caused by driven or bored piling and which must be avoided.

(3) Hand-Dug Piling shall:

(a) Be not less than 2 m diameter;

(b) Be not more than 25m deep; and.

(c) Have continuous shaft lining.

(4) Access/Exit Facilities

The Contractor shall:

(a) Provide safe and efficient access, egress and emergency exit facilities in the shaft for workers;

(b) Provide vertical ladders, securely anchored to framework or shaft lining and complete with a ladder safety system;

(c) Provide a landing rest platform every 5 m, when the length of any ladder exceeds 10 m and otherwise comply with the requirements provided in OSHA 1926.1053 Ladders where such requirements exceed those specified in this subclause;

(d) Ensure that the upper end of vertical ladders projects at least 1m above the ground and any landing rest platforms;

(e) Provide appropriate and adequate pumps to remove all water from the base of the shafts; and

(f) Take measures to prevent any accidents involving workers with the spoil removal containers and any other equipment particularly throughout the bucket hoisting and descending operations.

(5) Ladder Safety System

(a) A ladder safety system shall be provided to eliminate the risk of injury to any worker falling off the ladder; and

(b) The ladder safety system shall comprise a carrier, safety sleeve, lanyard, connectors, and body harness and all workers shall be trained in its use.

(6) Communication and Signalling Measures

~~(a) Signals for delivering materials and equipment to and down the shaft shall be determined in advance and all workers shall be trained in their use;~~

(b) Signals for delivering materials and equipment or discharging excavated materials to and down or from the shaft shall be determined in advance and all workers shall be trained in their use;

(c) Signals and evacuation methods during emergencies shall also be determined in in advance and all workers shall be trained in their use with regular evacuation training; and

(d) Where considered necessary by the HSO handheld radios shall be provided to the Operation Leader working at the base of the shaft and a Spotter at the ground level for all communications.

(7) Environmental Measures

(a) Ensure a continuous, adequate and safe air supply to workers located at the bottom of the shaft;

(b) Provide monitoring equipment, set up alarms and evacuate workers if air quality deteriorates and keep records in accordance with JSSS 2.1. [*Work Environment*]; and

(c) Provide adequate temporary lighting

(8) Measures before Commencing Work

Check the condition of the excavated ground surface in the shaft and whether there is any abnormality in the shaft lining.

(9) Measures during Execution of the Work

(a) When workers are in the shaft, assign a Spotter at ground level and located within direct view at the upper edge of the shaft;

(b) Minimise the depth of each stage of excavation;

(c) Avoid introducing new teams of workers or changing over teams until each stage of excavation is completed and temporary support or shaft lining has been installed;

(d) Provide immediate temporary support for the excavated faces prior to casting the liner;

(e) Providing reinforcement to the concrete liner;

(f) Providing drainage to each stage of excavation with relief wells, sumps and pumping as appropriate:

I suggest the addition of the above clauses based upon my further research

(g) Stop the work and evacuate workers when abnormal water inflow occurs in the shaft and resume work only after taking countermeasures and confirming the safety of the Site and the effectiveness of the measures;

(h) Pay constant attention to any changes in soil types, properties, etc. and if any abnormality is identified at the excavated surface during work or in the shaft lining, immediately stop the work, evacuate workers and take appropriate remedial measures, resume the work only after confirming that there is no further risk; and

(i) Ensure nothing is dropped into the shaft that may injure workers.

8.2.8 Monitoring Impact of Foundation Piling Works on Other Properties

The Contractor shall comply with the requirements JSSS ~~6.1.3 [*Monitoring Impact of Works on*~~

~~*Other Properties].*~~ 2.1.7 *[Monitoring and Records]*.

I suggest the above is left here as it is a secondary item and the positioning is consistent now with 7.5.3 and 7.6.11.

NK6/23: As commented by JICA on Chapter 6 TW, the monitoring is moved to 2.1.7 [Monitoring and Records]. We propose to specify as follows:

検討経緯書

9 Concrete Works

JICA Standard Safety Specification Preparation Study
10 Concrete Works (English R1)

2019.12.21 JSSS Japanese Draft R1
2019.12.27 NK Draft Eng. R0
2020.1.21 JSSS Japanese Draft R2ProFinal
2010.1.26 NK Draft Eng. R1

JSSS in Japanese (R2 Pro. Final 1/17)	JSSS in English R0 (1/21)	JSSS in English R1 (1/26)
目次 **10 コンクリート工事** 10.1 一般事項 10.2 計画における安全上の留意事項 10.3 作業員への安全教育と指導、周知 10.4 鉄筋作業 10.5 型枠及び型枠支保工作業 10.6 コンクリート工 10.6.1 コンクリートポンプ 10.6.2 コンクリートミキサー車 10.6.3 コンクリートバケット 10.6.4 バイブレーター 10.6.5 コンクリート打設作業	**10 Concrete Works** 10.1 General Requiremen 10.2 Safety Measures in Planning 10.3 Safety Instruction for Workes 10.4 Reinforcing bars Works 10.5 Formwork and Falsework of the Formwork Works 10.6 Concrete Works 10.6.1 Concrete Pump 10.6.2 Concrete Mixer 10.6.3 Concrete Bucket 10.6.4 Concrete Vibrator 10.6.5 Concrete Casting Work	**10 Concrete Works** 10.1 General Requiremens 10.2 Safety Measures in Planning 10.3 Safety Instruction for Workers 10.4 Reinforcing Bars Works 10.5 Formwork and Falsework 10.6 Concrete Works 10.6.1 Concrete Pumps 10.6.2 Concrete Mixer Vehicles 10.6.3 Concrete Buckets 10.6.4 Concrete Vibrators 10.6.5 Concrete Placing Works
10 コンクリート工事 **10.1 一般事項** 本章では、コンクリート工事の鉄筋・加工・組立、型枠及び型枠支保工の組立・使用・解体、コンクリート打設作業を扱う。 コンクリートの砕石製造・コンクリート練り混ぜ設備は、本仕様書 4[請負者の機器]4.3[建設設備]で扱う。 **10.2 計画における安全上の留意事項** 請負者は、コンクリート工事の計画にあたっては、次の措置を講じなければならない。 (1) 鉄筋、型枠、型枠支保工、コンクリート輸送管、コンクリートバケット、トレミー管、コンクリート内部振動機及び外部振動機等の資材の現場搬入は、本仕様書 5[運搬作業]に従って行うこと。 (2) 鉄筋、型枠、コンクリート等の資材の落下、投下、集積等による作業員及び第三者への危険の予防のため、仕様書 2.6[飛来落下の防止措置を遵守すること。 (3) 鉄筋の組立図には、必要に応じ鉄筋の組立時の強風による転倒・倒壊の防止のための鉄筋の仮支え、筋交い等の配置を含めること。 (4) 鉄筋、型枠、型枠支保工の作業にあたっては、必要に応じてこれらの組立・解体作業の手順を示す組立・解体図を作成し、それに従い作業を行うことを計画すること。なお、型枠及び型枠支保工の組立図には、型枠及び型枠支保工の解体作業の手順を含むこと。 (5) 型枠及び型枠支保工の転倒・崩壊の危険の防止のために、型枠及び型枠支保工に打設したコンクリートによる偏圧が作用しないようコンクリート	**10 Concrete Works** **10.1 General Requirement** This chapter specified the relate with concrete works, including cutting, bending and assembly of the reinforcing bars, and the assembly, use and dismantling of the formwork and its falsework. The crusher facilities for the quarry of concrete and the concrete batching plant are specified with JSSS 4 [Contractor's Equipment] 4.3 [Construction Facilities]. **10.2 Safety Measures in Planning** The Contractor shall take the following measures in planning of concrete works. (1) Carry out the transport of the equipment such as the reinforcing bars, the formwork, the falsework of the formwork, the concrete conveying pipe, the concrete bucket, the tremie pipe, the internal and external concrete vibrators, etc. the concrete vibrators complying with JSSS 5 [Transport]. (2) In order to prevent the workers and the third party from the risks of the fall, accumulation of the reinforcing bars, formwork, and the materials of the concrete, comply with JSSS 2.6[Falling Objects]. (3) The assembling drawing of the reinforcing bars should include the placement of the support and brace for the reinforcing bars if necessary, in order to prevent the reinforcing bars from falling and collapsing due to the strong wind in assembling. (4) Prepare the assembling and dismantling drawings which show the procedures for the assembly and dismantling of the reinforcing bars, formwork, and falsework of the formwork, then plan the work procedures complying with the drawing. The drawing of the formwork and the falsework of the formwork should include the procedures of dismantling.	**10 Concrete Works** **10.1 General Requirements** This Chapter specifies the safety of concrete works of cutting, bending and assembly of the reinforcing bars, and assembly, use and dismantling of the formwork and the falsework for concrete works. The manufacturing facilities of aggregates of concrete and the concrete batching plant are specified in JSSS 4 [Contractor's Equipment], 4.3 [Construction Facilities]. *To MD: For your reference, terms of reinforcing bars and reinforcement are shown in the last column.* **10.2 Safety Measures in Planning** The Contractor shall take the following measures in planning of concrete works: (1) Transport the Contractor's Equipment, Goods and materials of equipment, reinforcing bars, forms, falseworks, fresh concrete, pipes and hoses, concrete bucket, tremie pipes, vibrators, etc. for the concrete works comply with JSSS 4 [Contractor's Equipment]. (2) Prevent the workers and the third party from the risks of the fall of reinforcing bars, formworks, materials of concrete in the concrete works comply with JSSS 2.6[Falling Objects]. (3) Prepare assembling drawings of reinforcing bars including the placement of supports and braces to reinforce the reinforcing bars when necessary to prevent the reinforcing bars during assembly from falling and collapsing by strong wind during assembling. (4) Prepare assembling and dismantling drawings to show the procedures of the assembly of the reinforcing bars, formwork and falsework, and the dismantling of the formwork and falsework. (5) Plan the procedure of concrete placing including height and speed of

の打設順序、打設高さ及び打設速度を計画すること。 (6) 作業員の腰痛等の健康被害の防止のために、長尺鉄筋、型枠・型枠支保工の資材等の重量物を取扱う作業では、2 人以上で行う又は揚貨機械を使うこと等を計画すること。 **10.3 作業員への安全教育と指導、周知** 請負者は、コンクリート工事を行うにあたっては、作業員に対して次の措置を講じなければならない。 (1) 本仕様書 1.9(1)[教育訓練の実施]に規定する教育訓練に準じて、各作業の特性に応じて、作業員に対して教育訓練を実施すること。 (2) 機器を使用した作業を行うときには、本仕様書 4.1.2[各作業の作業員への周知]を遵守し、各作業の特性に応じた役割分担、作業内容、方法、手順、安全措置事項を作業員に周知すること。	(5) Plan the concrete pouring procedures, height and time of the concrete casting considering to the prevention of the unsymmetrical pressure due to the concrete in order to prevent the formwork and the falsework of the formwork from the falling and collapsing. (6) Plan that the handling of the long-size and heavy materials for the reinforcing bars, formwork and falsework should be conduct by more than 2 people or lifting equipment in order to prevent the health damages such as back pain of workers. **10.3 Safety Instruction for Workers** The Contractor shall take the following measures for the workers in the concrete works. (1) Conduct the instruction for the workers according to the characteristics of each work complying with the safety instructions specified with JSSS 4.1.5 [Safety Instructions] (2) When the works with the construction equipment are carried out, inform the workers of the sharing rolls, work contents, work procedures and safety measures according to the characteristics of each work complying with JSSS 4.1.2 [Instruction for Contractor's Personnel].	concrete placing to avoid the unsymmetrical concrete pressure to them larger than designed to prevent the formwork and falsework from their falling or collapsing. (6) Plan the handling of the long-size and/or heavy materials of the reinforcing bars, formwork and falsework by more than two (2) workers or lifting equipment to prevent the health damages such as back pain of workers. **10.3 Safety Instruction for Workers** The Contractor shall take the following measures for the safety of the workers in the concrete works: (1) Conduct the instruction for the workers according to the characteristics of each work complying with JSSS 4.1.5 [Safety Instructions], and (2) Inform the workers of their rolls, work contents, work procedures and safety measures when the works are carried out with the Contractor's Equipment complying with JSSS 4.1.2 [Instruction for Contractor's Personnel.
10.4 鉄筋作業 請負者は、鉄筋の加工、運搬、組立て作業を行うときは、次の措置を講じなければならない。 (1) 鉄筋加工作業 (a) 作業員の転倒等の危険を防止するために、鉄筋加工用の工具、鉄筋、加工の際に発生する端筋等は、整理、整頓しておくこと。鉄筋加工作業員以外の者が立ち入ると危険が及ぶ箇所には、本仕様書 2.3［立入禁止の措置］を遵守し、見やすい箇所に具体的な危険の内容とともに、立入禁止の表示、柵等を設置すること。 (b) 鉄筋加工作業を行うときには、本仕様書 4.1.5［機器の作業環境］を遵守し、作業場の照度の確保、機械への巻き込まれの防止、作業環境の整備、保護具の着用、火災予防、緊急事態発生時の対応、機械の異常発見時の対応等の措置を講じること。また、本仕様書 4.4.3[小型の定置機械の作業環境] を遵守し、挟まれ、巻き込まれ、及び飛来物による危険防止の措置を講じること。 (c) 鉄筋加工機械を使用して作業を行うときは、取扱者を定め本仕様書 4.4［定置機械］を遵守し、鉄筋加工機械の点検・整備を実施し、鉄筋加工機械の作業時の安全措置を講じること。 (d) 鉄筋の荷くずれによる作業員への危険の防止のために、鉄筋は結束する等の荷崩れしない方法で仮置きする等の措置を講じること。 (2) 鉄筋運搬作業 (a) 加工した鉄筋を作業床又は型枠等の上に仮置きするときは、仮置きする場所の最大上載荷重を守り、一箇所に集中して置かないこと。 (b) 鉄筋の吊り上げ、吊り下げ及び運搬作業を行うときには、本仕様書	**10.4 Reinforcing bars Works** The Contractor shall take the following measures for the cutting and bending, transport and assembly of the reinforcing bars. (1) Cutting and bending of the reinforcing bars (a) In order to prevent the worker from falling, keep the cutting and bending equipment of the reinforcing bars, reinforcing barss, and its trashes decluttered. In order to prevent anyone other than the workers cutting and bending the reinforcing bars from entering the site, install the fences and caution signs at locations easy to see that show the prohibition and its right reasons complying with JSSS 2.3 [Measures of No-entry]. (b) In the cutting and bending works of the reinforcing bars, take the measures such as the sufficient illuminance and the work environment, the use of the protector, the prevention from being caught in a rotating part of the equipment and fire, the abnormality, and the emergency complying with JSSS 4.1.6 [Work Environment] and take the measures such as the prevention from the danger due to being caught in a rotating part of the machine and hitting the flying materials complying with JSSS 4.4.3 [Work Environment of Construction Facilities]. (c) When the works with the manufacturing equipment for the reinforcing bars are carried out, appoint workers to use the equipment and carry out the maintenances and inspections of the manufacturing equipment for the reinforcing bars, and take the safety measures complying with JSSS 4.4 [Stationary Equipment] (d) In order to prevent from the danger due to the collapse the reinforcing bars, take the measures to place the reinforcing bars with the measures preventing the collapse such as tighten them by ropes.	**10.4 Reinforcing Bars Works** The Contractor shall take the following measures for the cutting, bending, transport and assembly of reinforcing bars: (1) Cutting and bending of reinforcing bars (a) Keep the equipment and tools, reinforcing bars and their trashes decluttered to prevent the workers from falling on them. Prevent anyone other than the workers for the cutting and bending of the reinforcing bars from entering the cutting and bending work site by installing the fences and caution signs at locations easy to see that show the prohibition and its concrete reasons complying with JSSS 2.3 [Measures of No-entry]. (b) Take the following measures: Sufficient illuminance, proper work environment complying with JSSS 4.1.6 [Work Environment], wearing of PPE, prevention being caught in rotating parts of the equipment and tools, and hit by the flying materials complying with JSSS 4.4.3 [Work Environment of Construction Facilities]. (c) Appoint the workers to work with the cutting and bending equipment and carry out the maintenance and inspection of the equipment, and take the safety measures complying with JSSS 4.4 [Stationary Equipment]. (d) Take the measures to store reinforcing bars to prevent their collapse such as tighten them by ropes. (2) Transport of reinforcing bars (a) Place the reinforcing bars on the floor or scaffolding, formwork, etc. so that their weight shall be smaller than the maximum allowable loading capacity, and prevent their concentrating on one place after their transportation. (b) Take the measures in addition to JSSS 6 [Hoisting and Rigging Works], 6.5[Hoisting and Rigging Works] to tighten the

6[揚貨・玉掛け作業] 6.5[玉掛け作業] を遵守した措置を講じること。運搬する鉄筋は確実に結束し、原則として水平吊りとすること。

(3) 鉄筋組立作業

(a) 鉄筋組立時には適切な足場を設けること。

(b) 作業員に組立てた鉄筋を移動のために登り降りさせないこと。組立てた鉄筋上を歩行するときは、踏み抜き、転倒を防止するために歩み板を敷く等により、作業通路を確保すること。

(c) 鉄筋を運搬するときは、原則として 2 本の玉掛けワイヤーロープによりバランスを取って玉掛すること。やむを得ず垂直吊りをするときは、鉄筋の抜け落ちを防止する措置を講じること。

(d) 組立図にもとづき、鉄筋の転倒・倒壊の防止のための仮支え、筋交い等を配置すること。風雨による鉄筋の転倒・倒壊のおそれがあるときは、組立て作業を中止すること。風雨の後は鉄筋の状態を検査し、異常があるときは作業を中止すること。

(e) やむをえない場合を除いて、上下作業は行ってはならない。

(f) 作業通路に面した鉄筋の端部には、作業員の突刺し、裂傷の危険防止のために、鉄筋防護キャップを設置する等の措置を講じること。

(2) Transport of the reinforcing bars

(a) In placing the reinforcing bars on the floor or the formwork, etc., comply with the maximum load capacity of them, and prevent from concentrating in one place.

(b) In transporting and lifting the reinforcing bars, take the measures specified with JSSS 6 [Hoisting and Rigging Works] 6.5[Hoisting and Rigging Works]. Tighten the reinforcing bars certainly and suspend the bar horizontally in principal.

(3) Assembly of the reinforcing bars

(a) Prepare the scaffold in assembling the reinforcing bars.

(b) Prohibit the workers from stepping and climbing up the assembled reinforcing bars. When the workers walk on the assembled reinforcing bars, ensure the service path to put the board because of the prevention from falling and treading on something sharp.

(c) When transporting the reinforcing bars, suspend the bar keeping the balance by two rigging wire ropes in principle. When suspending them vertically for unavoidable reason, take the measures to prevent from the reinforcing bars falling out.

(d) Place the support and brace for the reinforcing bars based on the assembling drawing, in order to prevent from falling and collapsing the reinforcing bars. When there is a risk for the falling and collapsing the reinforcing bars due to the wind and rain, suspend the assembly work. When it was bad weather, inspect the reinforcing bars and suspend the work if an abnormality.

(e) Prohibit the work at the site above or below another worker operating unless there is an unavoidable reason. revent.

(f) Take the protect measures such as installing the protect caps for the reinforcing bars faced to the service path in order to prevent the worker from piercing and tearing by the edge of the reinforcing bars.

reinforcing bars firmly and suspend the bars horizontally in principal in transporting and lifting them.

(3) Assembly of the reinforcing bars

(a) Prepare properly the scaffold for assembling the reinforcing bars.

(b) Prohibit the workers from climbing up and stepping down on the assembled reinforcing bars. When the workers walk on the assembled reinforcing bars, provide the service path by placing boards to prevent falling of workers and avoid treading of workers on something sharp.

(c) When transporting the reinforcing bars, suspend the bars keeping their balance by two rigging wire ropes in principle. When suspending them vertically by unavoidable reason, take the measures to prevent the reinforcing bars from falling out.

(d) Place the supports and braces for the reinforcing bars in accordance with the assembling drawings to prevent the reinforcing bars from falling and collapsing. When there is a risk of the falling and collapsing of the reinforcing bars by the wind and rain, stop the assembly work. After adverse weather, inspect the assembled reinforcing bars and stop the work when an abnormality is found.

(e) Prohibit the work at the site above or below the places where another worker is operating unless other measures are taken.

(f) Take the measures such as providing the protection caps on edges of the assembled reinforcing bars facing to the passageway to prevent the workers from pierced and torn by the edge of the reinforcing bars.

10.5 型枠及び型枠支保工作業

請負者は、型枠及び型枠支保工の組立て、解体の作業を行うときは、次の措置を講じなければならない。

(1) 型枠及び型枠支保工の設計のときには本仕様書 7.1.3[仮設工事の設計及び設計照査]を遵守し、設計すること。

(2) 型枠及び型枠支保工の施工のときには本仕様書 7.1.4[仮設工事の施工、使用、解体]を遵守し、施工すること。

(3) 型枠及び型枠支保工の組立、解体作業は、施工計画及び組立図に従い行うこと。

(4) 型枠及び型枠支保工の材料は、材料仕様書に記載の請負者が計画した品質の材料を使用するものとし、ひび割れ、変形又は腐食等のある不適切な材料を使用しないこと。

(5) 型枠及び型枠支保工の組立、解体作業を行うときには本仕様書 2.3[立入禁止の措置]を遵守し、当該作業に従事する者以外の立ち入りを禁止

10.5 Formwork and Falsework of the Formwork Works

The Contractor shall take the following measures in assembling and dismantling the formwork and the falsework of the formwork

(1) Comply with JSSS 7.1.3 [Method Statement and the Particular Safety Plan] in designing the formwork and the falsework of the formwork.

(2) Comply with JSSS 7.1.4 [Construction, Operation and Demolition of TW] in constructing the formwork and the falsework of the formwork.

(3) Comply with the execution scheme and the assembly drawing in conducting the assembly and dismantling for the formwork and falsework.

(4) The material of the formwork and falsework should be applied the material without the cracks and deformations of which quality is described in the material specification planned by the Contractor.

(5) When the assembly and dismantling works of the formwork and the

10.5 Formwork and Falsework

The Contractor shall take the following measures in assembling and dismantling the formwork and the falsework

(1) Comply with JSSS 7.1.3 [Method Statement and the Particular Safety Plan] in designing the formwork and the falsework.

(2) Comply with JSSS 7.1.4 [Construction, Operation and Demolition of TW] in constructing the formwork and the falsework.

(3) Comply with the Method Statement and the assembly drawings in conducting the assembly and dismantling of the formwork and falsework.

(4) The materials of the formwork and falsework shall be free from cracks and deformations, and quality specified in the design of the Contractor.

(5) When the assembly and dismantling works of the formwork and the falsework are carried out, prohibit anyone other than the relevant workers from entering to the Site for assembling and dismantling the

すること。 (6) 作業員の転倒防止のために、型枠及び型枠支保工の組立て前、及び解体後の材料は、整理整頓して仮置きすること。 (7) 型枠及び型枠支保工又はその材料を運搬するときは、それらの重量の確認や揚貨機械の作業半径の確認を行い、本仕様書 6.4.1[移動式クレーンの配置と据付]を遵守し、揚貨機械の転倒を防止すること。 (8) 大型型枠の作業では、突風や強風による型枠のあおられによる大型型枠の突然の動きによる作業員の挟まれを防止するため、挟まれの危険のある場所に作業員を立入らせないこと。 (9) 型枠パネルは水平にして仮置きすること。解体後の型枠材から露出した釘、針金等の突起物による作業員の踏抜き、裂傷等の危険の防止のために、解体後すみやかに突起物を取り除く、又は折り曲げる等の措置を講じること。 (10) 型枠支保工の組立、解体作業にあたっては、当作業に関する特別な教育を受講しかつ経験のある作業主任を配置し、作業を直接指揮させること。	falsework of the formwork are carried out, prohibit anyone other than the worker from entering to the site for assembling and dismantling the formwork and falsework complying with JSSS 2.3 [Measures of No-entry]. (6) In order to prevent the worker from falling, keep the materials of the formwork and falsework before assembling and after dismantling decluttered. (7) When the material of the formwork and falsework are transported, ensure the weight of the material and work diameter of the lifting equipment, and prevent the falling of the lifting equipment complying with JSSS 6.4.1 [Placements and Installations of Mobile Crane]. (8) When the large size of the formworks is used, in order to prevent the worker being caught in the formwork due to the sudden movement of the formwork by the strong wind, prohibit the worker from entering the area with the above risks. (9) Place the form panels for the formwork horizontally. After dismantling, in order to prevent the worker from the damage due to the outshoot such as the nails and wires which projected from the panels, take the measures such as the removal and bend of the outshoot, etc., immediately. (10) When the assembly and dismantling works of the falsework of the formwork are carried out, assign the Operation Leader who has experienced and learned the special education for the works, and let the Operation Leader instruct for assembling and dismantling of the falsework of the formwork.	formwork and falsework complying with JSSS 2.3 [Measures of No-entry]. (6) To prevent the workers from falling, keep the materials of the formwork and falsework before assembling and after dismantling decluttered. (7) When the materials of the formwork and falsework are transported, ensure the weight of the materials within the rated capacity of hoisting equipment, and prevent the falling of the lifting equipment complying with JSSS 6.4.1 [Placements and Installations of Mobile Crane]. (8) When the formwork of large size is hoisted, to prevent the workers from being struck by the formwork suddenly moved by the strong wind, prohibit the workers from entering the area where there is the risk of being hit and caught. (9) Place the form panels for the formwork horizontally on storing place. After its dismantling, to prevent the workers from the damage due to the protruding nails and wires on the panels and lumbers, take the measures such as the removal or bending immediately. (10) When the assembly and dismantling works of the falsework are carried out, assign the Operation Leader who has experience and trained for the works, and let the Operation Leader lead the assembling and dismantling of the falsework.
10.6 コンクリート工 **10.6.1 コンクリートポンプ** 請負者は、ブーム搭載型のポンプ車を含む移動式コンクリートポンプ（以下。「コンクリートポンプ車」という。）又は定置式コンクリートポンプを使用してコンクリートを打設するときには、次の措置を講じなければならない。 (1) ブーム搭載型ポンプ車の使用にあたっては、本仕様書 6.4.1[移動式クレーンの配置と据付]に準じ、コンクリートポンプ車の転倒を防止すること。 (2) コンクリートポンプ車のブーム先端のホースには、ホースの落下防止装置を設置すること。 (3) 移動式及び定置式コンクリートポンプの操作者とコンクリートの打設作業員間の確実な連絡のために、本仕様書 2.4[監視員、誘導員の配置]に従い誘導員の配置、無線電話等の装置の設置、一定の合図を定める等の措置を講じること。 (4) コンクリート輸送管及びホース（以下、「輸送管」という。）のコンクリートの吹出し口の直下、前面、シュートの前面、コンクリート運搬を行う一輪車の通路など、作業員に危険を及ぼすおそれのある場所は、立入禁止とすること。特に、ブーム先端のホースの暴れによる、作業員との接触に注意し、筒先前の立入を禁止すること。 (5) コンクリートポンプのホッパスクリーン上では作業を行わせないこと。ホッ	**10.6 Concrete Work** **10.6.1 Concrete Pump** The Contractor shall take the following measures for the concrete casting works by the mobile concrete pump included the vehicle with the concrete transport boom (Hereinafter, it is called "concrete pump vehicle".) and stationary concrete pump. (1) When the concrete pump vehicles with the booms are used, take the measures to prevent from falling them complying with JSSS 6.4.1 [Placements and Installations of Mobile Crane]. (2) Install the falling prevention device of the hose with the concrete pump vehicle at the edge of the boom. (3) Take the measures such as the placement the guider, the installation of the wireless phone, and setting the signal rules complying with JSSS 2.4 [Placement of Spotters and Flagmen] in order to ensure the communication between the worker operating the mobile and stationary concrete pumps and the worker casting the concrete. (4) Prohibit from entering the dangerous place such as the front and below of the outlet of the concrete conveying pipe and hose (Hereinafter, it is called "conveying pipe".), the front of the shoot, and the path of the monocycle for transporting the fresh concrete, etc. Especially, beware of the contact of the worker and the hose at the edge of the boom, and prohibit from entering the front of the hose. (5) Prohibit the worker from operating on the hopper screen of the	**10.6 Concrete Works** **10.6.1 Concrete Pumps** The Contractor shall take the following measures for the concrete placing works by the mobile concrete pumps including that with the concrete boom (Hereinafter, it is called "concrete pump vehicle".) and stationary concrete pump. (1) When the concrete pump vehicles with the booms are used, take the measures to prevent them from falling complying with JSSS 6.4.1 [Placements and Installations of Mobile Crane]. (2) Install the fall prevention device between the concrete transportation pipes and hose at the edge of the boom. *To MD: For your reference, please see the photos of pumps and in the last column.* *To MD: Please refer to the OSHA 30 hr training text: Concrete and Masonry Construction Lesson 16 Study Guide sent separately.* (3) Take the measures such as placement of the Spotter, provision of communication facility such as wireless phone, and setting signals complying with JSSS 2.4 [Placement of Spotters and Flagmen] to ensure the communication between the workers operating the concrete pumps and the workers placing concrete. (4) Prohibit the workers from entering the dangerous places in concrete placing work such as the place in front of and below the outlet of concrete conveying pipes and hoses to avoid the workers to be hit by pipe and horse rampaged, places in front of shoot and path of the concrete buggy.

パ内の撹拌羽根を停止してから、コンクリートに混入した異物を取り除くこと、また、ホッパ内の洗浄作業を行うこと。

(6) 輸送管の安全措置

(a) 輸送管の破裂による作業員への危険防止のため、その日の作業前に輸送管の点検を行い、異常がある場合は輸送作業を禁止すること。

(b) 輸送管のすり減りによる破裂を防止する為、輸送管のすり減りを定期的に確認すること。

(c) 輸送管は、接手金具を使用して確実に接続すること。

(d) 輸送管は、堅固な建設物に固定させる等により輸送管の脱落、振れ防止の措置を講ずること。

(e) 輸送管の内部を、洗浄ボールを用いて洗浄するときは、輸送管の先端部に洗浄ボールの飛出しによる作業員の危険を防止するための器具を取り付けること。

(7) 輸送管が閉そくしたときの処理

(a) 閉そくしたときの復旧手順を事前に決めておくこと。

(b) 輸送管の接続部を切り離すときは、コンクリートの吹出しを防止するため、輸送管の内部の圧力を減少させる措置を講ずること

10.6.2 コンクリートミキサー車

請負者は、コンクリートミキサー車をコンクリートの運搬及び打設に使用するときには、次の措置を講じなければならない。

(1) コンクリート運搬中のミキサー車の重心が高いことを考慮し、車の横転防止のために、運転者に走行中の車のバランス及び運転速度に注意させること。

(2) 作業員のドラムとの接触、ドラムへの巻き込まれの危険防止のため、回転中のコンクリートドラムの中をのぞかせないこと。

10.6.3 コンクリートバケット

請負者は、コンクリートバケットを使用してコンクリートを打設するときには、次の措置を講じなければならない。

(1) 本仕様書 10.6.1 [移動式・定置式コンクリートポンプ] (3)に準じ、コンクリートバケットの操作者とコンクリートの打設作業員間の確実な連絡のために、誘導員の配置等の措置を講じること。

(2) コンクリートバケットの移動は揚貨機械により行うこと。微調整を除き、コンクリートバケットの押引きを作業員に禁止すること。

(3) 運搬作業時のバケットの振れ防止を行い、吊荷の下には作業員を入らせないこと。

(4) バケットによるコンクリート打設作業の際、急激な開放によるバケットの反動を防止するためにコンクリートをゆっくり排出すること。

10.6.4 バイブレータ

concrete pump. After stopping the agitating blade on the hopper, remove the foreign matter from the concrete. Keep the inside of the hopper clean.

(6) Safety measures for the conveying pipe

(a) In order to prevent the worker from the danger due to the collapse of the conveying pipe, inspect the coveting pipe every day before the inspection, and prohibit from the operation if an abnormality.

(b) In order to prevent the collapse of the conveying pipes due to the abrasion, inspect them regularly.

(c) Connect the conveying pipes firmly by the fitting.

(d) Take the measures to prevent from falling and shaking the coveting pipe by fixing it to the solid structure.

(e) When cleaning the inside of the conveying pipe by the cleaning ball, install the device at the edge of the coveting pipe in order to prevent the worker from the danger due to rushing out the cleaning ball.

(7) Measures for the obstruction of the conveying pipe

(a) Decide the recovery procedure in advance.

(b) When separating the connection of the coveting pipes, take the measures to reduce the pressure in the conveying pipe to prevent from rushing out the concrete.

10.6.2 Concrete Mixer

The Contractor shall take the following measures for the concrete mixer in the transport and casting works of the concrete.

(1) Considering that the center of gravity of the concrete mixer loaded the fresh concrete is high, let the drivers beware of the balance and driving speed of the concrete mixer in order to prevent the falling them.

(2) In order to prevent the worker from the contact and being caught in the drum, prohibit from looking inside of the rotating concrete drums.

10.6.3 Concrete Bucket

The Contractor shall take the following measures for the concrete bucket in the casting works of the concrete.

(1) Take the measures such as the placement the guider, etc. in order to ensure the communication between the worker operating the concrete buckets and the worker casting the concrete complying with JSSS 10.6.1 [Concrete Pump] (3).

(2) The concrete bucket should be transported by the lifting equipment. The worker shall be prohibited from pushing and pulling the concrete bracket except for the adjustment.

(3) In the transport works, take the prevention measures to swing the buckets, and prohibit the worker from entering the below of suspended load.

(4) In the casting works by the concrete buckets, in order to prevent the reaction of the bucket due to the sudden discharge of the fresh concrete, discharge the concrete slowly.

(5) Prohibit the workers from working on the hopper screen of the concrete pump. Remove foreign materials in the concrete in the hopper and clean the hopper after stopping the agitating blade in the hopper of concrete pump.

(6) Safety measures for the concrete conveying pipes and hoses

(a) Inspect the pipes and hoses before concrete placing works on the day to prevent the workers from the danger due to the burst of the pipes and hoses, and stop the operation with pipes and horses if an abnormality is found.

(b) Inspect pipes and hoses regularly to prevent the burst of the pipes and hoses due to their abrasion.

(c) Joint the pipes and hoses firmly with their fittings.

(d) Take the measures for the pipes by being firmly fixed in place such as the firm structures to prevent the pipes from their fall and vibration.

(e) Install the cleaning ball receiving device at the edge of the pipes to prevent the workers from the danger of hit by the cleaning ball jumped out from the pipes when cleaning the inside of the pipes by cleaning ball.

MD: Please see the picture the last column.

(7) Measures for the clogging in the pipes

(a) Determine the recovery procedure in case of clogging in the pipes in advance.

(b) When opening the pressurized pipes, take the measures to remove the pressure in the pipes to prevent from splashing out concrete.

10.6.2 Concrete Mixer Vehicles

The Contractor shall take the following measures for the concrete mixer vehicle in the transport and placing works of the concrete.

(1) Considering the center of gravity of the concrete mixer vehicle loaded the fresh concrete is high, make the drivers be aware of the balance and driving speed of the concrete mixer vechicle to prevent its falling.

(2) In order to prevent the worker from the collision by and being caught in the mixing drum, prohibit from looking inside of the rotating concrete drums of the mixer.

10.6.3 Concrete Buckets

The Contractor shall take the following measures for the concrete bucket in the placing works of the concrete.

(1) Take the measures such as the placement the Spotter, etc. in order to ensure the communication between the workers operating the concrete buckets and the worker placing the concrete complying with JSSS 10.6.1 [Concrete Pump] (3).

(2) The concrete bucket shall be transported by the lifting equipment. The workers shall be prohibited from pushing and pulling the bracket except for the minor adjustment of location of bucket for discharging concrete.

(3) In the concrete transportation works, take the measures to prevent the bucket from swinging, and prohibit the workers from entering the

請負者は、バイブレータを使用してコンクリートを締固める場合、次の措置を講じなければならない。

(1) 電動のコンクリート内部振動機を使用するときは、4.5[電気機械器具]を遵守し感電防止の措置を講じること。

(2) 内部振動機及び手持ち型の外部振動機を使用するときは、振動による健康被害を予防するため、防振手袋を作業員に着用させること。

10.6.5 コンクリート打設作業

請負者は、コンクリート打設作業を行うときは、次の措置を講じなければならない。

(1) 型枠及び型枠支保工の点検

(a) 作業前に、型枠及び型枠支保工を点検し、不備な箇所は作業前に補修しておくこと。異常を認めた場合には、作業を中止すること。作業中に、型枠、型枠支保工及び型枠支保工の基礎に異常を認めた場合は、ただちに作業を中止し、作業員を退避させること。

(b) コンクリート打設中、シュート、輸送管等の状態を適宜点検し、異常がないことを確認すること。必要に応じ輸送管の接手金具の増締めを行うこと。異常が見つかった場合は、ただちに作業を中断すること。

(2) 施工計画に従い、打設したコンクリートによる想定外の偏圧が生じないよう打設作業を行うこと。

10.6.4 Concrete Vibrators

The Contractor shall take the following measures for the concrete vibrator in the compaction works of the concrete.

(1) Take the prevention measures for the electric shock in operating the electric concrete internal vibrator specified with JSSS 4.5 [Electric Construction Equipment].

(2) When the concrete internal vibrators or handy concrete external vibrators are used, let the workers wear the anti-vibration gloves in order to prevent the health damage due to the vibration.

10.6.5 Concrete Casting Work

The Contractor shall take the following measures for the concrete casting works.

(1) Inspection of the formwork and the falsework of the formwork

(c) Inspect the formwork and falsework and repair their defects before the operation. If there is an abnormality, prohibit from using them.
If there is an abnormality of the formwork, falsework and basement of the falsework in the casting works, suspend the operation immediately and evacuate the workers.

(d) When casting the concrete, inspect the condition of the shoot and conveying pipe, and retighten the fitting of the conveying pipe if necessary. If there is an abnormality, suspend the operation immediately.

(2) Conduct the concrete casting work complying with the execution method in order not to function the unsymmetrical pressure due to the casting concrete to the formwork and falsework.

places below bucket.

(4) In the discharging concrete from the bucket, to prevent the jump up of the bucket reacted to the sudden discharge of the concrete, discharge the concrete slowly.

10.6.4 Concrete Vibrators

The Contractor shall take the following measures for the concrete vibrators in the compaction works of the concrete.

(1) Take the measures to prevent the electric shock during operating the electric concrete internal vibrators in accordance with JSSS 4.5 [Electric Construction Equipment].

(2) When the concrete internal vibrators or portable concrete external vibrators are used, the workers shall wear the anti-vibration gloves to prevent the health damage due to the vibration.

10.6.5 Concrete Placing Works

The Contractor shall take the following measures for the concrete placing works.

(1) Inspection of the formwork and the falsework

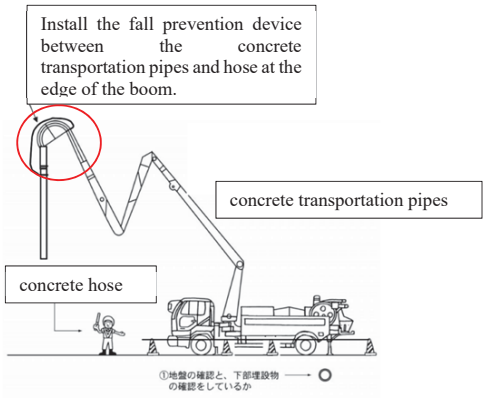
(a) Inspect the formwork and falsework and repair their defects before the concrete placing works. When an abnormality is found, stop the works.
If there is an abnormality of the formwork, falsework and basement of the falsework in the placing works, stop the works immediately and evacuate the workers.

(b) During placing the concrete, inspect the condition of the pipes and shoot, and retighten the joints of the pipes when necessary. If an abnormality is found, stop the works immediately.

(2) Execute the concrete placing complying with the Method Statement to avoid the unsymmetrical pressure to the form and falsework more than designed.

Concrete convey pipes and hose.

http://pmkujira.sakura.ne.jp/Exsokuryo/Free/Anzen/AnzenCK/8-1-C.htm



Mounted Boom Concrete Pump Safety

https://www.slideshare.net/AliKamalMostofaRubel/mounted-boom-concrete-pump-safety

(By NK Bangladesh MRT Project, S&H Officer)

BS ISO 6707-1:2017 Buildings and civil engineering works — Vocabulary

3.4.4.17 reinforcement
rods (3.4.1.8), bars (3.4.1.7), fabric, fibres, wires, and cables (3.4.4.54) added to give additional strength or support to a material (3.4.1.1) or component (3.4.1.4)

3.5.3.7 formwork
shuttering, GB structure (3.3.1.2), either temporary or permanent, provided to contain fresh concrete (3.4.4.15) and support it in the required shape and size (3.7.2.2) until it has hardened

3.5.3.8 falsework
temporary structure (3.3.1.2) used to support a permanent structure

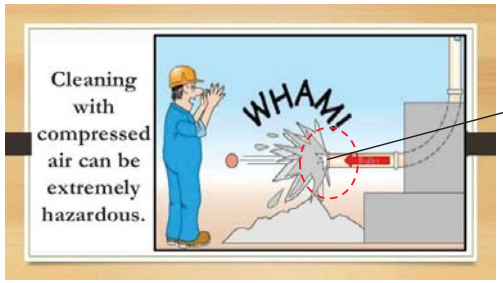
BS 6100-9:2007
09 33040 reinforcing bar
steel bar (01) that forms an element of reinforcement (01) NOTE Usually of circular cross-section

12 76016 batching plant
plant (01) for mixing, storing and supplying measured quantities of concrete (01), asphalt (01) or aggregate (01)

Mounted Boom Concrete Pump Safety

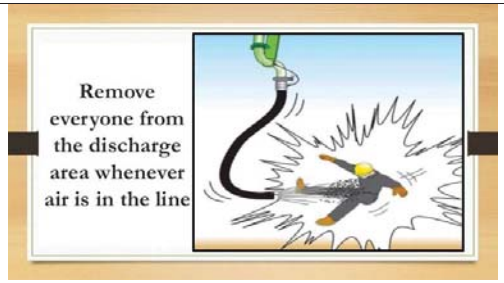
https://www.slideshare.net/AliKamalMostofaRubel/mounted-boom-concrete-pump-safety

(By NK Bangladesh MRT Project, S&H Officer)



cleaning ball receiving device at the edge of pipes

http://www.kk-mw.co.jp/business/pump_parts/item.html#sub09_item03



JICA Standard Safety Specification Preparation Study
9 CONCRETE WORK (English R2 for Issue 2)

2020.1.21 Japanese Final
2020.2.10 NK Issue 1
2020.3.2 JICA Comment
2020.4.3 NK Eng.R2

JSSS in Japanese (2020/01/21)	JSSS in English Issue 1 (2020/02/10)	JICA Comments (2020/03/02) JC: JICA Comments NK: NK actions	JSSS in English R2 for Issue 2(2020/4/3) Words in red color are added or modified from the last version..
9. コンクリート工事 **9.1 一般事項** **9.2 計画における安全上の留意事項** **9.3 作業員への安全教育と指導、周知** **9.4 鉄筋作業** **9.5 型枠及び型枠支保工作業** **9.6 コンクリート工** 10.6.1 コンクリートポンプ 10.6.2 コンクリートミキサー車 10.6.3 コンクリートバケット 10.6.4 バイブレータ 10.6.5 コンクリート打設作業	**9.1 GENERAL** 9.1.1 Scope 9.1.2 Safety Plan and Instructions to Workers **9.2 PARTICULAR SAFETY MEASURES FOR INSITU CONCRETE WORKS** 9.2.1 Safety Measures at Planning Stage 9.2.2 Safety Measures during Placement 9.2.3 Safety Measures for Placement by Pumping 9.2.4 Safety Measures for Concrete Mixer Trucks 9.2.5 Safety Measures for Use of Concrete Buckets 9.2.6 Safety Measures for Use of Concrete Vibrators **9.3 REINFORCEMENT** 9.3.1 Safety Measures at Planning Stage 9.3.2 Safety Measures at Fabrication and Assembly Stage **9.4 FORMWORK (INCLUDING FALSEWORK)** 9.4.1 General 9.4.2 Safety Measures at Planning Stage 9.4.3 Safety Measures at Fabrication and Assembly Stage 9.4.4 Safety Measures during Dismantling and Removal Stage NK: 次は貴機構への提出時のメイルのコピーです。 添付は、英文のクリーン版(Issue 1)、MD 氏の検討ノート付き書類(NK 英文原案)、和文と英文の比較書類です。 Issue 1 は、MD 氏のドラフトをもとに、次に留意して作成を行っております。 第 9 章の構成:セット版の構成は、作業の流れに沿い鉄筋、型枠、コンクリート作業の順で規定していました。MD 氏から本章はコンク リード工事が主であることから、コンクリート、鉄筋、型枠作業とする構成とする提案があり、妥当と考えまして、Issue 1 は、コンクリート作業が先に来る構成としております。セット版の構成に戻すことは Issue2 で可能です。 MD 氏から、コンクリート工事では、Precast Concrete(PC)もあることから OSHA1926 704, Requirements for precast concrete の規定の提案がありました。これにつきましては、和文作成の検討会で PC は規定しないとの方針でしたことから、Issue 1 では規定しておりません。 和文と英文の規定内容の比較を添付の様に行い、英文に漏れがないように致しました。一般事項や重複がある規定は削除しております。ま た、英文で規定が無かった事項は、英文に追記を行っております。この追記した英文は、Issue 2 で MD 氏による英文校閲を行うことに 致します。 MD 氏が追加した項目(例えば、シリカ粉塵に関する規定)は、妥当と考えましたものは残し、不要なものは削除致しました。	JC: 次回作成時に優先的に取り組む事項として、プレキャストコンクリートの取り扱いについてスペックマニュアル等に記載することを念頭においていただければと思います。 Regarding to Precast Concrete as a matter to be prioritized in next stage for completing JSSS, please keep it in mind in writing this section. NK: 了解しました。	**9.1 GENERAL** 9.1.1 Scope 9.1.2 Safety Plan and Instructions to Workers **9.2 PARTICULAR SAFETY MEASURES FOR INSITU CONCRETE WORKS** 9.2.1 Safety Measures at Planning Stage 9.2.2 Safety Measures ~~during~~ for Concrete Placement 9.2.3 Safety Measures for Placement by Pumping 9.2.4 Safety Measures for ~~Concrete Mixer Trucks~~ Ready-mixed Concrete Trucks 9.2.5 Safety Measures for Use of Concrete Buckets 9.2.6 Safety Measures for Use of Concrete Vibrators **9.3 REINFORCEMENT** 9.3.1 Safety Measures at Planning Stage 9.3.2 Safety Measures at Fabrication and ~~Assembly~~ Fixing and Placing Stage **9.4 FORMWORK (INCLUDING FALSEWORK)** 9.4.1 General 9.4.2 Safety Measures at Planning Stage 9.4.3 Safety Measures at Fabrication and Assembly Stage 9.4.4 Safety Measures during Dismantling and Removal Stage
9 コンクリート工事 **9.1 一般事項** 本章では、コンクリート工事の鉄筋・加工・組立、型枠及び型枠支保工の組立・使用・解体、コンクリート打設作業を扱う。 →E 9.1.1(1) に規定済み コンクリートの砕石の製造設備及びコンクリートの練り混ぜ設備は、本仕様書 4[請負者の機器]4.3[建設設備]で	**9.1. GENERAL** 9.1.1. Scope (1) This Chapter specifies the safety requirements for Concrete Works which shall include:	**9.1 GENERAL** 9.1.1 Scope (1) This Chapter specifies the safety requirements for Concrete Works which shall include:	**9.1 GENERAL** 9.1.1 Scope (1) This Chapter specifies the safety requirements for Concrete Works which shall include:

扱う。→E 9.1.1(2) に規定済み

9.2 計画における安全上の留意事項

請負者は、コンクリート工事の計画にあたっては、次の措置を講じなければならない。

(1) 鉄筋、型枠、型枠支保工、コンクリート輸送管、コンクリートバケット、トレミー管、コンクリート内部振動機及び外部振動機等の資材の現場搬入は、本仕様書 5[運搬作業]に従って行うこと。→規定無し。理由：共通事項として 9.1.1(2)に規定済。→規定不要。

(2) 鉄筋、型枠、コンクリート等の資材の落下、投下、集積等による作業員及び第三者への危険の予防のため、仕様書 2.6[飛来落下の防止措置を遵守すること。→規定無し。理由：共通事項として 9.1.1(2)に規定済。→規定不要。

(3) 鉄筋の組立図には、必要に応じ鉄筋の組立時の強風による転倒・倒壊の防止のための鉄筋の仮支え、筋交い等の配置を含めること。→E 9.4.2 (2)に規定済み

(4) 鉄筋、型枠、型枠支保工の作業にあたっては、必要に応じてこれらの組立・解体作業の手順を示す組立・解体図を作成し、それに従い作業を行うことを計画すること。なお、型枠及び型枠支保工の組立図には、型枠及び型枠支保工の解体作業の手順を含むこと。→E 9.4.2 (2)に規定済み

(5) 型枠及び型枠支保工の転倒・崩壊の危険の防止のために、型枠及び型枠支保工に打設したコンクリートによる偏圧が作用しないようコンクリートの打設順序、打設高さ及び打設速度を計画すること。→E 9.2.1(2)に規定済み

(6) 作業員の腰痛等の健康被害の防止のために、長尺鉄筋、型枠・型枠支保工の資材等の重量物を取扱う作業では、2 人以上で行う又は揚貨機械を使うこと等を計画すること。→E 9.1.2(2) に規定済み

9.3 作業員への安全教育と指導、周知

請負者は、コンクリート工事を行うにあたっては、作業員に対して次の措置を講じなければならない。

(1) 本仕様書 1.9(1)[教育訓練の実施]に規定する教育訓練に準じて、各作業の特性に応じて、作業員に

(a) Insitu (poured or pumped) concrete;

(b) Reinforcement (reinforcing bar and fabric reinforcement);

(c) Formwork (including associated falsework);

and hereinafter collectively referred to as "Concrete Works".

(2) General safety requirements, covering for example Contractor's Equipment including stone crushing plants and screening equipment, concrete batching plants, Temporary Works and other related matters, all which apply to the work in this Chapter, are described in other Chapters of JSSS.

Additional particular requirements are contained in this Chapter.

9.1.2. Safety Plan and Instructions to Workers

(1) Prepare a safety plan describing the safety requirements for Concrete Works and inform all relevant Contractor's Personnel of the content and requirements.

(2) Plan the execution of all Concrete Works including handling of reinforcement and formwork panels by using Contractor's Equipment and/or sufficient numbers of workers so that overloading and consequent back injury and other injury is avoided.

9.2. PARTICULAR SAFETY MEASURES FOR INSITU CONCRETE WORK

The following safety requirements are additional to the general requirements described in other Chapters.

9.2.1. Safety Measures at Planning Stage

(a) Insitu (poured or pumped) concrete;

(b) Reinforcement (reinforcing bar and fabric reinforcement);

(c) Formwork (including associated falsework);

and hereinafter collectively referred to as "Concrete Works".

(2) General safety requirements, covering for example Contractor's Equipment including stone crushing plants and screening equipment, concrete batching plants, Temporary Works and other related matters, all which apply to the work in this Chapter, are described in other Chapters of JSSS.

Additional particular requirements are contained in this Chapter.

9.1.2 Safety Plan and Instructions to Workers

(1) Prepare a safety plan describing the safety requirements for Concrete Works and inform ~~all relevant Contractor's Personnel~~ all workers engaging in the Concrete Works of the content and requirements. Such a safety plan shall pay due care to the workers' health matters (e.g. back injury) in relation to handling of reinforcement, formwork panels or other heavy stuff, and include necessary preventive measures (e.g. using appropriate Contractor's Equipment, assigning sufficient number ow workers).

JC: all relevant personnel では定かではないので all workers engaging in the Concrete Works に。
Isn't "all relevant personnel" clearly understood? "all workers engaging in the Concrete Works" is more appropriate.

NK: Modified as commented.

(2) Plan the execution of all Concrete Works including handling of reinforcement and formwork panels by using Contractor's Equipment and/or sufficient numbers of workers so that overloading and consequent back injury and other injury is avoided.

9.2. PARTICULAR SAFETY MEASURES FOR INSITU CONCRETE WORK

The following safety requirements are additional to the general requirements described in other Chapters.

9.2.1 Safety Measures at Planning Stage

JC: 第三者に剥離剤がかかる可能性があるような場合は、その剥離剤は無害なものでなくてはならない、といったことが書かれている MTR 9.7 項 Release Agent (6)を規定すべき？

(a) Insitu (poured or pumped) concrete;

(b) Reinforcement (reinforcing bar and fabric reinforcement);

(c) Formwork (including associated falsework);

and hereinafter collectively referred to as "Concrete Works".

(2) General safety requirements, covering for example Contractor's Equipment including stone crushing plants and screening equipment, concrete batching plants, Temporary Works and other related matters, all which apply to the work in this Chapter, are described in other Chapters of JSSS.

Additional particular requirements are contained in this Chapter.

9.1.2 Safety Plan and Instructions to Workers

(1) Prepare a safety plan describing the safety requirements for Concrete Works and inform all workers engaging in the Concrete Works of the content and requirements. Such a safety plan shall pay due care to the workers' health matters (e.g. back injury) in relation to handling of reinforcement, formwork panels or other heavy stuff, and include necessary preventive measures (e.g. using appropriate Contractor's Equipment, assigning sufficient number ow workers)

(2) Plan the execution of all Concrete Works including handling of reinforcement and formwork panels by using Contractor's Equipment and/or sufficient numbers of workers so that overloading and consequent back injury and other injury is avoided.

9.2 PARTICULAR SAFETY MEASURES FOR INSITU CONCRETE WORK

The following safety requirements are additional to the general requirements described in other Chapters.

9.2.1. Safety Measures at Planning Stage

対して教育訓練を実施すること。→規定無し。理由：共通事項として 9.1.1(2)に規定済。→規定不要。

(2) 機器を使用した作業を行うときには、本仕様書4.1.2[各作業の作業員への周知]を遵守し、各作業の特性に応じた役割分担、作業内容、方法、手順、安全措置事項を作業員に周知すること。→E 9.1.2(1)に規定済み

9.6 コンクリート工

(1) The Contractor shall plan all concrete work so that it can be executed in a safe and methodical manner.

(2) The Contractor shall plan the method of insitu concrete placement and carry out the design and construction of formwork and falsework to take account of uneven and excessive impact force and different or asymmetrical loads, thicknesses and pressures in certain areas during concrete placement to avoid any deformation, damage or collapse of formwork or falsework and show all details in the Method Statement and Safety Plan.

9.2.2. Safety Measures During Placement

The Contractor shall:

(1) Designate concrete placement works (including all pumping and hoisting of concrete) as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) Inspect all reinforcement, formwork and falsework before and during concrete placement. If any defect is discovered, stop the placement works and evacuate the workers immediately, carry out repairs and reinspect before resuming.

It is suggested to stipulate "When release agent may splash on third parties, such agent shall be harmless one to human" such as specified in MTR 9.7 [Release Agent] (6)?

NK: 剥離剤は、GC 1.1.5.2 で定義の Goods の一つであり、これが第 3 者へ掛かる被害防止は、JSSS の 2.6 FALLING OBJECTS の 2.6.1.General の規定で網羅されると考える。この特別な措置は規定しないこととする。
Release Agent is one of Goods defined in GC 1.1.5.2 and measures for such splash on the third parties is specified in JSSS, 2.6 FALLING OBJECTS, 2.6.1.General
Therefore, it is not appropriate to stipulate too much in details. Leave as it is.

(1) The Contractor shall plan all concrete work so that it can be executed in a safe and methodical manner.

(2) The Contractor shall plan the method of insitu concrete placement and carry out the design and construction of formwork and falsework to take account of uneven and excessive impact force and different or asymmetrical loads, thicknesses and pressures in certain areas during concrete placement to avoid ~~any~~ deformation beyond allowable construction tolerances specified in the contract damage or collapse of formwork or falsework and show all details in the Method Statement and Safety Plan.

JC: deleted and added.

9.2.2 Safety Measures ~~during~~ for Concrete Placement

JC: changed.

The Contractor shall:

(1) Designate concrete placement works (including all pumping and hoisting of concrete) as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) Inspect all ~~reinforcement,~~ formwork and falsework before ~~and during~~ concrete placement. Stop the works if any defect is discovered. ~~stop the placement works and evacuate the workers immediately, carry out repairs and reinspect before resuming~~.

JC: 鉄筋を見てもわからないのではないか。除外。
型枠全体が崩壊することがないようにプランニングされていることが前提なので、evacuation に関する記載は不要。その代わりに追加の支保材をスタンバイさせ、型枠の局所的な変形の際には補強するという規定を(3)に追記してください。
It may be able to find any defect by the inspection of

(1) The Contractor shall plan all concrete work so that it can be executed in a safe and methodical manner.

(2) The Contractor shall plan the method of insitu concrete placement and carry out the design and construction of formwork and falsework to take account of uneven and excessive impact force and different or asymmetrical loads, thicknesses and pressures in certain areas during concrete placement to avoid ~~any~~ deformation beyond allowable construction tolerances specified in the contract damage or collapse of formwork or falsework and show all details in the Method Statement and Safety Plan.

9.2.2. Safety Measures ~~during~~ for Concrete Placement

The Contractor shall:

(1) Designate concrete placement works (including all pumping and hoisting of concrete) as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) Inspect all reinforcement, formwork and falsework before and during concrete placement. If any defect is discovered, stop the placement works and evacuate the workers immediately, carry out repairs and reinspect before resuming.

		reinforcement. It is assumed that the entire formwork is planned so as not to collapse entirely, so it is not necessary to specify about evacuation. In stead of this phrases, please add a provision to (3) that additional materials for false works shall be on standby and used for reinforcing formworks in case of local deformation of the formwork. NK: 鉄筋の結束や支持が十分に行われない場等があることから、削除は不要と考えます。 ベトナム国のカントー橋のコンクリート打設作業中の事故は、型枠支保工、型枠、鉄筋の全体が崩壊した事故です。崩壊しないようにプランニングされていても、このような事故が発生しないように、打設前、及び打設中の点検し、不備がある場合は万一の重大事故のリスクを想定し、コンクリート打設の中止、作業員の撤去を行うべきと考えます。 そのため、本(1)は原文通りとすることを提案します。追加し補材の準備は(3)に追記します。 We consider the deletion of reinforcement is not necessary because there are sometimes improper fixing and supporting of re-bars. The collapse accident of Canto bridge in Vietnam occurred during concrete placing. The whole of falseworks, form works and reinforcement collapsed in the accident. Such accident occurred though planning was made to avoid collapse accident. In order to avoid such accident, inspection before and during concrete placing shall be made and specified. Therefore, (2) is left as it is. Addition to (3) will be made.	
	(3) Place the concrete in exact accordance with the Method Statement and avoid uneven and excessive impact force and different or asymmetrical thicknesses and pressures in certain areas during concrete placement to avoid any deformation, damage or collapse of formwork or falsework.	(3) Place the concrete in exact accordance with the Method Statement and avoid uneven and excessive impact force and different or asymmetrical thicknesses and pressures in certain areas during concrete placement. ~~to avoid any deformation, damage or collapse of formwork or falsework.~~ JC: deleted and added as commented to (1). 追加の支保材をスタンバイさせ、型枠の局所的な変形の際には補強するという規定を(3)に追記してください。 Added as commented in (2), please add to (3).	(3) Place the concrete in exact accordance with the Method Statement and avoid uneven and excessive impact force and different or asymmetrical thicknesses and pressures in certain areas during concrete placement. Some materials for falseworks shall be stored at the concrete placing site for use to reinforce falseworks in case of occurrence of their local deformation.
	(4) The Contractor shall be aware of the following common hazards and shall take all necessary measures to avoid the risk of any consequential accident, injury or death: (a) Impalement by projecting and unguarded reinforcement: The Contractor shall protect all exposed ends by enclosing in protective caps and/or by bending reinforcement bars so that exposed ends are no longer upright and present no danger; and (b) Impact and entanglement by materials or Contractor's Equipment: The Contractor shall take care in material handling and use of	~~(4) The Contractor shall be aware of the following common hazards and shall take all necessary measures to avoid the risk of any consequential accident, injury or death:~~ ~~(a) Impalement by projecting and unguarded reinforcement~~; ~~The Contractor shall protect all exposed ends by enclosing in protective caps and/or by bending reinforcement bars so that exposed ends are no longer upright and present no danger; and~~ ~~(b) Impact and entanglement by materials or Contractor's Equipment:~~ ~~The Contractor shall take care in material handling and use of Contractor's Equipment including the use of lockout/tagout~~	

	Contractor's Equipment including the use of lockout/tagout procedures. (c) Exposure of silica dust and Portland cement: If prolonged and unavoidable exposure can be anticipated, the Contractor shall ensure that workers are provided with respirators and masks in accordance with JSSS 2.1[WORK ENVIRONMENT] [2.1.1 Hazardous Substances]. (5) The Contractor shall provide PPE such as safety helmets, work clothing, waterproof gloves, rubber boots, protective eye and face equipment as required.	~~procedures.~~ ~~(c) Exposure of silica dust and Portland cement~~ ~~If prolonged and unavoidable exposure can be anticipated, the Contractor shall ensure that workers are provided with respirators and masks in accordance with JSSS 2.1[WORK ENVIRONMENT] [2.1.1 Hazardous Substances].~~ (5) ~~The Contractor shall provide PPE such as safety helmets, work clothing, waterproof gloves, rubber boots, protective eye and face equipment as required.~~ JC: common hazards というわりには列挙されている事象が特異な事象に限定されているように思います。(a)は 9.3.2 に既に入っています。(b)、(c)は削除してください。 特に(c)は fresh (wet) concrete の打設時の規定として適切ではないです。 These clauses seem special requirements for special issues. (a) is specified in 9.3.2. Please delete (b) and (c). It is not appropriate as requirement for placing of fresh (wet) concrete. NK: Deleted.	
9.6.1 コンクリートポンプ 請負者は、ブーム搭載型のポンプ車を含む移動式コンクリートポンプ(以下。「コンクリートポンプ車」という。)又は定置式コンクリートポンプを使用してコンクリートを打設するときには、次の措置を講じなければならない。 (1) ブーム搭載型ポンプ車の使用にあたっては、本仕様書 6.4.1[移動式クレーンの配置と据付]に準じ、コンクリートポンプ車の転倒を防止すること。→E 9.2.3(4)&(5)に規定済み (2) コンクリートポンプ車のブーム先端のホースには、ホースの落下防止装置を設置すること。→E 9.2.3(12)に規定済み (3) 移動式及び定置式コンクリートポンプの操作者とコンクリートの打設作業員間の確実な連絡のために、本仕様書 2.4[監視員、誘導員の配置]に従い誘導員の配置、無線電話等の装置の設置、一定の合図を定める等の措置を講じること。→E 9.2.3(6)に規定済み (4) コンクリート輸送管及びホース(以下、「輸送管」という。)のコンクリートの吹出し口の直下、前面、シュートの前面、コンクリート運搬を行う一輪車の通路など、作業員に危険を及ぼすおそれのある場所は、立入禁止とすること。特に、ブーム先端のホースの暴れによる、作業員との接触に注意し、筒先前の立入を禁止すること。→E 9.2.3(14)に NK 追加規定済み (5) コンクリートポンプのホッパスクリーン上では作業を行わせないこと。ホッパ内の撹拌羽根を停止してから、コンクリートに混入した異物を取り除くこと、また、ホッパ内の洗浄作業を行うこと。→E 9.2.3(13)に規	9.2.3. Safety Measures for Placement by Pumping The Contractor shall take the following safety measures for delivery of insitu concrete with the use of concrete pumps: (1) Inspect the condition of concrete pump delivery pipes, end hoses and all connections, ensure that they are free from defects and blockage, check that all joints and connections are secure and free from leakage before and during concrete placement works. If any defect is discovered, stop the placement works and evacuate the workers immediately. Carry out repairs and reinspect before commencing or resuming work. (2) Ensure that all delivery pipes, end hoses and other system components are all correctly pressure rated and capable of withstanding the	9.2.3. Safety Measures for Placement by Pumping JC: 意味が分からない記述が多いです。具体的には幾つか例示しておきますので(コメント部分)ご参照ください。そのうえで、BS 8476:2007 (購入済み?) Code of practice for the safe use of concrete pumps を参照されながら必要項目を組み立ててください。 There are many statements that are hard to understand in this section. Please see those shown for examples in comments. Some practical examples to be Please reconstruct this section referring to BS 8467:2007 [Code of practice for the safe use of concrete pumps. NK: BS 8407:2007 was purchased. Review and addition referring to the BS are made as below. The Contractor shall take the following safety measures for delivery of insitu concrete with the use of concrete pumps: (1) Inspect the condition of concrete pump delivery pipes, end hoses and all connections, ensure that they are free from defects and blockage, check that all joints and connections are secure and free from leakage before and during concrete placement works. If any defect is discovered, stop the placement works and evacuate the workers immediately. Carry out repairs and reinspect before commencing or resuming work. (2) Ensure that all delivery pipes, end hoses and other system components are all correctly pressure rated and capable of withstanding the	9.2.3. Safety Measures for Placement by Pumping The Contractor shall take the following safety measures for delivery of insitu concrete with the use of concrete pumps: (1) Inspect the condition of concrete pump delivery pipes, end hoses and all connections, ensure that they are free from defects and blockage, check that all joints and connections are secure and free from leakage before and during concrete placement works. If any defect is discovered, stop the placement works and evacuate the workers immediately. Carry out repairs and reinspect before commencing or resuming work. (2) Ensure that all delivery pipes, end hoses and other system components are all correctly pressure rated and capable of withstanding the

定済み	maximum pump pressure. (3) Comply with the requirements of JSSS Chapter 3 [*Existing Underground, Concealed and Overhead Services*] and: (a) Maintain a safe separation distance from any obstructions and avoid any risk of hitting or touching any obstructions with the pumping equipment, delivery pipes, end hoses or boom; (b) Maintain a safe separation distance between the delivery pipe, end hose and boom and any existing Overhead Services as required by JSSS Chapter 3 [*Existing Underground, Concealed and Overhead Services*], Table 3.2.1: Safe Separation Distances; (4) Check the ground condition, ensure a firm, stable and horizontal working base at all times and position pumping equipment and trucks at a safe distance from the edge of any excavations, drop or slope to protect against any slippage or fall of equipment and trucks or collapse of ground. (5) Fully extend outriggers and ensure stability of pumping equipment and trucks at all times. (6) Arrange proper communications and signals before starting the placement between workers, Spotters and operators of equipment and mixer trucks and ensure there is a Spotter at the point of placement. (7) Never allow workers to stand between mixer trucks and pumps when trucks are reversing.	maximum pump pressure. (3) Comply with the requirements of JSSS Chapter 3 [*Existing Underground, Concealed and Overhead Services*] and: (a) Maintain a safe separation distance from any obstructions and avoid any risk of hitting or touching any obstructions with the pumping equipment, delivery pipes, end hoses or boom; JC: 具体的にどのようなものでしょうか？ What does mean the word “obstruction” to be specific? NK: The “obstruction” means those items such as Contractor’s Equipment, buildings, etc. which may be hit by the pumping equipment. Added “(Contractor’s Equipment,, buildings, etc.)”. (b) Maintain a safe separation distance between the delivery pipe, end hose and boom and any existing Overhead Services as required by JSSS Chapter 3 [*Existing Underground, Concealed and Overhead Services*], Table 3.2.1: Safe Separation Distances; (4) Check the ground condition, ensure a firm, stable and horizontal working base at all times and position pumping equipment and trucks at a safe distance from the edge of any excavations, drop or slope to protect against any slippage or fall of equipment and trucks or collapse of ground. (5) Fully extend outriggers and ensure stability of pumping equipment and trucks at all times. (6) Arrange proper communications and signals before starting the placement between workers, Spotters and operators of equipment and mixer trucks and ensure there is a Spotter at the point of placement. (7) Never allow workers to stand between mixer trucks and pumps when trucks are reversing. JC: コンクリートミキサーのバックする時には Spotter を必ず配置することでは？ Doesn’t this mean that a spotter shall be placed when a truck mixer is moving backward.”? NK: Placement of Spotters is stipulated in (6). The purpose of (7) is to instruct workers strictly not to stand or walk into the back of the truck when it is moving backward. Leaved as it is.	maximum pump pressure. (3) Comply with the requirements of JSSS Chapter 3 [*Existing Underground, Concealed and Overhead Services*] and: (a) Maintain a safe separation distance from any obstructions (Contractor’s Equipment, buildings, etc.) and avoid any risk of hitting or touching any obstructions with the pumping equipment, delivery pipes, end hoses or boom; (b) Maintain a safe separation distance between the delivery pipe, end hose and boom and any existing Overhead Services as required by JSSS Chapter 3 [*Existing Underground, Concealed and Overhead Services*], Table 3.2.1: Safe Separation Distances; (4) Check the ground condition, ensure a firm, stable and horizontal working base at all times and position pumping equipment and trucks at a safe distance from the edge of any excavations, drop or slope to protect against any slippage or fall of equipment and trucks or collapse of ground. (5) Fully extend outriggers and ensure stability of pumping equipment and trucks at all times. (6) Arrange proper communications and signals before starting the placement between workers, Spotters and operators of equipment and ~~mixer trucks~~ ready-mixed concrete trucks and ensure there is a Spotter at the point of placement. (7) Never allow workers to stand between ~~mixer trucks~~ ready-mixed concrete trucks and pumps when trucks are reversing.
(6) 輸送管の安全措置 (a) 輸送管の破裂による作業員への危険防止のため、その日の作業前に輸送管の点検を行い、異常がある場合は輸送作業を禁止すること。→E 9.2.3(1)に規定済み	(8) Take care to avoid the risk of any accident when moving the boom and ensure that workers are out of the path of the boom. (9) Never allow workers to open a pressurised	(8) Take care to avoid the risk of any accident when moving the boom and ensure that workers are out of the path of the boom. (9) Never allow workers to open a pressurised line to prevent concrete from splashing out.	(8) Take care to avoid the risk of any accident when moving the boom and ensure that workers are out of the path of the boom. (9) Never allow workers open a pressurised

(b) 輸送管のすり減りによる破裂を防止する為、輸送管のすり減りを定期的に確認すること。→E 9.2.3(2)に規定済み
(c) 輸送管は、接手金具を使用して確実に接続すること。→E 9.2.3(2)に規定済み
(d) 輸送管は、堅固な建設物に固定させる等により輸送管の脱落、振れ防止の措置を講ずること。→E 9.2.3(2)に規定済み
(e) 輸送管の内部を、洗浄ボールを用いて洗浄するときは、輸送管の先端部に洗浄ボールの飛出しによる作業員の危険を防止するための器具を取り付けること。→E 9.2.3(10)に規定済み

(7) 輸送管が閉そくしたときの処理
(a) 閉そくしたときの復旧手順を事前に決めておくこと。→E 9.2(9)に追記済み
(b) 輸送管の接続部を切り離すときは、コンクリートの吹出しを防止するため、輸送管の内部の圧力を減少させる措置を講ずること→E 9.2(9)に規定済み

9.6.2 コンクリートミキサー車

請負者は、コンクリートミキサー車をコンクリートの運搬及び打設に使用するときには、次の措置を講じなければならない。

(1) コンクリート運搬中のミキサー車の重心が高いことを考慮し、車の横転防止のために、運転者に走行中の車のバランス及び運転速度に注意させること。→E 9.2.4(1)に規定済み
(2) 作業員のドラムとの接触、ドラムへの巻き込まれの危険防止のため、回転中のコンクリートドラムの中をのぞかせないこと。→E 9.2.4(2) に規定済み

line to prevent concrete from splashing out. Pressurised line shall be opened in accordance with predetermined procedure.

(10) When cleaning delivery pipes or end hoses with compressed air, ensure that a ball catcher is always provided to prevent the risk of any accident or injury for the ejected objects.

(11) Ensure that hoppers and chutes are securely fixed and that workers are aware method of operation and safe use.

(12) Ensure that the delivery pipe and hose at the end of the concreting pump booms are securely connected not to fall or become detached.

(13) Prohibit workers from working on the hopper screen of the concrete pump, remove obstructions and foreign materials in the hopper only after stopping the agitating blade and applying lockout/tagout procedures.

(14) Prohibit workers from entering places in front of and below the outlet of concrete pump delivery pipes and end hoses to avoid the workers to be hit by pipes and horse rampaged. *(Note: MD will review and edit this paragraph as NK added.)*

9.2.4. Safety Measures for Concrete Mixer Trucks

The Contractor shall take the following measures for the concrete mixer trucks in the transportation and delivery of insitu concrete.

(1) Ensure that drivers are aware of and take due account of the heavy load and high centre of gravity of loaded mixer trucks during delivery and discharge to maintain safety and prevent overturning.

(2) Ensure that workers do not come into contact

Pressurised line shall be opened in accordance with predetermined procedure.

JC: 英語では意味が取れない。
The meaning is hard to understand.
NK: 和文 9.6.1(7) (a) & (b)の規定です。
(9) is stipulated in Japanese version 9.6.1(7) (a) & (b).
BS 8407 stipulate as follows:
9.11 If a blockage occurs during the pour, the concrete pump operator should stop pumping immediately and instruct personnel to move to a safe position before attempting to remove the blockage.
9.12 If the concrete pump operator needs to open the delivery pipeline to clear a blockage, they should first release the pressure inside the delivery pipeline as much as possible, e.g. by reversing the pumping action. They have to treat the delivery pipeline as being pressurized at all times.
Appropriate and adequate hand and eye protection should be worn when opening the delivery pipeline.
Modified as right and will be reviewed by MD.

(10) When cleaning delivery pipes or end hoses with compressed air, ensure that a ball catcher is always provided to prevent the risk of any accident or injury for the ejected objects.

(11) Ensure that hoppers and chutes are securely fixed and that workers are aware method of operation and safe use.

(12) Ensure that the delivery pipe and hose at the end of the concreting pump booms are securely connected not to fall or become detached.

(13) Prohibit workers from working on the hopper screen of the concrete pump, remove obstructions and foreign materials in the hopper only after stopping the agitating blade and applying lockout/tagout procedures.

(14) Prohibit workers from entering places in front of and below the outlet of concrete pump delivery pipes and end hoses to avoid the workers to be hit by pipes and horse rampaged.

9.2.4. Safety Measures for ~~Concrete Mixer~~ Ready-mixed Concrete Trucks

JC: concrete mixer truck の名称にやや違和感がある。concrete agitator truck と concrete mixer truck の2種類があることを認識したい。そのうえで delivery(transportation), discharge (to concrete pump)に係る安全を規定したい。別添の"Safety in ready mixed concrete industry"が参考になる。
NK: BS8476 uses the following terms:
8.5 concrete-delivery lorries
9.8 ready-mixed concrete truck
9.27 concrete-mixer lorries
Used the term "ready-mixed concrete truck" as commented.

concrete delivery pipeline during delivery operation and at occurrence of a blockage in the pipeline to prevent concrete in the pipeline from splashing out. Pressurised line shall be opened after release the pressure inside the pipeline in accordance with predetermined procedure.

(10) When cleaning delivery pipes or end hoses with compressed air, ensure that a ball catcher is always provided to prevent the risk of any accident or injury for the ejected objects.

(11) Ensure that hoppers and chutes are securely fixed and that workers are aware method of operation and safe use.

(12) Ensure that the delivery pipe and hose at the end of the concreting pump booms are securely connected not to fall or become detached.

(13) Prohibit workers from working on the hopper screen of the concrete pump, remove obstructions and foreign materials in the hopper only after stopping the agitating blade and applying lockout/tagout procedures.

(14) Prohibit workers from entering places in front of and below the outlet of concrete pump delivery pipes and end hoses to avoid the workers to be hit by pipes and horse rampaged.

9.2.4. Safety Measures for Ready-mixed Concrete Trucks

9.6.3 コンクリートバケット

請負者は、コンクリートバケットを使用してコンクリートを打設するときには、次の措置を講じなければならない。

(1) 本仕様書 10.6.1 [移動式・定置式コンクリートポンプ] (3)に準じ、コンクリートバケットの操作者とコンクリートの打設作業員間の確実な連絡のために、誘導員の配置等の措置を講じること。→E 9.2.5(1) に規定済み

(2) コンクリートバケットの移動は揚貨機械により行うこと。微調整を除き、コンクリートバケットの押引きを作業員に禁止すること。→E 9.2.5(2)に規定済み＆E 9.2.5(4)に追記済み。

(3) 運搬作業時のバケットの振れ防止を行い、吊荷の下には作業員を入らせないこと。→E 9.2.5(4)&(5)に規定済み

(4) バケットによるコンクリート打設作業の際、急激な開放によるバケットの反動を防止するためにコンクリートをゆっくり排出すること。→E 9.2.5 (6)に規定済み

9.6.4 バイブレータ

請負者は、バイブレータを使用してコンクリートを締固め

with and/or become entangled with the rotating drum and other moving parts of mixer trucks and that they are prevented from looking into the drum.

9.2.5. Safety Measures for use of Concrete Buckets

The Contractor shall take the following measures when using concrete buckets for hoisting and placement of insitu concrete:

(1) Arrange proper communications and signals before starting the placement between workers, Spotters and operators of equipment and trucks and ensure there is a Spotter at the point of placement.

(2) Ensure that Hoisting and Rigging Equipment is suitable for the purpose and adequate for the load.

(3) Ensure that the movable gate is locked before hoisting and is only operated by a skilled worker when it is opened for discharge.

(4) Take measures to stabilise the bucket during hoisting and prevent any uncontrolled swinging. Prohibit workers from pushing and pulling bracket except for minor adjustment of location of bucket for discharging concrete.

(5) Prevent persons or workers from entering the places below bucket.

(6) Discharge the concrete slowly and in a controlled manner to prevent the bucket from rebounding after discharge.

9.2.6. Safety Measures for use of Concrete Vibrators

The Contractor shall take the following measures when using concrete vibrators for compacting of

The Contractor shall take the following measures for the concrete mixer trucks in the transportation and delivery of ~~insitu~~ pre-mixed concrete.

(1) Ensure that drivers are aware of and take due account of the heavy load and high centre of gravity of loaded mixer trucks during delivery and discharge to maintain safety and prevent overturning.

(2) Ensure that workers do not come into contact with and/or become entangled with the rotating drum and other moving parts of mixer trucks and that they are prevented from looking into the drum.

9.2.5. Safety Measures for use of Concrete Buckets

The Contractor shall take the following measures when using concrete buckets for hoisting and placement of ~~insitu~~ concrete:

JC: deleted.

~~(1) Arrange proper communications and signals before starting the placement between workers, Spotters and operators of equipment and trucks and ensure there is a Spotter at the point of placement.~~

~~(2) Ensure that Hoisting and Rigging Equipment is suitable for the purpose and adequate for the load.~~

JC: (1) & (2)はクレーン作業と同一ではないか？クレーン作業のところを引用する形で纏めてください。
Aren't clauses (1) & (2) same as provision for Crane Works? Please simplify it by referring to the relevant clause in Crane Works.
NK: As per the comment, clause (1) & (2) are combined and revised referring to 5.2.6. as right.

(3) Ensure that the movable gate is locked before hoisting and is only operated by a skilled worker when it is opened for discharge.

(4) Take measures to stabilise the bucket during hoisting and prevent any uncontrolled swinging. Prohibit workers from pushing and pulling bracket except for minor adjustment of location of bucket for discharging concrete.

(5) Prevent persons or workers from entering the places below bucket.

(6) Discharge the concrete slowly and in a controlled manner to prevent the bucket from rebounding after discharge.

9.2.6. Safety Measures for use of Concrete Vibrators

The Contractor shall take the following measures when using concrete vibrators for compacting of insitu concrete:

The Contractor shall take the following measures for the ready-mixed concrete ~~mixer~~ trucks in the transportation and delivery of ~~insitu~~ ready-mixed concrete.

(1) Ensure that drivers are aware of and take due account of the heavy load and high centre of gravity of loaded ~~mixer~~ ready-mixed concrete trucks during delivery and discharge to maintain safety and prevent overturning.

(2) Ensure that workers do not come into contact with and/or become entangled with the rotating drum and other moving parts of ~~mixer~~ ready-mixed concrete trucks and that they are prevented from looking into the drum.

9.2.5. Safety Measures for use of Concrete Buckets

The Contractor shall take the following measures when using concrete buckets for hoisting and placement of concrete:

(1) Comply with JSSS 5.2.6.[General Safety Measures for Hoisting Operations] for selection of proper Hoisting Equipment and Rigging Equipment, arrangement of proper communication tool and signals, placement of Spotters;

(2) Ensure that the movable gate is locked before hoisting and is only operated by a skilled worker when it is opened for discharge.

(3) Take measures to stabilise the bucket during hoisting and prevent any uncontrolled swinging. Prohibit workers from pushing and pulling bracket except for minor adjustment of location of bucket for discharging concrete.

(4) Prevent persons or workers from entering the places below bucket.

(5) Discharge the concrete slowly and in a controlled manner to prevent the bucket from rebounding after discharge.

9.2.6. Safety Measures for use of Concrete Vibrators

る場合、次の措置を講じなければならない。→
(1) 電動のコンクリート内部振動機を使用するときは、4.5[電気機械器具]を遵守し感電防止の措置を講じること。→E 9.2.6(1) に規定済み
(2) 内部振動機及び手持ち型の外部振動機を使用するときは、振動による健康被害を予防するため、防振手袋を作業員に着用させること。→E 9.2.6(2) に規定済み

9.6.5 コンクリート打設作業

請負者は、コンクリート打設作業を行うときは、次の措置を講じなければならない。
(1) 型枠及び型枠支保工の点検
(a) 作業前に、型枠及び型枠支保工を点検し、不備な箇所は作業前に補修しておくこと。異常を認めた場合には、作業を中止すること。作業中に、型枠、型枠支保工及び型枠支保工の基礎に異常を認めた場合は、ただちに作業を中止し、作業員を退避させること。→E 9.2.2(2) に規定済み
(b) コンクリート打設中、シュート、輸送管等の状態を適宜点検し、異常がないことを確認すること。必要に応じ輸送管の接手金具を増締めを行うこと。異常が見つかった場合は、ただちに作業を中断すること。→E 9.2.3(1)に規定済み
(2) 施工計画に従い、打設したコンクリートによる想定外の偏圧が生じないよう打設作業を行うこと。→E 9.2.2(3) に規定済み

9.4 鉄筋作業

請負者は、鉄筋の加工、運搬、組立て作業を行うときは、次の措置を講じなければならない。
(1) 鉄筋加工作業
(a) 作業員の転倒等の危険を防止するために、鉄筋加工用の工具、鉄筋、加工の際に発生する端筋等は、整理、整頓しておくこと。→E 9.3.2(1)(b)&(c)に規定済み 鉄筋加工作業員以外の者が立ち入ると危険が及ぶ箇所には、本仕様書 2.3[立入禁止の措置]を遵守し、見やすい箇所に具体的な危険の内容とともに、立入禁止の表示、柵等を設置すること。→E 9.3.2(1)(a))に規定済み
(b) 鉄筋加工作業を行うときには、本仕様書 4.1.5[機器の作業環境]を遵守し、作業場の照度の確保、機械への巻き込まれの防止、作業環境の整備、保護具の着用、火災予防、緊急事態発生時の対応、機械の異常発見時の対応等の措置を講じること。また、本仕様書 4.4.3[小型の定置機械の作業環境] を遵守し、挟まれ、巻き込まれ、及び飛来物による危険防止の措置を講じること。→規定無し。理由：共通事項として 9.1.1(2)に規定済。→規定不要。
(c) 鉄筋加工機械を使用して作業を行うときは、取扱者を定め本仕様書 4.4[定置機械]を遵守し、鉄筋加工機械の点検・整備を実施し、鉄筋加工機械の作業時の安全措置を講じるこ

insitu concrete:

(1) Take all necessary measures to prevent electric shock.

(2) Ensure that workers are provided with and that they wear anti-vibration gloves.

9.3. REINFORCEMENT

9.3.1. Safety Measures at Planning Stage

The Contractor shall:

(1) Prepare a Safety Plan, Method Statement and assembly drawings of reinforcement describing the method of, assembly and erection and showing the types and positioning of supports, ties and bracing necessary to support and rigidly secure the reinforcement and to prevent any movement or collapse.

(2) Inform all relevant workers of the content of the Safety Plan, Method Statement and assembly drawings.

9.3.2 Safety Measures at Fabrication and Assembly Stage

The Contractor shall take the following measures during cutting, bending, transporting and assembling of reinforcement:

(1) Take all necessary measures to prevent electric shock.

JC: (1)は日本語版どおり、「4.5 を順守し、感電防止の措置を講じること」といった趣旨の規定にしてください。
Please modify this clause with the meaning in Japanese draft such as “take measures for preventing electric shock accidents complying with JSSS 4.5”.

NK: added as commented.

(2) Ensure that workers are provided with and that they wear anti-vibration gloves.

9.3 REINFORCEMENT

9.3.1. Safety Measures at Planning Stage

The Contractor shall:

(1) Prepare a Safety Plan, Method Statement and ~~assembly~~ fixing and placing drawings of reinforcement describing the method of ~~fabrication~~ cutting, bending, assembly and erection and showing the types and positioning of supports, ties and bracing necessary to support and rigidly secure the reinforcement and to prevent any movement or collapse.

JC: BS での表現に合わせました。
replaced with the expression in BS.
NK: replaced with terms in BS 8000-2-2 Workmanship on building sites - Part 2: Code of practice for concrete work - Section 2.2 Sitework with in situ and precast concrete.

(2) Inform all relevant workers of the content of the Safety Plan, Method Statement and assembly drawings.

9.3.2. Safety Measures at Fabrication and ~~Assembly~~ Fixing and Placing Stage

JC: changed.

The Contractor shall take the following measures during cutting, bending, transporting and ~~assembling~~ fixing and placing of reinforcement:

The Contractor shall take the following measures when using concrete vibrators for compacting of insitu concrete:

(1) Take all necessary measures to prevent electric shock complying with JSSS 4.3.12 [Additional Requirements for Electric Powered Equipment].

(2) Ensure that workers are provided with and that they wear anti-vibration gloves.

9.5 REINFORCEMENT

9.3.1. Safety Measures at Planning Stage

The Contractor shall:

(1) Prepare a Safety Plan, Method Statement and fixing and placing drawings of reinforcement describing the method of cutting, bending and fixing ~~and erection~~ and showing the types and positioning of supports, ties and bracing necessary to support and rigidly secure the reinforcement and to prevent any movement or collapse.

(2) Inform all relevant workers of the content of the Safety Plan, Method Statement and assembly drawings.

9.3.2. Safety Measures at Fabrication and Fixing and Placing Stage

The Contractor shall take the following measures during cutting, bending, transporting and fixing and placing of reinforcement:

と。→規定無し。理由：共通事項として 9.1.1(2)に規定済。→規定不要。

(d) 鉄筋の荷くずれによる作業員への危険の防止のために、鉄筋は結束する等の荷崩れしない方法で仮置きする等の措置を講じること。→E 9.3.2(1)(c))に規定済み

(2) 鉄筋運搬作業

(a) 加工した鉄筋を作業床又は型枠等の上に仮置きするときは、仮置きする場所の最大上載荷重を守り、一箇所に集中して置かないこと。→E 9.3.2(2)(a)に規定済み

(b) 鉄筋の吊り上げ、吊り下げ及び運搬作業を行うときには、本仕様書 6[揚貨・玉掛け作業] 6.5[玉掛け作業] を遵守した措置を講じること。運搬する鉄筋は確実に結束し、原則として水平吊りとすること。→E 9.3.2(2)(b)に規定済み

(3) 鉄筋組立作業

(a) 鉄筋組立時には適切な足場を設けること。→E 9.3.2(3)(a)に規定済み

(b) 作業員に組立てた鉄筋を移動のために登り降りさせないこと。組立てた鉄筋上を歩行するときは、踏み抜き、転倒を防止するために歩み板を敷く等により、作業通路を確保すること。→E 9.3.2(3)(b)に規定済み

(c) 鉄筋を運搬するときは、原則として 2 本の玉掛けワイヤーロープによりバランスを取って玉掛すること。やむを得ず垂直吊りをするときは、鉄筋の抜け落ちを防止する措置を講じること。→E 9.3.2(2)(b)に規定済み

(d) 組立図にもとづき、鉄筋の転倒・倒壊の防止のための仮支え、筋交い等を配置すること。→E 9.3.2 (3)(c)に規定済み 風雨による鉄筋の転倒・倒壊のおそれがあるときは、組立て作業を中止すること。風雨の後は鉄筋の状態を検査し、異常があるときは作業を中止すること。→9.3.2(3)(d)に追記済み。

(e) やむをえない場合を除いて、上下作業は行ってはならない。→E 9.3.2(3)(e))に規定済み

(f) 作業通路に面した鉄筋の端部には、作業員の突刺し、裂傷の危険防止のために、鉄筋防護キャップを設置する等の措置を講じること。→E 9.3.2(3)(f)に規定済み

(1) Cutting and Bending:

(a) Designate the work as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*];

(b) Maintain the working area in a safe, organised, uncluttered and clean condition at all times, avoid excessive storage by retaining sufficient quantities of reinforcement for immediate use, locate equipment in known positions, prevent any fall or dropping of material, equipment and tools, remove offcuts to a separate area and ensure the area is safe and that the risk of workers falling or tripping is avoided; and

(c) Maintain stored reinforcement material in a safe and secure manner and ensure that there is no risk of collapse or fall by providing adequate restraints.

(2) Transporting:

(a) Ensure that scaffolding and any other temporary structures on which reinforcement is to be temporarily placed is capable of supporting the load, ensure that the load is distributed safely and that is does not cause any obstruction to the passage of other workers;

(b) Ensure that reinforcing bar is lifted and suspended horizontally to prevent any slippage during Hoisting Operations and also that it is bundled safely and securely tied to prevent any reinforcing bars from sliding out;

In principle suspend reinforcement horizontally maintaining the balance by using two rigging slings or wire ropes; and

(c) When transporting to the working location use flatbed trailers, ensure that the trailer is of sufficient length to avoid any overhang; where exceptional lengths of reinforcement are being

JC: changed.

(1) Cutting and Bending:

(a) Designate the work as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*];

(b) Maintain the working area in a safe, organised, uncluttered and clean condition at all times, avoid excessive storage by retaining sufficient quantities of reinforcement for immediate use, locate equipment in known positions, prevent any fall or dropping of material, equipment and tools, remove offcuts to a separate area and ensure the area is safe and that the risk of workers falling or tripping is avoided; and

(c) Maintain stored reinforcement material in a safe and secure manner and ensure that there is no risk of collapse or fall by providing adequate restraints.

(2) Transporting:

(a) Ensure that scaffolding and any other temporary structures on which reinforcement is to be temporarily placed is capable of supporting the load, ensure that the load is distributed safely and that is does not cause any obstruction to the passage of other workers;

(b) Ensure that reinforcing bar is lifted and suspended horizontally to prevent any slippage during Hoisting Operations and also that it is bundled safely and securely tied to prevent any reinforcing bars from sliding out;

In principle suspend reinforcement horizontally maintaining the balance by using two rigging slings ~~or wire ropes~~; and

JC: deleted.

(c) When transporting to the working location use flatbed trailers, ensure that the trailer is of sufficient length to avoid any overhang; where exceptional lengths of reinforcement are being transported and overhang is unavoidable, ensure that the overhang

(1) Cutting and Bending:

(a) Designate the work as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*];

(b) Maintain the working area in a safe, organised, uncluttered and clean condition at all times, avoid excessive storage by retaining sufficient quantities of reinforcement for immediate use, locate equipment in known positions, prevent any fall or dropping of material, equipment and tools, remove offcuts to a separate area and ensure the area is safe and that the risk of workers falling or tripping is avoided; and

(c) Maintain stored reinforcement material in a safe and secure manner and ensure that there is no risk of collapse or fall by providing adequate restraints.

(2) Transporting:

(a) Ensure that scaffolding and any other temporary structures on which reinforcement is to be temporarily placed is capable of supporting the load, ensure that the load is distributed safely and that is does not cause any obstruction to the passage of other workers;

(b) Ensure that reinforcing bar is lifted and suspended horizontally to prevent any slippage during Hoisting Operations and also that it is bundled safely and securely tied to prevent any reinforcing bars from sliding out;

In principle suspend reinforcement horizontally maintaining the balance by using two rigging slings; and

(c) When transporting to the working location use flatbed trailers, ensure that the trailer is of sufficient length to avoid any overhang; where exceptional

	transported and overhang is unavoidable, ensure that the overhang complied with local regulations and provide appropriate warning signs and lighting to remove all risk of impact collision with other vehicles, persons and workers.	complied with local regulations and provide appropriate warning signs and lighting to remove all risk of impact collision with other vehicles, persons and workers.	lengths of reinforcement are being transported and overhang is unavoidable, ensure that the overhang complied with local regulations and provide appropriate warning signs and lighting to remove all risk of impact collision with other vehicles, persons and workers.
	(3) Assembly:	(3) ~~Assembly~~ Fixing and Placing:	(3) Fixing and Placing:
		JC: changed.	
	(a) Prepare proper temporary access to and support for the assembly of reinforcement and for fixing the reinforcement in position;	(a) Prepare proper temporary access to and support for the assembly of reinforcement and for fixing the reinforcement in position;	(a) Prepare proper temporary access to and support for the assembly of reinforcement and for fixing the reinforcement in position;
	(b) Prevent any risk of fall and also any distortion or weakening of reinforcement by prohibiting workers from standing, walking or climbing on such reinforcement and where necessary provide safe temporary boarded walkways for workers use;	(b) Prevent any risk of fall and also any distortion or weakening of reinforcement by prohibiting workers from standing, walking or climbing on such reinforcement and where necessary provide safe temporary boarded walkways for workers use;	(b) Prevent any risk of fall and also any distortion or weakening of reinforcement by prohibiting workers from standing, walking or climbing on such reinforcement and where necessary provide safe temporary boarded walkways for workers use;
	(c) Ensure that assembly is in exact accordance with the assembly drawings and that the correct types and positioning of supports, ties and bracing is maintained to properly support and rigidly secure the reinforcement and prevent undue movement or collapse;	(c) Ensure that assembly is in exact accordance with the assembly drawings and that the correct types and positioning of supports, ties and bracing is maintained to properly support and rigidly secure the reinforcement and prevent undue movement or collapse;	(c) Ensure that assembly is in exact accordance with the assembly drawings and that the correct types and positioning of supports, ties and bracing is maintained to properly support and rigidly secure the reinforcement and prevent undue movement or collapse;
	(d) When there is a risk of the falling and collapsing of reinforcement under assembling by wind and rain, stop the assembly work. After strong wind and heavy rain, inspect the reinforcement under assembling and stop the assembling work when abnormality is found;	(d) When there is a risk of the falling and collapsing of reinforcement under assembling by wind and rain, stop the assembly work. After strong wind and heavy rain, inspect the reinforcement under assembling and stop the assembling work when abnormality is found;	(d) When there is a risk of the falling and collapsing of reinforcement under assembling by wind and rain, stop the assembly work. After strong wind and heavy rain, inspect the reinforcement under assembling and stop the assembling work when abnormality is found;
	(e) Prohibit all work at levels where any other worker is working underneath; and	(e) Prohibit all work at levels where any other worker is working underneath;; and	(e) Prohibit working concurrently at levels where any other worker is working underneath in accordance with JSSS 2.6.7 [Working Above or Below Others]; and
		JC: Non native の人間には“work at levels”が通じない可能性が高いので、work at levels を annex で定義語として規定してください。そのうえで、2.6.5(2.6.6.)に上下作業の規定があるため、それをリファーする形で規定してください。 There is possibility that readers might not understand “work at levels”. Please define the term in Annex. In addition, stipulate to refer to JSSS 2.6.5.(2.6.6)	
		NK: Modified and added.	
		(f) Provide temporary protection caps to exposed ends of reinforcing bars to prevent injury to workers.	
	(f) Provide temporary protection caps to exposed ends of reinforcing bars to prevent injury to workers.	**9.4 FORMWORK (INCLUDING FALSEWORK)**	(f) Provide temporary protection caps to exposed ends of reinforcing bars to prevent injury to workers.
9.5 型枠及び型枠支保工作業		9.4.1. General	

請負者は、型枠及び型枠支保工の組立て、解体の作業を行うときは、次の措置を講じなければならない。

(1) 型枠及び型枠支保工の設計のときには本仕様書7.1.3[仮設工事の設計及び設計照査]を遵守し、設計すること。→E 9.4.2(1)に規定済み

(2) 型枠及び型枠支保工の施工のときには本仕様書7.1.4[仮設工事の施工、使用、解体]を遵守し、施工すること。→E 9.4.2(1)に規定済み

(3) 型枠及び型枠支保工の組立、解体作業は、施工計画及び組立図に従い行うこと。→規定無し。理由：共通事項として 9.1.1(2)に規定済。→規定不要。

(4) 型枠及び型枠支保工の材料は、材料仕様書に記載の請負者が計画した品質の材料を使用するものとし、ひび割れ、変形又は腐食等のある不適切な材料を使用しないこと。E 9.4.3(4)に規定済み

(5) 型枠及び型枠支保工の組立、解体作業を行うときには本仕様書 2.3[立入禁止の措置]を遵守し、当該作業に従事する者以外の立ち入りを禁止すること。→E 9.4.3(1)に規定済み

(6) 作業員の転倒防止のために、型枠及び型枠支保工の組立て前、及び解体後の材料は、整理整頓して仮置きすること。→E 9.4.3(3)に規定済み

(7) 型枠及び型枠支保工又はその材料を運搬するときは、それらの重量の確認や揚貨機械の作業半径の確認を行い、本仕様書 6.4.1[移動式クレーンの配置と据付]を遵守し、揚貨機械の転倒を防止すること。→規定無し。理由：共通事項のため。→規定不要。

(8) 大型型枠の作業では、突風や強風による型枠のあおられによる大型型枠の突然の動きによる作業員の挟まれを防止するため、挟まれの危険のある場所に作業員を立入らせないこと。→E 9.4.3(6)に規定済み

(9) 型枠パネルは水平にして仮置きすること。解体後の型枠材から露出した釘、針金等の突起物による作業員の踏抜き、裂傷等の危険の防止のために、解体後すみやかに突起物を取り除く、又は折り曲げる等の措置を講じること。→E 9.4.4(2)&(3)に規定済み

(10) 型枠支保工の組立、解体作業にあたっては、当作業に関する特別な教育を受講しかつ経験のある作業主任を配置し、作業を直接指揮させること。→規定無し。理由：共通事項のため。→規定不要。

9.4. FORMWORK (INCLUDING FALSEWORK)

9.4.1. General

Any reference to “formwork” in this Section shall also be deemed to include reference to the associated falsework for that formwork.

9.4.2. Safety Measures at Planning Stage

The Contractor shall:

(1) Design the formwork and manage its provision, use and removal in accordance with JSSS 1.35 [*Design and Management of Temporary Works*] and the further requirements of JSSS Section 7.1 [*General Requirements of Temporary Works*].

(2) Prepare a Safety Plan, Method Statement and design drawings of formwork describing the method of fabrication, assembly, erection and removal and showing details of all materials, components, types and positioning of supports, ties and bracing necessary to create a rigid and secure temporary support structure for the concrete, reinforcement and workers and to prevent any movement or collapse.

(3) Inform all relevant workers of the content of the Safety Plan, Method Statement and design drawings.

9.4.3. Safety Measures at Fabrication and Assembly Stage

The Contractor shall take the following measures during fabricating, transporting and assembling of formwork:

(1) Designate the work as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) Maintain the working area in a safe, organised, uncluttered and clean condition at all times, avoid excessive storage by retaining sufficient quantities of material for immediate use, locate equipment in known positions, prevent any fall or dropping of material, equipment and tools, remove offcuts to a separate area and ensure the area is safe and that the risk of workers falling or tripping is avoided.

Any reference to “formwork” in this Section shall also be deemed to include reference to the associated falsework for that formwork.

9.4.2. Safety Measures at Planning Stage

The Contractor shall:

(1) Design the formwork and manage its provision, use and removal in accordance with JSSS 1.35 [*Design and Management of Temporary Works*] and the further requirements of JSSS Section 7.1 [*General Requirements of Temporary Works*].

(2) Prepare a Safety Plan, Method Statement and design drawings of formwork describing the method of fabrication, assembly, erection and removal and showing details of all materials, components, types and positioning of supports, ties and bracing necessary to create a rigid and secure temporary support structure for the concrete, reinforcement and workers and to prevent any movement or collapse.

(3) Inform all relevant workers of the content of the Safety Plan, Method Statement and design drawings.

9.4.3. Safety Measures at Fabrication and Assembly Stage

The Contractor shall take the following measures during fabricating, transporting and assembling of formwork:

(1) Designate the work as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) Maintain the working area in a safe, organised, uncluttered and clean condition at all times, avoid excessive storage by retaining sufficient quantities of material for immediate use, locate equipment in known positions, prevent any fall or dropping of material, equipment and tools, remove offcuts to a separate area and ensure the area is safe and that the risk of workers falling or tripping is avoided.

JC: “in known positions”が分かりません。
This phrase “in known positions” is not understandable.
NK: It means that equipment should be placed at or moved to the predetermined places.
Modified.

~~(3) Maintain stored formwork material in a safe and secure manner and ensure that there is no~~

9.4 FORMWORK (INCLUDING FALSEWORK)

9.4.1. General

Any reference to “formwork” in this Section shall also be deemed to include reference to the associated falsework for that formwork.

9.4.2. Safety Measures at Planning Stage

The Contractor shall:

(1) Design the formwork and manage its provision, use and removal in accordance with JSSS 1.35 [*Design and Management of Temporary Works*] and the further requirements of JSSS Section 7.1 [*General Requirements of Temporary Works*].

(2) Prepare a Safety Plan, Method Statement and design drawings of formwork describing the method of fabrication, assembly, erection and removal and showing details of all materials, components, types and positioning of supports, ties and bracing necessary to create a rigid and secure temporary support structure for the concrete, reinforcement and workers and to prevent any movement or collapse.

(3) Inform all relevant workers of the content of the Safety Plan, Method Statement and design drawings.

9.4.3. Safety Measures at Fabrication and Assembly Stage

The Contractor shall take the following measures during fabricating, transporting and assembling of formwork:

(1) Designate the work as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) Maintain the working area including storage area in a safe, organised, uncluttered and clean condition at all times, avoid excessive storage by retaining sufficient quantities of material for immediate use, locate equipment ~~in known positions,~~ at predetermined places, prevent any fall or dropping of material, equipment and tools, remove offcuts to a separate area and ensure the area is safe and that the risk of workers falling or tripping is avoided.

	(3) Maintain stored formwork material in a safe and secure manner and ensure that there is no risk of collapse or fall by providing adequate restraints.	~~risk of collapse or fall by providing adequate restraints.~~ JC: (2)、(3)は両方とも整理整頓に関する概念なので、統合してください。例えば working area including storage area など。 Clause (2) & (3) are both regarding to concept of organizing work area, thus, unify them one clause by stating "working area including storage area." NK: As commented, added the phrase in (2) and delete (3).	
	(4) Ensure that the formwork is free from cracks, defects and deformation. Ensure that scaffolding and any other temporary structures on which formwork is to be temporarily placed is capable of supporting the load, ensure that the load is distributed safely and that is does not cause any obstruction to the passage of other workers.	(4) Ensure that the formwork is free from cracks, defects and deformation. Ensure that scaffolding and any other temporary structures on which formwork is to be temporarily placed is capable of supporting the load, ensure that the load is distributed safely ~~and that is does not cause any obstruction to the passage of other workers.~~ JC: 鉄筋コンクリートを支保することが優先されるべきで、他作業員の通行を考慮することは2次的規定で、逆に通行禁止措置が必要になる。 Supporting the reinforcing concrete shall be given priority. The consideration of obstruction of passage of workers is secondary requirement. Therefore, deleted. Reversely, prohibition of passage is necessary. NK: deleted as commented and modified to delete two "ensure".	(3) Ensure that the formwork is free from cracks, defects and deformation, ~~Ensure that~~ scaffolding and any other temporary structures on which formwork is to be temporarily placed is capable of supporting the load, ~~ensure that~~ and the load is distributed safely.
	(5) Ensure that formwork is restrained during any Hoisting Operation to prevent being affected by wind and that any risk of collision and consequent injury and damage is avoided.	(5) Ensure that formwork is restrained during any Hoisting Operation to prevent being affected by wind and that any risk of collision and consequent injury and damage is avoided.	(4) Ensure that formwork is restrained during any Hoisting Operation to prevent being affected by wind and that any risk of collision and consequent injury and damage is avoided.
	9.4.4. Safety Measures during Dismantling and Removal Stage	9.4.4. Safety Measures during Dismantling and Removal Stage	9.4.4. Safety Measures during Dismantling and Removal Stage
	(1) Unless otherwise specified, ensure that formwork is only dismantled when so instructed or approved in writing by the HSO.	(1) ~~Unless otherwise specified, ensure that formwork is only dismantled when so instructed or approved in writing by the HSO.~~ The formwork shall be dismantled in accordance with the relevant provision in the Contract. JC: Time for removal of falsework and formwork は specification に規定されているべきで、Engineer の確認があることが通常。従って HSO に関する明示的な記載は不要。 It is common practice to stipulate the time for removal of falsework and formwork requiring confirmation by the Engineer in the specification. It is not necessary to state about the HSO. NK: As commented, the clause (1) is modified.	(1) The formwork shall be dismantled in accordance with the relevant provision in the Contract.
	(2) After dismantling, stack formwork panels horizontally to avoid overturning being affected by strong wind or other loads; and	(2) After dismantling, stack formwork panels horizontally to avoid overturning being affected by strong wind or other loads; and JC: 日本語版 10.5 の(8)、(9)を纏めた規定のようですが、日本語原文から趣旨がずれているようです。 ついては、この(2)と(3)を統合させて、水平の仮置きおよび踏み抜き防止の趣旨となるように書き直してください。	(2) When the formwork panels are hoisted, prohibit the workers from entering the dangerous area to prevent the workers from being hit or struck by the panels which is
	(3) The protruding nails, wires, projecting		

	members and splinters on the formwork dismantled shall be removed or bended to avoid injury to workers and other persons.	Clause (2) seems to be a provision combined 10.5 (8) & (9) together, however the requirement is deviated from the original one. Please express the requirement of placing the form materials horizontally and preventing accidents from protruding nails etc.by unifying (2) and (3). NK: Clause 10.5 (8), (9) in Japanese version stipulate different matters each other. Thus, it is better to modify (2) and (3) reflecting the concept of Japanese relevant clauses. Not only large formwork panels but also any form panels have risk to hit workers. Not specified for large panels. MD will review these sentences. (3) The protruding nails, wires, projecting members and splinters on the forms dismantled shall be removed or bended to avoid injury to workers and other persons.	suddenly moved by the strong wind. (3) After dismantling, the form panels shall be stacked horizontally to avoid overturning; and (4) The protruding nails, wires, projecting members and splinters on the forms dismantled shall be removed or bended to avoid injury to workers and other persons.

JICA Standard Safety Specification Preparation Study
9 CONCRETE WORKS (R3 for Issue 2)

2020.4.29 NK.R3

JSSS in English R2 for Issue 2（2020/4/3）	JICA Comments on R2 (2020/4/22) JC: JICA comments and revision in blue letters and underlined NK: NK actions	JSSS in English R3 for Issue 2 (2020/4/29) Red letters: Revision from last issue
9 CONCRETE WORKS	**9 CONCRETE WORKS**	**9 CONCRETE WORKS**
9.1 GENERAL 9.1.1 Scope 9.1.2 Safety Plan and Instructions to Workers	**9.1 GENERAL** 9.1.1 Scope 9.1.2 Safety Plan and Instructions to Workers	**9.1 GENERAL** 9.1.1 Scope 9.1.2 Safety Plan and Instructions to Workers
9.2 PARTICULAR SAFETY MEASURES FOR INSITU CONCRETE WORKS 9.2.1 Safety Measures at Planning Stage 9.2.2 Safety Measures for Concrete Placement 9.2.3 Safety Measures for Placement by Pumping 9.2.4 Safety Measures for Ready-mixed Concrete Trucks 9.2.5 Safety Measures for Use of Concrete Buckets 9.2.6 Safety Measures for Use of Concrete Vibrators	**9.2 PARTICULAR SAFETY MEASURES FOR INSITU CONCRETE WORKS (JC1)** JC1: 8 章では Cast in place となっているので、統一してください。 The term “insitu” is not used in Chapter 8 but “cast-in-place”. It is necessary to determine which should be used. NK: “Cast-in-place” is more commonly used. Replaced all insitu with cast-in-place in this Chapter. 9.2.1 Safety Measures at Planning Stage 9.2.2 Safety Measures for Concrete Placement 9.2.3 Safety Measures for Placement by Pumping 9.2.4 Safety Measures for Ready-mixed Concrete Trucks 9.2.5 Safety Measures for Use of Concrete Buckets 9.2.6 Safety Measures for Use of Concrete Vibrators	**9.2 PARTICULAR SAFETY MEASURES FOR CAST-IN-PLACE CONCRETE WORKS** 9.2.1 Safety Measures at Planning Stage 9.2.2 Safety Measures for Concrete Placement 9.2.3 Safety Measures for Placement by Pumping 9.2.4 Safety Measures for Ready-mixed Concrete Trucks 9.2.5 Safety Measures for Use of Concrete Buckets 9.2.6 Safety Measures for Use of Concrete Vibrators
9.3 REINFORCEMENT 9.3.1 Safety Measures at Planning Stage 9.3.2 Safety Measures at Fabrication and Fixing and Placing Stage	**9.3 REINFORCEMENT** 9.3.1 Safety Measures at Planning Stage 9.3.2 Safety Measures at Fabrication and Fixing and Placing Stage	**9.3 REINFORCEMENT** 9.3.1 Safety Measures at Planning Stage 9.3.2 Safety Measures at Fabrication and Fixing and Placing Stage
9.4 FORMWORK (INCLUDING FALSEWORK) 9.4.1 General 9.4.2 Safety Measures at Planning Stage 9.4.3 Safety Measures at Fabrication and Assembly Stage 9.4.4 Safety Measures during Dismantling and Removal Stage	**9.4 FORMWORK (INCLUDING FALSEWORK)** 9.4.1 General 9.4.2 Safety Measures at Planning Stage 9.4.3 Safety Measures at Fabrication and Assembly Stage 9.4.4 Safety Measures during Dismantling and Removal Stage	**9.4 FORMWORK (INCLUDING FALSEWORK)** 9.4.1 General 9.4.2 Safety Measures at Planning Stage 9.4.3 Safety Measures at Fabrication and Assembly Stage 9.4.4 Safety Measures during ~~Dismantling~~ Disassembling and Removal Stage
9.1 GENERAL	**9.1 GENERAL**	**9.1 GENERAL**
9.1.1 Scope (1) This Chapter specifies the safety requirements for Concrete Works which shall include: (a) Insitu (poured or pumped) concrete; (b) Reinforcement (reinforcing bar and fabric reinforcement); (c) Formwork (including associated falsework); and hereinafter collectively referred to as “Concrete Works”. (2) General safety requirements, covering for example Contractor’s Equipment including stone crushing plants and screening equipment, concrete batching plants, Temporary Works and other related matters, all which apply to the work in this Chapter, are described in other Chapters of JSSS. Additional particular requirements are contained in this Chapter.	9.1.1 Scope (1) This Chapter specifies the safety requirements for Concrete Works which shall include: (a) Insitu (poured or pumped) concrete; (b) Reinforcement (reinforcing bar and fabric reinforcement); (c) Formwork (including associated falsework); and hereinafter collectively referred to as “Concrete Works”. (2) General safety requirements, covering for example Contractor’s Equipment including stone crushing plants and screening equipment, concrete batching plants, Temporary Works and other related matters, all which apply to the work in this Chapter, are described in other Chapters of JSSS. Additional particular requirements are contained in this Chapter.	9.1.1 Scope (1) This Chapter specifies the safety requirements for Concrete Works which shall include: (a) Cast-in-place (poured or pumped) concrete; (b) Reinforcement (reinforcing bar and fabric reinforcement); (c) Formwork (including associated falsework); and hereinafter collectively referred to as “Concrete Works”. (2) General safety requirements, covering for example Contractor’s Equipment including stone crushing plants and screening equipment, concrete batching plants, Temporary Works and other related matters, all which apply to the work in this Chapter, are described in other Chapters of JSSS. Additional particular requirements are contained in this Chapter.
9.1.2 Safety Plan and Instructions to Workers (1) Prepare a safety plan describing the safety requirements for	9.1.2 Safety Plan and Instructions to Workers (1) Prepare a safety plan describing the safety requirements for	9.1.2 Safety Plan and Instructions to Workers (1) Prepare a safety plan describing the safety requirements for

Concrete Works and inform all workers engaging in the Concrete Works of the content and requirements. Such a safety plan shall pay due care to the workers' health matters (e.g. back injury) in relation to handling of reinforcement, formwork panels or other heavy stuff, and include necessary preventive measures (e.g. using appropriate Contractor's Equipment, assigning sufficient number ow workers) (2) Plan the execution of all Concrete Works including handling of reinforcement and formwork panels by using Contractor's Equipment and/or sufficient numbers of workers so that overloading and consequent back injury and other injury is avoided.	Concrete Works and inform all workers engaging in the Concrete Works of the content and requirements. Such a safety plan shall pay due care to the workers' health matters (e.g. back injury) in relation to handling of reinforcement, formwork panels or other heavy stuff, and include necessary preventive measures (e.g. using appropriate Contractor's Equipment, assigning sufficient number of workers) (2) Plan the execution of all Concrete Works including handling of reinforcement and formwork panels by using Contractor's Equipment and/or sufficient numbers of workers so that overloading and consequent back injury and other injury is avoided.	Concrete Works and inform all workers engaging in the Concrete Works of the content and requirements. Such a safety plan shall pay due care to the workers' health matters (e.g. back injury) in relation to handling of reinforcement, formwork panels or other heavy stuff, and include necessary preventive measures (e.g. using appropriate Contractor's Equipment, assigning sufficient number of workers) (2) Plan the execution of all Concrete Works including handling of reinforcement and formwork panels by using Contractor's Equipment and/or sufficient numbers of workers so that overloading and consequent back injury and other injury is avoided.
9.2 PARTICULAR SAFETY MEASURES FOR INSITU CONCRETE WORK The following safety requirements are additional to the general requirements described in other Chapters. 9.1.1. Safety Measures at Planning Stage (1) The Contractor shall plan all concrete work so that it can be executed in a safe and methodical manner. (2) The Contractor shall plan the method of insitu concrete placement and carry out the design and construction of formwork and falsework to take account of uneven and excessive impact force and different or asymmetrical loads, thicknesses and pressures in certain areas during concrete placement to avoid ~~any~~ deformation beyond allowable construction tolerances specified in the contract damage or collapse of formwork or falsework and show all details in the Method Statement and Safety Plan. 9.1.2. Safety Measures ~~during~~ for Concrete Placement The Contractor shall: (1) Designate concrete placement works (including all pumping and hoisting of concrete) as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*]. (2) Inspect all reinforcement, formwork and falsework before and during concrete placement. If any defect is discovered, stop the placement works and evacuate the workers immediately, carry out repairs and reinspect before resuming.	**9.2 PARTICULAR SAFETY MEASURES FOR INSITU CONCRETE WORK** The following safety requirements are additional to the general requirements described in other Chapters. 9.2.1 Safety Measures at Planning Stage (1) The Contractor shall plan all concrete work so that it can be executed in a safe and methodical manner. (2) The Contractor shall plan the method of insitu concrete placement and carry out the design and construction of formwork and falsework to take account of uneven and excessive impact force and different or asymmetrical loads, thicknesses and pressures in certain areas during concrete placement to avoid ~~any~~ deformation beyond allowable construction tolerances specified in the contract damage or collapse of formwork or falsework and show all details in the Method Statement and Safety Plan. JC2: 飛来・落下の項で主として想定しているのは、固形物による衝撃であり、剥離剤による皮膚の炎症等の化学的被害ではありません。追記願います。 The above is measures to avoid injuries by falling objects (solid ones) but not chemical injuries on skins or other parts of body by concrete form release agent. Please specify regarding prevention of damage due to use of release agent. NK: 作業員及び第三者に対する安全措置について右(3)のように追加します。 A new clause is added to specify measures for workers and the third parties when using concrete form release agents. コンクリート剥離剤を使用するときは、作業員に保護眼鏡、ゴム手袋等の個人用保護具を使用しなければならない。第三者に剥離剤がかかる可能性がある場合には、剥離剤の飛散を防ぐ対策を講じるとともに、必要に応じて立入禁止区域を設定し誘導員を配置しなければならない。 9.2.2 Safety Measures ~~during~~ for Concrete Placement The Contractor shall: (1) Designate concrete placement works (including all pumping and hoisting of concrete) as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*]. (2) Inspect all reinforcement, formwork and falsework before and during concrete placement. If any defect is discovered, stop the placement works and evacuate the workers immediately, carry out	**9.2 PARTICULAR SAFETY MEASURES FOR CAST-IN-PLACE CONCRETE WORK** The following safety requirements are additional to the general requirements described in other Chapters. 9.2.1 Safety Measures at Planning Stage (1) The Contractor shall plan all concrete work so that it can be executed in a safe and methodical manner. (2) The Contractor shall plan the method of cast-in-place concrete placement and carry out the design and construction of formwork and falsework to take account of uneven and excessive impact force and different or asymmetrical loads, thicknesses and pressures in certain areas during concrete placement to avoid ~~any~~ deformation beyond allowable ~~construction~~ tolerances specified in the Contract damage or collapse of formwork or falsework and show all details in the Method Statement and Safety Plan. (3) The Contractor shall provide PPE such as rubber gloves, face masks and goggles to the workers when spraying concrete form release agents to prevent chemical injury, and where there is a possibility that release agent may splash on the third parties, take measures such as establishing exclusion zone with temporary barriers and locate Spotters to prevent those person from entering the area. 9.2.2 Safety Measures for Concrete Placement The Contractor shall: (1) Designate concrete placement works (including all pumping and hoisting of concrete) as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*]. (2) Inspect all reinforcement, formwork and falsework before and during concrete placement. If any defect is discovered, stop the placement works and evacuate the workers immediately, carry out

(3) Place the concrete in exact accordance with the Method Statement and avoid uneven and excessive impact force and different or asymmetrical thicknesses and pressures in certain areas during concrete placement. Some materials for falseworks shall be stored at the concrete placing site for use to reinforce falseworks in case of occurrence of their local deformation.

9.1.3. Safety Measures for Placement by Pumping

The Contractor shall take the following safety measures for delivery of insitu concrete with the use of concrete pumps:

(1) Inspect the condition of concrete pump delivery pipes, end hoses and all connections, ensure that they are free from defects and blockage, check that all joints and connections are secure and free from leakage before and during concrete placement works. If any defect is discovered, stop the placement works and evacuate the workers immediately. Carry out repairs and reinspect before commencing or resuming work.

(2) Ensure that all delivery pipes, end hoses and other system components are all correctly pressure rated and capable of withstanding the maximum pump pressure.

(3) Comply with the requirements of JSSS Chapter 3 [*Existing Underground, Concealed and Overhead Services*] and:

(a) Maintain a safe separation distance from any obstructions (Contractor's Equipment, buildings, etc.) and avoid any risk of hitting or touching any obstructions with the pumping equipment, delivery pipes, end hoses or boom;

(b) Maintain a safe separation distance between the delivery pipe, end hose and boom and any existing Overhead Services as required by JSSS Chapter 3 [*Existing Underground, Concealed and Overhead Services*], Table 3.2.1: Safe Separation Distances;

(4) Check the ground condition, ensure a firm, stable and horizontal working base at all times and position pumping equipment and trucks at a safe distance from the edge of any excavations, drop or slope to protect against any slippage or fall of equipment and trucks or collapse of ground.

repairs and reinspect before resuming.

(3) Place the concrete in exact accordance with the Method Statement and avoid uneven and excessive impact force and different or asymmetrical thicknesses and pressures in certain areas during concrete placement. ~~Some~~ Additional materials ~~for falseworks~~ shall be stored at the concrete placing site for use to reinforce falseworks in case of occurrence of their local deformation. (JC3&4))

JC3: 普通単に in accordance with といっており、ここだけ exact というのもおかしい。削除する。
In other places, the phrase of "in accordance with" is used, not "in exact accordance with". Please delete "exact".

NK: "exact" is deleted. Some deletion and change have ben made by JICA as right.

JC4: JC revised.

9.2.3 Safety Measures for ~~Placement by~~ Concrete Pumping

The Contractor shall take the following safety measures for delivery of insitu concrete with the use of concrete pumps:

(1) Inspect the condition of concrete pump delivery pipes, end hoses and all connections, ensure that they are free from defects and blockage, check that all joints and connections are secure and free from leakage before and during concrete placement works. ~~. If any defect is discovered, stop the placement works and evacuate the workers immediately. Carry out repairs and reinspect before commencing or resuming work.~~ (JC5)

JC5: The latter half of clause (1) is deleted by JICA.

(2) Ensure that all delivery pipes, end hoses and other system components are all correctly pressure rated and capable of withstanding the maximum pump pressure.

(3) Comply with the requirements of JSSS Chapter 3 [*Existing Underground, Concealed and Overhead Services*] and:

(a) Maintain a safe separation distance from any obstructions (Contractor's Equipment, buildings, etc.) and avoid any risk of hitting or touching any obstructions with the pumping equipment, delivery pipes, end hoses or boom; (JC6)

~~(b) Maintain a safe separation distance between the delivery pipe, end hose and boom and any existing Overhead Services as required by JSSS Chapter 3 [*Existing Underground, Concealed and Overhead Services*], Table 3.2.1: Safe Separation Distances;~~

JC6: この話は 3 章とは関係ないので独立させました。また、(b)は削除。
The sub-clause (a) is irrelevant to Chapter 3. Thus (a) becomes (3) as independent clause and sub-clause (b) is deleted.

NK: Modified as JICA commented.

(4) Check the ground condition, ensure a firm, stable and horizontal working base at all times and position pumping equipment and trucks at a safe distance from the edge of any excavations, drop or slope to protect against any slippage or fall of equipment and trucks or collapse of ground.

(5) Fully extend outriggers and ensure stability of pumping equipment

repairs and reinspect before resuming.

(3) Place the concrete in ~~exact~~ accordance with the Method Statement and avoid uneven and excessive impact force and different or asymmetrical thicknesses and pressures in certain areas during concrete placement. ~~Some~~ Additional materials ~~for falseworks~~ shall be stored at the concrete placing site for use to reinforce falseworks in case of occurrence of their local deformation.

9.2.3 Safety Measures for ~~Placement by~~ Concrete Pumping

The Contractor shall take the following safety measures for delivery of cast-in-place concrete with the use of concrete pumps:

(1) Inspect the condition of concrete pump delivery pipes, end hoses and all connections, ensure that they are free from defects and blockage, check that all joints and connections are secure and free from leakage before and during concrete placement works. ~~If any defect is discovered, stop the placement works and evacuate the workers immediately. Carry out repairs and reinspect before commencing or resuming work.~~

(2) Ensure that all delivery pipes, end hoses and other system components are all correctly pressure rated and capable of withstanding the maximum pump pressure.

(3) Maintain a safe separation distance between the delivery pipe, end hose and boom and any existing Overhead Services as required by JSSS Chapter 3 [*Existing Underground, Concealed and Overhead Services*], Table 3.2.1: Safe Separation Distances.

(4) Maintain a safe separation distance from any obstructions (Contractor's Equipment, buildings, etc.) and avoid any risk of hitting or touching any obstructions with the pumping equipment, delivery pipes, end hoses or boom;

~~(b) Maintain a safe separation distance between the delivery pipe, end hose and boom and any existing Overhead Services as required by JSSS Chapter 3 [*Existing Underground, Concealed and Overhead Services*], Table 3.2.1: Safe Separation Distances;~~

(5) Check the ground condition, ensure a firm, stable and horizontal working base at all times and position pumping equipment and ready-mixed concrete trucks at a safe distance from the edge of any excavations, drop or slope to protect against any slippage or fall of equipment and ready-mixed concrete trucks or collapse of ground.

(6) Fully extend outriggers and ensure stability of pumping equipment and ready-mixed concrete trucks at all times.

(5) Fully extend outriggers and ensure stability of pumping equipment and trucks at all times.

(6) Arrange proper communications and signals before starting the placement between workers, Spotters and operators of equipment and ~~mixer trucks~~ ready-mixed concrete trucks and ensure there is a Spotter at the point of placement.

(7) Never allow workers to stand between ~~mixer trucks~~ ready-mixed concrete trucks and pumps when trucks are reversing.

(8) Take care to avoid the risk of any accident when moving the boom and ensure that workers are out of the path of the boom.

(9) Never allow workers open a pressurised concrete delivery pipeline during delivery operation and at occurrence of a blockage in the pipeline to prevent concrete in the pipeline from splashing out. Pressurised line shall be opened after release the pressure inside the pipeline in accordance with predetermined procedure.

(10) When cleaning delivery pipes or end hoses with compressed air, ensure that a ball catcher is always provided to prevent the risk of any accident or injury for the ejected objects.

(11) Ensure that hoppers and chutes are securely fixed and that workers are aware method of operation and safe use.

(12) Ensure that the delivery pipe and hose at the end of the concreting pump booms are securely connected not to fall or become detached.

(13) Prohibit workers from working on the hopper screen of the concrete pump, remove obstructions and foreign materials in the hopper only after stopping the agitating blade and applying lockout/tagout procedures.

(14) Prohibit workers from entering places in front of and below the outlet of concrete pump delivery pipes and end hoses to avoid the workers to be hit by pipes and horse rampaged.

9.1.4. Safety Measures for Ready-mixed Concrete Trucks

The Contractor shall take the following measures for the ready-mixed concrete ~~mixer~~ trucks in the transportation and delivery of ~~insitu~~ ready-mixed concrete.

(1) Ensure that drivers are aware of and take due account of the heavy load and high centre of gravity of loaded ~~mixer~~ ready-mixed concrete trucks during delivery and discharge to maintain safety and trucks at all times.

(6) Arrange proper communications and signals before starting the placement between workers, Spotters and operators of equipment and ~~mixer trucks~~ ready-mixed concrete trucks and ensure there is a Spotter at the point of placement.

(7) Never allow workers to stand between ready-mixed concrete trucks and pumps when trucks are reversing.

(8) ~~Take care to avoid the risk of any accident when moving the boom~~ and ensure that workers are out of the path of the boom. (JC7)

JC7: リスクは回避できないので、この部分の記述は不要です。左記のように変えてよいと思います。
As it is not possible to “avoid a risk”, this part is not necessary. Please change the sentence as right.

NK: Changed as JICA commented.

(9) Never allow workers open a pressurised concrete delivery pipeline during delivery operation and at occurrence of a blockage in the pipeline to prevent concrete in the pipeline from splashing out. Pressurised line shall be opened after release the pressure inside the pipeline in accordance with predetermined procedure. (JC8)

JC8: 異常が発生したときの対処は下に記載があるので、この部分は削除します。(9)は右のように変更します。
Measures for occurrence of an abnormality are stated below. Clause (9) is changed as right.

NK: Changed as JICA commented.

(10) When cleaning delivery pipes or end hoses with compressed air, ensure that a ball catcher is always provided to prevent the risk of any accident or injury for the ejected objects. (JC9)

JC9: 今時はエアで洗浄をするということはないので、削除させていただきます。
Nowadays, cleaning with compressed air is not used. Thus, this clause is deleted.

NK: Deleted as JICA commented.

(11) Ensure that hoppers and chutes are securely fixed and that workers are aware method of operation and safe use.

(12) Ensure that the delivery pipe and hose at the end of the concreting pump booms are securely connected not to fall or become detached.

(13) Prohibit workers from working on the hopper screen of the concrete pump, remove obstructions and foreign materials in the hopper only after stopping the agitating blade and applying lockout/tagout procedures.

(14) Prohibit workers from entering places in front of and below the outlet of concrete pump delivery pipes and end hoses to avoid the workers to be hit by pipes and horse rampaged.

9.2.4 Safety Measures for Ready-mixed Concrete Trucks

The Contractor shall take the following measures for the ready-mixed concrete trucks in the transportation and delivery of ~~insitu~~ ready-mixed concrete.

(1) Ensure that drivers are aware of and take due account of the heavy load and high centre of gravity of loaded ready-mixed concrete trucks during delivery and discharge to maintain safety and prevent overturning.

(7) Arrange proper communications and signals before starting the placement between workers, Spotters and operators of equipment and ready-mixed concrete trucks and ensure there is a Spotter at the point of placement.

(8) Never allow workers to stand between ready-mixed concrete trucks and pumps when trucks are reversing.

(9) ~~Take care to avoid the risk of any accident when moving the boom and~~ Ensure that workers are out of the path of the boom when moving the boom.

(10) ~~Never allow workers open a pressurised concrete delivery pipeline during delivery operation and at occurrence of a blockage in the pipeline to prevent concrete in the pipeline from splashing out. Pressurised line shall be opened after release the pressure inside the pipeline in accordance with predetermined procedure~~.
If a blockage or clogging occurs inside the pipeline during the pour, stop pumping immediately and instruct workers to move to a safe position before attempting to remove the blockage or clogging. The pipeline shall be opened after release the pressure inside in accordance with predetermined procedure.

~~(11) When cleaning delivery pipes or end hoses with compressed air, ensure that a ball catcher is always provided to prevent the risk of any accident or injury for the ejected objects.~~

(12) Ensure that hoppers and chutes are securely fixed and that workers are aware method of operation and safe use.

(13) Ensure that the delivery pipe and hose at the end of the concreting pump booms are securely connected not to fall or become detached.

(14) Prohibit workers from working on the hopper screen of the concrete pump, remove obstructions and foreign materials in the hopper only after stopping the agitating blade and applying lockout/tagout procedures.

(15) Prohibit workers from entering places in front of and below the outlet of concrete pump delivery pipes and end hoses to avoid the workers to be hit by pipes and horse rampaged.

9.2.4 Safety Measures for Ready-mixed Concrete Trucks

The Contractor shall take the following measures for the ready-mixed concrete trucks in the transportation and delivery of ready-mixed concrete.

(1) Ensure that drivers are aware of and take due account of the heavy load and high centre of gravity of loaded ready-mixed concrete trucks during delivery and discharge to maintain safety and prevent

and prevent overturning. (2) Ensure that workers do not come into contact with and/or become entangled with the rotating drum and other moving parts of ~~mixer~~ ready-mixed concrete trucks and that they are prevented from looking into the drum. 9.1.5. Safety Measures for use of Concrete Buckets The Contractor shall take the following measures when using concrete buckets for hoisting and placement of concrete: (1) Comply with JSSS 5.2.6.[General Safety Measures for Hoisting Operations] for selection of proper Hoisting Equipment and Rigging Equipment, arrangement of proper communication tool and signals, placement of Spotters; (2) Ensure that the movable gate is locked before hoisting and is only operated by a skilled worker when it is opened for discharge. (3) Take measures to stabilise the bucket during hoisting and prevent any uncontrolled swinging. Prohibit workers from pushing and pulling bracket except for minor adjustment of location of bucket for discharging concrete. (4) Prevent persons or workers from entering the places below bucket. (5) Discharge the concrete slowly and in a controlled manner to prevent the bucket from rebounding after discharge. 9.1.6. Safety Measures for use of Concrete Vibrators The Contractor shall take the following measures when using concrete vibrators for compacting of insitu concrete: (1) Take all necessary measures to prevent electric shock complying with JSSS 4.3.12 [Additional Requirements for Electric Powered Equipment]. (2) Ensure that workers are provided with and that they wear anti-vibration gloves.	(2) Ensure that workers do not come into contact with and/or become entangled with the rotating drum and other moving parts of ready-mixed concrete trucks ~~and that they are prevented from looking into the drum~~.(JC10) JC10: JICA deleted. 9.2.5 Safety Measures for use of Concrete Buckets The Contractor shall take the following measures when using concrete buckets for hoisting and placement of concrete: (1) Comply with JSSS 5.2.6.[General Safety Measures for Hoisting Operations] for selection of proper Hoisting Equipment and Rigging Equipment, arrangement of proper communication tool and signals, placement of Spotters; (2) Ensure that the movable gate is locked before hoisting and is only operated by a skilled worker when it is opened for discharge. (3) Take measures to stabilise the bucket during hoisting and prevent any uncontrolled swinging. Prohibit workers from pushing and pulling bracket except for minor adjustment of location of bucket for discharging concrete. (4) Prevent persons or workers from entering the places below bucket. (5) Discharge the concrete slowly and in a controlled manner to prevent the bucket from rebounding after discharge. 9.2.6 Safety Measures for use of Concrete Vibrators The Contractor shall take the following measures when using concrete vibrators for compacting of insitu concrete: (1) Take all necessary measures to prevent electric shock complying with JSSS 4.3.12 [Additional Requirements for Electric Powered Equipment]. (2) Ensure that workers are provided with and that they wear anti-vibration gloves. (JC10) JC10: 振動による被害軽減にはなるけど、防止グローブだけつければ良いというものではないので「振動による健康被害を予防するため、」を一言入れた方が良いかも。(騒音とかと類似)騒音被害(JSSS2.1.4 (2) と横並びで、振動被害防止のため、という言葉を入れました。 A phrase “To prevent vibration damage to workers” is inserted to coincide with JSSS 2.1.4 (2). NK: Modified as JICA commented.	overturning. (2) Ensure that workers do not come into contact with and/or become entangled with the rotating drum and other moving parts of ready-mixed concrete trucks ~~and that they are prevented from looking into the drum~~. 9.2.5 Safety Measures for use of Concrete Buckets The Contractor shall take the following measures when using concrete buckets for hoisting and placement of concrete: (1) Comply with JSSS 5.2.6.[General Safety Measures for Hoisting Operations] for selection of proper Hoisting Equipment and Rigging Equipment, arrangement of proper communication tool and signals, placement of Spotters; (2) Ensure that the movable gate is locked before hoisting and is only operated by a skilled worker when it is opened for discharge. (3) Take measures to stabilise the bucket during hoisting and prevent any uncontrolled swinging. Prohibit workers from pushing and pulling bracket except for minor adjustment of location of bucket for discharging concrete. (4) Prevent persons or workers from entering the places below bucket. (5) Discharge the concrete slowly and in a controlled manner to prevent the bucket from rebounding after discharge. 9.2.6 Safety Measures for use of Concrete Vibrators The Contractor shall take the following measures when using concrete vibrators for compacting of cast-in-place concrete: (1) Take all necessary measures to prevent electric shock complying with JSSS 4.3.12 [Additional Requirements for Electric Powered Equipment]. (2) To prevent vibration damage to workers, provide workers with anti-vibration gloves and ensure that those gloves are properly used. ~~Ensure that workers are provided with and that they wear anti-vibration gloves~~.
9.3 REINFORCEMENT 9.3.1. Safety Measures at Planning Stage The Contractor shall: (1) Prepare a Safety Plan, Method Statement and fixing and placing drawings of reinforcement describing the method of cutting, bending and fixing ~~and erection~~ and showing the types and positioning of supports, ties and bracing necessary to support and rigidly secure the reinforcement and to prevent any movement or collapse. (2) Inform all relevant workers of the content of the Safety Plan,	**9.3 REINFORCEMENT** 9.3.1. Safety Measures at Planning Stage The Contractor shall: (1) Prepare a Safety Plan, Method Statement and fixing and placing drawings of reinforcement describing the method of cutting, bending and fixing and showing the types and positioning of supports, ties and bracing necessary to support and rigidly secure the reinforcement and to prevent any movement or collapse. (2) Inform all relevant workers of the content of the Safety Plan, Method Statement and assembly drawings.	**9.3 REINFORCEMENT** 9.3.1. Safety Measures at Planning Stage The Contractor shall: (1) Prepare a Safety Plan, Method Statement and fixing and placing drawings of reinforcement describing the method of cutting, bending and fixing and showing the types and positioning of supports, ties and bracing necessary to support and rigidly secure the reinforcement and to prevent any movement or collapse. (2) Inform all relevant workers of the content of the Safety Plan, Method Statement and assembly drawings.

Method Statement and assembly drawings.

9.3.2. Safety Measures at Fabrication and Fixing and Placing Stage

The Contractor shall take the following measures during cutting, bending, transporting and fixing and placing of reinforcement:

(1) Cutting and Bending:

(a) Designate the work as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*];

(b) Maintain the working area in a safe, organised, uncluttered and clean condition at all times, avoid excessive storage by retaining sufficient quantities of reinforcement for immediate use, locate equipment in known positions, prevent any fall or dropping of material, equipment and tools, remove offcuts to a separate area and ensure the area is safe and that the risk of workers falling or tripping is avoided; and

(c) Maintain stored reinforcement material in a safe and secure manner and ensure that there is no risk of collapse or fall by providing adequate restraints.

(2) Transporting:

(a) Ensure that scaffolding and any other temporary structures on which reinforcement is to be temporarily placed is capable of supporting the load, ensure that the load is distributed safely and that is does not cause any obstruction to the passage of other workers;

(b) Ensure that reinforcing bar is lifted and suspended horizontally to prevent any slippage during Hoisting Operations and also that it is bundled safely and securely tied to prevent any reinforcing bars from sliding out;

In principle suspend reinforcement horizontally maintaining the balance by using two rigging slings; and

(c) When transporting to the working location use flatbed trailers, ensure that the trailer is of sufficient length to avoid any overhang; where exceptional lengths of reinforcement are being transported and overhang is unavoidable, ensure that the overhang complied with local regulations and provide appropriate warning signs and lighting to remove all risk of impact collision with other vehicles, persons and workers.

9.3.2. Safety Measures at Fabrication and Fixing and Placing Stage

The Contractor shall take the following measures during cutting, bending, transporting and fixing and placing of reinforcement:

(1) Cutting and Bending:

(a) Designate the work as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*];

(b) Maintain the working area in a safe, organised, uncluttered and clean condition at all times, avoid excessive storage by retaining sufficient quantities of reinforcement for immediate use, locate equipment in known positions, prevent any fall or dropping of material, equipment and tools, remove offcuts to a separate area and ensure the area is safe and that the risk of workers falling or tripping is avoided; and

(c) Maintain stored reinforcement material in a safe and secure manner and ensure that there is no risk of collapse or fall by providing adequate restraints. (JC11)

JC11: JICA modified.

(2) Transporting:

(a) Ensure that scaffolding and any other temporary structures on which reinforcement is to be temporarily placed is capable of supporting the load, ensure that the load is distributed safely and that is does not cause any obstruction to the passage of other workers;

(b) Ensure that reinforcing bar is lifted and suspended horizontally to prevent any slippage during Hoisting Operations and also that it is bundled safely and securely tied to prevent any reinforcing bars from sliding out;

In principle suspend reinforcement horizontally maintaining the balance by using two rigging slings; and (JC12)

JC12: 意味がわかりません。わかるように修正願います。
The meaning of this sentence is not clear. Please modify it to become more understandable.

NK: 右のように修正しました。 Modified as right.

(c) When transporting to the working location use flatbed trailers, ensure that the trailer is of sufficient length to avoid any overhang; where exceptional lengths of reinforcement are being transported and overhang is unavoidable, ensure that the overhang complied with local regulations and provide appropriate warning signs and lighting to remove all risk of impact collision with other vehicles, persons and workers. (JC13)

JC13: トレーラーの長さを調整するのではなく、鉄筋の長さを調整するのだと思います。英語については適宜修正してください。
It wouldn't be right to adjust the length of trailer instead of length of reinforcing bars. Please modify the sub-clause.

NK: ODA の現場では、鉄筋は最大長 12m が一般的であり、このれらの鉄筋を設計に合わせて切断します。請負者は残余が出ないように工夫して鉄筋を切断します。トレーラー長に合わせて鉄筋を切断することはないため、長さ

9.3.2. Safety Measures at Fabrication and Fixing and Placing Stage

The Contractor shall take the following measures during cutting, bending, transporting and fixing and placing of reinforcement:

(1) Cutting and Bending:

(a) Designate the work as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*];

(b) Maintain the working area in a safe, organised, uncluttered and clean condition at all times, avoid excessive storage by retaining sufficient quantities of reinforcement for immediate use, locate equipment in known positions, prevent any fall or dropping of material, equipment and tools, remove offcuts to a separate area and ensure the area is safe and that the risk of workers falling or tripping is avoided; and

(c) Maintain stored reinforcement material in a safe and secure manner ~~and ensure that there is no risk of~~ to prevent collapse or fall by providing adequate restraints.

(2) Transporting:

(a) Ensure that scaffolding and any other temporary structures on which reinforcement is to be temporarily placed is capable of supporting the load, ensure that the load is distributed safely and that is does not cause any obstruction to the passage of other workers;

(b) Ensure that reinforcing bar is lifted and suspended horizontally to prevent any slippage during Hoisting Operations and also that it is bundled safely and securely tied to prevent any reinforcing bars from sliding out;

In principle ~~suspend reinforcement~~ hoist the bundle of reinforcing bars keeping them horizontal and maintaining the balance by using two rigging slings; and

(c) When transporting to the working location use flatbed trailers or truck, ensure that the trailer or truck is of sufficient length to avoid any overhang of reinforcing bars; ~~where exceptional lengths of reinforcement are being transported and overhang is unavoidable, ensure that the overhang complied with local regulations and provide appropriate warning signs and lighting to remove all risk of impact collision with other vehicles, persons and workers. When transporting to the working location by trailers, adjust length of reinforcement so as to respect the local regulation in terms of overhanging.~~ Provide appropriate warning signs and lighting on reinforcing bars if necessary in accordance with the local regulations to avoid collision with other vehicles, persons and workers.

(3) Fixing and Placing: (a) Prepare proper temporary access to and support for the assembly of reinforcement and for fixing the reinforcement in position; (b) Prevent any risk of fall and also any distortion or weakening of reinforcement by prohibiting workers from standing, walking or climbing on such reinforcement and where necessary provide safe temporary boarded walkways for workers use; (c) Ensure that assembly is in exact accordance with the assembly drawings and that the correct types and positioning of supports, ties and bracing is maintained to properly support and rigidly secure the reinforcement and prevent undue movement or collapse; (d) When there is a risk of the falling and collapsing of reinforcement under assembling by wind and rain, stop the assembly work. After strong wind and heavy rain, inspect the reinforcement under assembling and stop the assembling work when abnormality is found; (e) Prohibit working concurrently at levels where any other worker is working underneath in accordance with JSSS 2.6.7 [Working Above or Below Others]; and (f) Provide temporary protection caps to exposed ends of reinforcing bars to prevent injury to workers.	にあったトレーラーを調達することが運搬業者の責任と考えます。 日本の場合、次の規則があります。 *セミトレーラ連結車の車両制限令の長さの特例* *高速自動車国道　１６．５ｍ（積載する貨物が被けん引車の車体の前方又は後方にはみ出していないもの）* *指定道路、その他の道路…１２ｍ　（これを超える車両は、特殊車両通行許可が必要である。）* 運搬に関しては交通規則に従うと規定することで良いと考えますので、右のように変更致します。 At ODA sites, re-bars are 12 m generally in longest. The Contractor cuts the re-bars following the design but not depending on the length of trailer. The Contractor shall select trailer to transport depending on the length of re-bars. In Japan, trailers of 16.5 m without overhanging of goods can run highway and those of 12 m on public roads. It needs special permission on public roads in case longer than 12 m. The (d) specify not to be overhang and following the traffic regulations as right. (3) Fixing and Placing: (a) Prepare proper temporary access to and support for the assembly of reinforcement and for fixing the reinforcement in position; (b) Prevent any risk of fall and also any distortion or weakening of reinforcement by prohibiting workers from standing, walking or climbing on such reinforcement and where necessary provide safe temporary boarded walkways for workers use; (c) Ensure that assembly is in exact accordance with the assembly drawings and that the correct types and positioning of supports, ties and bracing is maintained to properly support and rigidly secure the reinforcement and prevent undue movement or collapse; (d) When there is a risk of the falling and collapsing of reinforcement under assembling by wind and rain, stop the assembly work. After strong wind and heavy rain, inspect the reinforcement under assembling and stop the assembling work when abnormality is found; (JC14) JC14: 単数形の risk を使うかどうかも考えた方が良いかと It is better reconsider use of the word “a risk” in singular form. NK: JICA のコメントに従い右のように変更しました。 Changed as right in accordance with the suggestion by JICA To MD, please review this comment. (e) Prohibit working concurrently at levels where any other worker is working underneath in accordance with JSSS 2.6.7 [Working Above or Below Others]; and (f) Provide temporary protection caps to exposed ends of reinforcing bars to prevent injury to workers.	(3) Fixing and Placing: (a) Prepare proper temporary access to and support for the assembly of reinforcement and for fixing the reinforcement in position; (b) Prevent any risk of fall and also any distortion or weakening of reinforcement by prohibiting workers from standing, walking or climbing on such reinforcement and where necessary provide safe temporary boarded walkways for workers use; (c) Ensure that assembly is in exact accordance with the assembly drawings and that the correct types and positioning of supports, ties and bracing is maintained to properly support and rigidly secure the reinforcement and prevent undue movement or collapse; (d) When there is ~~a risk~~ danger of the falling and collapsing of reinforcement under assembling by wind and rain, stop the assembly work. After strong wind and heavy rain, inspect the reinforcement under assembling and stop the assembling work when abnormality is found; (e) Prohibit working concurrently at levels where any other worker is working underneath in accordance with JSSS 2.6.7 [Working Above or Below Others]; and (f) Provide temporary protection caps to exposed ends of reinforcing bars to prevent injury to workers.
9.4 FORMWORK (INCLUDING FALSEWORK) 9.4.1. General Any reference to “formwork” in this Section shall also be deemed to include reference to the associated falsework for that formwork.	**9.4 FORMWORK (INCLUDING FALSEWORK)** 9.4.1 General Any reference to “formwork” in this Section shall also be deemed to include reference to the associated falsework for that formwork.	**9.4 FORMWORK (INCLUDING FALSEWORK)** 9.4.1 General Any reference to “formwork” in this Section shall also be deemed to include reference to the associated falsework for that formwork.

9.4.2. Safety Measures at Planning Stage

The Contractor shall:

(1) Design the formwork and manage its provision, use and removal in accordance with JSSS 1.35 [*Design and Management of Temporary Works*] and the further requirements of JSSS Section 7.1 [*General Requirements of Temporary Works*].

(2) Prepare a Safety Plan, Method Statement and design drawings of formwork describing the method of fabrication, assembly, erection and removal and showing details of all materials, components, types and positioning of supports, ties and bracing necessary to create a rigid and secure temporary support structure for the concrete, reinforcement and workers and to prevent any movement or collapse.

(3) Inform all relevant workers of the content of the Safety Plan, Method Statement and design drawings.

9.4.3. Safety Measures at Fabrication and Assembly Stage

The Contractor shall take the following measures during fabricating, transporting and assembling of formwork:

(1) Designate the work as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) Maintain the working area including storage area in a safe, organised, uncluttered and clean condition at all times, avoid excessive storage by retaining sufficient quantities of material for immediate use, locate equipment ~~in known positions,~~ at predetermined places, prevent any fall or dropping of material, equipment and tools, remove offcuts to a separate area and ensure the area is safe and that the risk of workers falling or tripping is avoided.

(3) Ensure that the formwork is free from cracks, defects and deformation, ~~Ensure that~~ scaffolding and any other temporary structures on which formwork is to be temporarily placed is capable of supporting the load, ~~ensure that~~ and the load is distributed safely.

(4) Ensure that formwork is restrained during any Hoisting Operation to prevent being affected by wind and that any risk of collision and consequent injury and damage is avoided.

9.4.2 Safety Measures at Planning Stage

The Contractor shall:

(1) Design the formwork and manage its provision, use and removal in accordance with JSSS 1.35 [*Design and Management of Temporary Works*] and the further requirements of JSSS Section 7.1 [*General Requirements of Temporary Works*].

(2) Prepare a Safety Plan, Method Statement and design drawings of formwork describing the method of fabrication, assembly, erection and removal and showing details of all materials, components, types and positioning of supports, ties and bracing necessary to create a rigid and secure temporary support structure for the concrete, reinforcement and workers and to prevent any movement or collapse.

(3) Inform all relevant workers of the content of the Safety Plan, Method Statement and design drawings.

9.4.3 Safety Measures at Fabrication and Assembly Stage

The Contractor shall take the following measures during fabricating, transporting and assembling of formwork:

(1) Designate the work as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) Maintain the working area including storage area in a safe, organised, uncluttered and clean condition at all times, avoid excessive storage by retaining sufficient quantities of material for immediate use, locate equipment at predetermined places, prevent any fall or dropping of material, equipment and tools, remove offcuts to a separate area and ensure the area is safe and that the risk of workers falling or tripping is avoided. (JC15)

JC15: 解体のところに入っていた事項ですが、組み立ての時にも必要な事項なので、文章を修正の上、こちらに移しました。(項目 9.4.4 (2)を 9.4.3 に(3)として移動。)
The new clause (3) is moved from 9.4.3 (2) because this should include the common safety measures at assembling stage.

NK: コメントに従い、移動、修正しました。
Th e clause is moved and the sentence is modified as commented by JICA.

(3) Ensure that the formwork is free from cracks, defects and deformation, scaffolding and any other temporary structures on which formwork is to be temporarily placed is capable of supporting the load, ~~ensure that~~ and the load is distributed safely. (JC16)

JC16: Ensure that でつないでいく文が長くなるので、型枠に瑕疵がない、という部分を切り離しました。
As the sentence is too long, the part that formwork is free from defects is separated.

NK: コメントに従い、項目を 2 つに分割しました。
The clause is divided into two clauses as right (4) & (5).

(4) Ensure that formwork is restrained during any Hoisting Operation to prevent being affected by wind and that any risk of collision and consequent injury and damage is avoided. (JC17)

JC17: 強風がふいているときは型枠の資材のつり上げ作業をやめろというのが趣旨だ

9.4.2 Safety Measures at Planning Stage

The Contractor shall:

(1) Design the formwork and manage its provision, use and removal in accordance with JSSS 1.35 [*Design and Management of Temporary Works*] and the further requirements of JSSS Section 7.1 [*General Requirements of Temporary Works*].

(2) Prepare a Safety Plan, Method Statement and design drawings of formwork describing the method of fabrication, assembly, erection and removal and showing details of all materials, components, types and positioning of supports, ties and bracing necessary to create a rigid and secure temporary support structure for the concrete, reinforcement and workers and to prevent any movement or collapse.

(3) Inform all relevant workers of the content of the Safety Plan, Method Statement and design drawings.

9.4.3 Safety Measures at Fabrication and Assembly Stage

The Contractor shall take the following measures during fabricating, transporting and assembling of formwork:

(1) Designate the work as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) Maintain the working area including storage area in a safe, organised, uncluttered and clean condition at all times, avoid excessive storage by retaining sufficient quantities of material for immediate use, locate equipment at predetermined places, prevent any fall or dropping of material, equipment and tools, remove offcuts to a ~~separate~~ designated area ~~and ensure the area is safe and that the risk of workers falling or tripping is avoided~~.

(3) When assembling and ~~dismantling~~ disassembling the formwork, prohibit the workers from entering the area subject to risk of being hit or struck by the panel which is suddenly moved by strong wind.

(4) Ensure that the formwork is free from cracks, defects and deformation,

(5) Ensure that scaffolding and any other temporary structures on which formwork is to be temporarily placed is capable of supporting the load, and that the load is distributed evenly and within the allowable stress of formwork.

(6) ~~Ensure that formwork is restrained during any Hoisting Operation to prevent being affected by wind and that any risk of collision and consequent injury and damage is avoided~~.
When hoisting operation is carried out for largen sized formwork

	と思います。ですので、Ensure that formwork is restrained というのは関係ないと思います。また、システム型枠（system formwork）に関連する事象として記載することを検討ください。 Hoisting of formwork must be stopped when strong wind is blowing. Therefore, restraining formwork is not relevant in this case. Please consider to describe for a case of "System Formwork". NK: 右の(6)ように、大型パネルの吊り上げ作業には全ての必要な対策をとることとの表現に修正することを提案します。 When hoisting operation is carried out for largen sized formwork panels such as system formwork, ensure that all necessary measures are taken to prevent being affected by wind and that any risk of collision and consequent injury and damage is avoided	panels such as system formwork, ensure that all necessary measures are taken to prevent being affected by wind and that any risk of collision and consequent injury and damage is avoided.
9.4.4. Safety Measures during Dismantling and Removal Stage	9.4.4 Safety Measures during Dismantling and Removal Stage (JC18)	9.4.4 Safety Measures during ~~Dismantling~~ Disassembling and Removal Stage
(1) The formwork shall be dismantled in accordance with the relevant provision in the Contract.	JC18: Dismantling は Disassembling に、他の箇所も同様に変えてください。 Please change the term "dismantle" to "disassemble" for other parts as well. NK: コメントし従い変更しました。 Changed as commented. (1) The formwork shall be dismantled in accordance with the relevant provision in the Contract.	(1) The formwork shall be ~~dismantled~~ disassembled in accordance with the relevant provision in the Contract.
(2) When the formwork panels are hoisted, prohibit the workers from entering the dangerous area to prevent the workers from being hit or struck by the panels which is suddenly moved by the strong wind.	(2) When the formwork panels are hoisted, prohibit the workers from entering the dangerous area to prevent the workers from being hit or struck by the panels which is suddenly moved by the strong wind. (JC19)	~~(2) When the formwork panels are hoisted, prohibit the workers from entering the dangerous area to prevent the workers from being hit or struck by the panels which is suddenly moved by the strong wind.~~
	JC19: 項目(2)は 9.4.3 (3) に移動。文章を組立ても含めように修正。 Clause (2) is moved to 9.4.3 as (3). The sentence is modified so as to include assembling.	
(3) After dismantling, the form panels shall be stacked horizontally to avoid overturning; and	(3) After dismantling, the form panels shall be stacked horizontally to avoid overturning; and	(3) After ~~dismantling~~, disassembling the form panels shall be stacked horizontally to avoid overturning; and
(4) The protruding nails, wires, projecting members and splinters on the forms dismantled shall be removed or bended to avoid injury to workers and other persons.	(4) The protruding nails, wires, projecting members and splinters on the forms dismantled shall be removed or bended to avoid injury to workers and other persons.	(4) The protruding nails, wires, projecting members and splinters on the forms ~~dismantled~~ disassembled shall be removed or bended to avoid injury to workers and other persons.

2020.5.8 NK R3

JSSS in English R2 for Issue 2 (2020/04/22)	JSSS in English Issue 3（2020/05/04）	JSSS in English Issue 3 Clear Copy（2020/05/04）
CHAPTER 9 CONCRETE WORKS **9.1 GENERAL** 9.1.1 Scope 9.1.2 Safety Plan and Instructions to Workers **9.2. PARTICULAR SAFETY MEASURES FOR INSITU CONCRETE WORK** 9.2.1. Safety Measures at Planning Stage 9.2.2. Safety Measures During Placement 9.2.3. Safety Measures for Placement by Pumping 9.2.4. Safety Measures for Concrete Mixer Trucks 9.2.5. Safety Measures for use of Concrete Buckets 9.2.6. Safety Measures for use of Concrete Vibrators **9.3. REINFORCEMENT** 9.3.1. Safety Measures at Planning Stage 9.3.2. Safety Measures at Fabrication and Assembly Stage **9.4. FORMWORK (INCLUDING FALSEWORK)** 9.4.1. General 9.4.2. Safety Measures at Planning Stage 9.4.3. Safety Measures at Fabrication and Assembly Stage 9.4.4. Safety Measures during Dismantling and Removal Stage	**CHAPTER 9 CONCRETE WORKS** **9.1 GENERAL** 9.1.1 Scope 9.1.2 Safety Plan and Instructions to Workers **9.2. PARTICULAR SAFETY MEASURES FOR CAST-IN-PLACE CONCRETE WORK** 9.2.1. Safety Measures at Planning Stage 9.2.2. Safety Measures for Placement 9.2.3. Safety Measures for Placement by Pumping 9.2.4. Safety Measures for Ready-Mixed Concrete Trucks 9.2.5. Safety Measures for use of Concrete Buckets 9.2.6. Safety Measures for use of Concrete Vibrators **9.3. REINFORCEMENT** 9.3.1. Safety Measures at Planning Stage 9.3.2. Safety Measures at Fabrication and Fixing and Placing Stage **9.4. FORMWORK (INCLUDING FALSEWORK)** 9.4.1. General 9.4.2. Safety Measures at Planning Stage 9.4.3. Safety Measures at Fabrication and Assembly Stage 9.4.4. Safety Measures during Dismantling and Removal Stage	**CHAPTER 9 CONCRETE WORKS** **9.1 GENERAL** 9.1.1 Scope 9.1.2 Safety Plan and Instructions to Workers **9.2. PARTICULAR SAFETY MEASURES FOR CAST-IN-PLACE CONCRETE WORK** 9.2.1. Safety Measures at Planning Stage 9.2.2. Safety Measures for Placement 9.2.3. Safety Measures for Placement by Pumping 9.2.4. Safety Measures for Ready-Mixed Concrete Trucks 9.2.5. Safety Measures for use of Concrete Buckets 9.2.6. Safety Measures for use of Concrete Vibrators **9.3. REINFORCEMENT** 9.3.1. Safety Measures at Planning Stage 9.3.2. Safety Measures at Fabrication and Fixing and Placing Stage **9.4. FORMWORK (INCLUDING FALSEWORK)** 9.4.1. General 9.4.2. Safety Measures at Planning Stage 9.4.3. Safety Measures at Fabrication and Assembly Stage 9.4.4. Safety Measures during Dismantling and Removal Stage
CHAPTER 9 CONCRETE WORKS **9.1. GENERAL** 9.1.1. Scope (1) This Chapter specifies the safety requirements for Concrete Works which shall include: (a) ~~Insitu~~ Cast-in-place (poured or pumped) concrete; JC1: 8 章では Cast in place となっているので、統一してください。 The term “insitu” is not used in Chapter 8 but “cast-in-place”. It is necessary to determine which should be used. NK: “Cast-in-place” is more commonly used. Replaced all insitu with cast-in-place in this Chapter. (b) Reinforcement (reinforcing bar and fabric reinforcement); (c) Formwork (including associated falsework); and hereinafter collectively referred to as “Concrete Works”. (2) General safety requirements, covering for example Contractor’s Equipment including stone crushing plants and screening equipment, concrete batching plants, Temporary Works and other related matters, all which apply to the work in this Chapter, are	**CHAPTER 9 CONCRETE WORKS** **9.1 GENERAL** 9.1.1 Scope (1) This Chapter specifies the safety requirements for concrete works which include: (a) ~~In situ Concrete~~ Cast-in place (poured or pumped) concrete; *I have changed this throughout but please note that In-situ Concrete is an internationally accepted term and it is also defined in BS 6100 (in-situ concrete (01)6.4.20).* (b) Reinforcement (reinforcing bar and fabric reinforcement); (c) Formwork (including associated falsework); and which are hereinafter collectively referred to as “Concrete Works”. (2) General safety requirements, covering for example Contractor’s Equipment including stone crushing plants and screening equipment, concrete batching plants, Temporary Works and other related matters, all which apply to the work in this Chapter, are	**CHAPTER 9 CONCRETE WORKS** **9.1 GENERAL** 9.1.1 Scope (1) This Chapter specifies the safety requirements for concrete works which include: (a) Cast-in place (poured or pumped) concrete; (b) Reinforcement (reinforcing bar and fabric reinforcement); (c) Formwork (including associated falsework); and which are hereinafter collectively referred to as “Concrete Works”. (2) General safety requirements, covering for example Contractor’s Equipment including stone crushing plants and screening equipment, concrete batching plants, Temporary Works and other related matters, all which apply to the work in this Chapter, are described in other Chapters of JSSS. Additional particular requirements are contained in this Chapter.

described in other Chapters of JSSS. Additional particular requirements are contained in this Chapter. 9.1.2. Safety Plan and Instructions to Workers ~~(1) Prepare a safety plan describing the safety requirements for Concrete Works and inform all relevant Contractor's Personnel of the content and requirements.~~ Prepare a safety plan describing the safety requirements for Concrete Works and inform all workers engaging in the Concrete Works of the content and requirements. Such a safety plan shall pay due care to the workers' health matters (e.g. back injury) in relation to handling of reinforcement, formwork panels or other heavy stuff, and include necessary preventive measures (e.g. using appropriate Contractor's Equipment, assigning sufficient number ~~ow~~ of workers) JC1: all relevant personnel では定かではないので all workers engaging in the Concrete Works に。 Isn't "all relevant personnel" clearly understood? "all workers engaging in the Concrete Works" is more appropriate. NK1: Modified as commented. (2) Plan the execution of all Concrete Works including handling of reinforcement and formwork panels by using Contractor's Equipment and/or sufficient numbers of workers so that overloading and consequent back injury and other injury is avoided.	described in other Chapters of JSSS. Additional particular requirements are contained in this Chapter. 9.1.2 Safety Plan and Instructions to Workers Prepare a Safety Plan describing the safety requirements for Concrete Works and inform all workers engaged in the Concrete Works of the content and requirements. The Safety Plan shall pay due care to the workers' health matters (e.g. back injury) in relation to handling of reinforcement, formwork panels or other heavy items, and include necessary preventive measures (e.g. using appropriate Contractor's Equipment, assigning sufficient number of workers). *Revised as requested; edited*	9.1.2 Safety Plan and Instructions to Workers Prepare a Safety Plan describing the safety requirements for Concrete Works and inform all workers engaged in the Concrete Works of the content and requirements. The Safety Plan shall pay due care to the workers' health matters (e.g. back injury) in relation to handling of reinforcement, formwork panels or other heavy items, and include necessary preventive measures (e.g. using appropriate Contractor's Equipment, assigning sufficient number of workers).
9.2. PARTICULAR SAFETY MEASURES FOR ~~INSITU~~ CAST-IN-PLACE CONCRETE WORK The following safety requirements are additional to the general requirements described in other Chapters. 9.2.1. Safety Measures at Planning Stage JC1: 第三者に剥離剤がかかる可能性があるような場合は、その剥離剤は無害なものでなくてはならない、といったことが書かれている MTR 9.7 項 Release Agent (6)を規定すべき？ It is suggested to stipulate "When release agent may splash on third parties, such agent shall be harmless one to human" such as specified in MTR 9.7 [Release Agent] (6)? NK: 剥離剤は、GC 1.1.5.2 で定義の Goods の一つであり、これが第 3 者へ掛かる被害防止は、JSSS の 2.6 FALLING OBJECTS の 2.6.1.General の規定で網羅されると考える。この特別な措置は規定しないこととする。 Release Agent is one of Goods defined in GC 1.1.5.2 and measures for such splash on the third parties is specified in JSSS, 2.6 FALLING OBJECTS, 2.6.1.General Therefore, it is not appropriate to stipulate too much in details. Leave as it is. (1) The Contractor shall plan all concrete work so that it can be executed in a safe and methodical manner. (2) The Contractor shall plan the method of ~~insitu~~ cast-in-place concrete placement and carry out the design and construction of formwork and falsework to take account of uneven and excessive impact force and different or asymmetrical loads, thicknesses and pressures in certain areas during concrete placement to avoid ~~any~~ deformation beyond allowable ~~construction~~ tolerances specified in the Contract damage or collapse of formwork or falsework and show all details in the Method Statement and Safety Plan. JC1: deleted and added.	**9.2 PARTICULAR SAFETY MEASURES FOR CAST-IN PLACE CONCRETE WORK** The following safety requirements are additional to the general requirements described in other Chapters. 9.2.1 Safety Measures at Planning Stage (1) The Contractor shall plan all Concrete Works so that they are executed in a safe and methodical manner. (2) The Contractor shall plan the method of cast-in place concrete placement and carry out the design and construction of formwork and falsework to take account of uneven and excessive impact force and different or asymmetrical loads, thicknesses and pressures in certain areas during concrete placement to avoid deformation beyond allowable tolerances specified in the Contract. any damage or collapse of formwork or falsework and show all details in the Method Statement and Safety Plan. *Revised as requested; and edited. If this adjustment remains (which I do not recommend) "Contract" could be changed to "Particular Safety Specification" but this is still not correct.* *I do not agree with or recommend this change. It is not correct and not good practice to mention "allowable" tolerances for formwork and falsework deformation in this manner.* *Please note that the "tolerances" are usually specified for the finished permanent works (i.e. the concrete) dimensions, not the tolerances in the formwork and falsework during concrete pouring.* *The falsework is temporary work and therefore 100% contractor design responsibility, he also selects the formwork and falsework materials and designs*	**9.2 PARTICULAR SAFETY MEASURES FOR CAST-IN PLACE CONCRETE WORK** The following safety requirements are additional to the general requirements described in other Chapters. 9.2.1 Safety Measures at Planning Stage (1) The Contractor shall plan all Concrete Works so that they are executed in a safe and methodical manner. (2) The Contractor shall plan the method of cast-in place concrete placement and carry out the design and construction of formwork and falsework to take account of uneven and excessive impact force and different or asymmetrical loads, thicknesses and pressures in certain areas during concrete placement to avoid deformation beyond allowable tolerances specified in the Contract, any damage or collapse of formwork or falsework and show all details in the Method Statement and Safety Plan. (3) The Contractor shall provide PPE such as rubber gloves, face masks and goggles to the workers when spraying concrete form release agents to prevent chemical injury, and where there is a possibility that release agent may splash on the third parties, take measures such as establishing exclusion zone with temporary barriers and locate Spotters to prevent those persons from entering the area.

JC2: 飛来・落下の項で主として想定しているのは、固形物による衝撃であり、剥離剤による皮膚の炎症等の化学的被害ではありません。追記願います。
The above is measures to avoid injuries by falling objects (solid ones) but not chemical injuries on skins or other parts of body by concrete form release agent. Please specify regarding prevention of damage due to use of release agent.

NK: 作業員及び第三者に対する安全措置について右(3)のように追加します。
コンクリート剥離剤を使用するときは、作業員に保護眼鏡、ゴム手袋等の個人用保護具を使用しなければならない。第三者に剥離剤がかかる可能性がある場合には、剥離剤の飛散を防ぐ対策を講じるとともに、必要に応じて立入禁止区域を設定し誘導員を配置しなければならない。
A new clause (3) is added to specify measures for workers and the third parties when using concrete form release agents.

(3) The Contractor shall provide PPE such as rubber gloves, face masks and goggles to the workers when spraying concrete form release agents to prevent chemical injury, and where there is a possibility that release agent may splash on the third parties, take measures such as establishing exclusion zone with temporary barriers and locate Spotters to prevent those person from entering the area.

9.2.2. Safety Measures ~~during~~ for Concrete Placement

JC1: revised.

The Contractor shall:

(1) Designate concrete placement works (including all pumping and hoisting of concrete) as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) Inspect all reinforcement, formwork and falsework before and during concrete placement. If any defect is discovered, stop the placement works and evacuate the workers immediately, carry out repairs and reinspect before resuming.

JC1: 鉄筋を見てもわからないのではないか。除外。
型枠全体が崩壊することがないようにプランニングされていることが前提なので、evacuation に関する記載は不要。その代わりに追加の支保材をスタンバイさせ、型枠の局所的な変形の際には補強するという規定を(3)に追記してください。
It may be able to find any defect by the inspection of reinforcement. It is assumed that the entire formwork is planned so as not to collapse entirely, so it is not necessary to specify about evacuation. In stead of this phrases, please add a provision to (3) that additional materials for false works shall be on standby and used for reinforcing formworks in case of local deformation of the formwork.

NK: 鉄筋の結束や支持が十分に行われない場等があることから、削除は不要と考えます。
ベトナム国のカントー橋のコンクリート打設作業中の事故は、型枠支保工、型枠、鉄筋の全体が崩壊した事故です。崩壊しないようにプランニングされていても、このような事故が発生しないように、打設前、及び打設中の点検し、不備がある場合は万一の重大事故のリスクを想定し、コンクリート打設の中止、作業員の撤去を行うべきと考えます。
そのため、本(1)は原文通りとすることを提案します。追加し補材の準備は(3)に追記します。
We consider the deletion of reinforcement is not necessary because there are sometimes improper fixing and supporting of re-bars.
The collapse accident of Canto bridge in Vietnam occurred during concrete placing.

these temporary structures. He also chooses and controls the volumes, rates and methods of pouring so he is the only party that can design the formwork and falsework and decide if it is structurally capable of supporting his work.

Only the Contractor can decide what (if any) tolerances shall be included in his formwork and falsework design and usually his design should allow for deformation so that the finished concrete dimensions are correct.

(3) The Contractor shall provide PPE such as rubber gloves, face masks and goggles to the workers when spraying concrete form release agents to prevent chemical injury, and where there is a possibility that release agent may splash on the third parties, take measures such as establishing exclusion zone with temporary barriers and locate Spotters to prevent those persons from entering the area.

Revised as requested; edited.

However please note that this would be better included in measures for placement not measures at planning stage. I had also recommended protective footwear (rubber boots) as this is often necessary in developing countries.

9.2.2. Safety Measures for Concrete Placement

The Contractor shall:

(1) Designate concrete placement works (including all pumping and hoisting of concrete) as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) Inspect all reinforcement, formwork and falsework before and during concrete placement. If any defect is discovered, stop the placement works and evacuate the workers immediately, carry out repairs and reinspect before resuming.

~~(3) Place the concrete in exact accordance with the Method Statement and avoid uneven and excessive impact force and different or asymmetrical thicknesses and pressures in certain areas during concrete placement to avoid any deformation, damage or collapse of formwork or falsework.~~

(4) Place the concrete in accordance with the Method Statement and avoid uneven and excessive impact force and different or asymmetrical thicknesses and pressures in certain areas during concrete placement Additional materials shall be stored at the concrete placing site for use to reinforce falseworks in case of occurrence of their local deformation.

I have inserted your alternative clause above but I must state that I do not agree with it. This is a very important safety clause that should include very clear requirements and it should demand the contractor's total compliance.

The concrete pouring should be in "exact" accordance with the MS otherwise formwork and falsework design and construction (see 9.2.1 (2)) is wrong and the formwork and falsework could well fail. The use of the word "exact" is intentional to emphasise this.

The further deleted words change the original meaning and reduce the effectiveness.

The additional words, make it apparent that deformation is acceptable (which it isn't) and that additional "material" (whatever this may mean) is enough to

9.2.2. Safety Measures for Concrete Placement

The Contractor shall:

(1) Designate concrete placement works (including all pumping and hoisting of concrete) as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) Inspect all reinforcement, formwork and falsework before and during concrete placement. If any defect is discovered, stop the placement works and evacuate the workers immediately, carry out repairs and reinspect before resuming.

(3) Place the concrete in accordance with the Method Statement and avoid uneven and excessive impact force and different or asymmetrical thicknesses and pressures in certain areas during concrete placement Additional materials shall be stored at the concrete placing site for use to reinforce falseworks in case of occurrence of their local deformation.

The whole of falseworks, form works and reinforcement collapsed in the accident. Such accident occurred though planning was made to avoid collapse accident. In order to avoid such accident, inspection before and during concrete placing shall be made and specified.
Therefore, (2) is left as it is. Addition to (3) will be made.

(3) Place the concrete in ~~exact~~ accordance with the Method Statement and avoid uneven and excessive impact force and different or asymmetrical thicknesses and pressures in certain areas during concrete placement ~~to avoid any deformation, damage or collapse of formwork or falsework~~. ~~Some~~ Additional materials ~~for falseworks~~ shall be stored at the concrete placing site for use to reinforce falseworks in case of occurrence of their local deformation.

JC1: deleted and added as commented to (1).
追加の支保材をスタンバイさせ、型枠の局所的な変形の際には補強するという規定を(3)に追記してください。
Added as commented in (2), please add to (3).

JC3: 普通単に in accordance with といっており、ここだけ exact というのもおかしい。削除する。
In other places, the phrase of "in accordance with" is used, not "in exact accordance with". Please delete "exact".

NK: "exact" is deleted. Some deletion and change have ben made by JICA as right.

JC4: JC revised.

~~(4) The Contractor shall be aware of the following common hazards and shall take all necessary measures to avoid the risk of any consequential accident, injury or death:~~

~~(a) Impalement by projecting and unguarded reinforcement:~~

~~The Contractor shall protect all exposed ends by enclosing in protective caps and/or by bending reinforcement bars so that exposed ends are no longer upright and present no danger; and~~

~~(b) Impact and entanglement by materials or Contractor's Equipment:~~

~~The Contractor shall take care in material handling and use of Contractor's Equipment including the use of lockout/tagout procedures.~~

~~(c) Exposure of silica dust and Portland cement:~~

~~If prolonged and unavoidable exposure can be anticipated, the Contractor shall ensure that workers are provided with respirators and masks in accordance with JSSS 2.1[WORK ENVIRONMENT] [2.1.1 Hazardous Substances].~~

~~(5) The Contractor shall provide PPE such as safety helmets, work clothing, waterproof gloves, rubber boots, protective eye and face equipment as required.~~

JC1: common hazards というわりには列挙されている事象が特異な事象に限定されているように思います。(a)は 9.3.2 に既に入っています。(b)、(c)は削除してください。
特に(c)は fresh (wet) concrete の打設時の規定として適切ではないです。
These clauses seem special requirements for special issues. (a) is specified in 9.3.2. Please delete (b) and (c).
It is not appropriate as requirement for placing of fresh (wet) concrete.

NK: Deleted.

solve the problem (which it is not). If further temporary props might be required, this does not give confidence in the adequacy of a contractor's design.

Please also refer to my notes against 9.2.1 (2) above.

~~(5) The Contractor shall be aware of the following common hazards and shall take all necessary measures to avoid the risk of any consequential accident, injury or death:~~

~~(a) Impalement by projecting and unguarded reinforcement:~~

~~The Contractor shall protect all exposed ends by enclosing in protective caps and/or by bending reinforcement bars so that exposed ends are no longer upright and present no danger; and~~

~~(b) Impact and entanglement by materials or Contractor's Equipment:~~

~~The Contractor shall take care in material handling and use of Contractor's Equipment including the use of lockout/tagout procedures.~~

~~(c) Exposure of silica dust and Portland cement:~~

~~If prolonged and unavoidable exposure can be anticipated, the Contractor shall ensure that workers are provided with respirators and masks in accordance with JSSS 2.1[WORK ENVIRONMENT] [2.1.1 Hazardous Substances].~~

I have deleted the above as you have instructed.

~~The Contractor shall provide PPE such as safety helmets, work clothing, waterproof gloves, rubber boots, protective eye and face equipment as required.~~

I have deleted the above as you have instructed. However, surely this is where your added 9.2.1 (3) should be inserted?

9.2.3. Safety Measures for ~~Placement by~~ Concrete Pumping

JC1: 意味が分からない記述が多いです。具体的には幾つか例示しておきますので（コメント部分）ご参照ください。そのうえで、BS 8476:2007 (購入済み?) Code of practice for the safe use of concrete pumps を参照されながら必要項目を組み立ててください。
There are many statements that are hard to understand in this section. Please see those shown for examples in comments. Some practical examples to be Please reconstruct this section referring to BS 8467:2007 [Code of practice for the safe use of concrete pumps.

NK: BS 8407:2007 was purchased. Review and addition referring to the BS are made as below.

The Contractor shall take the following safety measures for delivery of ~~insitu~~ cast-in-place concrete with the use of concrete pumps:

(1) Inspect the condition of concrete pump delivery pipes, end hoses and all connections, ensure that they are free from defects and blockage, check that all joints and connections are secure and free from leakage before and during concrete placement works. ~~If any defect is discovered, stop the placement works and evacuate the workers immediately. Carry out repairs and reinspect before commencing or resuming work.~~

JC5: The latter half of clause (1) is deleted by JICA.

(2) Ensure that all delivery pipes, end hoses and other system components are all correctly pressure rated and capable of withstanding the maximum pump pressure.

~~(3) Comply with the requirements of JSSS Chapter 3 [*Existing Underground, Concealed and Overhead Services*] and:~~

(3) Maintain a safe separation distance between the delivery pipe, end hose and boom and any existing Overhead Services as required by JSSS Chapter 3 [*Existing Underground, Concealed and Overhead Services*], Table 3.2.1: Safe Separation Distances.

(4) Maintain a safe separation distance from any obstructions (Contractor's Equipment, buildings, etc.) and avoid any risk of hitting or touching any obstructions with the pumping equipment, delivery pipes, end hoses or boom;

~~(a) Maintain a safe separation distance from any obstructions (Contractor's Equipment, buildings, etc.) and avoid any risk of hitting or touching any obstructions with the pumping equipment, delivery pipes, end hoses or boom;~~

JC1: 具体的にどのようなものでしょうか？
What does mean the word "obstruction" to be specific?

NK: The "obstruction" means those items such as Contractor's Equipment, buildings, etc. which may be hit by the pumping equipment.
Added "(Contractor's Equipment,, buildings, etc.)".

~~(b) Maintain a safe separation distance between the delivery pipe, end hose and boom and any existing Overhead Services as required by JSSS Chapter 3 [*Existing Underground, Concealed and Overhead Services*], Table 3.2.1: Safe Separation Distances;~~

JC6: この話は 3 章とは関係ないので独立させました。また、(b)は削除。
The sub-clause (a) is irrelevant to Chapter 3. Thus (a) becomes (3) as independent clause and sub-clause (b) is deleted.

9.2.3. Safety Measures for Placement by Pumping

The Contractor shall take the following safety measures for delivery of cast-in place concrete with the use of concrete pumps:

~~(1)~~ Inspect the condition of concrete pump delivery pipes, end hoses and all connections, ensure that they are free from defects and blockage, check that all joints and connections are secure and free from leakage before and during concrete placement works. ~~If any defect is discovered, stop the placement works and evacuate the workers immediately. Carry out repairs and reinspect before commencing or resuming work.~~

I have deleted the above as you have instructed.

(2) Ensure that all delivery pipes, end hoses and other system components are all correctly pressure rated and capable of withstanding the maximum pump pressure.

(3) Maintain a safe separation distance between the delivery pipe, end hose and boom and any existing Overhead Services as required by JSSS Chapter 3 [*Existing Underground, Concealed and Overhead Services*], Table 3.2.1: Safe Separation Distances.

(4) Maintain a safe separation distance from any obstructions (Contractor's Equipment, buildings, etc.) and avoid any risk of hitting or touching any obstructions with the pumping equipment, delivery pipes, end hoses or boom;

I have reversed these items as you have instructed and added the minor wording as shown.

(5) Check the ground condition, ensure a firm, stable and horizontal working base at all times and position pumping equipment and ready-mixed concrete trucks at a safe distance from the edge of any excavations, drop or slope to protect against any slippage or fall of equipment and ready-mixed concrete trucks or collapse of ground.

(6) Fully extend outriggers and ensure stability of pumping equipment and ready-mixed concrete trucks at all times.

(7) Arrange proper communications and signals before starting the placement between workers, Spotters and operators of equipment and ready-mixed concrete trucks and ensure there is a Spotter at the point of placement.

(8) Never allow workers to stand between ready-mixed concrete trucks and pumps when ready-mixed concrete trucks are reversing.

(9) Ensure that workers are out of the path of the boom when moving the boom.

(10) If a blockage or clogging occurs inside the pipeline during the pour, stop pumping immediately and instruct workers to move to a safe position before attempting to remove the blockage or clogging. The pipeline shall be opened after releasing the pressure inside in accordance with the predetermined procedure.

Revised as requested; and edited.

(11) Ensure that hoppers and chutes are securely fixed and that workers are aware of the method of operation and safe use.

(12) Ensure that the delivery pipe and hose at the end of the concreting

9.2.3. Safety Measures for Placement by Pumping

The Contractor shall take the following safety measures for delivery of cast-in place concrete with the use of concrete pumps:

(1) Inspect the condition of concrete pump delivery pipes, end hoses and all connections, ensure that they are free from defects and blockage, check that all joints and connections are secure and free from leakage before and during concrete placement works.

(2) Ensure that all delivery pipes, end hoses and other system components are all correctly pressure rated and capable of withstanding the maximum pump pressure.

(3) Maintain a safe separation distance between the delivery pipe, end hose and boom and any existing Overhead Services as required by JSSS Chapter 3 [*Existing Underground, Concealed and Overhead Services*], Table 3.2.1: Safe Separation Distances.

(4) Maintain a safe separation distance from any obstructions (Contractor's Equipment, buildings, etc.) and avoid any risk of hitting or touching any obstructions with the pumping equipment, delivery pipes, end hoses or boom;

(5) Check the ground condition, ensure a firm, stable and horizontal working base at all times and position pumping equipment and ready-mixed concrete trucks at a safe distance from the edge of any excavations, drop or slope to protect against any slippage or fall of equipment and ready-mixed concrete trucks or collapse of ground.

(6) Fully extend outriggers and ensure stability of pumping equipment and ready-mixed concrete trucks at all times.

(7) Arrange proper communications and signals before starting the placement between workers, Spotters and operators of equipment and ready-mixed concrete trucks and ensure there is a Spotter at the point of placement.

(8) Never allow workers to stand between ready-mixed concrete trucks and pumps when ready-mixed concrete trucks are reversing.

(9) Ensure that workers are out of the path of the boom when moving the boom.

(10) If a blockage or clogging occurs inside the pipeline during the pour, stop pumping immediately and instruct workers to move to a safe position before attempting to remove the blockage or clogging. The pipeline shall be opened after releasing the pressure inside in accordance with the predetermined procedure.

(11) Ensure that hoppers and chutes are securely fixed and that workers are aware of the method of operation and safe use.

(12) Ensure that the delivery pipe and hose at the end of the concreting pump booms are securely connected so that they do not fall or become detached.

(13) Prohibit workers from working on the hopper screen of the concrete pump, remove obstructions and foreign materials in the hopper only after stopping the agitating blade and applying lockout/tagout procedures.

(14) Prohibit workers from entering in front of and below the outlet of

NK: Modified as JICA commented.

(5) Check the ground condition, ensure a firm, stable and horizontal working base at all times and position pumping equipment and ready-mixed concrete trucks at a safe distance from the edge of any excavations, drop or slope to protect against any slippage or fall of equipment and ready-mixed concrete trucks or collapse of ground.

(6) Fully extend outriggers and ensure stability of pumping equipment and ready-mixed concrete trucks at all times.

(7) Arrange proper communications and signals before starting the placement between workers, Spotters and operators of equipment and ~~mixer trucks~~ ready-mixed concrete trucks and ensure there is a Spotter at the point of placement.

(8) Never allow workers to stand between mixer trucks and pumps when and ~~mixer trucks~~ ready-mixed concrete trucks are reversing.

JC1: コンクリートミキサーのバックする時には Spotter を必ず配置することでは？
Doesn't this mean that a spotter shall be placed when a truck mixer is moving backward."?

NK: Placement of Spotters is stipulated in (6). The purpose of (7) is to instruct workers strictly not to stand or walk into the back of the truck when it is moving backward. Leaved as it is.

(9) ~~Take care to avoid the risk of any accident when moving the boom and~~ Ensure that workers are out of the path of the boom when moving the boom.

8. JC7: リスクは回避できないので、この部分の記述は不要です。上記のように変えてよいと思います。
As it is not possible to "avoid a risk", this part is not necessary. Please change the sentence as above.

NK: Changed as JICA commented.

~~(10) Never allow workers to open a pressurised line to prevent concrete from splashing out. Pressurised line shall be opened in accordance with predetermined procedure.~~

~~Never allow workers open a pressurised concrete delivery pipeline during delivery operation and at occurrence of a blockage in the pipeline to prevent concrete in the pipeline from splashing out. Pressurised line shall be opened after release the pressure inside the pipeline in accordance with predetermined procedure.~~

If a blockage or clogging occurs inside the pipeline during the pour, stop pumping immediately and instruct workers to move to a safe position before attempting to remove the blockage or clogging. The pipeline shall be opened after release the pressure inside in accordance with predetermined procedure.

JC: 英語では意味が取れない。
The meaning is hard to understand.

NK: 和文 9.6.1(7) (a) & (b)の規定です。
(9) is stipulated in Japanese version 9.6.1(7) (a) & (b).
BS 8407 stipulate as follows:
9.11 If a blockage occurs during the pour, the concrete pump operator should stop pumping immediately and instruct personnel to move to a safe position before attempting to remove the blockage.
9.12 If the concrete pump operator needs to open the delivery pipeline to clear a blockage, they should first release the pressure inside the delivery pipeline as

pump booms are securely connected so that they do not fall or become detached.

(13) Prohibit workers from working on the hopper screen of the concrete pump, remove obstructions and foreign materials in the hopper only after stopping the agitating blade and applying lockout/tagout procedures.

(14) Prohibit workers from entering in front of and below the outlet of concrete pump delivery pipes and end hoses to prevent workers being struck by pipes or loose and flailing hoses.

NK please check the above, I have edited but am not completely sure of the full meaning of your added clause.

concrete pump delivery pipes and end hoses to prevent workers being struck by pipes or loose and flailing hoses.

much as possible, e.g. by reversing the pumping action. They have to treat the delivery pipeline as being pressurized at all times. Appropriate and adequate hand and eye protection should be worn when opening the delivery pipeline.
Modified as right and will be reviewed by MD.

JC8: 異常が発生したときの対処は下に記載があるので、この部分は削除します。(9)は右のように変更します。
Measures for occurrence of an abnormality are stated below. Clause (9) is changed as right.
NK: Changed as JICA commented.

~~(11) When cleaning delivery pipes or end hoses with compressed air, ensure that a ball catcher is always provided to prevent the risk of any accident or injury for the ejected objects.~~

JC9: 今時はエアで洗浄をするということはないので、削除させていただきます。
Nowadays, cleaning with compressed air is not used. Thus, this clause is deleted.
NK: Deleted as JICA commented.

(12) Ensure that hoppers and chutes are securely fixed and that workers are aware method of operation and safe use.

(13) Ensure that the delivery pipe and hose at the end of the concreting pump booms are securely connected not to fall or become detached.

(14) Prohibit workers from working on the hopper screen of the concrete pump, remove obstructions and foreign materials in the hopper only after stopping the agitating blade and applying lockout/tagout procedures.

(15) Prohibit workers from entering places in front of and below the outlet of concrete pump delivery pipes and end hoses to avoid the workers to be hit by pipes and horse rampaged. *(Note: MD will review and edit this paragraph as NK added.)*

9.2.4. Safety Measures for ~~Concrete Mixer Trucks~~ Ready-mixed Concrete Trucks

JC1: concrete mixer truck の名称にやや違和感がある。concrete agitator truck と concrete mixer truck の2種類があることを認識したい。そのうえで delivery(transportation), discharge (to concrete pump)に係る安全を規定したい。別添の"Safety in ready mixed concrete industry"が参考になる。
It seems strange to use the term of concrete mixer truck. After acknowledged that there are two terms of concrete agitator truck and concrete mixer truck, safety measures shall be stipulated regarding delivery (transportation), discharge (to concrete pump). "Safety in ready mixed concrete industry" attached herewith can be referred to.
NK: BS8476 uses the following terms:
8.5 concrete-delivery lorries
9.8 ready-mixed concrete truck
9.27 concrete-mixer lorries
Used the term "ready-mixed concrete truck" as commented.

The Contractor shall take the following measures for the ready-mixed concrete ~~mixer~~ trucks in the transportation and delivery of ~~insitu~~ ready-mixed concrete.

(1) Ensure that drivers are aware of and take due account of the heavy load and high centre of gravity of loaded ~~mixer~~ ready-mixed concrete trucks during delivery and discharge to maintain safety and prevent overturning.

(2) Ensure that workers do not come into contact with and/or become

9.2.4 Safety Measures for Ready-Mixed Concrete Trucks

The Contractor shall take the following measures for the ready-mixed concrete trucks in the transportation and delivery of cast-in place concrete.

(1) Ensure that drivers are aware of and take due account of the heavy load and high centre of gravity of loaded ready-mixed concrete trucks during delivery and discharge to maintain safety and prevent overturning.

(2) Ensure that workers do not come into contact with and/or become entangled with the rotating drum and other moving parts of ready-mixed concrete trucks and that they are prevented from looking into the drum.

9.2.4 Safety Measures for Ready-Mixed Concrete Trucks

The Contractor shall take the following measures for the ready-mixed concrete trucks in the transportation and delivery of cast-in place concrete.

(1) Ensure that drivers are aware of and take due account of the heavy load and high centre of gravity of loaded ready-mixed concrete trucks during delivery and discharge to maintain safety and prevent overturning.

(2) Ensure that workers do not come into contact with and/or become entangled with the rotating drum and other moving parts of ready-mixed concrete trucks and that they are prevented from looking into the drum.

entangled with the rotating drum and other moving parts of ~~mixer~~ ready-mixed concrete ~~t~~trucks~~. and that they are prevented from looking into the drum~~.

JC10: JICA deleted.

9.2.5. Safety Measures for use of Concrete Buckets

The Contractor shall take the following measures when using concrete buckets for hoisting and placement of ~~insitu~~ concrete:

JC1: deleted

~~(1) Arrange proper communications and signals before starting the placement between workers, Spotters and operators of equipment and trucks and ensure there is a Spotter at the point of placement.~~

~~(2) Ensure that Hoisting and Rigging Equipment is suitable for the purpose and adequate for the load.~~

JC1: (1) & (2)はクレーン作業と同一ではないか？クレーン作業のところを引用する形で纏めてください。
Aren't clauses (1) & (2) same as provision for Crane Works? Please simplify it by referring to the relevant clause in Crane Works.

NK: As per the comment, clause (1) & (2) are combined and revised referring to 5.2.6. as below.

(1) Comply with JSSS 5.2.6.[General Safety Measures for Hoisting Operations] for selection of proper Hoisting Equipment and Rigging Equipment, arrangement of proper communication tool and signals, placement of Spotters;

(2) Ensure that the movable gate is locked before hoisting and is only operated by a skilled worker when it is opened for discharge.

(3) Take measures to stabilise the bucket during hoisting and prevent any uncontrolled swinging. Prohibit workers from pushing and pulling bracket except for minor adjustment of location of bucket for discharging concrete. *(Note: MD will review and edit this paragraph as NK added.)*

(4) Prevent persons or workers from entering the places below bucket.

(5) Discharge the concrete slowly and in a controlled manner to prevent the bucket from rebounding after discharge.

9.2.6. Safety Measures for use of Concrete Vibrators

The Contractor shall take the following measures when using concrete vibrators for compacting of ~~insitu~~ cast-in-place concrete:

(1) Take all necessary measures to prevent electric shock complying with JSSS 4.3.12 [Additional Requirements for Electric Powered Equipment]..

JC1: (1)は日本語版どおり、「4.5 を順守し、感電防止の措置を講じること」といった趣旨の規定にしてください。
Please modify this clause with the meaning in Japanese draft such as "take measures for preventing electric shock accidents complying with JSSS 4.5".

NK: added as commented.

(2) ~~Ensure that workers are provided with and that they wear anti-vibration gloves.~~ To prevent vibration damage to workers, provide workers with anti-vibration gloves and ensure that those gloves are properly used.

JC10: 振動による被害軽減にはなるけど、防止グローブだけつければ良いというもので

9.2.5 Safety Measures for use of Concrete Buckets

The Contractor shall take the following measures when using concrete buckets for hoisting and placement of cast-in place concrete:

(1) Comply with JSSS 5.2.6 [*General Safety Measures for Hoisting Operations*] for selection of proper Hoisting Equipment and Rigging Equipment, arrangement of proper communication tools, signals and placement of Spotters.

Revised as requested; and edited.

(2) Ensure that the movable gate is locked before hoisting and is only operated by a skilled worker when it is opened for discharge.

(3) Take measures to stabilise the bucket during hoisting and prevent any uncontrolled swinging. Prohibit workers from pushing and pulling bracket except for minor adjustment of location of the bucket for discharging concrete.

Revised as requested; and edited.

(4) Prevent any persons or workers from entering the places below bucket.

(5) Discharge the concrete slowly and in a controlled manner to prevent the bucket from rebounding after discharge.

9.2.6 Safety Measures for use of Concrete Vibrators

The Contractor shall take the following measures when using concrete vibrators for compacting of cast-in place concrete:

(1) Take all necessary measures to prevent electric shock, complying with JSSS 4.3.12 [*Additional Requirements for Electric Powered Equipment*].

Revised as requested

(2) To prevent vibration injury to workers, provide anti-vibration gloves and ensure that they are properly used.

Revised as requested; and edited.

9.2.5 Safety Measures for use of Concrete Buckets

The Contractor shall take the following measures when using concrete buckets for hoisting and placement of cast-in place concrete:

(1) Comply with JSSS 5.2.6 [*General Safety Measures for Hoisting Operations*] for selection of proper Hoisting Equipment and Rigging Equipment, arrangement of proper communication tools, signals and placement of Spotters.

(2) Ensure that the movable gate is locked before hoisting and is only operated by a skilled worker when it is opened for discharge.

(3) Take measures to stabilise the bucket during hoisting and prevent any uncontrolled swinging. Prohibit workers from pushing and pulling bracket except for minor adjustment of location of the bucket for discharging concrete.

(4) Prevent any persons or workers from entering the places below bucket.

(5) Discharge the concrete slowly and in a controlled manner to prevent the bucket from rebounding after discharge.

9.2.6 Safety Measures for use of Concrete Vibrators

The Contractor shall take the following measures when using concrete vibrators for compacting of cast-in place concrete:

(1) Take all necessary measures to prevent electric shock, complying with JSSS 4.3.12 [*Additional Requirements for Electric Powered Equipment*].

(2) To prevent vibration injury to workers, provide anti-vibration gloves and ensure that they are properly used.

はないので「振動による健康被害を予防するため、」を一言入れた方が良いかも。 （騒音とかと類似）騒音被害（JSSS2.1.4 (2) と横並びで、振動被害防止のため、という言葉を入れました。 A phrase “To prevent vibration damage to workers” is inserted to coincide with JSSS 2.1.4 (2). NK: Modified as JICA commented.		
9.3. REINFORCEMENT 9.3.1 Safety Measures at Planning Stage The Contractor shall: (1) Prepare a Safety Plan, Method Statement and fixing and placing drawings of reinforcement describing the method of cutting, bending and fixing ~~and erection~~ and showing the types and positioning of supports, ties and bracing necessary to support and rigidly secure the reinforcement and to prevent any movement or collapse. JC1: BS での表現に合わせました。replaced with the expression in BS. NK: replaced with terms in BS 8000-2-2 Workmanship on building sites - Part 2: Code of practice for concrete work - Section 2.2 Sitework with in situ and precast concrete. (2) Inform all relevant workers of the content of the Safety Plan, Method Statement and assembly drawings. 9.3.2 Safety Measures at Fabrication and ~~Assembly~~ Fixing and Placing Stage JC1: changed. The Contractor shall take the following measures during cutting, bending, transporting and ~~assembling~~ fixing and placing of reinforcement: JC1: changed. (1) Cutting and Bending: (a) Designate the work as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*]; (b) Maintain the working area in a safe, organised, uncluttered and clean condition at all times, avoid excessive storage by retaining sufficient quantities of reinforcement for immediate use, locate equipment in known positions, prevent any fall or dropping of material, equipment and tools, remove offcuts to a separate area and ensure the area is safe and that the risk of workers falling or tripping is avoided; and (c) Maintain stored reinforcement material in a safe and secure manner ~~and ensure that there is no risk of~~ to prevent collapse or fall by providing adequate restraints. JC11: JICA modified. (2) Transporting: (a) Ensure that scaffolding and any other temporary structures on which reinforcement is to be temporarily placed is capable of supporting the load, ensure that the load is distributed safely and that is does not cause any obstruction to the passage of other workers;	**9.3 REINFORCEMENT** 9.3.1 Safety Measures at Planning Stage The Contractor shall: (1) Prepare a Safety Plan, Method Statement and fixing and placing drawings of reinforcement describing the method of cutting, bending and fixing and showing the types and positioning of supports, ties and bracing necessary to support and rigidly secure the reinforcement and to prevent any movement or collapse. (2) Inform all relevant workers of the content of the Safety Plan, Method Statement and assembly drawings. 9.3.2 Safety Measures at Fabrication and Fixing and Placing Stage The Contractor shall take the following measures during cutting, bending, transporting, fixing and placing of reinforcement: (1) Cutting and Bending: (a) Designate the work as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*]; (b) Maintain the working area in a safe, organised, uncluttered and clean condition at all times, avoid excessive storage by retaining sufficient quantities of reinforcement for immediate use, locate equipment in known positions, prevent any fall or dropping of material, equipment and tools, remove offcuts to a separate area and ensure the area is safe and that the risk of workers falling or tripping is avoided; and (c) Maintain stored reinforcement material in a safe and secure manner and prevent collapse or fall by providing adequate restraints. (2) Transporting: (a) Ensure that scaffolding and any other temporary structures on which reinforcement is to be temporarily placed is capable of supporting the load, ensure that the load is distributed safely and that is does not cause any obstruction to the passage of other workers; (b) Ensure that reinforcing bar is lifted and suspended horizontally to prevent any slippage during Hoisting Operations and also that it is bundled safely and securely tied to prevent any reinforcing bars from sliding out;	**9.3 REINFORCEMENT** 9.3.1 Safety Measures at Planning Stage The Contractor shall: (1) Prepare a Safety Plan, Method Statement and fixing and placing drawings of reinforcement describing the method of cutting, bending and fixing and showing the types and positioning of supports, ties and bracing necessary to support and rigidly secure the reinforcement and to prevent any movement or collapse. (2) Inform all relevant workers of the content of the Safety Plan, Method Statement and assembly drawings. 9.3.2 Safety Measures at Fabrication and Fixing and Placing Stage The Contractor shall take the following measures during cutting, bending, transporting, fixing and placing of reinforcement: (1) Cutting and Bending: (a) Designate the work as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*]; (b) Maintain the working area in a safe, organised, uncluttered and clean condition at all times, avoid excessive storage by retaining sufficient quantities of reinforcement for immediate use, locate equipment in known positions, prevent any fall or dropping of material, equipment and tools, remove offcuts to a separate area and ensure the area is safe and that the risk of workers falling or tripping is avoided; and (c) Maintain stored reinforcement material in a safe and secure manner and prevent collapse or fall by providing adequate restraints. (2) Transporting: (a) Ensure that scaffolding and any other temporary structures on which reinforcement is to be temporarily placed is capable of supporting the load, ensure that the load is distributed safely and that is does not cause any obstruction to the passage of other workers; (b) Ensure that reinforcing bar is lifted and suspended horizontally to prevent any slippage during Hoisting Operations and also that it is bundled safely and securely tied to prevent any reinforcing bars from sliding out;

(b) Ensure that reinforcing bar is lifted and suspended horizontally to prevent any slippage during Hoisting Operations and also that it is bundled safely and securely tied to prevent any reinforcing bars from sliding out;

In principle ~~suspend reinforcement~~ hoist the bundle of reinforcing bars keeping them horizontal and maintaining the balance by using two rigging slings ~~or wire ropes~~; and

JC1: changed.

JC12: 意味がわかりません。わかるように修正願います。
The meaning of this sentence is not clear. Please modify it to become more understandable.

NK: 上のように修正しました。 Modified as above.

(c) When transporting to the working location use flatbed trailers or truck, ensure that the trailer or truck is of sufficient length to avoid any overhang of reinforcing bars; ~~where exceptional lengths of reinforcement are being transported and overhang is unavoidable, ensure that the overhang complied with local regulations and provide appropriate warning signs and lighting to remove all risk of impact collision with other vehicles, persons and workers. When transporting to the working location by trailers, adjust length of reinforcement so as to respect the local regulation in terms of overhanging.~~ Provide appropriate warning signs and lighting on reinforcing bars if necessary in accordance with the local regulations to avoid collision with other vehicles, persons and workers.

JC13: トレーラーの長さを調整するのではなく、鉄筋の長さを調整するのだと思います。英語については適宜修正してください。
It wouldn't be right to adjust the length of trailer instead of length of reinforcing bars. Please modify the sub-clause.

NK: ODA の現場では、鉄筋は最大長 12m が一般的であり、これらの鉄筋を設計に合わせて切断します。請負者は残余が出ないように工夫して鉄筋を切断します。トレーラー長に合わせて鉄筋を切断することはないため、長さにあったトレーラーを調達することが運搬業者の責任と考えます。
日本の場合、次の規則があります。
セミトレーラ連結車の車両制限令の長さの特例
高速自動車国道 １６．５ｍ（積載する貨物が被けん引車の車体の前方又は後方にはみ出していないもの）
指定道路、その他の道路…１２ｍ （これを超える車両は、特殊車両通行許可が必要である。）
運搬に関しては交通規則に従うと規定することで良いと考えますので、右のように変更致します。
At ODA sites, re-bars are 12 m generally in longest. The Contractor cuts the re-bars following the design but not depending on the length of trailer. The Contractor shall select trailer to transport depending on the length of re-bars.
In Japan, trailers of 16.5 m without overhanging of goods can run highway and those of 12 m on public roads. It needs special permission on public roads in case longer than 12 m.
The (d) specify not to be overhang and following the traffic regulations as right.

(3) ~~Assembly~~ Fixing and Placing:

JC1: changed.

(a) Prepare proper temporary access to and support for the

In principle, hoist the bundle of reinforcing bars, keeping them horizontal and maintaining the balance by using two rigging slings; and

(c) When transporting to the working location use flatbed trailers or truck, ensure that the trailer or truck is of sufficient length to avoid any overhang of reinforcing bars and provide appropriate warning signs and lighting on reinforcing bars if necessary in accordance with the local regulations to avoid collision with other vehicles, persons and workers.

(3) Fixing and Placing:

(a) Prepare proper temporary access to and support for fixing and placing reinforcement in position;

(b) Prevent any risk of fall and also any distortion or weakening of reinforcement by prohibiting workers from standing, walking or climbing on such reinforcement and where necessary provide safe temporary boarded walkways for workers use;

(c) Ensure that fixing and placing is in exact accordance with the fixing and placing drawings and that the correct types and positioning of supports, ties and bracing is maintained to properly support and rigidly secure the reinforcement and prevent undue movement or collapse;

(d) When there is any danger of reinforcement falling or collapsing during fixing and placing in wind and rain, stop the fixing and placing work. After conditions improve, inspect the reinforcement and take measures to correct any abnormality before continuing with fixing and placing;

Your original draft used "assembly" but you have now changed this to "fixing and placing". I have therefore corrected the above accordingly

(e) Prohibit working concurrently at levels where any other worker is working underneath in accordance with JSSS 2.6.7 [*Working Above or Below Others*]; and

(f) Provide temporary protection caps to exposed ends of reinforcing bars to prevent injury to workers.

In principle, hoist the bundle of reinforcing bars, keeping them horizontal and maintaining the balance by using two rigging slings; and

(c) When transporting to the working location use flatbed trailers or truck, ensure that the trailer or truck is of sufficient length to avoid any overhang of reinforcing bars and provide appropriate warning signs and lighting on reinforcing bars if necessary in accordance with the local regulations to avoid collision with other vehicles, persons and workers.

(3) Fixing and Placing:

(a) Prepare proper temporary access to and support for fixing and placing reinforcement in position;

(b) Prevent any risk of fall and also any distortion or weakening of reinforcement by prohibiting workers from standing, walking or climbing on such reinforcement and where necessary provide safe temporary boarded walkways for workers use;

(c) Ensure that fixing and placing is in exact accordance with the fixing and placing drawings and that the correct types and positioning of supports, ties and bracing is maintained to properly support and rigidly secure the reinforcement and prevent undue movement or collapse;

(d) When there is any danger of reinforcement falling or collapsing during fixing and placing in wind and rain, stop the fixing and placing work. After conditions improve, inspect the reinforcement and take measures to correct any abnormality before continuing with fixing and placing;

(e) Prohibit working concurrently at levels where any other worker is working underneath in accordance with JSSS 2.6.7 [*Working Above or Below Others*]; and

(f) Provide temporary protection caps to exposed ends of reinforcing bars to prevent injury to workers.

assembly of reinforcement and for fixing the reinforcement in position; (b) Prevent any risk of fall and also any distortion or weakening of reinforcement by prohibiting workers from standing, walking or climbing on such reinforcement and where necessary provide safe temporary boarded walkways for workers use; (c) Ensure that assembly is in exact accordance with the assembly drawings and that the correct types and positioning of supports, ties and bracing is maintained to properly support and rigidly secure the reinforcement and prevent undue movement or collapse; (d) When there is ~~a risk~~ danger of the falling and collapsing of reinforcement under assembling by wind and rain, stop the assembly work. After strong wind and heavy rain, inspect the reinforcement under assembling and stop the assembling work when abnormality is found; *(Note: MD will review and edit this paragraph as NK added.)* JC14: 単数形の risk を使うかどうかも考えた方が良いかと It is better reconsider use of the word "a risk" in singular form. NK: JICA のコメントに従い右のように変更しました。 Changed as right in accordance with the suggestion by JICA To MD, please review this comment. (e) Prohibit working concurrently at levels where any other worker is working underneath in accordance with JSSS 2.6.7 [Working Above or Below Others]; and JC1: Non native の人間には"work at levels"が通じない可能性が高いので、work at levels を annex で定義語として規定してください。そのうえで、2.6.5(2.6.6.)に上下作業の規定があるため、それをリファーする形で規定してください。 There is possibility that readers might not understand "work at levels". Please define the term in Annex. In addition, stipulate to refer to JSSS 2.6.5.(2.6.6) NK: Modified and added. (f) Provide temporary protection caps to exposed ends of reinforcing bars to prevent injury to workers.		
9.4. FORMWORK (INCLUDING FALSEWORK) 9.4.1. General Any reference to "formwork" in this Section shall also be deemed to include reference to the associated falsework for that formwork. 9.4.2. Safety Measures at Planning Stage The Contractor shall: (1) Design the formwork and manage its provision, use and removal in accordance with JSSS 1.35 [*Design and Management of Temporary Works*] and the further requirements of JSSS Section 7.1 [*General Requirements of Temporary Works*]. (2) Prepare a Safety Plan, Method Statement and design drawings of formwork describing the method of fabrication, assembly, erection and removal and showing details of all materials, components, types and positioning of supports, ties and bracing necessary to create a rigid and secure temporary support structure for the concrete, reinforcement and workers and to prevent any movement	**9.4 FORMWORK (INCLUDING FALSEWORK)** 9.4.1 General Any reference to "formwork" in this Section shall also be deemed to include reference to the associated falsework for that formwork. 9.4.2 Safety Measures at Planning Stage The Contractor shall: (1) Design the formwork and manage its provision, use and removal in accordance with JSSS 1.35 [*Design and Management of Temporary Works*] and the further requirements of JSSS Section 7.1 [*General Requirements of Temporary Works*]. (2) Prepare a Safety Plan, Method Statement and design drawings of formwork describing the method of fabrication, assembly, erection and removal and showing details of all materials, components, types and positioning of supports, ties and bracing necessary to create a rigid and secure temporary support structure for the concrete, reinforcement and workers and to prevent any movement	**9.4 FORMWORK (INCLUDING FALSEWORK)** 9.4.1 General Any reference to "formwork" in this Section shall also be deemed to include reference to the associated falsework for that formwork. 9.4.2 Safety Measures at Planning Stage The Contractor shall: (1) Design the formwork and manage its provision, use and removal in accordance with JSSS 1.35 [*Design and Management of Temporary Works*] and the further requirements of JSSS Section 7.1 [*General Requirements of Temporary Works*]. (2) Prepare a Safety Plan, Method Statement and design drawings of formwork describing the method of fabrication, assembly, erection and removal and showing details of all materials, components, types and positioning of supports, ties and bracing necessary to create a rigid and secure temporary support structure for the concrete, reinforcement and workers and to prevent any movement

or collapse.

(3) Inform all relevant workers of the content of the Safety Plan, Method Statement and design drawings.

9.4.3. Safety Measures at Fabrication and Assembly Stage

The Contractor shall take the following measures during fabricating, transporting and assembling of formwork:

(1) Designate the work as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) Maintain the working area including storage area in a safe, organised, uncluttered and clean condition at all times, avoid excessive storage by retaining sufficient quantities of material for immediate use, locate equipment ~~in known positions,~~ at predetermined places, prevent any fall or dropping of material, equipment and tools, offcuts to a ~~separate~~ designated area ~~and ensure the area is safe and that the risk of workers falling or tripping is avoided~~

(3) When assembling and ~~dismantling~~ disassembling the formwork, prohibit the workers from entering the area subject to risk of being hit or struck by the panel which is suddenly moved by strong wind.

JC1: "in known positions"が分かりません。
This phrase "in known positions" is not understandable.

NK: It means that equipment should be placed at or moved to the predetermined places. Modified.

JC15: 解体のところに入っていた事項ですが、組み立ての時にも必要な事項なので、文章を修正の上、こちらに移しました。(項目 9.4.4 (2)を 9.4.3 に(3)として移動。)
The new clause (3) is moved from 9.4.3 (2) because this should include the common safety measures at assembling stage.

NK: コメントに従い、移動、修正しました。
Th e clause is moved and the sentence is modified as commented by JICA.

~~(3) Maintain stored formwork material in a safe and secure manner and ensure that there is no risk of collapse or fall by providing adequate restraints.~~

JC1: (2)、(3)は両方とも整理整頓に関する概念なので、統合してください。例えば working area including storage area など。
Clause (2) & (3) are both regarding to concept of organizing work area, thus, unify them one clause by stating "working area including storage area."

NK: As commented, added the phrase in (2) and delete (3).

~~(4) Ensure that the formwork is free from cracks, defects and deformation, Ensure that scaffolding and any other temporary structures on which formwork is to be temporarily placed is capable of supporting the load, ensure that and the load is distributed safely. and that is does not cause any obstruction to the passage of other workers.~~

(g) Ensure that the formwork is free from cracks, defects and deformation;

(h) Ensure that scaffolding and any other temporary structures on which formwork is to be temporarily placed is capable of

or collapse.

I assume that "assembly" is acceptable here.

(3) Inform all relevant workers of the content of the Safety Plan, Method Statement and design drawings.

9.4.3 Safety Measures at Fabrication and Assembly Stage

The Contractor shall take the following measures during fabricating, transporting and assembling of formwork:

(1) Designate the work as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) Maintain the working area and storage area in a safe, organised, uncluttered and clean condition at all times, avoid excessive storage by retaining sufficient quantities of material for immediate use, locate equipment in predetermined places, prevent any fall or dropping of material, equipment and tools, remove offcuts to a designated area.

Revised as requested; and edited.

~~(3) Maintain stored formwork material in a safe and secure manner and ensure that there is no risk of collapse or fall by providing adequate restraints.~~

(4) Ensure that the formwork is free from cracks, defects and deformation.

(5) Ensure that scaffolding and any other temporary structures on which formwork is to be temporarily placed is capable of supporting the load, that the load is distributed evenly and within the allowable stress of formwork.

Revised as requested; and edited.

(6) During any hoisting operations, ensure that all necessary measures are taken to prevent formwork being affected by wind and that any risk of collision and consequent injury and damage is avoided.

Revised as requested; and edited, however please note:

The addition of "largen sized formwork" is not necessary and has no meaning anyway, even medium or small (however size is defined) should also be considered.

It is not correct to include "system formwork" as an example because this is not an example. The requirement applies to all types of formwork which may be affected by wind including purpose made plywood panels for example

or collapse.

(3) Inform all relevant workers of the content of the Safety Plan, Method Statement and design drawings.

9.4.3 Safety Measures at Fabrication and Assembly Stage

The Contractor shall take the following measures during fabricating, transporting and assembling of formwork:

(1) Designate the work as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) Maintain the working area and storage area in a safe, organised, uncluttered and clean condition at all times, avoid excessive storage by retaining sufficient quantities of material for immediate use, locate equipment in predetermined places, prevent any fall or dropping of material, equipment and tools, remove offcuts to a designated area.

(3) Ensure that the formwork is free from cracks, defects and deformation.

(4) Ensure that scaffolding and any other temporary structures on which formwork is to be temporarily placed is capable of supporting the load, that the load is distributed evenly and within the allowable stress of formwork.

(5) During any hoisting operations, ensure that all necessary measures are taken to prevent formwork being affected by wind and that any risk of collision and consequent injury and damage is avoided.

supporting the load, and that the load is distributed evenly and within the allowable stress of formwork;

JC1: 鉄筋コンクリートを支保することが優先されるべきで、他作業員の通行を考慮することは2次的規定で、逆に通行禁止措置が必要になる。
Supporting the reinforcing concrete shall be given priority. The consideration of obstruction of passage of workers is secondary requirement. Therefore, deleted. Reversely, prohibition of passage is necessary.

NK: deleted as commented and modified to delete two "ensure".

JC16: Ensure that でつないでいく文が長くなるので、型枠に瑕疵がない、という部分を切り離しました。
As the sentence is too long, the part that formwork is free from defects is separated.

NK: コメントに従い、項目を 2 つに分割しました。
The clause is divided into two clauses as right (4) & (5).

(i) ~~Ensure that formwork is restrained during any Hoisting Operation to prevent being affected by wind and that any risk of collision and consequent injury and damage is avoided.~~ When hoisting operation is carried out for largen sized formwork panels such as system formwork, ensure that all necessary measures are taken to prevent being affected by wind and that any risk of collision and consequent injury and damage is avoided.

JC17: 強風がふいているときは型枠の資材のつり上げ作業をやめろというのが趣旨だと思います。ですので、Ensure that formwork is restrained というのは関係ないと思います。また、システム型枠(system formwork)に関連する事象として記載することを検討ください。
Hoisting of formwork must be stopped when strong wind is blowing. Therefore, restraining formwork is not relevant in this case.
Please consider to describe for a case of "System Formwork".

NK: 右の(6)ように、大型パネルの吊り上げ作業には全ての必要な対策をとることとの表現に修正することを提案します。
When hoisting operation is carried out for largen sized formwork panels such as system formwork, ensure that all necessary measures are taken to prevent being affected by wind and that any risk of collision and consequent injury and damage is avoided

9.4.4. Safety Measures during ~~Dismantling~~ Disassembling and Removal Stage

JC18: Dismantling は Disassembling に、他の箇所も同様に変えてください。
Please change the term "dismantle" to "disassemble" for other parts as well.

NK: コメントし従い変更しました。 Changed as commented.

To MD: Please review this change because I think the term "dismantle" seems correct word than "disassemble" for this 9.4.4.

(1) ~~Unless otherwise specified, ensure that formwork is only dismantled when so instructed or approved in writing by the HSO.~~ The formwork shall be ~~dismantled~~ disassembled in accordance with the relevant provision in the Contract.

JC1: Time for removal of falsework and formwork は specification に規定されているべきで、Engineer の確認があることが通常。従って HSO に関する明示的な記載は不要。
It is common practice to stipulate the time for removal of falsework and formwork requiring confirmation by the Engineer in the specification. It is not necessary to state about the HSO.

NK: As commented, the clause (1) is modified.

9.4.4 Safety Measures during Dismantling and Removal Stage

Please note that "dismantling" (as used in your original draft) is the correct word and in my opinion should not be changed. It is preferable in this sense to "disassembly".

(1) Ensure that formwork is only dismantled when so instructed or approved in writing by the HSO.

The above requirement is very important for safety purposes and I do not recommend its deletion or amendment. A principle cause of structural collapse is when formwork is dismantled too early. This is often done with no consideration of safety and no involvement of the HSO but is frequently a consequence of speeding-up the work when it is running late.

Also the effect of concrete quality on time of strength achievement should be considered.

The text as I have originally suggested is correct and I do not recommend that it be replaced with your suggestion "The formwork shall be disassembled in accordance with the relevant provision in the Contract". This reduces or even

9.4.4 Safety Measures during Dismantling and Removal Stage

(1) Ensure that formwork is only dismantled when so instructed or approved in writing by the HSO.

(2) After dismantling, stack formwork panels horizontally to avoid overturning due to strong wind or applied loadings; and

(3) Any protruding nails, wires, projecting members and splinters shall be removed or bent flat to avoid injury to workers and other persons.

~~(2) After dismantling, stack formwork panels horizontally to avoid overturning being affected by strong wind or other loads; and~~

~~(2) When the formwork panels are hoisted, prohibit the workers from entering the dangerous area to prevent the workers from being hit or struck by the panels which is suddenly moved by the strong wind.~~

JC19: 項目(2)は 9.4.3 (3) に移動。文章を組立ても含めように修正。
Clause (2) is moved to 9.4.3 as (3). The sentence is modified so as to include assembling.

(3) After ~~dismantling~~ disassembling, the form panels shall be stacked horizontally to avoid overturning; and

JC1: 日本語版 10.5 の(8)、(9)を纏めた規定のようですが、日本語原文から趣旨がずれているようです。
ついては、この(2)と(3)を統合させて、水平の仮置きおよび踏み抜き防止の趣旨となるように書き直してください。
Clause (2) seems to be a provision combined 10.5 (8) & (9) together, however the requirement is deviated from the original one.
Please express the requirement of placing the form materials horizontally and preventing accidents from protruding nails etc.by unifying (2) and (3).

NK: Clause 10.5 (8), (9) in Japanese version stipulate different matters each other. Thus, it is better to modify (2) and (3) reflecting the concept of Japanese relevant clauses.
Not only large formwork panels but also any form panels have risk to hit workers. Not specified for large panels.

MD will review these sentences.

(4) The protruding nails, wires, projecting members and splinters on the formwork ~~dismantled~~ disassembled shall be removed or bended to avoid injury to workers and other persons.

negates the meaning of the original text.

I am aware that technical specifications commonly describe period for curing of concrete and indicative or minimum periods before dismantling formwork but this is Temporary Works for which the responsibility rests with the contractor irrespective of what may be stated there. It is not a duty or obligation of the Employer or Engineer to advise or instruct.

(2) After dismantling, stack formwork panels horizontally to avoid overturning due to strong wind or applied loadings; and

I suggest the above change

(3) Any protruding nails, wires, projecting members and splinters shall be removed or bent flat to avoid injury to workers and other persons.

JSSS in English R3 for Issue 2（2020/4/29）

JC1&2: JICA comment Issue 1 & R2, NK1 &2: NK Comment 1 to Issue1 & R2

9. CONCRETE WORKS

9.1 GENERAL

9.1.1 Scope

(1) This Chapter specifies the safety requirements for Concrete Works which shall include:

(a) ~~Insitu~~ Cast-in-place (poured or pumped) concrete;

JC1: 8 章では Cast in place となっているので、統一してください。
The term “insitu” is not used in Chapter 8 but “cast-in-place”. It is necessary to determine which should be used.

NK: “Cast-in-place” is more commonly used. Replaced all insitu with cast-in-place in this Chapter.

(b) Reinforcement (reinforcing bar and fabric reinforcement);

(c) Formwork (including associated falsework);

and hereinafter collectively referred to as “Concrete Works”.

(2) General safety requirements, covering for example Contractor’s Equipment including stone crushing plants and screening equipment, concrete batching plants, Temporary Works and other related matters, all which apply to the work in this Chapter, are described in other Chapters of JSSS.

Additional particular requirements are contained in this Chapter.

9.1.2 Safety Plan and Instructions to Workers

~~(1) Prepare a safety plan describing the safety requirements for Concrete Works and inform all relevant Contractor’s Personnel of the content and requirements.~~

JSSS in English Issue 3 (2020/5/4 by MD) With comments by MD

MD Comments NK6/23: Comments

9. CONCRETE WORKS

9.1 GENERAL

9.1.1 Scope

(1) This Chapter specifies the safety requirements for concrete works which include:

(a) ~~In situ Concrete~~ Cast-in place (poured or pumped) concrete;

I have changed this throughout but please note that In-situ Concrete is an internationally accepted term and it is also defined in BS 6100 (in-situ concrete (01)6.4.20).

NK6/23: understood.

(b) Reinforcement (reinforcing bar and fabric reinforcement);

(c) Formwork (including associated falsework);

and which are hereinafter collectively referred to as “Concrete Works”.

(2) General safety requirements, covering for example Contractor’s Equipment including stone crushing plants and screening equipment, concrete batching plants, Temporary Works and other related matters, all which apply to the work in this Chapter, are described in other Chapters of JSSS.

Additional particular requirements are contained in this Chapter.

9.1.2 Safety Plan and Instructions to Workers

JSSS in English R4 for Issue 3 DFR on Issue 2 of 2020/4/22 (2020/6/24)

NK: Comment and Revision

9. CONCRETE WORKS

9.1 GENERAL

9.1.1 Scope

(1) This Chapter specifies the safety requirements for concrete works which include:

(a) Cast-in place (poured or pumped) concrete;

(b) Reinforcement (reinforcing bar and fabric reinforcement);

(c) Formwork (including associated falsework);

and which are hereinafter collectively referred to as “Concrete Works”.

(2) General safety requirements, covering for example Contractor’s Equipment including stone crushing plants and screening equipment, concrete batching plants, Temporary Works and other related matters, all which apply to the work in this Chapter, are described in other Chapters of JSSS.

Additional particular requirements are contained in this Chapter.

9.1.2 Safety Plan and Instructions to Workers

Prepare a safety plan describing the safety requirements for Concrete Works and inform all workers engaging in the Concrete Works of the content and requirements. Such a safety plan shall pay due care to the workers' health matters (e.g. back injury) in relation to handling of reinforcement, formwork panels or other heavy stuff, and include necessary preventive measures (e.g. using appropriate Contractor's Equipment, assigning sufficient number ~~ow~~ of workers) JC1: all relevant personnel では定かではないので all workers engaging in the Concrete Works に。 Isn't "all relevant personnel" clearly understood? "all workers engaging in the Concrete Works" is more appropriate. NK1: Modified as commented. (2) Plan the execution of all Concrete Works including handling of reinforcement and formwork panels by using Contractor's Equipment and/or sufficient numbers of workers so that overloading and consequent back injury and other injury is avoided.	Prepare a Safety Plan describing the safety requirements for Concrete Works and inform all workers engaged in the Concrete Works of the content and requirements. The Safety Plan shall pay due care to the workers' health matters (e.g. back injury) in relation to handling of reinforcement, formwork panels or other heavy items, and include necessary preventive measures (e.g. using appropriate Contractor's Equipment, assigning sufficient number of workers). *Revised as requested; edited.* NK6/23: confirmed the above and deletion of (2)..	Prepare a Safety Plan describing the safety requirements for Concrete Works and inform all workers engaged in the Concrete Works of the content and requirements. The Safety Plan shall pay due care to the workers' health matters (e.g. back injury) in relation to handling of reinforcement, formwork panels or other heavy items, and include necessary preventive measures (e.g. using appropriate Contractor's Equipment, assigning sufficient number of workers).
9.2 PARTICULAR SAFETY MEASURES FOR ~~INSITU~~ CAST-IN-PLACE CONCRETE WORK The following safety requirements are additional to the general requirements described in other Chapters. **9.2.1 Safety Measures at Planning Stage** JC1: 第三者に剥離剤がかかる可能性があるような場合は、その剥離剤は無害なものでなくてはならない、といったことが書かれている MTR 9.7 項 Release Agent (6)を規定すべき？ It is suggested to stipulate "When release agent may splash on third parties, such agent shall be harmless one to human" such as specified in MTR 9.7 [Release Agent] (6)? NK: 剥離剤は、GC 1.1.5.2 で定義の Goods の一つであり、これが第 3 者へ掛かる被害防止は、JSSS の 2.6 FALLING OBJECTS の 2.6.1.General の規定で網羅されると考える。この特別な措置は規定しないこととする。 Release Agent is one of Goods defined in GC 1.1.5.2 and measures for such splash on the third parties is specified in JSSS, 2.6 FALLING OBJECTS, 2.6.1.General Therefore, it is not appropriate to stipulate too much in details. Leave as it is. (1) The Contractor shall plan all concrete work so that it can be executed in a safe and methodical manner. (2) The Contractor shall plan the method of ~~insitu~~ cast-in-place concrete placement and carry out the design and construction of formwork and falsework to take account of uneven and excessive impact force and different or asymmetrical loads, thicknesses and pressures in certain areas during concrete placement to avoid ~~any~~ deformation beyond allowable ~~construction~~ tolerances specified in the Contract damage or collapse of formwork or falsework and show all details in the Method Statement and Safety Plan. JC1: deleted and added. JC2: 飛来・落下の項で主として想定しているのは、固形物による衝撃であり、剥離剤による皮膚の炎症等の化学的被害ではありません。追記願います。 The above is measures to avoid injuries by falling objects (solid ones) but not chemical injuries on skins or other parts of body by concrete form release agent. Please specify regarding prevention of damage due to use of release agent. NK: 作業員及び第三者に対する安全措置について右(3)のように追加します。	**9.2 PARTICULAR SAFETY MEASURES FOR CAST-IN PLACE CONCRETE WORK** The following safety requirements are additional to the general requirements described in other Chapters. **9.2.1 Safety Measures at Planning Stage** (1) The Contractor shall plan all Concrete Works so that they are executed in a safe and methodical manner. (2) The Contractor shall plan the method of cast-in place concrete placement and carry out the design and construction of formwork and falsework to take account of uneven and excessive impact force and different or asymmetrical loads, thicknesses and pressures in certain areas during concrete placement to avoid deformation beyond allowable tolerances specified in the Contract, any damage or collapse of formwork or falsework and show all details in the Method Statement and Safety Plan. *Revised as requested; and edited. If this adjustment remains (which I do not recommend) "Contract" could be changed to "Particular Safety Specification" but this is still not correct.* *I do not agree with or recommend this change. It is not correct and not good practice to mention "allowable" tolerances for formwork and falsework deformation in this manner.*	**9.2 PARTICULAR SAFETY MEASURES FOR CAST-IN PLACE CONCRETE WORK** The following safety requirements are additional to the general requirements described in other Chapters. **9.2.1 Safety Measures at Planning Stage** (1) The Contractor shall plan all Concrete Works so that they are executed in a safe and methodical manner. (2) The Contractor shall plan the method of cast-in place concrete placement and carry out the design and construction of formwork and falsework to take account of uneven and excessive impact force and different or asymmetrical loads, thicknesses and pressures in certain areas during concrete placement to avoid deformation beyond ~~allowable~~ tolerances of concrete structure specified in the Contract, any damage or collapse of formwork or falsework and show all details in the Method Statement and Safety Plan.

コンクリート剥離剤を使用するときは、作業員に保護眼鏡、ゴム手袋等の個人用保護具を使用しなければならない。第三者に剥離剤がかかる可能性がある場合には、剥離剤の飛散を防ぐ対策を講じるとともに、必要に応じて立入禁止区域を設定し誘導員を配置しなければならない。
A new clause (3) is added to specify measures for workers and the third parties when using concrete form release agents.

(3) The Contractor shall provide PPE such as rubber gloves, face masks and goggles to the workers when spraying concrete form release agents to prevent chemical injury, and where there is a possibility that release agent may splash on the third parties, take measures such as establishing exclusion zone with temporary barriers and locate Spotters to prevent those person from entering the area.

9.2.2 Safety Measures ~~during~~ for Concrete Placement

JC1: revised.

The Contractor shall:

(1) Designate concrete placement works (including all pumping and hoisting of concrete) as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) Inspect all reinforcement, formwork and falsework before and during concrete placement. If any defect is discovered, stop the placement works and evacuate the workers immediately, carry out

Please note that the "tolerances" are usually specified for the finished permanent works (i.e. the concrete) dimensions, not the tolerances in the formwork and falsework during concrete pouring.

The falsework is temporary work and therefore 100% contractor design responsibility, he also selects the formwork and falsework materials and designs these temporary structures. He also chooses and controls the volumes, rates and methods of pouring so he is the only party that can design the formwork and falsework and decide if it is structurally capable of supporting his work.

Only the Contractor can decide what (if any) tolerances shall be included in his formwork and falsework design and usually his design should allow for deformation so that the finished concrete dimensions are correct.

NK6/23: understood.
JICA want to specify to design form and false works to secure the tolerances of concrete structures specified in the Contract.
I proposed to revise it as shown right/above.

The example of Specification regarding concrete tolerance is shown below for discussion with JICA.

3.8.2. Dimensions
The tolerances of finished dimensions of concrete structures shall be as shown in following tables.

Item		*Tolerance (mm unless shown otherwise)*
(i) Footings		
Plan dimensions	*Formed footings and Plan dimensions pile caps*	*-15 to +50*
	Unformed footings (when approved by the Superintendent)	*0 to +150*
Thickness	*< 300 mm*	*-5 to +25*
	> 300 mm	*-10 to +50*
Top of footing or pile cap reduced level		*-25 to +25*

(3) The Contractor shall provide PPE such as rubber gloves, face masks and goggles to the workers when spraying concrete form release agents to prevent chemical injury, and where there is a possibility that release agent may splash on the third parties, take measures such as establishing exclusion zone with temporary barriers and locate Spotters to prevent those persons from entering the area.

Revised as requested; edited.

However please note that this would be better included in measures for placement not measures at planning stage. I had also recommended protective footwear (rubber boots) as this is often necessary in developing countries.

NK6/23: confirmed and noted.

9.2.2 Safety Measures for Concrete Placement

The Contractor shall:

(1) Designate concrete placement works (including all pumping and hoisting of concrete) as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) Inspect all reinforcement, formwork and falsework before and during concrete placement. If any defect is discovered, stop the placement works and evacuate the workers immediately, carry out

(3) The Contractor shall provide PPE such as rubber gloves, face masks and goggles to the workers when spraying concrete form release agents to prevent chemical injury, and where there is a possibility that release agent may splash on the third parties, take measures such as establishing exclusion zone with temporary barriers and locate Spotters to prevent those persons from entering the area.

9.2.2 Safety Measures for Concrete Placement

The Contractor shall:

(1) Designate concrete placement works (including all pumping and hoisting of concrete) as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) Inspect all reinforcement, formwork and falsework before and during concrete placement. If any defect is discovered, stop the placement works and evacuate the workers immediately, carry out repairs and reinspect before resuming.

repairs and reinspect before resuming.

JC1: 鉄筋を見てもわからないのではないか。除外。

型枠全体が崩壊することがないようにプランニングされていることが前提なので、evacuation に関する記載は不要。その代わりに追加の支保材をスタンバイさせ、型枠の局所的な変形の際には補強するという規定を(3)に追記してください。

It may be able to find any defect by the inspection of reinforcement. It is assumed that the entire formwork is planned so as not to collapse entirely, so it is not necessary to specify about evacuation. In stead of this phrases, please add a provision to (3) that additional materials for false works shall be on standby and used for reinforcing formworks in case of local deformation of the formwork.

NK: 鉄筋の結束や支持が十分に行われない場等があることから、削除は不要と考えます。
ベトナム国のカントー橋のコンクリート打設作業中の事故は、型枠支保工、型枠、鉄筋の全体が崩壊した事故です。崩壊しないようにプランニングされていても、このような事故が発生しないように、打設前、及び打設中の点検し、不備がある場合は万一の重大事故のリスクを想定し、コンクリート打設の中止、作業員の撤去を行うべきと考えます。
そのため、本(1)は原文通りとすることを提案します。追加し補材の準備は(3)に追記します。
We consider the deletion of reinforcement is not necessary because there are sometimes improper fixing and supporting of re-bars.
The collapse accident of Canto bridge in Vietnam occurred during concrete placing. The whole of falseworks, form works and reinforcement collapsed in the accident. Such accident occurred though planning was made to avoid collapse accident. In order to avoid such accident, inspection before and during concrete placing shall be made and specified.
Therefore, (2) is left as it is. Addition to (3) will be made.

(3) Place the concrete in ~~exact~~ accordance with the Method Statement and avoid uneven and excessive impact force and different or asymmetrical thicknesses and pressures in certain areas during concrete placement ~~to avoid any deformation, damage or collapse of formwork or falsework~~. ~~Some~~ Additional materials ~~for falseworks~~ shall be stored at the concrete placing site for use to reinforce falseworks in case of occurrence of their local deformation.

JC1: deleted and added as commented to (1).
追加の支保材をスタンバイさせ、型枠の局所的な変形の際には補強するという規定を(3)に追記してください。
Added as commented in (2), please add to (3).

JC3: 普通単に in accordance with といっており、ここだけ exact というのもおかしい。削除する。
In other places, the phrase of “in accordance with” is used, not “in exact accordance with”. Please delete “exact”.

NK: “exact” is deleted. Some deletion and change have been made by JICA as right.

JC4: JC revised.

~~(4) The Contractor shall be aware of the following common hazards~~

repairs and reinspect before resuming.

~~(3) Place the concrete in exact accordance with the Method Statement and avoid uneven and excessive impact force and different or asymmetrical thicknesses and pressures in certain areas during concrete placement to avoid any deformation, damage or collapse of formwork or falsework.~~

(3) Place the concrete in accordance with the Method Statement and avoid uneven and excessive impact force and different or asymmetrical thicknesses and pressures in certain areas during concrete placement Additional materials shall be stored at the concrete placing site for use to reinforce falseworks in case of occurrence of their local deformation.

I have inserted your alternative clause above but I must state that I do not agree with it. This is a very important safety clause that should include very clear requirements and it should demand the contractor’s total compliance.

The concrete pouring should be in “exact” accordance with the MS otherwise formwork and falsework design and construction (see 9.2.1 (2)) is wrong and the formwork and falsework could well fail. The use of the word “exact” is intentional to emphasise this.

The further deleted words change the original meaning and reduce the effectiveness.

The additional words, make it apparent that deformation is acceptable (which it isn’t) and that additional “material” (whatever this may mean) is enough to solve the problem (which it is not). If further temporary props might be required, this does not give confidence in the adequacy of a contractor’s design.

Please also refer to my notes against 9.2.1 (2) above.

~~(4) The Contractor shall be aware of the following common hazards~~

(3) Place the concrete in accordance with the Method Statement and avoid uneven and excessive impact force and different or asymmetrical thicknesses and pressures in certain areas during concrete placement Additional materials shall be stored at the concrete placing site for use to reinforce falseworks in case of occurrence of their local deformation.

and shall take all necessary measures to avoid the risk of any consequential accident, injury or death:

(a) Impalement by projecting and unguarded reinforcement:

The Contractor shall protect all exposed ends by enclosing in protective caps and/or by bending reinforcement bars so that exposed ends are no longer upright and present no danger; and

(b) Impact and entanglement by materials or Contractor's Equipment:

The Contractor shall take care in material handling and use of Contractor's Equipment including the use of lockout/tagout procedures.

(c) Exposure of silica dust and Portland cement:

If prolonged and unavoidable exposure can be anticipated, the Contractor shall ensure that workers are provided with respirators and masks in accordance with JSSS 2.1[WORK ENVIRONMENT] [2.1.1 Hazardous Substances].

(5) The Contractor shall provide PPE such as safety helmets, work clothing, waterproof gloves, rubber boots, protective eye and face equipment as required.

JC1: common hazards というわりには列挙されている事象が特異な事象に限定されているように思います。(a)は 9.3.2 に既に入っています。(b)、(c)は削除してください。
特に(c)は fresh (wet) concrete の打設時の規定として適切ではないです。
These clauses seem special requirements for special issues. (a) is specified in 9.3.2. Please delete (b) and (c).
It is not appropriate as requirement for placing of fresh (wet) concrete.

NK: Deleted.

9.2.3 Safety Measures for ~~Placement by~~ Concrete Pumping

JC1: 意味が分からない記述が多いです。具体的には幾つか例示しておきますので(コメント部分)ご参照ください。そのうえで、BS 8476:2007 (購入済み?) Code of practice for the safe use of concrete pumps を参照されながら必要項目を組み立ててください。
There are many statements that are hard to understand in this section. Please see those shown for examples in comments. Some practical examples to be Please reconstruct this section referring to BS 8467:2007 [Code of practice for the safe use of concrete pumps.

NK: BS 8407:2007 was purchased. Review and addition referring to the BS are made as below.

The Contractor shall take the following safety measures for delivery of ~~insitu~~ cast-in-place concrete with the use of concrete pumps:

(1) Inspect the condition of concrete pump delivery pipes, end hoses and all connections, ensure that they are free from defects and blockage, check that all joints and connections are secure and free from leakage before and during concrete placement works. ~~If any defect is discovered, stop the placement works and evacuate the workers immediately. Carry out repairs and reinspect before commencing or resuming work.~~

JC5: The latter half of clause (1) is deleted by JICA.

(2) Ensure that all delivery pipes, end hoses and other system components are all correctly pressure rated and capable of

and shall take all necessary measures to avoid the risk of any consequential accident, injury or death:

(a) Impalement by projecting and unguarded reinforcement:

The Contractor shall protect all exposed ends by enclosing in protective caps and/or by bending reinforcement bars so that exposed ends are no longer upright and present no danger; and

(b) Impact and entanglement by materials or Contractor's Equipment:

The Contractor shall take care in material handling and use of Contractor's Equipment including the use of lockout/tagout procedures.

(c) Exposure of silica dust and Portland cement:

If prolonged and unavoidable exposure can be anticipated, the Contractor shall ensure that workers are provided with respirators and masks in accordance with JSSS 2.1[WORK ENVIRONMENT] [2.1.1 Hazardous Substances].

I have deleted the above as you have instructed.

The Contractor shall provide PPE such as safety helmets, work clothing, waterproof gloves, rubber boots, protective eye and face equipment as required.

I have deleted the above as you have instructed. However, surely this is where your added 9.2.1 (3) should be inserted?

NK6/23: We consider they are specified in 2.9 PPE AND FIRST AID.

9.2.3 Safety Measures for Placement by Pumping

The Contractor shall take the following safety measures for delivery of cast-in place concrete with the use of concrete pumps:

(1) Inspect the condition of concrete pump delivery pipes, end hoses and all connections, ensure that they are free from defects and blockage, check that all joints and connections are secure and free from leakage before and during concrete placement works. ~~If any defect is discovered, stop the placement works and evacuate the workers immediately. Carry out repairs and reinspect before commencing or resuming work.~~

I have deleted the above as you have instructed.

9.2.3 Safety Measures for Placement by Pumping

The Contractor shall take the following safety measures for delivery of cast-in place concrete with the use of concrete pumps:

(1) Inspect the condition of concrete pump delivery pipes, end hoses and all connections, ensure that they are free from defects and blockage, check that all joints and connections are secure and free from leakage before and during concrete placement works.

(2) Ensure that all delivery pipes, end hoses and other system components

withstanding the maximum pump pressure.

~~(3) Comply with the requirements of JSSS Chapter 3 [*Existing Underground, Concealed and Overhead Services*] and:~~

(3) Maintain a safe separation distance between the delivery pipe, end hose and boom and any existing Overhead Services as required by JSSS Chapter 3 [*Existing Underground, Concealed and Overhead Services*], Table 3.2.1: Safe Separation Distances.

(4) Maintain a safe separation distance from any obstructions (Contractor's Equipment, buildings, etc.) and avoid any risk of hitting or touching any obstructions with the pumping equipment, delivery pipes, end hoses or boom;

~~(a) Maintain a safe separation distance from any obstructions (Contractor's Equipment, buildings, etc.) and avoid any risk of hitting or touching any obstructions with the pumping equipment, delivery pipes, end hoses or boom;~~

JC1: 具体的にどのようなものでしょうか？
What does mean the word "obstruction" to be specific?

NK: The "obstruction" means those items such as Contractor's Equipment, buildings, etc. which may be hit by the pumping equipment.
Added "(Contractor's Equipment,, buildings, etc.)".

~~(b) Maintain a safe separation distance between the delivery pipe, end hose and boom and any existing Overhead Services as required by JSSS Chapter 3 [*Existing Underground, Concealed and Overhead Services*], Table 3.2.1: Safe Separation Distances;~~

JC6: この話は 3 章とは関係ないので独立させました。また、(b)は削除。
The sub-clause (a) is irrelevant to Chapter 3. Thus (a) becomes (3) as independent clause and sub-clause (b) is deleted.

NK: Modified as JICA commented.

(5) Check the ground condition, ensure a firm, stable and horizontal working base at all times and position pumping equipment and ready-mixed concrete trucks at a safe distance from the edge of any excavations, drop or slope to protect against any slippage or fall of equipment and ready-mixed concrete trucks or collapse of ground.

(6) Fully extend outriggers and ensure stability of pumping equipment and ready-mixed concrete trucks at all times.

(7) Arrange proper communications and signals before starting the placement between workers, Spotters and operators of equipment and ~~mixer trucks~~ ready-mixed concrete trucks and ensure there is a Spotter at the point of placement.

(8) Never allow workers to stand between mixer trucks and pumps when and ~~mixer trucks~~ ready-mixed concrete trucks are reversing.

JC1: コンクリートミキサーのバックする時には Spotter を必ず配置することでは？
Doesn't this mean that a spotter shall be placed when a truck mixer is moving backward."?

NK: Placement of Spotters is stipulated in (6). The purpose of (7) is to instruct workers strictly not to stand or walk into the back of the truck when it is moving backward. Leaved as it is.

(9) ~~Take care to avoid the risk of any accident when moving the boom and~~ Ensure that workers are out of the path of the boom when moving the boom.

(2) Ensure that all delivery pipes, end hoses and other system components are all correctly pressure rated and capable of withstanding the maximum pump pressure.

(3) Maintain a safe separation distance between the delivery pipe, end hose and boom and any existing Overhead Services as required by JSSS Chapter 3 [*Existing Underground, Concealed and Overhead Services*], Table 3.2.1: Safe Separation Distances.

(4) Maintain a safe separation distance from any obstructions (Contractor's Equipment, buildings, etc.) and avoid any risk of hitting or touching any obstructions with the pumping equipment, delivery pipes, end hoses or boom;

I have reversed these items as you have instructed and added the minor wording as shown.

(5) Check the ground condition, ensure a firm, stable and horizontal working base at all times and position pumping equipment and ready-mixed concrete trucks at a safe distance from the edge of any excavations, drop or slope to protect against any slippage or fall of equipment and ready-mixed concrete trucks or collapse of ground.

(6) Fully extend outriggers and ensure stability of pumping equipment and ready-mixed concrete trucks at all times.

(7) Arrange proper communications and signals before starting the placement between workers, Spotters and operators of equipment and ready-mixed concrete trucks and ensure there is a Spotter at the point of placement.

(8) Never allow workers to stand between ready-mixed concrete trucks and pumps when ready-mixed concrete trucks are reversing.

(9) Ensure that workers are out of the path of the boom when moving

are all correctly pressure rated and capable of withstanding the maximum pump pressure.

(3) Maintain a safe separation distance between the delivery pipe, end hose and boom and any existing Overhead Services as required by JSSS Chapter 3 [*Existing Underground, Concealed and Overhead Services*], Table 3.2.1: Safe Separation Distances.

(4) Maintain a safe separation distance from any obstructions (Contractor's Equipment, buildings, etc.) and avoid any risk of hitting or touching any obstructions with the pumping equipment, delivery pipes, end hoses or boom;

(5) Check the ground condition, ensure a firm, stable and horizontal working base at all times and position pumping equipment and ready-mixed concrete trucks at a safe distance from the edge of any excavations, drop or slope to protect against any slippage or fall of equipment and ready-mixed concrete trucks or collapse of ground.

(6) Fully extend outriggers and ensure stability of pumping equipment and ready-mixed concrete trucks at all times.

(7) Arrange proper communications and signals before starting the placement between workers, Spotters and operators of equipment and ready-mixed concrete trucks and ensure there is a Spotter at the point of placement.

(8) Never allow workers to stand between ready-mixed concrete trucks and pumps when ready-mixed concrete trucks are reversing.

(9) Ensure that workers are out of the path of the boom when moving the boom.

8. JC7: リスクは回避できないので、この部分の記述は不要です。上記のように変えてよいと思います。
As it is not possible to “avoid a risk”, this part is not necessary. Please change the sentence as above.

NK: Changed as JICA commented.

~~(10) Never allow workers to open a pressurised line to prevent concrete from splashing out. Pressurised line shall be opened in accordance with predetermined procedure.~~

~~Never allow workers open a pressurised concrete delivery pipeline during delivery operation and at occurrence of a blockage in the pipeline to prevent concrete in the pipeline from splashing out. Pressurised line shall be opened after release the pressure inside the pipeline in accordance with predetermined procedure.~~

If a blockage or clogging occurs inside the pipeline during the pour, stop pumping immediately and instruct workers to move to a safe position before attempting to remove the blockage or clogging. The pipeline shall be opened after release the pressure inside in accordance with predetermined procedure.

JC: 英語では意味が取れない。
The meaning is hard to understand.

NK: 和文 9.6.1(7) (a) & (b)の規定です。
(9) is stipulated in Japanese version 9.6.1(7) (a) & (b).
BS 8407 stipulate as follows:
9.11 If a blockage occurs during the pour, the concrete pump operator should stop pumping immediately and instruct personnel to move to a safe position before attempting to remove the blockage.
9.12 If the concrete pump operator needs to open the delivery pipeline to clear a blockage, they should first release the pressure inside the delivery pipeline as much as possible, e.g. by reversing the pumping action. They have to treat the delivery pipeline as being pressurized at all times. Appropriate and adequate hand and eye protection should be worn when opening the delivery pipeline.
Modified as right and will be reviewed by MD.

JC8: 異常が発生したときの対処は下に記載があるので、この部分は削除します。(9)は右のように変更します。
Measures for occurrence of an abnormality are stated below. Clause (9) is changed as right.

NK: Changed as JICA commented.

~~(11) When cleaning delivery pipes or end hoses with compressed air, ensure that a ball catcher is always provided to prevent the risk of any accident or injury for the ejected objects.~~

JC9: 今時はエアで洗浄をするということはないので、削除させていただきます。
Nowadays, cleaning with compressed air is not used. Thus, this clause is deleted.

NK: Deleted as JICA commented.

(12) Ensure that hoppers and chutes are securely fixed and that workers are aware method of operation and safe use.

(13) Ensure that the delivery pipe and hose at the end of the concreting pump booms are securely connected not to fall or become detached.

(14) Prohibit workers from working on the hopper screen of the concrete pump, remove obstructions and foreign materials in the hopper only after stopping the agitating blade and applying lockout/tagout

the boom.

(10) If a blockage or clogging occurs inside the pipeline during the pour, stop pumping immediately and instruct workers to move to a safe position before attempting to remove the blockage or clogging. The pipeline shall be opened after releasing the pressure inside in accordance with the predetermined procedure.

Revised as requested; and edited.

(11) Ensure that hoppers and chutes are securely fixed and that workers are aware of the method of operation and safe use.

(12) Ensure that the delivery pipe and hose at the end of the concreting pump booms are securely connected so that they do not fall or become detached.

(10) If a blockage or clogging occurs inside the pipeline during the pour, stop pumping immediately and instruct workers to move to a safe position before attempting to remove the blockage or clogging. The pipeline shall be opened after releasing the pressure inside in accordance with the predetermined procedure.

(11) Ensure that hoppers and chutes are securely fixed and that workers are aware of the method of operation and safe use.

(12) Ensure that the delivery pipe and hose at the end of the concreting pump booms are securely connected so that they do not fall or become detached.

(13) Prohibit workers from working on the hopper screen of the concrete pump, remove obstructions and foreign materials in the hopper only

procedures.

(15) Prohibit workers from entering places in front of and below the outlet of concrete pump delivery pipes and end hoses to avoid the workers to be hit by pipes and horse rampaged. *(Note: MD will review and edit this paragraph as NK added.)*

9.2.4 Safety Measures for ~~Concrete Mixer Trucks~~ Ready-mixed Concrete Trucks

JC1: concrete mixer truck の名称にやや違和感がある。concrete agitator truck と concrete mixer truck の2種類があることを認識したい。そのうえで delivery(transportation), discharge (to concrete pump)に係る安全を規定したい。別添の"Safety in ready mixed concrete industry"が参考になる。
It seems strange to use the term of concrete mixer truck. After acknowledged that there are two terms of concrete agitator truck and concrete mixer truck, safety measures shall be stipulated regarding delivery (transportation), discharge (to concrete pump). "Safety in ready mixed concrete industry" attached herewith can be referred to.

NK: BS8476 uses the following terms:
8.5 concrete-delivery lorries
9.8 ready-mixed concrete truck
9.27 concrete-mixer lorries
Used the term "ready-mixed concrete truck" as commented.

The Contractor shall take the following measures for the ready-mixed concrete ~~mixer~~ trucks in the transportation and delivery of ~~insitu~~ ready-mixed concrete.

(1) Ensure that drivers are aware of and take due account of the heavy load and high centre of gravity of loaded ~~mixer~~ ready-mixed concrete trucks during delivery and discharge to maintain safety and prevent overturning.

(2) Ensure that workers do not come into contact with and/or become entangled with the rotating drum and other moving parts of ~~mixer~~ ready-mixed concrete ~~t~~rucks~~. and that they are prevented from looking into the drum~~.

JC10: JICA deleted.

9.2.5 Safety Measures for use of Concrete Buckets

The Contractor shall take the following measures when using concrete buckets for hoisting and placement of ~~insitu~~ concrete:

JC1: deleted

~~(1) Arrange proper communications and signals before starting the placement between workers, Spotters and operators of equipment and trucks and ensure there is a Spotter at the point of placement.~~

~~(2) Ensure that Hoisting and Rigging Equipment is suitable for the purpose and adequate for the load.~~

JC1: (1) & (2)はクレーン作業と同一ではないか？クレーン作業のところを引用する形で纏めてください。
Aren't clauses (1) & (2) same as provision for Crane Works? Please simplify it by referring to the relevant clause in Crane Works.

(13) Prohibit workers from working on the hopper screen of the concrete pump, remove obstructions and foreign materials in the hopper only after stopping the agitating blade and applying lockout/tagout procedures.

(14) Prohibit workers from entering in front of and below the outlet of concrete pump delivery pipes and end hoses to prevent workers being struck by pipes or ~~loose and~~ flailing hoses.

NK please check the above, I have edited but am not completely sure of the full meaning of your added clause.

NK6/23: modified.

9.2.4 Safety Measures for Ready-Mixed Concrete Trucks

The Contractor shall take the following measures for the ready-mixed concrete trucks in the transportation and delivery of cast-in place concrete.

(1) Ensure that drivers are aware of and take due account of the heavy load and high centre of gravity of loaded ready-mixed concrete trucks during delivery and discharge to maintain safety and prevent overturning.

(2) Ensure that workers do not come into contact with and/or become entangled with the rotating drum and other moving parts of ready-mixed concrete trucks and that they are prevented from looking into the drum.

9.2.5 Safety Measures for use of Concrete Buckets

The Contractor shall take the following measures when using concrete buckets for hoisting and placement of cast-in place concrete:

after stopping the agitating blade and applying lockout/tagout procedures.

(14) Prohibit workers from entering in front of and below the outlet of concrete pump delivery pipes and end hoses to prevent workers being struck by pipes or ~~loose and~~ flailing hoses.

9.2.4 Safety Measures for Ready-Mixed Concrete Trucks

The Contractor shall take the following measures for the ready-mixed concrete trucks in the transportation and delivery of cast-in place concrete.

(1) Ensure that drivers are aware of and take due account of the heavy load and high centre of gravity of loaded ready-mixed concrete trucks during delivery and discharge to maintain safety and prevent overturning.

(2) Ensure that workers do not come into contact with and/or become entangled with the rotating drum and other moving parts of ready-mixed concrete trucks and that they are prevented from looking into the drum.

9.2.5 Safety Measures for use of Concrete Buckets

The Contractor shall take the following measures when using concrete buckets for hoisting and placement of cast-in place concrete:

NK: As per the comment, clause (1) & (2) are combined and revised referring to 5.2.6. as below.

(1) Comply with JSSS 5.2.6.[General Safety Measures for Hoisting Operations] for selection of proper Hoisting Equipment and Rigging Equipment, arrangement of proper communication tool and signals, placement of Spotters;

(2) Ensure that the movable gate is locked before hoisting and is only operated by a skilled worker when it is opened for discharge.

(3) Take measures to stabilise the bucket during hoisting and prevent any uncontrolled swinging. Prohibit workers from pushing and pulling bracket except for minor adjustment of location of bucket for discharging concrete. *(Note: MD will review and edit this paragraph as NK added.)*

(4) Prevent persons or workers from entering the places below bucket.

(5) Discharge the concrete slowly and in a controlled manner to prevent the bucket from rebounding after discharge.

9.2.6 Safety Measures for use of Concrete Vibrators

The Contractor shall take the following measures when using concrete vibrators for compacting of ~~insitu~~ cast-in-place concrete:

(1) Take all necessary measures to prevent electric shock complying with JSSS 4.3.12 [Additional Requirements for Electric Powered Equipment]..

JC1: (1)は日本語版どおり、「4.5 を順守し、感電防止の措置を講じること」といった趣旨の規定にしてください。
Please modify this clause with the meaning in Japanese draft such as “take measures for preventing electric shock accidents complying with JSSS 4.5”.

NK: added as commented.

(2) ~~Ensure that workers are provided with and that they wear anti-vibration gloves.~~ To prevent vibration damage to workers, provide workers with anti-vibration gloves and ensure that those gloves are properly used.

JC10: 振動による被害軽減にはなるけど、防止グローブだけつければ良いというものではないので「振動による健康被害を予防するため、」を一言入れた方が良いかも。（騒音とかと類似）騒音被害（JSSS2.1.4 (2) と横並びで、振動被害防止のため、という言葉を入れました。
A phrase “To prevent vibration damage to workers” is inserted to coincide with JSSS 2.1.4 (2).

NK: Modified as JICA commented.

(1) Comply with JSSS 5.2.6 [*General Safety Measures for Hoisting Operations*] for selection of proper Hoisting Equipment and Rigging Equipment, arrangement of proper communication tools, signals and placement of Spotters.

Revised as requested; and edited.

(2) Ensure that the movable gate is locked before hoisting and is only operated by a skilled worker when it is opened for discharge.

(3) Take measures to stabilise the bucket during hoisting and prevent any uncontrolled swinging. Prohibit workers from pushing and pulling bracket except for minor adjustment of location of the bucket for discharging concrete.

Revised as requested; and edited.

(4) Prevent any persons or workers from entering the places below bucket.

(5) Discharge the concrete slowly and in a controlled manner to prevent the bucket from rebounding after discharge.

9.2.6 Safety Measures for use of Concrete Vibrators

The Contractor shall take the following measures when using concrete vibrators for compacting of cast-in place concrete:

(1) Take all necessary measures to prevent electric shock, complying with JSSS 4.3.12 [*Additional Requirements for Electric Powered Equipment*].

Revised as requested

(2) To prevent vibration injury to workers, provide anti-vibration gloves and ensure that they are properly used.

Revised as requested; and edited.

(1) Comply with JSSS 5.2.6 [*General Safety Measures for Hoisting Operations*] for selection of proper Hoisting Equipment and Rigging Equipment, arrangement of proper communication tools, signals and placement of Spotters.

(2) Ensure that the movable gate is locked before hoisting and is only operated by a skilled worker when it is opened for discharge.

(3) Take measures to stabilise the bucket during hoisting and prevent any uncontrolled swinging. Prohibit workers from pushing and pulling bracket except for minor adjustment of location of the bucket for discharging concrete.

(4) Prevent any persons or workers from entering the places below bucket.

(5) Discharge the concrete slowly and in a controlled manner to prevent the bucket from rebounding after discharge.

9.2.6 Safety Measures for use of Concrete Vibrators

The Contractor shall take the following measures when using concrete vibrators for compacting of cast-in place concrete:

(1) Take all necessary measures to prevent electric shock, complying with JSSS 4.3.12 [*Additional Requirements for Electric Powered Equipment*].

(2) To prevent vibration injury to workers, provide anti-vibration gloves and ensure that they are properly used.

9.3 REINFORCEMENT

9.3.1 Safety Measures at Planning Stage

The Contractor shall:

(1) Prepare a Safety Plan, Method Statement and fixing and placing drawings of reinforcement describing the method of cutting, bending and fixing ~~and erection~~ and showing the types and positioning of supports, ties and bracing necessary to support and rigidly secure the reinforcement and to prevent any movement or

9.3 REINFORCEMENT

9.3.1 Safety Measures at Planning Stage

The Contractor shall:

(1) Prepare a Safety Plan, Method Statement and fixing and placing drawings of reinforcement describing the method of cutting, bending and fixing and showing the types and positioning of supports, ties and bracing necessary to support and rigidly secure the reinforcement and to prevent any movement or collapse.

9.3 REINFORCEMENT

9.3.1 Safety Measures at Planning Stage

The Contractor shall:

(1) Prepare a Safety Plan, Method Statement and fixing and placing drawings of reinforcement describing the method of cutting, bending and fixing and showing the types and positioning of supports, ties and bracing necessary to support and rigidly secure the reinforcement and to prevent any movement or collapse.

collapse.

JC1: BS での表現に合わせました。replaced with the expression in BS.

NK: replaced with terms in BS 8000-2-2 Workmanship on building sites - Part 2: Code of practice for concrete work - Section 2.2 Sitework with in situ and precast concrete.

(2) Inform all relevant workers of the content of the Safety Plan, Method Statement and assembly drawings.

9.3.2 Safety Measures at Fabrication and ~~Assembly~~ Fixing and Placing Stage

JC1: changed.

The Contractor shall take the following measures during cutting, bending, transporting and ~~assembling~~ fixing and placing of reinforcement:

JC1: changed.

(1) Cutting and Bending:

(a) Designate the work as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*];

(b) Maintain the working area in a safe, organised, uncluttered and clean condition at all times, avoid excessive storage by retaining sufficient quantities of reinforcement for immediate use, locate equipment in known positions, prevent any fall or dropping of material, equipment and tools, remove offcuts to a separate area and ensure the area is safe and that the risk of workers falling or tripping is avoided; and

(c) Maintain stored reinforcement material in a safe and secure manner ~~and ensure that there is no risk of~~ to prevent collapse or fall by providing adequate restraints.

JC11: JICA modified.

(2) Transporting:

(a) Ensure that scaffolding and any other temporary structures on which reinforcement is to be temporarily placed is capable of supporting the load, ensure that the load is distributed safely and that is does not cause any obstruction to the passage of other workers;

(b) Ensure that reinforcing bar is lifted and suspended horizontally to prevent any slippage during Hoisting Operations and also that it is bundled safely and securely tied to prevent any reinforcing bars from sliding out;

In principle ~~suspend reinforcement~~ hoist the bundle of reinforcing bars keeping them horizontal and maintaining the balance by using two rigging slings ~~or wire ropes~~; and

JC1: changed.

JC12: 意味がわかりません。わかるように修正願います。
The meaning of this sentence is not clear. Please modify it to become more understandable.

NK: 上のように修正しました。 Modified as above.

(c) When transporting to the working location use flatbed trailers or truck, ensure that the trailer or truck is of sufficient

(2) Inform all relevant workers of the content of the Safety Plan, Method Statement and assembly drawings.

9.3.2 Safety Measures at Fabrication, ~~and~~ Fixing and Placing Stage

The Contractor shall take the following measures during cutting, bending, transporting, fixing and placing of reinforcement:

(1) Cutting and Bending:

(a) Designate the work as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*];

(b) Maintain the working area in a safe, organised, uncluttered and clean condition at all times, avoid excessive storage by retaining sufficient quantities of reinforcement for immediate use, locate equipment in known positions, prevent any fall or dropping of material, equipment and tools, remove offcuts to a separate area and ensure the area is safe and that the risk of workers falling or tripping is avoided; and

(c) Maintain stored reinforcement material in a safe and secure manner and prevent collapse or fall by providing adequate restraints.

(2) Transporting:

(a) Ensure that scaffolding and any other temporary structures on which reinforcement is to be temporarily placed is capable of supporting the load, ensure that the load is distributed safely and that is does not cause any obstruction to the passage of other workers;

(b) Ensure that reinforcing bar is lifted and suspended horizontally to prevent any slippage during Hoisting Operations and also that it is bundled safely and securely tied to prevent any reinforcing bars from sliding out;

In principle, hoist the bundle of reinforcing bars, keeping them horizontal and maintaining the balance by using two rigging slings; and

(c) When transporting to the working location use flatbed trailers or truck, ensure that the trailer or truck is of sufficient

(2) Inform all relevant workers of the content of the Safety Plan, Method Statement and assembly drawings.

9.3.2 Safety Measures at Fabrication, ~~and~~ Fixing and Placing Stage

The Contractor shall take the following measures during cutting, bending, transporting, fixing and placing of reinforcement:

(1) Cutting and Bending:

(a) Designate the work as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*];

(b) Maintain the working area in a safe, organised, uncluttered and clean condition at all times, avoid excessive storage by retaining sufficient quantities of reinforcement for immediate use, locate equipment in known positions, prevent any fall or dropping of material, equipment and tools, remove offcuts to a separate area and ensure the area is safe and that the risk of workers falling or tripping is avoided; and

(c) Maintain stored reinforcement material in a safe and secure manner and prevent collapse or fall by providing adequate restraints.

(2) Transporting:

(a) Ensure that scaffolding and any other temporary structures on which reinforcement is to be temporarily placed is capable of supporting the load, ensure that the load is distributed safely and that is does not cause any obstruction to the passage of other workers;

(b) Ensure that reinforcing bar is lifted and suspended horizontally to prevent any slippage during Hoisting Operations and also that it is bundled safely and securely tied to prevent any reinforcing bars from sliding out;

In principle, hoist the bundle of reinforcing bars, keeping them horizontal and maintaining the balance by using two rigging slings; and

(c) When transporting to the working location use flatbed trailers or truck, ensure that the trailer or truck is of sufficient length to avoid any overhang of reinforcing bars and provide

length to avoid any overhang of reinforcing bars; ~~where exceptional lengths of reinforcement are being transported and overhang is unavoidable~~, ~~ensure that the overhang complied with local regulations and provide appropriate warning signs and lighting to remove all risk of impact collision with other vehicles, persons and workers.~~ ~~When transporting to the working location by trailers, adjust length of reinforcement so as to respect the local regulation in terms of overhanging.~~ Provide appropriate warning signs and lighting on reinforcing bars if necessary in accordance with the local regulations to avoid collision with other vehicles, persons and workers.

JC13: トレーラーの長さを調整するのではなく、鉄筋の長さを調整するのだと思います。英語については適宜修正してください。
It wouldn't be right to adjust the length of trailer instead of length of reinforcing bars. Please modify the sub-clause.

NK: ODA の現場では、鉄筋は最大長 12m が一般的であり、これらの鉄筋を設計に合わせて切断します。請負者は残余が出ないように工夫して鉄筋を切断します。トレーラー長に合わせて鉄筋を切断することはないため、長さにあったトレーラーを調達することが運搬業者の責任と考えます。
日本の場合、次の規則があります。
セミトレーラ連結車の車両制限令の長さの特例
高速自動車国道　１６．５ｍ（積載する貨物が被けん引車の車体の前方又は後方にはみ出していないもの）
指定道路、その他の道路…１２ｍ　（これを超える車両は、特殊車両通行許可が必要である。）
運搬に関しては交通規則に従うと規定することで良いと考えますので、右のように変更致します。
At ODA sites, re-bars are 12 m generally in longest. The Contractor cuts the re-bars following the design but not depending on the length of trailer. The Contractor shall select trailer to transport depending on the length of re-bars.
In Japan, trailers of 16.5 m without overhanging of goods can run highway and those of 12 m on public roads. It needs special permission on public roads in case longer than 12 m.
The (d) specify not to be overhang and following the traffic regulations as right.

(3) ~~Assembly~~ Fixing and Placing:

JC1: changed.

(a) Prepare proper temporary access to and support for the assembly of reinforcement and for fixing the reinforcement in position;

(b) Prevent any risk of fall and also any distortion or weakening of reinforcement by prohibiting workers from standing, walking or climbing on such reinforcement and where necessary provide safe temporary boarded walkways for workers use;

(c) Ensure that assembly is in exact accordance with the assembly drawings and that the correct types and positioning of supports, ties and bracing is maintained to properly support and rigidly secure the reinforcement and prevent undue movement or collapse;

(d) When there is ~~a risk~~ danger of the falling and collapsing of reinforcement under assembling by wind and rain, stop the assembly work. After strong wind and heavy rain, inspect the reinforcement under assembling and stop the assembling

length to avoid any overhang of reinforcing bars and provide appropriate warning signs and lighting on reinforcing bars if necessary in accordance with the local regulations to avoid collision with other vehicles, persons and workers.

(3) Fixing and Placing:

(a) Prepare proper temporary access to and support for fixing and placing reinforcement in position;

(b) Prevent any risk of fall and also any distortion or weakening of reinforcement by prohibiting workers from standing, walking or climbing on such reinforcement and where necessary provide safe temporary boarded walkways for workers use;

(c) Ensure that fixing and placing is in exact accordance with the fixing and placing drawings and that the correct types and positioning of supports, ties and bracing is maintained to properly support and rigidly secure the reinforcement and prevent undue movement or collapse;

(d) When there is any danger of reinforcement falling or collapsing during fixing and placing in wind and rain, stop the fixing and placing work. After conditions improve, inspect the reinforcement and take measures to correct any abnormality before continuing with fixing and placing;

appropriate warning signs and lighting on reinforcing bars if necessary in accordance with the local regulations to avoid collision with other vehicles, persons and workers.

(3) Fixing and Placing:

(a) Prepare proper temporary access to and support for fixing and placing reinforcement in position;

(b) Prevent any risk of fall and also any distortion or weakening of reinforcement by prohibiting workers from standing, walking or climbing on such reinforcement and where necessary provide safe temporary boarded walkways for workers use;

(c) Ensure that fixing and placing is in exact accordance with the fixing and placing drawings and that the correct types and positioning of supports, ties and bracing is maintained to properly support and rigidly secure the reinforcement and prevent undue movement or collapse;

(d) When there is any danger of reinforcement falling or collapsing during fixing and placing in wind and rain, stop the fixing and placing work. After conditions improve, inspect the reinforcement and take measures to correct any abnormality before continuing with fixing and placing;

work when abnormality is found; *(Note: MD will review and edit this paragraph as NK added.)* JC14: 単数形の risk を使うかどうかも考えた方が良いかと It is better reconsider use of the word "a risk" in singular form. NK: JICA のコメントに従い右のように変更しました。 Changed as right in accordance with the suggestion by JICA To MD, please review this comment. (e) Prohibit working concurrently at levels where any other worker is working underneath in accordance with JSSS 2.6.7 [Working Above or Below Others]; and JC1: Non native の人間には"work at levels"が通じない可能性が高いので、work at levels を annex で定義語として規定してください。そのうえで、2.6.5(2.6.6.)に上下作業の規定があるため、それをリファーする形で規定してください。 There is possibility that readers might not understand "work at levels". Please define the term in Annex. In addition, stipulate to refer to JSSS 2.6.5.(2.6.6) NK: Modified and added. (f) Provide temporary protection caps to exposed ends of reinforcing bars to prevent injury to workers.	*Your original draft used "assembly" but you have now changed this to "fixing and placing". I have therefore corrected the above accordingly* (e) Prohibit working concurrently at levels where any other worker is working underneath in accordance with JSSS 2.6.7 [*Working Above or Below Others*]; and (f) Provide temporary protection caps to exposed ends of reinforcing bars to prevent injury to workers.	(e) Prohibit working concurrently at levels where any other worker is working underneath in accordance with JSSS 2.6.7 [*Working Above or Below Others*]; and (f) Provide temporary protection caps to exposed ends of reinforcing bars to prevent injury to workers.
9.4 FORMWORK (INCLUDING FALSEWORK) **9.4.1 General** Any reference to "formwork" in this Section shall also be deemed to include reference to the associated falsework for that formwork. **9.4.2 Safety Measures at Planning Stage** The Contractor shall: (1) Design the formwork and manage its provision, use and removal in accordance with JSSS 1.35 [*Design and Management of Temporary Works*] and the further requirements of JSSS Section 7.1 [*General Requirements of Temporary Works*]. (2) Prepare a Safety Plan, Method Statement and design drawings of formwork describing the method of fabrication, assembly, erection and removal and showing details of all materials, components, types and positioning of supports, ties and bracing necessary to create a rigid and secure temporary support structure for the concrete, reinforcement and workers and to prevent any movement or collapse. (3) Inform all relevant workers of the content of the Safety Plan, Method Statement and design drawings. **9.4.3 Safety Measures at Fabrication and Assembly Stage** The Contractor shall take the following measures during fabricating, transporting and assembling of formwork: (1) Designate the work as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*]. (2) Maintain the working area including storage area in a safe, organised, uncluttered and clean condition at all times, avoid excessive storage by retaining sufficient quantities of material for	**9.4 FORMWORK (INCLUDING FALSEWORK)** **9.4.1 General** Any reference to "formwork" in this Section shall also be deemed to include reference to the associated falsework for that formwork. **9.4.2 Safety Measures at Planning Stage** The Contractor shall: (1) Design the formwork and manage its provision, use and removal in accordance with JSSS 1.35 [*Design and Management of Temporary Works*] and the further requirements of JSSS Section 7.1 [*General Requirements of Temporary Works*]. (2) Prepare a Safety Plan, Method Statement and design drawings of formwork describing the method of fabrication, assembly, erection and removal and showing details of all materials, components, types and positioning of supports, ties and bracing necessary to create a rigid and secure temporary support structure for the concrete, reinforcement and workers and to prevent any movement or collapse. *I assume that "assembly" is acceptable here.* (3) Inform all relevant workers of the content of the Safety Plan, Method Statement and design drawings. **9.4.3 Safety Measures at Fabrication and Assembly Stage** The Contractor shall take the following measures during fabricating, transporting and assembling of formwork: (1) Designate the work as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*]. (2) Maintain the working area and storage area in a safe, organised, uncluttered and clean condition at all times, avoid excessive storage by retaining sufficient quantities of material for immediate use,	**9.4 FORMWORK (INCLUDING FALSEWORK)** **9.4.1 General** Any reference to "formwork" in this Section shall also be deemed to include reference to the associated falsework for that formwork. **9.4.2 Safety Measures at Planning Stage** The Contractor shall: (1) Design the formwork and manage its provision, use and removal in accordance with JSSS 1.35 [*Design and Management of Temporary Works*] and the further requirements of JSSS Section 7.1 [*General Requirements of Temporary Works*]. (2) Prepare a Safety Plan, Method Statement and design drawings of formwork describing the method of fabrication, assembly, erection and removal and showing details of all materials, components, types and positioning of supports, ties and bracing necessary to create a rigid and secure temporary support structure for the concrete, reinforcement and workers and to prevent any movement or collapse. (3) Inform all relevant workers of the content of the Safety Plan, Method Statement and design drawings. **9.4.3 Safety Measures at Fabrication and Assembly Stage** The Contractor shall take the following measures during fabricating, transporting and assembling of formwork: (1) Designate the work as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*]. (2) Maintain the working area and storage area in a safe, organised, uncluttered and clean condition at all times, avoid excessive storage by retaining sufficient quantities of material for immediate use,

immediate use, locate equipment ~~in known positions,~~ at predetermined places, prevent any fall or dropping of material, equipment and tools, offcuts to a ~~separate~~ designated area ~~and ensure the area is safe and that the risk of workers falling or tripping is avoided~~	locate equipment in predetermined places, prevent any fall or dropping of material, equipment and tools, remove offcuts to a designated area. *Revised as requested; and edited.*	locate equipment in predetermined places, prevent any fall or dropping of material, equipment and tools, remove offcuts to a designated area.
(3) When assembling and ~~dismantling~~ disassembling the formwork, prohibit the workers from entering the area subject to risk of being hit or struck by the panel which is suddenly moved by strong wind.		
JC1: “in known positions”が分かりません。 This phrase “in known positions” is not understandable. NK: It means that equipment should be placed at or moved to the predetermined places. Modified. JC15: 解体のところに入っていた事項ですが、組み立ての時にも必要な事項なので、文章を修正の上、こちらに移しました。(項目 9.4.4 (2)を 9.4.3 に(3)として移動。) The new clause (3) is moved from 9.4.3 (2) because this should include the common safety measures at assembling stage. NK: コメントに従い、移動、修正しました。 Th e clause is moved and the sentence is modified as commented by JICA.		
~~(3) Maintain stored formwork material in a safe and secure manner and ensure that there is no risk of collapse or fall by providing adequate restraints.~~	~~(3) Maintain stored formwork material in a safe and secure manner and ensure that there is no risk of collapse or fall by providing adequate restraints.~~	
JC1: (2)、(3)は両方とも整理整頓に関する概念なので、統合してください。例えば working area including storage area など。 Clause (2) & (3) are both regarding to concept of organizing work area, thus, unify them one clause by stating “working area including storage area.” NK: As commented, added the phrase in (2) and delete (3).		
~~(4) Ensure that the formwork is free from cracks, defects and deformation, Ensure that scaffolding and any other temporary structures on which formwork is to be temporarily placed is capable of supporting the load, ensure that and the load is distributed safely. and that is does not cause any obstruction to the passage of other workers.~~		
(g) Ensure that the formwork is free from cracks, defects and deformation;	(4) Ensure that the formwork is free from cracks, defects and deformation.	(3) Ensure that the formwork is free from cracks, defects and deformation.
(h) Ensure that scaffolding and any other temporary structures on which formwork is to be temporarily placed is capable of supporting the load, and that the load is distributed evenly and within the allowable stress of formwork;	(5) Ensure that scaffolding and any other temporary structures on which formwork is to be temporarily placed is capable of supporting the load, that the load is distributed evenly and within the allowable stress of formwork. *Revised as requested; and edited.*	(4) Ensure that scaffolding and any other temporary structures on which formwork is to be temporarily placed is capable of supporting the load, that the load is distributed evenly and within the allowable stress of formwork.
JC1: 鉄筋コンクリートを支保することが優先されるべきで、他作業員の通行を考慮することは2次的規定で、逆に通行禁止措置が必要になる。 Supporting the reinforcing concrete shall be given priority. The consideration of obstruction of passage of workers is secondary requirement. Therefore, deleted. Reversely, prohibition of passage is necessary. NK: deleted as commented and modified to delete two “ensure”. JC16: Ensure that でつないでいく文が長くなるので、型枠に瑕疵がない、という部分を切り離しました。 As the sentence is too long, the part that formwork is free from defects is separated. NK: コメントに従い、項目を 2 つに分割しました。 The clause is divided into two clauses as right (4) & (5).		
(i) ~~Ensure that formwork is restrained during any Hoisting Operation to prevent being affected by wind and that any risk of collision and~~	(6) During any hoisting operations, ensure that all necessary measures are taken to prevent formwork being affected by wind and that any	(5) During any hoisting operations, ensure that all necessary measures are taken to prevent formwork being affected by wind and that any

~~consequent injury and damage is avoided~~. When hoisting operation is carried out for largen sized formwork panels such as system formwork, ensure that all necessary measures are taken to prevent being affected by wind and that any risk of collision and consequent injury and damage is avoided.

JC17: 強風がふいているときは型枠の資材のつり上げ作業をやめろというのが趣旨だと思います。ですので、Ensure that formwork is restrained というのは関係ないと思います。また、システム型枠(system formwork)に関連する事象として記載することを検討ください。
Hoisting of formwork must be stopped when strong wind is blowing. Therefore, restraining formwork is not relevant in this case.
Please consider to describe for a case of "System Formwork".

NK: 右の(6)ように、大型パネルの吊り上げ作業には全ての必要な対策をとることとの表現に修正することを提案します。
When hoisting operation is carried out for largen sized formwork panels such as system formwork, ensure that all necessary measures are taken to prevent being affected by wind and that any risk of collision and consequent injury and damage is avoided

9.4.4 Safety Measures during ~~Dismantling~~ Disassembling and Removal Stage

JC18: Dismantling は Disassembling に、他の箇所も同様に変えてください。
Please change the term "dismantle" to "disassemble" for other parts as well.

NK: コメントし従い変更しました。 Changed as commented.

To MD: Please review this change because I think the term "dismantle" seems correct word than "disassemble" for this 9.4.4.

(1) ~~Unless otherwise specified, ensure that formwork is only dismantled when so instructed or approved in writing by the HSO.~~ The formwork shall be ~~dismantled~~ disassembled in accordance with the relevant provision in the Contract.

JC1: Time for removal of falsework and formwork は specification に規定されているべきで、Engineer の確認があることが通常。従って HSO に関する明示的な記載は不要。
It is common practice to stipulate the time for removal of falsework and formwork requiring confirmation by the Engineer in the specification. It is not necessary to state about the HSO.

NK: As commented, the clause (1) is modified.

~~(2) After dismantling, stack formwork panels horizontally to avoid overturning being affected by strong wind or other loads; and~~

~~(2) When the formwork panels are hoisted, prohibit the workers from entering the dangerous area to prevent the workers from being hit or struck by the panels which is suddenly moved by the strong wind.~~

JC19: 項目(2)は 9.4.3 (3) に移動。文章を組立ても含めように修正。
Clause (2) is moved to 9.4.3 as (3). The sentence is modified so as to include assembling.

(3) After ~~dismantling~~ disassembling, the form panels shall be stacked horizontally to avoid overturning; and

JC1: 日本語版 10.5 の(8)、(9)を纏めた規定のようですが、日本語原文から趣旨がずれているようです。
ついては、この(2)と(3)を統合させて、水平の仮置きおよび踏み抜き防止の趣旨となるように書き直してください。

risk of collision and consequent injury and damage is avoided.

Revised as requested; and edited, however please note:

The addition of "largen sized formwork" is not necessary and has no meaning anyway, even medium or small (however size is defined) should also be considered.

It is not correct to include "system formwork" as an example because this is not an example. The requirement applies to all types of formwork which may be affected by wind including purpose made plywood panels for example

NK6/23: agreed.

9.4.4 Safety Measures during Dismantling and Removal Stage

Please note that "dismantling" (as used in your original draft) is the correct word and in my opinion should not be changed. It is preferable in this sense to "disassembly".

NK6/23: agreed.

(1) Ensure that formwork is only dismantled when so instructed or approved in writing by the HSO.

The above requirement is very important for safety purposes and I do not recommend its deletion or amendment. A principle cause of structural collapse is when formwork is dismantled too early. This is often done with no consideration of safety and no involvement of the HSO but is frequently a consequence of speeding-up the work when it is running late.

Also the effect of concrete quality on time of strength achievement should be considered.

The text as I have originally suggested is correct and I do not recommend that it be replaced with your suggestion "The formwork shall be disassembled in accordance with the relevant provision in the Contract". This reduces or even negates the meaning of the original text.

I am aware that technical specifications commonly describe period for curing of concrete and indicative or minimum periods before dismantling formwork but this is Temporary Works for which the responsibility rests with the contractor irrespective of what may be stated there. It is not a duty or obligation of the Employer or Engineer to advise or instruct.

NK6/23: agreed.

(2) After dismantling, stack formwork panels horizontally to avoid overturning due to strong wind or applied loadings; and

I suggest the above change

risk of collision and consequent injury and damage is avoided.

9.4.4 Safety Measures during Dismantling and Removal Stage

(1) Ensure that formwork is only dismantled when so instructed or approved in writing by the HSO.

(2) After dismantling, stack formwork panels horizontally to avoid overturning due to strong wind or applied loadings; and

Clause (2) seems to be a provision combined 10.5 (8) & (9) together, however the requirement is deviated from the original one. Please express the requirement of placing the form materials horizontally and preventing accidents from protruding nails etc.by unifying (2) and (3). NK: Clause 10.5 (8), (9) in Japanese version stipulate different matters each other. Thus, it is better to modify (2) and (3) reflecting the concept of Japanese relevant clauses. Not only large formwork panels but also any form panels have risk to hit workers. Not specified for large panels. MD will review these sentences. (4) The protruding nails, wires, projecting members and splinters on the formwork ~~dismantled~~ disassembled shall be removed or bended to avoid injury to workers and other persons.	(3) Any protruding nails, wires, projecting members and splinters shall be removed or bent flat to avoid injury to workers and other persons.	(3) Any protruding nails, wires, projecting members and splinters shall be removed or bent flat to avoid injury to workers and other persons.

NK6/23 NK comments and revision of 6/24
Changes to or editing of previous Issue 2
(includes JICA/NK comments)
Query or comment

JICA STANDARD SAFETY SPECIFICATION FOR PROJECT IMPLEMENTATION UNDER JAPANESE ODA

CHAPTER 9: CONCRETE WORKS

Japan International Cooperation Agency (JICA)

NK6/23 NK comments and revision of 6/24
Changes to or editing of previous Issue 2
(includes JICA/NK comments)
Query or comment

Note to JICA and NK:

It is my understanding that Chapters 1 to 6 are functional specifications that cover most risks as general and prevailing reference documents.

Chapters 7 to 10 (and later), are "trade" type documents for which most risks have already been identified and covered in Chapters 1 to 6 and they will therefore be necessarily brief.

I suggest that excessive cross reference and duplication should be avoided and only particular additional requirements be described in these later chapters.

I had suggested that "Concrete Works" should cover all items usually associated with this trade such as precast concrete, prestressing etc, however having drafted simple requirements, this is not required by JICA/NK.

JICA STANDARD SAFETY SPECIFICATION (JSSS)
CHAPTER 9: CONCRETE WORKS

Table of Contents

9.1 GENERAL

9.1.1 Scope

(1) This Chapter specifies the safety requirements for concrete works which include:

(a) ~~In-situ Concrete~~ Cast-in place (poured or pumped) concrete;

I have changed this throughout but please note that In-situ Concrete is an internationally accepted term and it is also defined in BS 6100 (in-situ concrete (01)6.4.20).

(b) Reinforcement (reinforcing bar and fabric reinforcement);

(c) Formwork (including associated falsework);

and which are hereinafter collectively referred to as "Concrete Works".

(2) General safety requirements, covering for example Contractor's Equipment including stone crushing plants and screening equipment, concrete batching plants, Temporary Works and other related matters, all which apply to the work in this Chapter, are described in other Chapters of JSSS.

Additional particular requirements are contained in this Chapter.

9.1.2 Safety Plan and Instructions to Workers

Prepare a Safety Plan describing the safety requirements for Concrete Works and inform all workers engaged in the Concrete Works of the content and requirements. The Safety Plan shall pay due care to the workers' health matters (e.g. back injury) in relation to handling of reinforcement, formwork panels or other heavy items, and include necessary preventive measures (e.g. using appropriate Contractor's Equipment, assigning sufficient number of workers).

Revised as requested; edited

9.2 PARTICULAR SAFETY MEASURES FOR CAST-IN PLACE CONCRETE WORK

The following safety requirements are additional to the general requirements described in other Chapters.

9.2.1 Safety Measures at Planning Stage

(1) The Contractor shall plan all Concrete Works so that they are executed in a safe and methodical manner.

(2) The Contractor shall plan the method of cast-in place concrete placement and carry out the design and construction of formwork and falsework to take account of uneven and excessive impact force and different or asymmetrical loads, thicknesses and pressures in certain areas during concrete placement to avoid deformation beyond allowable tolerances specified in the Contract, any damage or collapse of formwork or falsework and show all details in the Method Statement and Safety Plan.

NK6/23: proposed to replace with "beyond ~~allowable~~ tolerances of concrete structure specified in the Contract, any damage or collapse of formwork or falsework and show all details in the Method Statement and Safety Plan."

Revised as requested; and edited. If this adjustment remains (which I do not recommend) "Contract" could be changed to "Particular Safety Specification" but this is still not correct.

I do not agree with or recommend this change. It is not correct and not good practice to mention "allowable" tolerances for formwork and falsework deformation in this manner.

Please note that the "tolerances" are usually specified for the finished permanent works (i.e. the concrete) dimensions, not the tolerances in the formwork and falsework during concrete pouring.

The falsework is temporary work and therefore 100% contractor design responsibility, he also selects the formwork and falsework materials and designs these temporary structures. He also chooses and controls the volumes, rates and methods of pouring so he is the only party that can design the formwork and falsework and decide if it is structurally capable of supporting his work.

Only the Contractor can decide what (if any) tolerances shall be included in his formwork and falsework design and usually his design should allow for deformation so that the finished concrete dimensions are correct.

NK6/23: understood the above explanation..
JICA want to specify to design form and false works to secure the tolerances of concrete structures specified in the Contract.
I proposed to revise it as shown above.

Please see B2 which mentions as follows:
The example of Specification regarding concrete tolerance is shown below for discussion with JICA.

(3) The Contractor shall provide PPE such as rubber gloves, face masks and goggles to the workers when spraying concrete form release agents to prevent chemical injury, and where there is a possibility that release agent may splash on the third parties, take measures such as establishing exclusion zone with temporary barriers and locate Spotters to prevent those persons from entering the area.

Revised as requested; edited.

However please note that this would be better included in measures for placement not measures at planning stage. I had also recommended protective footwear (rubber boots) as this is often necessary in developing countries.

9.2.2 Safety Measures for Placement

The Contractor shall:

(1) Designate concrete placement works (including all pumping and hoisting of concrete) as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) Inspect all reinforcement, formwork and falsework before and during concrete placement. If any defect is discovered, stop the placement works and evacuate the workers immediately, carry out repairs and reinspect before resuming.

~~(3) Place the concrete in exact accordance with the Method Statement and avoid uneven and excessive impact force and different or asymmetrical thicknesses and pressures in certain areas during concrete placement to avoid any deformation, damage or collapse of formwork or falsework.~~

(4) Place the concrete in accordance with the Method Statement and avoid uneven and excessive impact force and different or asymmetrical thicknesses and pressures in certain areas during concrete placement Additional materials shall be stored at the concrete placing site for use to reinforce falseworks in case of occurrence of their local deformation.

I have inserted your alternative clause above but I must state that I do not agree with it. This is a very important safety clause that should include very clear requirements and it should demand the contractor's total compliance.

The concrete pouring should be in "exact" accordance with the MS otherwise formwork and falsework design and construction (see 9.2.1 (2)) is wrong and the formwork and falsework could well fail. The use of the word "exact" is intentional to emphasise this.

The further deleted words change the original meaning and reduce the effectiveness.

The additional words, make it apparent that deformation is acceptable (which it isn't) and that additional "material" (whatever this may mean) is enough to solve the problem (which it is not). If further temporary props might be required, this does not give confidence in the adequacy of a contractor's design.

Please also refer to my notes against 9.2.1 (2) above.

~~(5) The Contractor shall be aware of the following common hazards and shall take all necessary measures to avoid the risk of any consequential accident, injury or death:~~

~~(a) Impalement by projecting and unguarded reinforcement:~~

~~The Contractor shall protect all exposed ends by enclosing in protective caps and/or by bending reinforcement bars so that exposed ends are no longer upright and present no danger; and~~

~~(b) Impact and entanglement by materials or Contractor's Equipment:~~

~~The Contractor shall take care in material handling and use of Contractor's Equipment including the use of lockout/tagout procedures.~~

~~(c) Exposure of silica dust and Portland cement:~~

~~If prolonged and unavoidable exposure can be anticipated, the Contractor shall ensure that workers are provided with respirators and masks in accordance with JSSS 2.1[WORK ENVIRONMENT] [2.1.1 Hazardous Substances].~~

I have deleted the above as you have instructed.

~~The Contractor shall provide PPE such as safety helmets, work clothing, waterproof gloves, rubber boots, protective eye and face equipment as required.~~

I have deleted the above as you have instructed. However, surely this is where your added 9.2.1 (3) should be inserted?

9.2.3 Safety Measures for Placement by Pumping

The Contractor shall take the following safety measures for delivery of cast-in place concrete with the use of concrete pumps:

~~(1)~~ Inspect the condition of concrete pump delivery pipes, end hoses and all connections, ensure that they are free from defects and blockage, check that all joints and connections are secure and free from leakage before and during concrete placement works. ~~If any defect is discovered, stop the placement works and evacuate the workers immediately. Carry out repairs and reinspect before commencing or resuming work.~~

I have deleted the above as you have instructed.

(2) Ensure that all delivery pipes, end hoses and other system components are all correctly pressure rated and capable of withstanding the maximum pump pressure.

(3) Maintain a safe separation distance between the delivery pipe, end hose and boom and any existing Overhead Services as required by JSSS Chapter 3 [*Existing Underground, Concealed and Overhead Services*], Table 3.2.1: Safe Separation Distances.

(4) Maintain a safe separation distance from any obstructions (Contractor's Equipment,

buildings, etc.) and avoid any risk of hitting or touching any obstructions with the pumping equipment, delivery pipes, end hoses or boom;

I have reversed these items as you have instructed and added the minor wording as shown.

(5) Check the ground condition, ensure a firm, stable and horizontal working base at all times and position pumping equipment and ready-mixed concrete trucks at a safe distance from the edge of any excavations, drop or slope to protect against any slippage or fall of equipment and ready-mixed concrete trucks or collapse of ground.

(6) Fully extend outriggers and ensure stability of pumping equipment and ready-mixed concrete trucks at all times.

(7) Arrange proper communications and signals before starting the placement between workers, Spotters and operators of equipment and ready-mixed concrete trucks and ensure there is a Spotter at the point of placement.

(8) Never allow workers to stand between ready-mixed concrete trucks and pumps when ready-mixed concrete trucks are reversing.

(9) Ensure that workers are out of the path of the boom when moving the boom.

(10) If a blockage or clogging occurs inside the pipeline during the pour, stop pumping immediately and instruct workers to move to a safe position before attempting to remove the blockage or clogging. The pipeline shall be opened after releasing the pressure inside in accordance with the predetermined procedure.

Revised as requested; and edited.

(11) Ensure that hoppers and chutes are securely fixed and that workers are aware of the method of operation and safe use.

(12) Ensure that the delivery pipe and hose at the end of the concreting pump booms are securely connected so that they do not fall or become detached.

(13) Prohibit workers from working on the hopper screen of the concrete pump, remove obstructions and foreign materials in the hopper only after stopping the agitating blade and applying lockout/tagout procedures.

(14) Prohibit workers from entering in front of and below the outlet of concrete pump delivery pipes and end hoses to prevent workers being struck by pipes or ~~loose and~~ flailing hoses.

NK please check the above, I have edited but am not completely sure of the full meaning of your added clause.

NK6/23: modified.

9.2.4 Safety Measures for Ready-Mixed Concrete Trucks

The Contractor shall take the following measures for the ready-mixed concrete trucks in the transportation and delivery of cast-in place concrete.

(1) Ensure that drivers are aware of and take due account of the heavy load and high centre of gravity of loaded ready-mixed concrete trucks during delivery and discharge to maintain safety and prevent overturning.

(2) Ensure that workers do not come into contact with and/or become entangled with the rotating drum and other moving parts of ready-mixed concrete trucks and that they are prevented from looking into the drum.

9.2.5 Safety Measures for use of Concrete Buckets

The Contractor shall take the following measures when using concrete buckets for hoisting and placement of cast-in place concrete:

(1) Comply with JSSS 5.2.6 [*General Safety Measures for Hoisting Operations*] for selection of proper Hoisting Equipment and Rigging Equipment, arrangement of proper communication tools, signals and placement of Spotters.

Revised as requested; and edited.

(2) Ensure that the movable gate is locked before hoisting and is only operated by a skilled worker when it is opened for discharge.

(3) Take measures to stabilise the bucket during hoisting and prevent any uncontrolled swinging. Prohibit workers from pushing and pulling bracket except for minor adjustment of location of the bucket for discharging concrete.

Revised as requested; and edited.

(4) Prevent any persons or workers from entering the places below bucket.

(5) Discharge the concrete slowly and in a controlled manner to prevent the bucket from rebounding after discharge.

9.2.6 Safety Measures for use of Concrete Vibrators

The Contractor shall take the following measures when using concrete vibrators for compacting of cast-in place concrete:

(1) Take all necessary measures to prevent electric shock, complying with JSSS 4.3.12 [*Additional Requirements for Electric Powered Equipment*].

Revised as requested

(2) To prevent vibration injury to workers, provide anti-vibration gloves and ensure that they are properly used.

Revised as requested; and edited.

9.3 REINFORCEMENT

9.3.1 Safety Measures at Planning Stage

The Contractor shall:

(1) Prepare a Safety Plan, Method Statement and fixing and placing drawings of reinforcement describing the method of cutting, bending and fixing and showing the types and positioning of supports, ties and bracing necessary to support and rigidly secure the reinforcement and to prevent any movement or collapse.

(2) Inform all relevant workers of the content of the Safety Plan, Method Statement and assembly drawings.

9.3.2 Safety Measures at Fabrication, ~~and~~ Fixing and Placing Stage

NK6/23: modified.

The Contractor shall take the following measures during cutting, bending, transporting, fixing and placing of reinforcement:

(1) Cutting and Bending:

(a) Designate the work as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*];

(b) Maintain the working area in a safe, organised, uncluttered and clean condition at all times, avoid excessive storage by retaining sufficient quantities of

reinforcement for immediate use, locate equipment in known positions, prevent any fall or dropping of material, equipment and tools, remove offcuts to a separate area and ensure the area is safe and that the risk of workers falling or tripping is avoided; and

(c) Maintain stored reinforcement material in a safe and secure manner and prevent collapse or fall by providing adequate restraints.

(2) Transporting:

(a) Ensure that scaffolding and any other temporary structures on which reinforcement is to be temporarily placed is capable of supporting the load, ensure that the load is distributed safely and that is does not cause any obstruction to the passage of other workers;

(b) Ensure that reinforcing bar is lifted and suspended horizontally to prevent any slippage during Hoisting Operations and also that it is bundled safely and securely tied to prevent any reinforcing bars from sliding out;

In principle, hoist the bundle of reinforcing bars, keeping them horizontal and maintaining the balance by using two rigging slings; and

(c) When transporting to the working location use flatbed trailers or truck, ensure that the trailer or truck is of sufficient length to avoid any overhang of reinforcing bars and provide appropriate warning signs and lighting on reinforcing bars if necessary in accordance with the local regulations to avoid collision with other vehicles, persons and workers.

(3) Fixing and Placing:

(a) Prepare proper temporary access to and support for fixing and placing reinforcement in position;

(b) Prevent any risk of fall and also any distortion or weakening of reinforcement by prohibiting workers from standing, walking or climbing on such reinforcement and where necessary provide safe temporary boarded walkways for workers use;

(c) Ensure that fixing and placing is in exact accordance with the fixing and placing drawings and that the correct types and positioning of supports, ties and bracing is maintained to properly support and rigidly secure the reinforcement and prevent undue movement or collapse;

(d) When there is any danger of reinforcement falling or collapsing during fixing and placing in wind and rain, stop the fixing and placing work. After conditions improve, inspect the reinforcement and take measures to correct any abnormality before continuing with fixing and placing;

Your original draft used "assembly" but you have now changed this to "fixing and placing". I have therefore corrected the above accordingly

(e) Prohibit working concurrently at levels where any other worker is working underneath in accordance with JSSS 2.6.7 [*Working Above or Below Others*]; and

(f) Provide temporary protection caps to exposed ends of reinforcing bars to prevent injury to workers.

9.4 FORMWORK (INCLUDING FALSEWORK)

9.4.1 General

Any reference to "formwork" in this Section shall also be deemed to include reference to the associated falsework for that formwork.

9.4.2 Safety Measures at Planning Stage

The Contractor shall:

(1) Design the formwork and manage its provision, use and removal in accordance with JSSS 1.35 [*Design and Management of Temporary Works*] and the further requirements of JSSS Section 7.1 [*General Requirements of Temporary Works*].

(2) Prepare a Safety Plan, Method Statement and design drawings of formwork describing the method of fabrication, assembly, erection and removal and showing details of all materials, components, types and positioning of supports, ties and bracing necessary to create a rigid and secure temporary support structure for the concrete, reinforcement and workers and to prevent any movement or collapse.

I assume that "assembly" is acceptable here.

(3) Inform all relevant workers of the content of the Safety Plan, Method Statement and design drawings.

9.4.3 Safety Measures at Fabrication and Assembly Stage

The Contractor shall take the following measures during fabricating, transporting and assembling of formwork:

(1) Designate the work as Dangerous Work, enclose the immediate working area with temporary signs and fences or barriers, prevent entry of any unauthorised personnel and take all such further measures that are required by JSSS 2.3 [*Prohibition of Entry - Dangerous Work*].

(2) Maintain the working area and storage area in a safe, organised, uncluttered and clean condition at all times, avoid excessive storage by retaining sufficient quantities of material for immediate use, locate equipment in predetermined places, prevent any fall or dropping of material, equipment and tools, remove offcuts to a designated area.

Revised as requested; and edited.

~~(3) Maintain stored formwork material in a safe and secure manner and ensure that there is no risk of collapse or fall by providing adequate restraints.~~

(4) Ensure that the formwork is free from cracks, defects and deformation.

(5) Ensure that scaffolding and any other temporary structures on which formwork is to be temporarily placed is capable of supporting the load, that the load is distributed evenly and within the allowable stress of formwork.

Revised as requested; and edited.

(4) During any hoisting operations, ensure that all necessary measures are taken to prevent formwork being affected by wind and that any risk of collision and consequent injury and damage is avoided.

Revised as requested; and edited, however please note:

The addition of "largen sized formwork" is not necessary and has no meaning anyway, even medium or small (however size is defined) should also be considered.

It is not correct to include "system formwork" as an example because this is not an example. The requirement applies to all types of formwork which may be affected by wind including purpose made plywood panels for example

9.4.4 Safety Measures during Dismantling and Removal Stage

Please note that "dismantling" (as used in your original draft) is the correct word and in my opinion should not be changed. It is preferable in this sense to "disassembly".

(1) Ensure that formwork is only dismantled when so instructed or approved in writing by

the HSO.

The above requirement is very important for safety purposes and I do not recommend its deletion or amendment. A principle cause of structural collapse is when formwork is dismantled too early. This is often done with no consideration of safety and no involvement of the HSO but is frequently a consequence of speeding-up the work when it is running late.

Also the effect of concrete quality on time of strength achievement should be considered.

The text as I have originally suggested is correct and I do not recommend that it be replaced with your suggestion "The formwork shall be disassembled in accordance with the relevant provision in the Contract". This reduces or even negates the meaning of the original text.

I am aware that technical specifications commonly describe period for curing of concrete and indicative or minimum periods before dismantling formwork but this is Temporary Works for which the responsibility rests with the contractor irrespective of what may be stated there. It is not a duty or obligation of the Employer or Engineer to advise or instruct.

(2) After dismantling, stack formwork panels horizontally to avoid overturning due to strong wind or applied loadings; and

I suggest the above change

(3) Any protruding nails, wires, projecting members and splinters shall be removed or bent flat to avoid injury to workers and other persons.

検討経緯書

10 Diving Works

JICA Standard Safety Specification Preparation Study
11 Diving Works (English R1)

2020.1.29 Japanese R2ProFinalR1
2020.1.31 NK Draft Eng. R1

JSSS in Japanese (R2 Pro. Final 1/29)

目次

11 潜水作業

11.1 一般事項

(1) 本章では、他給気式潜水及び自給気式潜水による潜水作業を扱う。ただし、飽和潜水、混合ガス潜水については対象外とする。

(2) 用語の定義

(a) 他給気式潜水とは、空気圧縮機からの送気を受けて行う潜水をいう。

(b) 自給気式潜水とは、潜水士が携行するボンベからの給気を受けて行う潜水をいう。

(c) 潜水士(Diver)とは、当該国又は国際的な潜水資格を持ち潜水作業に従事する者をいう。

(3) 当該国の法律、本契約、本仕様書に規定がない事項は、OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations の規定のうち、混合ガス潜水を除く、他給気式潜水及び自給気式潜水に関する規定のみを遵守して、作業計画及び安全計画を作成し、安全措置を講じなくてはならない。

JSSS in English R0（1/30）

Contents

11 Diving Works

11.1 General Requirement

(1) This chapter specified the diving works by the surface-supplied air diving and scuba diving only, excluding Saturated diving and mixed-gas diving.

(2) Definitions of terms in JSSS are as follows.

(a) “Surface-supplied Air Diving” means the diving methods by the air supply from the air compressor on the diving support vessel.

(b) “Scuba Diving” means the diving methods by the air supply from the gas cylinder carried by the divers.

(c) “Diver” means the worker with the international diving licenses or the Countries.

(3) The Contractor shall prepare the safety plan and work plan, and take the safety measures complying with the item only for surface-supplied air diving and scuba diving in “OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations” for the item not specified in the contract, this specification and the law of the Countries.

JSSS in English R1 (1/31)

11 Diving Works

11 Diving Works

11.1 General Requirement

(1) This Chapter specifies the diving works of the surface-supplied air diving and SCUBA diving excluding saturated diving and mixed-gas diving.

(2) Definition of terms is as follows:

(a) “Surface-supplied air diving” means a diving mode in which the diver in the water is supplied from the dive location with compressed air for breathing.

(b) “SCUBA diving” means a diving mode independent of surface supply in which the diver uses open circuit self-contained underwater breathing apparatus.

(c) “Diver” means the worker working in water using underwater apparatus which supplies compressed breathing gas at the ambient pressure. The diver shall hold the diving license required by the Law ofthe Country or international one when no requirement in the Law.

(3) The Contractor shall prepare the meathod statement and safety plan, and take the safety measures for the diving works in accordance with the requirements for the surface-supplied air diving and SCUBA diving excluding mixed-gas diving specified in “OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations” for requirements other than specified in the Contract, JSSS and the Law of the Country.

11.2 潜水作業計画における安全上の留意事項

11.2.1 一般

請負者は、潜水作業の作業計画及び安全計画（以下、「計画」という。）の作成は次の事項に留意して作成しなければならない。

(1) 計画の作成に際し、潜水作業の専門知識・経験等のある潜水士の助言を受けること。

(2) 潜水作業の内容を理解し、伴う危険性を把握し、適切な作業船・補助設備・潜水士及び作業の支援員の計画を立てること。

(3) 当該作業の開始に当たり、潜水士を含む作業員・関係者に対する事前周知を行うこと。

11.2.2 潜水作業の計画

計画作成に当たり、次の情報を入手すること。

(1) 作業現場水域（河川、湖水、海域等）の情報

(a) 気象、海象、その他の情報

(i) 最寄りの既設観測所の観測資料

(ii) 霧及び雷の時期別発生状況

(iii) 作業水深と想定流速

(iv) 海底の土質・状況、爆発物、危険物、障害物等

(v) 河川流速と洪水波情報

(b) 現場周辺の一般船舶の交通制限措置、本契約及び契約以外の工事の状況

(2) 計画で網羅すべき事項

(a) 作業内容、潜水方式

(b) 計画する潜水作業に対する空気圧縮機の能力

(c) 潜水深度、潮流、水中視界、水温、海底状況等の作業環境

(d) 作業時期、潜水士・作業船の混在作業、作業に影響する船舶の航行状況

(e) 潜水作業班の要員構成、資格

(f) 指揮命令系統

(g) 作業中止基準

(h) 緊急時の措置、連絡体制、救急処置

(i) 救急治療施設及び医療体制

(j) 現場水域管理者とのコミュニケーション

11.2 Safety Measures for Diving Work Plan

11.2.1 General Requirement

The Contractor shall prepare the working plan and safety plan (called “diving work plan” as below) considering to the following items.

(1) Request the advice from the diver with the experiments and special knowledge for the diving work in planning of diving work.

(2) To be clarified the danger by understanding the work contents, and plan the work ship, equipment, diver and the assistant.

(3) Inform the worker including the diver, the assistant and all relative of the diving work plan.

11.2.2 Diving Work Plan

The Contractor shall collect the following information to prepare the diving work plan.

(1) Information of the work site (river, lake, sea area etc.)

(a) Seasonal and local information for weather and sea conditions

(i) Observed data at the nearest existing weather observatory

(ii) Occurrence conditions of the fog and lightning by periods, etc.

(iii) Water depth, the assumed current speed of the work site

(iv) Geotechnical condition of seabed, explosives, dangerous goods, and other obstacles, etc.

(v) River current speed, flood wave information

(b) Restriction of the maritime ship traffic at the site and the construction conditions of this Contract and the others.

(2) Items which should be specified with the diving work plan

(a) Work details, diving method, and diving measures

(b) Capacity of the air compressor for the planned diving work.

(c) Work environment such as diving depth, tide current, visibility of underwater, water temperature, and seabed conditions, etc.

(d) Work schedule, the works mixed of the divers and work vessels, maritime condition of the vessel affecting the diving work

(e) The licensed person and personnel composition of the diver team

(f) Command structure

(g) Suspension criteria of the diving work

(h) Measure in emergency, contact system and first aid

(i) Emergency medical institutes and medical care system

(j) Communication for the administrator of the water area at the site

11.2 Preparation of Method Statement and Safety Plan

11.2.1 General Requirements

The Contractor shall prepare the method statement and Safety Plan of the diving works taking into consideration the following requirements:

(1) Reflecting the advice of the diver who has the experience and special knowledge of the diving works;

(2) Planning of arrangement and works of the workboat, equipment, divers and assistants for the diving works after understanding of the work contents of the diving works and risks in the works; and

(3) Information and instructions to be given to the divers, assistants and other workers related with the diving works of the method and safety measures before start of the works.

11.2.2 Method Statement and Safety Plan

The Contractor shall collect the information and describe in the method statement and Safety Plan as mentioned below.

(1) Information of the diving work site

(a) Weather, sea state and other information

To MD: Please select proper term such as sea state, maritime condition, or other https://en.wikipedia.org/wiki/Sea_state

(i) Data observed at the weather stations near the Site;

(ii) Date of fog and lightning occurred by periods

(iii) Water depth, estimated current speed at the work site

(iv) Water level variation in flood at the work site

(v) Geotechnical conditions of the work site, explosives, Dangerous Goods and other obstacles

(b) Traffic restriction measures of the public/third parties' ships/boats at the Site

To MD: Please determine which term of ship, boat, vessel, other in sea or river shall be used

(c) Status of construction works near the diving work site in the Contract and by others.

(2) Items to be described

(a) Contents of the diving work and diving method;

(b) Capacity of the air compressor for the diving work;

(c) Work environment such as diving depth, tide current, river flow, visibility of underwater, water temperature, sea/riverbed conditions, etc.;

(d) Time schedule, the mixed works of the divers and workboats, traffic conditions of the ships/boats to affect the diving works;

(e) Personnel composition of the diving work team and required licenses for the work;

(f) Command line;

(g) Criteria to stop the diving work;

(h) Measures in emergency, communication system and first aid;

		(i) Emergency medical facilities and medical care system (j) Communication system with the administrator of the water area management at the Site.
11.3 要員の配置 (1) 請負者は、本仕様書 1.8[請負者の要員の適正配置]に従い、潜水作業には、作業の管理者、潜水士、作業の支援員を配置しなければならない。潜水作業の管理者と作業の支援員の業務及び責務は次である。 (a) 潜水士の資格を持つ者の中から、船上で全体の作業を管理及び指揮する潜水作業の管理者を配置し、以下の業務を行わせること。 (i) 潜水作業全般の統括業務と管理 (i) 潜水士、作業の支援員に対する作業の指揮 (ii) 潜水作業全般の安全管理並びに他の作業関係者との連絡・調整 (iii) 潜水作業に関する記録の作成と保管 (b) 次に示す潜水作業の支援に従事する作業の支援員を、潜水方法の特性に応じ必要な人数配置すること。 (i) 空気圧縮機を運転すること。 (ii) 潜水士への送気の調節を行うバルブ又はコックを操作すること。 (iii) 潜水士と連絡して、その者の潜降及び浮上を適正に行わせること。 (iv) 潜水士への送気の調節を行う送気員と連絡して、潜水士に必要な量の空気を送気させること。 (v) 送気設備の故障その他の事故により、潜水士に危険又は健康障害の生ずるおそれがあるとき、速やかに潜水士に連絡すること。 (vi) ヘルメット式潜水器を用いて行う潜水業務にあっては、潜降直前に当該潜水士のヘルメットがかぶと台に結合されているかどうかを確認すること。 (vii) 作業船との混在作業における作業船・潜水士間の連絡及び合図の伝達を行うこと。 (viii) 潜水士に命綱を用いる場合は、確認信号により潜水士の安全を確認すること。 (ix) 気泡により潜水士の安全を確認すること。 (2) 潜水士の健康管理は、本仕様書 1.8.1[要員の適正配置上の留意点]に規定の作業員の健康状態の管理に加えて、以下の潜水士の疾患及び健康状態に留意して行わなければならない。潜水作業で危険の	**11.3 Placement of the Workers** (1) The Contractor shall place the diving work manager, the diver, and the assistant complying with JSSS 1.8[Proper Placement of Contractor's Personnel]. The work contents and responsibilities of the diving work manager and the assistant are shown as follows. (a) Place the diving work manager which is assigned among the worker with the diving licenses to manage and instruct all works, and carry out the following works (i) Management and supervision for the diving works (ii) Instruction for the diving works to divers and assistant (iii) Safety management for the diving works and communication and coordination with other third parties (iv) Record and storage the report for the diving works (b) Place the necessary number of the assistant which carries out the following support works according to the characteristic of the diving method. (i) Operate the air compressors (ii) Control the valve and cock for the conditioning the breathing air (iii) Let the diver descent and ascent properly to communicate them (iv) Let the air suppliers operate air supply equipment properly to communicate them (v) Inform the diver immediately when there is a risk for the health damage due to the accidents of the air supply facilities. (vi) During the diving method with the standard diving helmet, confirm the connection between the helmet and the corselet before the diving works. (vii) Coordinate the work vessel and the diver when the work vessel and the diver operate in the same area. (viii) Ensure the safety for the diver by the signal when the diver use the lifeline (ix) Ensure the safety for the diver by the air bubble of breathing. (2) The Contractor shall carry out the health check for the divers considering to the following condition and disease addition to the health management specified with JSSS 1.8.1 [Proper Placement of Contractor's Personnel]. If there is a risk for the diving work due to the diver's health condition, the Contractor shall prohibit the diver from operating the diving work. (a) Disease of the respiratory system (b) Disease of the cardiovascular system	**11.3 Placement of the Workers** (1) The Contractor shall place the manager/supervisor, the diver, and the assistants for the diving work complying with JSSS 1.8[Proper Placement of Contractor's Personnel] as specified below. *To MD: We specified in Japanese JSSS to place a manager for the diving work whose work and responsibilities are as show below. Please determine manager or supervisor.* *For your rference: ACoP below specify supervisor.* *HSE Commercial diving projects offshore Diving at Work Regulations 1997* *Approved Code of Practice and guidance* *https://www.hse.gov.uk/pubns/books/l103.htm* (a) Place the manager/supervisor for the diving works which is assigned among the workers having the diving licenses to manage and instruct all works, and carry out the following duties: (i) Management and supervision of the diving works (ii) Instruction for the diving works to the divers and assistants (iii) Safety management in the diving works and communication and coordination with other third parties (iv) Recording and storage of the reports of the diving works (b) Place the necessary number of the assistants who execute the following supporting works according to the characteristic of the diving method. (i) Operate the air compressors; (ii) Control the valve for the supply of breathing air; (iii) Communicate with the diver so that the diver descent and ascents properly; (iv) Communicate with the assistant in charge to supply the air to the divers properly; (v) Inform the diver immediately when there is a risk of the health damage to the diver due to the accident of the air supply facilities and others. (vi) Inspect the connection between the helmet and the corselet (neck dam, breastplate, or corselet) of the diver before the start of diving works in case of the diving method with the diving helmet. *To MD: Please check which is to be used among neck dam, breastplate, or corselet.* *https://en.wikipedia.org/wiki/Diving_helmet* (vii) Coordinate the workboat and the diver when the workboat and the diver operate in the same area; (viii) Ensure the safety of the diver by receiving the

おそれがある疾患又は状態がある場合は、潜水士を潜水作業に従事させないこと。 (a) 呼吸器系疾患 (Respiratory system) (b) 循環器系疾患 (Cardiovascular system) (c) 神経系疾患(Nervous system) (d) 筋骨格系疾患(Musculoskeletal system) (e) 耳鼻咽喉系疾患 (Ear, nose, throat) (f) 視覚の状態（Vision） (g) 歯の状態(Dental health) (h) 内分泌系疾患（Endocrine system） (i) その他の潜水に影響のある疾患、健康項目	(c) Disease of the nervous system (d) Disease of the musculoskeletal system (e) Disease of the ear, nose, throat (f) Problem of the vision (g) Distress of the dental health (h) Disease of the endocrine system (i) The other item and disease which affects the diving work	signals from the diver when the diver uses the lifeline; and (ix) Ensure the safety of the diver by observing the air bubble of breathing of the diver. (2) The Contractor shall carry out the health check of the divers considering to the following condition and disease addition to the health management specified in JSSS 1.8.1 [Proper Placement of Contractor's Personnel]. If there is a risk to the diver in the diving work due to the diver's health condition, the Contractor shall prohibit the diver from engaging in the diving work. (a) Disease of the respiratory system, cardiovascular system, nervous system, musculoskeletal system, ear, nose and throat, and endocrine system; (b) Conditions of the vision and dental health (c) Other health conditions and disease which affects the diving work *To MD, The above (a) and (c) are selected from the following:* *HSE The medical examination and assessment of commercial divers (MA1) 59 and others* *https://www.hse.gov.uk/pubns/ma1.htm*
11.4 作業員への安全教育と指導、周知 請負者は、潜水作業の作業員に次の安全教育と指導、周知を行わなければならない。 (1) 本仕様書 4.1.4[安全教育と指導]に準じて、各作業の特性に応じて、作業員に対して教育訓練を実施すること。 (2) 本仕様書 4.1.2[各作業の作業員への周知]に準じて、各作業の特性に応じた役割分担、作業内容、方法、手順、安全措置事項を作業員に周知すること。	**11.4 Safety Instruction for the Worker** The Contractor shall carry out the following safety instruction and announcement to the workers. (1) Conduct the training for the worker according to the characteristic of the works complying with JSSS 4.1.4 [Safety Instructions]. (2) Inform the worker of the work contents, methods, procedures, sharing rolls and safety measures according to the characteristic of the works complying with JSSS 4.1.2 [Instruction for Contractor's Personnel].	**11.4 Safety Instruction to the Workers** The Contractor shall carry out the following safety instruction and training to the workers. (1) Conduct the training for the workers according to each duty in the diving works complying with JSSS 4.1.4 [Safety Instructions]. (2) Inform the workers of the work contents, methods, procedures, sharing rolls and safety measures according to each duty of the diving works complying with JSSS 4.1.2 [Instruction for Contractor's Personnel].
11.5 潜水設備・器具及び作業船 **11.5.1 潜水作業用の設備及び器具** 請負者は、OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations、§1910.430 Equipment.の規定を遵守し、潜水方式に応じて適切な設備及び器具を配置しなくてはならない。	**11.5 Diving Equipment and Diving Support Vessel** **11.5.1 Diving Equipment and Facility** The Contractor shall equip the diving equipment and facilities properly according to the diving methods complying with OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations、§1910.430 Equipment.	**11.5 Diving Equipment and Diving Workboat** **11.5.1 Diving Equipment and Facility** The Contractor shall provide the diving equipment and facilities properly according to the diving methods in accordance with OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations, §1910.430 Equipment.
11.5.2 潜水作業船 請負者は、潜水作業のために次を遵守した潜水作業船を配置しなくてはならない。 (1) 堅牢で、かつ対波性及び復元性の高い構造であること、当該国の法律に基づく設備を有し、かつ作業現場に応じた大きさのものであること。 (2) 潜水士の乗降用のはしごが設置されていること。 (3) 雨よけ並びに日よけの覆を設置されていること。	**11.5.2 Diving boat and Patrol boat** The Contractor shall procure the diving boat complying with the following items. (1) Ensure that the work boat should be robust and resilience structure with the anti-wave structure, and equipped the facilities based on the law of the country, and be right sized according to the work site. (2) Ensure that the ladder for getting on the boat should be equipped (3) Ensure that the roof for the rain and sun protection should be equipped	**11.5.2 Diving Workboat** The Contractor shall arrange the diving workboat complying with the following requirements: (1) The workboat shall be robust, seaworthiness and stable and equipped the facilities following the Law of the Country, and be suitable size required according to the diving work site; (2) The ladders for the divers getting on and off the workboat are equipped; and

		(3) The roof for the rain and sunshade shall be provided on the workboat.
11.5.3 点検・整備 請負者は、保守管理のために、当該国の法律及び当該潜水設備・器具及び作業船の製造者のマニュアルの規定に従い、本仕様書 4.1.6[機器の点検・整備]に準じ、当該当該潜水作業に使用する潜水設備・器具及び作業船の日常点検表、定期点検表を作成し、点検、検査を実施しなければならない。 点検検査結果は、記録・保管し、エンジニアから要求がある場合は提示しなければならない。 整備が完了するまで、潜水設備・器具及び作業船は、使用してはならない。	**11.5.3 Inspections and Maintenances** The Contractor shall make the daily and periodic checklist of the work vessels, diving equipment and facilities comply with the manufacture's manual of these manufactures, the law of the country and JSSS 4.1.6 [Inspections and Maintenances] and conduct the following inspections and maintenances. The Contractor shall keep the inspection records and submit them if the Engineer requests to show them. The Contractor shall prohibit from using the diving equipment, facility and vessel until the maintenance will finish.	**11.5.3 Inspections and Maintenance** The Contractor shall prepare the daily and periodic checklist of the diving workboat, equipment, tools and facilities complying with the manufacture's manual and instructions, the Laws of the Country and JSSS 4.1.6 [Inspections and Maintenances] and conduct the inspections and maintenance. The Contractor shall keep the inspection records and submit them if the Engineer requests. The Contractor shall prohibit from using the diving workboat, equipment, tools and facilities until the maintenance is finished.
11.6 潜水作業の安全措置 **11.6.1 潜水作業前の安全措置** 請負者は、潜水作業の開始前に次の措置を講じなければならない。 (1) 作業員 (a) 作業の方法、手順、作業員の配置及び業務分担について打合せること。 (b) 潜水タイムテーブルの順守を指示すること。 (c) 作業場所の気象・海象の状況、障害物の有無及びその状況、その他注意すべき点について周知すること。 (d) 潜水士の健康状態を確認すること。 (2) 潜水設備・器具 潜水設備・器具の作業前点検を行い、不備がある場合は使用を禁止すること。 (3) 潜水作業船 (a) 作業前に点検を行い、不備がある場合は使用を禁止すること。 (b) 潜水作業船に潜水作業を表示する国際信号 A 旗板を掲げること。 (c) 潜水作業船は作業中に移動しないように確実にびょう泊すること。 (d) エンジンを停止すること。 (4) 潜水作業現場 (a) 潜水作業の区域を示す赤旗等を設置すること。 (b) 潜水作業現場には、3m 毎に水深を表示したさがり綱を設置すること。 (4) 潜水開始前の確認	**11.6 Safety Measures for Diving Works** **11.6.1 Measures before Diving Works** The Contractor shall take the following measures before the diving work. (1) Worker (a) Discuss the work methods, procedures, the placement of the worker and the work roll sharing (b) Instruct the worker to comply with the diving timetable (c) Inform the worker of the weather and maritime condition of the work site, obstacles and their conditions, and the other notices. (d) Conduct the health check for the diver (2) Diving equipment and tool Conduct the inspection of the diving equipment and tool before the operation and prohibit from using the item with the defect (3) Diving boat (a) Conduct the inspection before the operation and prohibit from using them with the defect (b) Indicate the International Maritime Signal Flag A which shows the diving work at the diving work vessel. (c) The diving boat shall be anchoring certainly. (d) Stop the engine during the diving work (4) Diving work site (a) Indicate the signs such as red flags which show the diving work site (b) Install the rope which shows the water depth each 3m at the diving work site. (5) Confirmation and notice before the diving (a) Carrying Tools for the diver	**11.6 Safety Measures for Diving Works** **11.6.1 Measures before Diving Works** The Contractor shall take the following measures before the diving work: (1) Workers (a) Discuss the work methods, procedures, placement of the workers and the work roll sharing; (b) Instruct the workers to comply with the diving timetable; (c) Inform the workers of the weather and maritime conditions at the site, obstacles and their conditions, and other notices to be attentioned; and (d) Conduct the health check of the divers. (2) Diving equipment and tools Conduct the inspection of the diving equipment and tools before the operation and prohibit from using them when the defect is found. (3) Diving workboat (a) Conduct the inspection of the diving workboat before its operation and prohibit from using it when the defect is found; (b) Rise the International Maritime Signal Flag A which shows the executing diving work on the diving workboat; (c) Moor the diving workboat to the sea bottom with an anchor certainly; and (d) Stop the engine during the diving work. (4) Diving work site (a) Provide the signs such as by red flags which show the diving work site; and (b) Install a downline which has depth indication marks of 3m intervals in the diving work site. *MD: downline is shown below:*

(a) 潜水士の携行品 (i) 他給気式潜水の場合：信号索、水中時計、水深計、通話装置、ナイフ （注：通話装置を携行する場合は信号索、水中時計、水深計を携行させないことができる。） (ii) 自給気式潜水の場合： 水中時計、水深計、ナイフ、救命胴衣又は浮力調整具、（携行可能な場合は通話装置） (b) 自給気式潜水の潜水士への当該作業に使用するボンベの現に有する給気能力 (c) 潜水士船のさがり綱の緊結状況 (d) 通話装置の稼働 (e) 船上作業員の救命胴衣の着用 (f) 監視船の配備状況（配備している場合） 上記の確認で不備又は異常がある場合は、作業を行わないこと。	(i) Surface-supplied air diving: signal halyard, diver's watch, water depth meter, diver's telephone devices (if the diver carry the telephone devices, it is not necessary to equip the signal halyard, diver's watch, water depth meter.) and knife (ii) Scuba diving: diver's watch, water depth meter, knife, life jacket or buoyancy adjuster (diver's telephone devices, if the diver can carry) (b) Inform the diver of the air supply capacity of the gas cylinder for the scuba diving. (c) Confirm the tighten condition of the rope of the diving work vessels (d) Operation condition of the telephone devices (e) Confirm that the worker on the vessel takes the life jackets. (f) Confirm the deployment condition of the patrol vessels (if the patrol vessel is chartered) If some defect or anything wrong are identified by the above confirmations, prohibit from diving.	https://en.wikipedia.org/wiki/Downline_(diving) (5) Check before the diving works (a) Tools to be carried by the divers (i) Tools for the surface-supplied air diving: signal halyard, diver's watch, water depth meter, telephone device and knife (Note: if the diver carries the telephone device, it is not necessary to take the signal halyard, diver's watch and water depth meter.) (ii) Tools for SCUBA diving: diver's watch, water depth meter, knife, life jacket or buoyancy adjuster, and diver's telephone device if available. (b) Inform the diver of the air supply capacity of the gas cylinder for the SCUBA diving; (c) Check the tightening status of the downline from the diving workboat to the diving work site; (d) Check operation status of the telephone device; (e) Check if the workers on the workboat wear the life jackets; and (f) Check the placement state of the patrol boat (when the patrol boat is placed). If defect or abnormality are identified by the above check, prohibit the diver from diving.
11.6.2 潜水作業中の安全措置 請負者は、潜水作業中は、次の安全措置を講じなければならない。 (1) 作業に無関係な船舶の潜水作業場所付近への接近を監視する専任の監視員を配置し、潜水作業場所付近に近づく船舶に対し、ハンドマイク、旗等により現場へ接近させないこと。 (2) 潜水士への措置 (a) 潜水作業の管理者及び作業の支援員がいないときは、潜水士に潜水作業を行わせないこと。 (b) 作業船の乗降には、乗降用はしごを使用させること。 (c) 潜降及び浮上するときは、さがり綱を使用させること。 (d) 有線又は無線の通話装置、信号索等で、連絡員と常に連絡をとらせること。 (3) 気象・海象状況の変化を早期に把握し、計画で定めた作業中止基準に合致する状況となった場合は、直ちに作業を中止すること。 (4) 潜水士の作業時間の管理 (a) 潜水士の作業内容に応じた適切な休憩時間の取得や交代等の労務管理を行うこと。 (b) 各潜水士の潜水作業に要した時間、潜水作業内容、潜水回数、潜水深度等を記録すること。	**11.6.2 Safety Measures during Diving Work** The Contractor shall take the following safety measure during the diving work. (1) Place the spotter which shall monitor the approaching boat and vessels to the diving work site. Take the measures such as alerts for their boats and vessels which do not related in the diving work by the hand speaker and flags, etc. in order to prevent from approaching the diving work site. (2) Measures for the diver (a) Prohibit the diver from carrying out the diving work without the diving work manager and the assistant (b) Let the diver use the ladder for getting off the boat in diving works. (c) Let the diver use the rope for descending and ascending. (d) Communicate always with divers by the diver's telephone and the signal halyard. (3) Monitor the weather and maritime condition earlier, and if their conditions shall meet the suspension criteria, suspend the diving work (4) Time management for the diver (a) Conduct the work management such the divers take the suitable rest or shift for another worker according to their work conditions, etc. (b) Keep the record of the diving time, the work contents, the number of times of the diving work, and the working depth of each diver, etc.	**11.6.2 Safety Measures during Diving Works** The Contractor shall take the following safety measures during the diving works: (1) Place the Spotter on the diving workboat who shall watch the boat and ships approaching to the diving work site. Take the measures to alert the boats and ships unrelated with the diving works by the hand speaker and flags, etc. in order to prevent them from approaching to the diving work site. (2) Measures for the divers (a) Prohibit the divers from carrying out the diving work without the supervisor and the assistants for the diving works; (b) Make the divers use the ladders for getting off and on the workboat in the diving works; (c) Make the divers use the downline for descending and ascending; and (d) Communicate always with the divers through the wire or wireless diver's telephone or the signal halyard. (3) Grasp the change of weather and sea state early and if the change meets the work stop criteria, stop the diving work; (4) Time management for the diver (a) Conduct the work management so that the divers take the suitable rest or shift or be replaced with other divers according

		to their work conditions; and (b) Make the record of diving time, work contents, number of times of diving, and the working depth of each diver, etc.
11.7 緊急救護措置 請負者は、本仕様書 1.11［救急救護計画］に従い、潜水作業時の救急救護計画を作成しなければならない。 詳細な救急救護施設と医療要員に関する要求事項が、本契約の中で別途規定されている場合は、それを遵守しなければならない。 水深 10m 以上の場所において潜水作業を行うとき、又は水深 10m 以下の水深であっても減圧症等にかかるおそれのある作業を行うときは、本契約で別途規定する措置を講じなければならない。	**11.7 Medical Measures in Emergency** The contractor shall make the emergency medical plan in diving work complying with JSSS 1.11 [Emergency Response Plan]. If the contract specifies with the requirement for the detail of the emergency medical institutes and medical staff, the Contractor shall comply with the contract. When the divers carry out the work at more than 10 m depth or at the risk of the decompression sickness despite of less than 10 m depth, the Contractor shall take the measures specified with the Contract.	**11.7 Medical Measures in Emergency** The Contractor shall make the emergency medical plan for the diving works in accordance with JSSS 1.11 [Emergency Response Plan]. The Contractor shall comply with the requirements regarding the emergency medical facilities and medical staff for the diving works specified in the Contract. When the divers carry out the works in more than 10 m depth or there is risk of the decompression sickness in less than 10 m depth, the Contractor shall take the measures for treatment of decompression sickness specified in the Contract.
		To MD, please include the following in Annex 1.3 as the special requirements by the Employer to the Contractor: *(1) To select the medical facility which has operational decompression chamber and establish a system to transport and get treatment the diver of decompression sickness to and communicate with the medical facility in emergency, or* *(2) To provide a medical facility which has a decompression chamber in or near the diving work site and establish a communication system to get a doctor to lead the decompression treatment in case there is no medical facility for the decompression treatment near the Site.*

JICA Standard Safety Specification Preparation Study
10 DIVING WORKS (English R2 for Issue 2)

2019.11.05 Japanese Final
2020.2.18 NK Issue 1
2020.3.3 JICA Comment
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JSSS in Japanese (2019/11/05)	JSSS in English Issue 1 (2020/02/18)	JICA Comments (2020/03/03) JC: JICA Comments NK: NK actions	JSSS in English R2 for Issue 2(2020/4/6) Words in red color are added or modified from the last version.
10. 潜水作業 10.1 一般事項 10.2 潜水作業計画における安全上の留意事項 10.2.1 一般 10.2.2 潜水作業の計画 10.3 要員の配置 10.4 作業員への安全教育と指導、周知 10.5 潜水設備・器具及び作業船 10.5.1 潜水作業用の設備及び器具 10.5.2 潜水作業船 10.5.3 点検・整備 10.6 潜水作業の安全措置 10.6.1 潜水作業前の安全措置 10.6.2 潜水作業中の安全措置 10.7 緊急救護措置	**10. DIVING WORK** **10.1 GENERAL** 10.1.1 Scope 10.1.2 Definitions 10.1.3 Compliance Standards **10.2 DIVE SAFETY PLAN** 10.2.1 General Content 10.2.2 Climatic, Marine, Natural and Physical Conditions 10.2.3 Further Technical Detail in Dive Safety Plan **10.3 PERSONNEL FOR DIViNG OPERATION** 10.3.1 Qualification of Diving Personnel 10.3.2 Designated Person-in-Charge (DPIC) 10.3.3 Duties of DPIC 10.3.4 Diver Assignments 10.3.5 Assistants and Duties of Members Dive Team Members 10.3.6 Health Check **10.4 DIVING EQUIPMENT, TOOLS, FACILITIES AND WORKBOATS** 10.4.1 Diving Equipment 10.4.2 Diving Workboats 10.4.3 Inspections and Maintenance **10.5 PARTICULAR SAFETY MEASURES** 10.5.1 Measures before Diving Operations 10.5.2 Measures during Diving Operations **10.6 DIVING ACCIDENT CONTROL PLAN** 10.6.1 General 10.6.2 Provisions by Contractors		**10. DIVING WORK** **10.1 GENERAL** 10.1.1 Scope 10.1.2 Definitions 10.1.3 Compliance Standards **10.2 DIVE SAFETY PLAN** 10.2.1 General Content 10.2.2 Climatic, Marine, Natural and Physical Conditions 10.2.3 Further Technical Detail in Dive Safety Plan **10.3 PERSONNEL FOR DIViNG OPERATION** 10.3.1 Qualification of Diving Personnel 10.3.2 Designated Person-in-Charge (DPIC) 10.3.3 Duties of DPIC 10.3.4 Diver Assignments 10.3.5 Assistants and Duties of Members Dive Team Members 10.3.6 Health Check **10.4 DIVING EQUIPMENT, TOOLS, FACILITIES AND WORKBOATS** 10.4.1 Diving Equipment 10.4.2 Diving Workboats 10.4.3 Inspections and Maintenance **10.5 PARTICULAR SAFETY MEASURES** 10.5.1 Measures before Diving Operations 10.5.2 Measures during Diving Operations **10.6 DIVING ACCIDENT CONTROL PLAN** 10.6.1 General 10.6.2 Provisions by Contractors
10 潜水作業 **10.1 一般事項** (1) 本章では、他給気式潜水及び自給気式潜水による潜水作業を扱う。ただし、飽和潜水、混合ガス潜水については対象外とする。→E10.1.1 に規定済み (2) 用語の定義 (a) 他給気式潜水とは、空気圧縮機からの送気を受けて行う潜水をいう。→E10.1.2(a)に規定済み (b) 自給気式潜水とは、潜水士が携行するボンベからの給気を受けて行う潜水をいう。→E10.1.2(b)に規定済み (c) 潜水士(Diver)とは、当該国又は国際的な潜水資格を持ち潜水作業に従事する者をいう。→前半は 1.18Proper Placement of Contractor's Personnel、後半は E10.1.2(c)に規定済み (3) 当該国の法律、本契約、本仕様書に規定がない事項は、OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations の規定のうち、他給気式潜水及び自給気式潜水に関する規定のみを遵守して、作業計画及び安全計画を作成し、安全措置を講じなくてはならない。→E10.1.3(1)に規定済み(但し、作業計画と安全計画の記述は削	**10. DIVING WORK** **10.1. GENERAL** 10.1.1. Scope This Chapter specifies the safety requirements for diving operations which shall include surface-supplied air diving and SCUBA diving and which are hereinafter collectively referred to as "Diving Works". Saturation diving and mixed-gas diving are not included. 10.1.2. Definitions (1) Definition of terms is as follows: (a) "Surface-supplied air diving" means a diving mode in which the Diver is supplied at the dive location with a piped supply of compressed air for breathing; (b) "SCUBA diving" means a diving mode independent of surface supply in which	**10 DIVING WORK** **10.1. GENERAL** 10.1.1 Scope This Chapter specifies the safety requirements for diving operations which shall include surface-supplied air diving and SCUBA diving and which are hereinafter collectively referred to as "Diving Works". Saturation diving and mixed-gas diving are not included. 10.1.2. Definitions (1) Definition of terms is as follows: (a) "Surface-supplied air diving" means a diving mode in which the Diver is supplied at the dive location with a piped supply of compressed air for breathing; (b) "SCUBA diving" means a diving mode independent of surface supply in which	**10 DIVING WORK** **10.1. GENERAL** 10.1.1 Scope This Chapter specifies the safety requirements for diving operations which shall include surface-supplied air diving and SCUBA diving and which are hereinafter collectively referred to as "Diving Works". Saturation diving and mixed-gas diving are not included. 10.1.2. Definitions (1) Definition of terms is as follows: (a) "Surface-supplied air diving" means a diving mode in which the Diver is supplied at the dive location with a piped supply of compressed air for breathing; (b) "SCUBA diving" means a diving mode independent of surface supply in which

除。OSHA に含まれるため。）

10.2　潜水作業計画における安全上の留意事項

10.2.1　一般

請負者は、潜水作業の作業計画及び安全計画（以下、「計画」という。）の作成は次の事項に留意して作成しなければならない。→E10.2 Dive Safety Plan に規定済み

(1) 計画の作成に際し、潜水作業の専門知識・経験等のある潜水士の助言を受けること。→E10.2.1(6)に規定済み、潜水士が作成することと規定。

(2) 潜水作業の内容を理解し、伴う危険性を把握し、適切な作業船・補助設備・潜水士及び作業の支援員

the Diver uses open circuit self-contained underwater breathing apparatus;

(c) "Diver" means a worker working in water using underwater breathing apparatus which supplies compressed breathing gas at the ambient pressure;

(d) "Dive Team" means Divers and support assistants involved in a diving operation, including the Designated Person-in-Charge;

(e) "Designated Person-in-Charge" or "DPIC" means a senior person who, through qualification, experience and capability is deemed by the HSO to be qualified to be in charge of all aspects of the diving operation including those affecting the safety and health of members of the Dive Team;

(f) "Dive Safety Plan" means the safety plan prepared in advance of each diving operation and the nature and size of any diving operation so identified shall be such that it can be safely supervised by one DPIC.

10.1.3. Compliance Standards

(1) The Contractor shall comply as a minimum with all of the requirements specified in OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations for surface-supplied air diving and SCUBA diving (excluding saturation and mixed-gas diving).

10.2. DIVE SAFETY PLAN

10.2.1. General Content

(1) The Contractor shall prepare a Dive Safety Plan for the Diving Works, inform and if necessary further train and test all Dive Team members in the content of the Plan.

(2) A copy of the Dive Safety Plan shall be made available at the dive location to each Dive Team member.

the Diver uses open circuit self-contained underwater breathing apparatus;

(c) "Diver" means a worker working in water using underwater breathing apparatus which supplies compressed breathing gas at the ambient pressure;

(d) "Dive Team" means Divers and support assistants involved in a diving operation, including the Designated Person-in-Charge;

(e) "Designated Person-in-Charge" or "DPIC" means a senior person who, through qualification, experience and capability is deemed by the HSO to be qualified to be in charge of all aspects of the diving operation including those affecting the safety and health of members of the Dive Team;

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JC: このスペックに書いていない基準については OSHA に従うという記述にしてください。（最後のページのコメントにあるとおり、減圧室に関する記述は OSHA では不十分に見え、HSE を参照することとしたため）
For the provisions which are not stipulated in this specification, please state that they shall comply with OSHA. (As mentioned in the comment in the last page, it seems that the statement of OSHA regarding decompression chamber is not sufficient, thus this chapter shall refer to HSE.)

NK: modified as commented.

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~~(3) The Dive Safety Plan shall contain a copy of~~

the Diver uses open circuit self-contained underwater breathing apparatus;

(c) "Diver" means a worker working in water using underwater breathing apparatus which supplies compressed breathing gas at the ambient pressure;

(d) "Dive Team" means Divers and support assistants involved in a diving operation, including the Designated Person-in-Charge;

(e) "Designated Person-in-Charge" or "DPIC" means a senior person who, through qualification, experience and capability is deemed by the HSO to be qualified to be in charge of all aspects of the diving operation including those affecting the safety and health of members of the Dive Team;

(f) "Dive Safety Plan" means the safety plan prepared in advance of each diving operation and the nature and size of any diving operation so identified shall be such that it can be safely supervised by one DPIC.

10.1.3. Compliance Standards

(1) For provisions which are not stipulated in the JSSS, the Contractor shall comply ~~as a minimum~~ with ~~all of~~ the requirements specified in OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations for surface-supplied air diving and SCUBA diving (excluding saturation and mixed-gas diving).

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(1) The Contractor shall prepare a Dive Safety Plan for the Diving Works, inform and if necessary further train and test all Dive Team members in the content of the Plan.

(2) A copy of the Dive Safety Plan shall be made available at the dive location to each Dive Team member.

の計画を立てること。→E10.2.1(5)に規定済み (3) 当該作業の開始に当たり、潜水士を含む作業員・関係者に対する事前周知を行うこと。→E10.2.1(1)に規定済み	(3) The Dive Safety Plan shall contain a copy of the OSHA standard and the Contractor's policies for implementing the requirements of this standard.	~~the OSHA standard and the Contractor's policies for implementing the requirements of this standard.~~ JC:意図が不明であることもあり、不要に思います。 The intention of this provision is unknown. This item is not necessary. NK: OSHA Subpart T, 1910.420 Safe practices manual stipulate "(b) Contents. (1) The safe practices manual shall contain a copy of this standard and the employer's policies for implementing the requirements of this standard." Item (3) is deleted as commented.	
10.2.2 潜水作業の計画 計画作成に当たり、次の情報を入手すること。→E10.2.2序文に規定済み (1) 作業現場水域(河川、湖水、海域等)の情報→E10.2.2(1)に規定済み (a) 気象、海象、その他の情報→E10.2.2(1)-(4)に規定済み (i) 最寄りの既設観測所の観測資料 (ii) 霧及び雷の時期別発生状況 (iii) 作業水深と想定流速 (iv) 海底の土質・状況、爆発物、危険物、障害物等 (v) 河川流速と洪水波情報 (b) 現場周辺の一般船舶の交通制限措置、→E10.2.2(5)に規定済み、本契約及び契約以外の工事の状況→規定なし。E10.2.2(3)に追記する。 (2) 計画で網羅すべき事項 (a) 作業内容、潜水方式→規定なし。E10.2.2(1)として追記する。 (b) 計画する潜水作業に対する空気圧縮機の能力→E10.2.2 に規定済み、潜水作業に関係する全機械の能力に変更する。 (c) 潜水深度、潮流、水中視界、水温、海底状況等の作業環境→E10.2.2 に規定済み (d) 作業時期、潜水士作業船の混在作業、作業に影響する船舶の航行状況→E10.2.3(2)に規定済み (e) 潜水作業班の要員構成、資格、→E10.2.3(3)に規定済み (f) 指揮命令系統→E10.2.3(3)に規定済み (g) 作業中止基準→規定なし。E10.2.2(4)として追記する。 (h) 緊急時の措置、連絡体制、救急処置→E10.2.3(4)に規定済み (i) 救急治療施設及び医療体制→E10.2.3(5)に規定済み (j) 現場水域管理者とのコミュニケーション→E10.2.3(6)に規定済み	(4) For each required diving operation and diving mode, the Dive Safety Plan shall include: (a) Safety procedures and checklists for each diving operation; (b) Assignments and responsibilities of each of the Dive Team members; (c) Equipment lists, procedures and checklists; (d) Emergency procedures including for equipment failure, fire, adverse climatic, marine, natural and physical conditions, adverse environmental conditions, medical illness and injury; (e) Details of the workboat and all diving equipment, fuel and other consumables; (f) Equipment, tools, materials and consumables for the assigned work tasks;	(4) For each required diving operation and diving mode, the Dive Safety Plan shall include: JC: work stop criteria を入れておいた方が良いと思います。10.5.2(3)に突然出てきているので It is better to mention the work stop criteria here as it appears suddenly at 10.5.2 (3). NK: Though it is stipulated to establish the criteria for stopping the work in 10.2.2., Item (e) is added. (a) Safety procedures and checklists for each diving operation; (b) Assignments and responsibilities of each of the Dive Team members; (c) Equipment lists, procedures and checklists; JC: (e)及び(f)と重複感があります。違いがあるということであれば、分かるように明記してください。 The item (c) seems duplicated with (e) and (f). If there is difference and reasons to state, describe it so that the difference can be understood clearly. NK: OSHA Subpart T, 1910.420 Safe practices manual.の(a)から(d)を(3)に規定し、(e)以降を追記していました。(e) & (f)を(c)に含めます。 OSHA Subpart T, 1910.420 Safe practices manual.(a) to (d) is specified in (3) and other requirements are added to (3) as (e) to (i). Combined (e) and (f) in (c). (d) Emergency procedures including for equipment failure, fire, adverse climatic, marine, natural and physical conditions, adverse environmental conditions, medical illness and injury; (e) Details of the workboat and all diving equipment, fuel, and other consumables; (f) Equipment, tools, materials and consumables for the assigned work tasks; (g) Scope of work for each Diver and all support assistants in the Dive Team throughout the diving operation; (h) Information and instructions to be given to the Divers, support assistants and other workers related with the	(3) For each required diving operation and diving mode, the Dive Safety Plan shall include: (a) Safety procedures and checklists for each diving operation; (b) Assignments and responsibilities of each of the Dive Team members; (c) ~~Equipment l~~ Lists, procedures and checklists of diving equipment, tools, materials, workboat, fuel and other consumables; (d) Emergency procedures including for equipment failure, fire, adverse climatic, marine, natural and physical conditions, adverse environmental conditions, medical illness and injury; (e) Work stop criteria for change of the weather and marine conditions; ~~(e) Details of the workboat and all diving equipment, fuel, and other consumables;~~ ~~(f) Equipment, tools, materials and consumables for the assigned work tasks;~~ (f) Scope of work for each Diver and all support assistants in the Dive Team throughout the diving operation; (g) Information and instructions to be given to the Divers, support assistants

	(g) Scope of work for each Diver and all support assistants in the Dive Team throughout the diving operation; (h) Information and instructions to be given to the Divers, support assistants and other workers related with the diving operations and the working methods and safety measures; and (i) Communication systems and procedures. (5) The Dive Safety Plan shall analyse the tasks of the assigned diving operation, assess all risks involved and describe all measures to avoid such risks. (6) The Dive Safety Plan shall be prepared by a Diver that has the qualification, experience and capability deemed sufficient by the HSO and it shall incorporate the advice of and be approved by the DPIC.	diving operations and the working methods and safety measures; and (i) Communication systems and procedures. (5) The Dive Safety Plan shall analyse the tasks of the assigned diving operation, assess all risks involved and describe all measures to ~~avoid~~ mitigate such risks. JC: changed. (6) The Dive Safety Plan shall ~~be prepared by a Diver that has the qualification, experience and capability deemed sufficient by the HSO and it shall~~ incorporate the advice of DPIC or any other Contractor's personnel having relevant qualification and experience. ~~and be approved by the DPIC.~~ JC: これでは実際に潜る人が計画を作ることになる(Diver の定義を参照)。OSHA を見ると基本は DPIC が作ることになっていないか？ This sentence can be read that the diver himself will make the Dive Safety Plan. (Refer to the definition of Diver,) DPIC shall make the Plan basically if comply with the provisions of OSHA? JC: DPIC が自分でアドバイスして、自分で承認するという言い方はおかしい。 It seems strange that DPIC gives advice to and approves the Dive Safety Plan. NK: OSHA では、Safety Plan (Safety practice manual)を、雇用者(請負者)が作成するとのみ規定し、誰が作成するべきとは規定していません。 提案の(6)は、実際現場で潜るかに関係せず潜水士である者が、DPIC の助言を得て作成し、DPIC の承認を得ることを規定しています。 潜水作業という特殊な作業であることから、潜水士の作成、DPIC の review and approval 承認という手続きで、漏れや間違いのない品質の Safety Plan が確保できると考えます。 単なる潜水士ではなく、HSO が能力を認めた潜水士に作成することが規定されております。 一方、DPIC が作成しますと、review and approval の任務に HSO は専門家でないため不適であり、別途潜水専門家を任命する必要があります。 そのため、 DPIC の助言は削除した原案を推奨致します。 The OSHA stipulates only that The employer shall develop a safe practices manual (Safety Plan) but not mention who prepare it. The proposed (6) stipulates a diver shall prepare it . The diver is not restricted to a diver who actually engages in the diving work. The diver prepares it getting advice and DPIC approve it. Because the diving work is special work, by the preparation by the diver and review and approval by the DPIC, quality of SP which does not have missing/errors can be secured. The	and other workers related with the diving operations and the working methods and safety measures; and (h) Communication systems and procedures. (4) The Dive Safety Plan shall analyse the tasks of the assigned diving operation, assess all risks involved and describe all measures to ~~avoid~~ mitigate such risks. (5) The Dive Safety Plan shall be prepared by a Diver that has the qualification, experience and capability deemed sufficient by the HSO and it shall ~~incorporate the advice of and~~ be approved by the DPIC.

		diver is not normal diver but one HSO admits his ability. On the other hand, if DPIC prepare the SP, it is necessary to assign other professional person who is qualified for diving works because HSO cannot review and approve as normally he is not qualified for diving works. With reasons, NK propose to leave this (6) with deletion of " incorporate the advice of and". (7) The Dive Safety Plan shall be reviewed and approved by the HSO and submitted to the Engineer. JC: HSO による review & approval の後に Engineer に提出することにした方がよくないか？ Isn't it better that after review and approval of the Dive Safety Plan, then submit it to the Engineer? NK: DPIC が review and approval を(6)で規定していますが、最終的に HSO が承認することとし、下記の第 1 章 1.7.7 に規定の通り、作業開始前にエンジニアへ提出することが良いと考えます。第 1 章に規定されておりここでの提出の規定は不要と考えます。(6)には Further を追記します。 1.7.7.Commencement Stage Safety Plan (1) This shall be submitted within twenty-eight (28) days after the Commencement Date and not less than twenty-eight (28) days before commencing any work at the Site, (6) stipulate DPIC shall review and approval the Safety Plan (SP), and HSO shall finally approve the SP. As JSSS 1.7.7. above has specified its submission, no need to specify it in (6).	(6) The Dive Safety Plan shall be further reviewed and approved by the HSO
	(7) The Dive Safety Plan shall be reviewed and approved by the HSO.		
	10.2.2. Climatic, Marine, Natural and Physical Conditions The Contractor shall compile relevant information from statistical records, recent records and forecasts of conditions for the Dive Safety Plan. The Contractor shall establish criteria to permit commencement, continuation or stopping of any diving operations due to the climatic, marine, natural and physical conditions. The Dive Safety Plan shall describe how such controls shall be implemented.	10.2.2. Climatic, Marine, Natural and Physical Conditions The Contractor shall compile relevant information from statistical records, recent records and forecasts of conditions for the Dive Safety Plan. The Contractor shall establish criteria to permit commencement, continuation or stopping of any diving operations due to the climatic, marine, natural and physical conditions. The Dive Safety Plan shall describe how such controls shall be implemented. JC: permit to stop という言い方があるのでしょうか。 We wonder if there is expression of "permit to stop"? NK: 作業開始、継続、中止は DPIC が基準(criteria)に基づき現場で指示することから、請負者は基準を設定することへ変更します。 The commencement, continuation or stopping is directed in accordance with the criteria at the site, therefore this clause specifies only to establish the criteria as modified.	10.2.2. Climatic, Marine, Natural and Physical Conditions The Contractor shall compile relevant information from statistical records, recent records and forecasts of conditions for the Dive Safety Plan. The Contractor shall establish criteria ~~to permit~~ for commencement, continuation or stopping of any diving operations due to the climatic, marine, natural and physical conditions. The Dive Safety Plan shall describe how such controls shall be implemented.
	The Contractor shall make exploratory dives to survey and establish conditions at the diving location. Relevant information shall be obtained by the Contractor from all available sources and shall include for example the following: (1) Climatic information and forecasting at the	The Contractor shall make exploratory dives to survey and establish conditions at the diving location. Relevant information shall be obtained by the Contractor from all available sources and shall include for example the following: (1) Climatic information and forecasting at the diving location:	The Contractor shall make exploratory dives to survey and establish conditions at the diving location. Relevant information shall be obtained by the Contractor from all available sources and shall include for example the following: (1) Climatic information and forecasting at the diving location:

	diving location: (a) Wind speed and direction; (b) Air temperature; (c) Surface visibility, fog, sea mist; (d) Likelihood and intensity of electrical storm; and (e) Weather forecasting. (2) Water/Marine Conditions (a) Sea state; wave height and direction; (b) Height and time of tides; (c) Water depths; (d) Water Temperatures; (e) Water currents, direction and speed; (f) Visibility at depths; and (g) Water level variation in rivers or lakes during flood periods. (3) Physical Conditions (a) Underwater cables and pipes; (b) Other artificial obstacles; (c) Geotechnical conditions affecting the work; and (d) UXO, Dangerous Goods and Hazardous Substances. (4) Natural Conditions (a) Natural obstructions; (b) Coral reef or other marine life to be protected; and (c) Danger from marine wildlife and precautions. (5) Surface Traffic (a) Surface traffic details, timings and restrictions, and (b) Danger, precautions and control of surface traffic. (6) Diving Works Area (a) Demarcation of diving location; and (b) Limits of working area. 10.2.3. Further Technical Detail in Dive Safety Plan In addition to the above, the Contractor shall provide further technical detail in the Dive Safety Plan including: (1) Equipment for the Dive Works of air	(a) Wind speed and direction; (b) Air temperature; (c) Surface visibility, fog, sea mist; (d) Likelihood and intensity of electrical storm; and (e) Weather forecasting. (2) Water/Marine Conditions (a) Sea state; wave height and direction; (b) Height and time of tides; (c) Water depths; (d) Water Temperatures; (e) Water currents, direction and speed; (f) Visibility at depths; and (g) Water level variation in rivers or lakes during flood periods. (3) Physical Conditions (a) Underwater cables and pipes; (b) Other artificial obstacles; (c) Geotechnical conditions affecting the work; and (d) UXO, Dangerous Goods and Hazardous Substances. (4) Natural Conditions (a) Natural obstructions; (b) Coral reef or other marine life to be protected; and (c) Danger from marine wildlife and precautions. (5) Surface Traffic (a) Surface traffic details, timings and restrictions, and (b) Danger, precautions and control of surface traffic. (6) Diving Works Area (a) Demarcation of diving location; and (b) Limits of working area. 10.2.3. Further Technical Detail in Dive Safety Plan In addition to the above, the Contractor shall provide further technical detail in the Dive Safety Plan including: (1) Equipment for the Dive Works of air compressor system, breathing-gas supply hoses, buoyancy control, compressed gas	(a) Wind speed and direction; (b) Air temperature; (c) Surface visibility, fog, sea mist; (d) Likelihood and intensity of electrical storm; and (e) Weather forecasting. (2) Water/Marine Conditions (a) Sea state; wave height and direction; (b) Height and time of tides; (c) Water depths; (d) Water Temperatures; (e) Water currents, direction and speed; (f) Visibility at depths; and (g) Water level variation in rivers or lakes during flood periods. (3) Physical Conditions (a) Underwater cables and pipes; (b) Other artificial obstacles; (c) Geotechnical conditions affecting the work; and (d) UXO, Dangerous Goods and Hazardous Substances. (4) Natural Conditions (a) Natural obstructions; (b) Coral reef or other marine life to be protected; and (c) Danger from marine wildlife and precautions. (5) Surface Traffic (a) Surface traffic details, timings and restrictions, and (b) Danger, precautions and control of surface traffic. (6) Diving Works Area (a) Demarcation of diving location; and (b) Limits of working area. 10.2.3. Further Technical Detail in Dive Safety Plan In addition to the above, the Contractor shall provide further technical detail in the Dive Safety Plan including: (1) Equipment for the Dive Works of air compressor system, breathing-gas supply hoses, buoyancy control, compressed gas

10.3　要員の配置

(1) 請負者は、本仕様書 1.8[請負者の要員の適正配置]に従い、潜水作業には、作業の管理者、潜水士、作業の支援員を配置しなければならない。潜水作業の管理者と作業の支援員の業務及び責務は次である。→規定なし。序文は不要であることから、規定しない。

(a) 潜水士の資格を持つ者の中から、船上で全体の作業を管理及び指揮する潜水作業の管理者を配置し、以下の業務を行わせること。
→E10.3.2 に Designated Person-in-Charge として規定済み

(i) 潜水作業全般の統括業務と管理
→E10.3.2(1)に規定済み

(ii) 潜水士、作業の支援員に対する作業の指揮→規定なし。E10.3.3(3)に追記する。

(iii) 潜水作業全般の安全管理、並びに他の作業関係者との連絡・調整→E10.3.3(2)に規定済み

(iv) 潜水作業に関する記録の作成と保管
→E10.3.3(6)&(7)に規定済み

(b) 次に示す潜水作業の支援に従事する作業の

compressor system, breathing-gas supply hoses, buoyancy control, compressed gas cylinders, gauges and timekeeping devices, masks and helmets, etc.

(2) Time schedule, the various works of the Divers, support assistants and workboats, traffic conditions of the workboats and other marine craft that may affect the diving operations.

(3) Composition of the Dive Team, command structure, assigned tasks, required licenses for the work.

(4) Communications, recovery and first aid measures in the event of an accident or emergency.

(5) Emergency medical facilities including the provision of a decompression chamber at the Diving Works location together with medical support.

(6) Or (alternatively and by reference to JSSS Section 10.6 [*Diving Accident Control Plan*] the address, contact details of an existing decompression chamber that the Contractor intends to use together with a description of the facilities, age and condition and location.

(7) Contact system between the Contractor/diving workboats and the authorities which manage the area around the diving works site at normal and emergency times.

10.3. PERSONNEL FOR DIVING OPERATIONS

10.3.1. Qualification of Diving Personnel

Qualification of the Dive Team members shall be in accordance with the specified OSHA requirements and shall for example include the following:

(1) Each Diver shall possess a valid commercial diving certification for the appropriate training level issued by an internationally recognised Diver competence assessment organisation and as approved by the HSO and Engineer.

(2) Each Dive Team member shall have the experience and training necessary to perform assigned tasks in a safe and healthful manner.

(3) Each Dive Team member shall have experience and training in the following:

(a) The use of tools, equipment and systems relevant to assigned tasks;

(b) Techniques of the assigned diving mode; and

(c) Diving operations and emergency

cylinders, gauges and timekeeping devices, masks and helmets, etc.

(2) Time schedule, the various works of the Divers, support assistants and workboats, traffic conditions of the workboats and other marine craft that may affect the diving operations.

(3) Composition of the Dive Team, command structure, assigned tasks, required licenses for the work.

(4) Communications, recovery and first aid measures in the event of an accident or emergency.

(5) Emergency medical facilities including the provision of a decompression chamber at the Diving Works location together with medical support.

(6) Or (alternatively and by reference to JSSS Section 10.6 [*Diving Accident Control Plan*] the address, contact details of an existing decompression chamber that the Contractor intends to use together with a description of the facilities, age and condition and location.

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(4) All Dive Team members shall be trained in

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(3) Composition of the Dive Team, command structure, assigned tasks, required licenses for the work.

(4) Communications, recovery and first aid measures in the event of an accident or emergency.

(5) Emergency medical facilities including the provision of a decompression chamber at the Diving Works location together with medical support.

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(b) Techniques of the assigned diving mode; and

(c) Diving operations and emergency procedures.

(4) All Dive Team members shall be trained in

支援員を、潜水方法の特性に応じ必要な人数配置すること。→E10.3.5 に規定済み

(i) 空気圧縮機を運転すること。→E10.3.5(1)に規定済み

(ii) 潜水士への送気の調節を行うバルブ又はコックを操作すること。→E10.3.5(2)に規定済み

(iii) 潜水士と連絡して、その者の潜降及び浮上を適正に行わせること。→E10.3.5(3)に規定済み

(iv) 潜水士への送気の調節を行う送気員と連絡して、潜水士に必要な量の空気を送気させること。→E10.3.5(4)に規定済み

(v) 送気設備の故障その他の事故により、潜水士に危険又は健康障害の生ずるおそれがあるとき、速やかに潜水士に連絡すること。→E10.3.5(5)に規定済み

(vi) ヘルメツト式潜水器を用いて行う潜水業務にあっては、潜降直前に当該潜水士のヘルメツトがかぶと台に結合されているかどうかを確認すること。→E10.3.5(6)に規定済み

(vii) 作業船との混在作業における作業船・潜水士間の連絡及び合図の伝達を行うこと。→E10.3.5(7)に規定済み

(viii) 潜水士に命綱を用いる場合は、確認信号により潜水士の安全を確認すること。→E10.3.5(8)に規定済み

(ix) 気泡により潜水士の安全を確認すること。→E10.3.5(9)に規定済み

(2) 潜水士の健康管理は、本仕様書 1.8.1[要員の適正配置上の留意点]に規定の作業員の健康状態の管理に加えて、以下の潜水士の疾患及び健康状態に留意して行わなければならない。潜水作業で危険のおそれがある疾患又は状態がある場合は、潜水士を潜水作業に従事させないこと。
→E10.3.6(1)&(3)に規定済み、下記は同(1)-(2)に規定済み。

(a) 呼吸器系疾患 (Respiratory system)
(b) 循環器系疾患 (Cardiovascular system)
(c) 神経系疾患(Nervous system)
(d) 筋骨格系疾患(Musculoskeletal system))
(e) 耳鼻咽喉系疾患 (Ear, nose, throat)
(f) 視覚の状態(Vision)
(g) 歯の状態(Dental health)
(h) 内分泌系疾患(Endocrine system
(i) その他の潜水に影響のある疾患、健康項目

procedures.

(4) All Dive Team members shall be trained in cardiopulmonary resuscitation and first aid to a minimum standard of that recommended by the International Federation of Red Cross and Red Crescent Societies standard course or equivalent.

(5) Dive Team members who are exposed to or control the exposure of others to hyperbaric conditions shall be trained in diving-related physics and physiology.

(6) The qualifications of all Divers shall be checked and verified in accordance with the specified OSHA requirements.

10.3.2. Designated Person-in-Charge (DPIC).

(1) The Contractor shall assign a DPIC to each diving operation.

(2) The DPIC shall have experience in, and knowledge of all phases of the diving operation for which he is responsible.

(3) The DPIC shall be immediately responsible for the health and safety of the Dive Team.

(4) The DPIC shall be stationed at the dive location, and shall not be stationed at another dive location (i.e., the DPIC must be stationed at one dive location and be responsible only for the diving operation at that location).

(5) The DPIC can be a Diver when qualified as a diver, and when another dive-team member is available at the dive location who is trained and capable of performing the necessary functions of the DPIC's duties.

(6) The qualifications of the DPIC shall be checked and verified in accordance with the specified OSHA requirements.

(7) No Diver shall dive in any diving operation unless the DPIC and the complete Dive Team present.

10.3.3. Duties of DPIC

The DPIC shall have the duties and responsibilities required by the content of this Chapter and the specified OSHA requirements, including the following:

(1) Manage the health and safety of the Dive Team;

(2) Manage and supervise the diving operation;

(3) Issue instructions for the diving operation to the Dive Team;

cardiopulmonary resuscitation and first aid to a minimum standard of that recommended by the International Federation of Red Cross and Red Crescent Societies standard course or equivalent.

(5) Dive Team members who are exposed to or control the exposure of others to hyperbaric conditions shall be trained in diving-related physics and physiology.

(6) The qualifications of all Divers shall be checked and verified in accordance with the specified OSHA requirements.

10.3.2 Designated Person-in-Charge (DPIC).

(1) The Contractor shall assign a DPIC to each diving operation.

(2) The DPIC shall have experience in, and knowledge of all phases of the diving operation for which he is responsible.

(3) The DPIC shall be immediately responsible for the health and safety of the Dive Team.

(4) The DPIC shall be stationed at the dive location, and shall not be stationed at another dive location (i.e., the DPIC must be stationed at one dive location and be responsible only for the diving operation at that location).

(5) The DPIC can be a Diver when qualified as a diver, and when another dive-team member is available at the dive location who is trained and capable of performing the necessary functions of the DPIC's duties.

(6) The qualifications of the DPIC shall be checked and verified in accordance with the specified OSHA requirements.

~~(7) No Diver shall dive in any diving operation unless the DPIC and the complete Dive Team present.~~

JC: 10.3.4 に入れるべき事項
This item should be in 10.3.4.
NK: Moved to 10.3.4.(4).

10.3.3 Duties of DPIC

The DPIC shall have the duties and responsibilities required by the content of this Chapter and the specified OSHA requirements, including the following:

(1) Manage the health and safety of the Dive Team;

(2) Manage and supervise the diving operation;

(3) Issue instructions for the diving operation to the Dive Team;

cardiopulmonary resuscitation and first aid to a minimum standard of that recommended by the International Federation of Red Cross and Red Crescent Societies standard course or equivalent.

(5) Dive Team members who are exposed to or control the exposure of others to hyperbaric conditions shall be trained in diving-related physics and physiology.

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10.3.3 Duties of DPIC

The DPIC shall have the duties and responsibilities required by the content of this Chapter and the specified OSHA requirements, including the following:

(1) Manage the health and safety of the Dive Team;

(2) Manage and supervise the diving operation;

(3) Issue instructions for the diving operation to the Dive Team;

	(4) Issue instructions to temporarily stop work when the DPIC considers that it is not safe to continue; (5) Support the HSO with the health and safety management of the diving operations; (6) Ensure that all members of the Dive Team keep records; and (7) Collect or summarise records and submit to HSO. 10.3.4. Diver Assignments. (1) Each Dive Team member shall be assigned tasks commensurate to the persons experience and training, except that limited additional tasks may be assigned to a Diver undergoing training provided that these tasks are performed under the direct supervision of an experienced Dive Team member. (2) The Contractor shall not require a Dive Team member to be exposed to hyperbaric conditions against the member's will, except when necessary to complete decompression or treatment procedures. (3) The Contractor shall not permit a Dive Team member to dive or be otherwise exposed to hyperbaric conditions for the duration of any temporary physical impairment or condition which is known to the Contractor and is likely to affect adversely the safety or health of a Dive Team member. 10.3.5. Assistants and Duties of Dive Team The Contractor shall appoint such Divers and support assistants within each Dive Team as are considered necessary by the DPIC for the Dive Team to discharge its duties in a safe and competent manner. All Dive Team support assistants shall have the duties and responsibilities required by the content of this Chapter and the specified OSHA requirements, including the following: (1) Operate the air compressors. (2) Control the valve for the surface supply of breathing air. (3) Communicate with the Diver so that the Diver	(4) Issue instructions to temporarily stop work when the DPIC considers that it is not safe to continue; (5) Support the HSO with the health and safety management of the diving operations; (6) Ensure that all members of the Dive Team keep records; and (7) Collect or summarise records and submit to HSO. 10.3.4 Diver Assignments. (1) Each Dive Team member shall be assigned tasks commensurate to the persons experience and training, except that limited additional tasks may be assigned to a Diver undergoing training provided that these tasks are performed under the direct supervision of an experienced Dive Team member. (2) The Contractor shall not require a Dive Team member to be exposed to hyperbaric conditions against the member's will, except when necessary to complete decompression or treatment procedures. (3) The Contractor shall not permit a Dive Team member to dive or be otherwise exposed to hyperbaric conditions for the duration of any temporary physical impairment or condition which is known to the Contractor and is likely to affect adversely the safety or health of a Dive Team member. JC: 趣旨が分からないので、non-native に分かるような記述に修正してください。 The meaning of this item is hard to understand. Please, modify the sentence so that non-native can easily understand. NK: Modified. MD will review this. NK: moved from 10.3.2 (7) to (4). 10.3.5 Assistants and Duties of Dive Team The Contractor shall appoint such Divers and support assistants within each Dive Team as are considered necessary by the DPIC for the Dive Team to discharge its duties in a safe and competent manner. All Dive Team support assistants shall have the duties and responsibilities required by the content of this Chapter and the specified OSHA requirements, including the following: (1) Operate the air compressors. (2) Control the valve for the surface supply of breathing air. (3) Communicate with the Diver so that the Diver	(4) Issue instructions to temporarily stop work when the DPIC considers that it is not safe to continue; (5) Support the HSO with the health and safety management of the diving operations; (6) Ensure that all members of the Dive Team keep records; and (7) Collect or summarise records and submit to HSO. 10.3.4 Diver Assignments. (1) Each Dive Team member shall be assigned tasks commensurate to the persons experience and training, except that limited additional tasks may be assigned to a Diver undergoing training provided that these tasks are performed under the direct supervision of an experienced Dive Team member. (2) The Contractor shall not require a Dive Team member to be exposed to hyperbaric conditions against the member's will, except when necessary to complete decompression or treatment procedures. (3) The Contractor shall not permit a Dive Team member to dive or be exposed to hyperbaric conditions or any other condition which is likely to affect adversely the safety or health of a Dive Team member that may cause any physical impairment. (4) No Diver shall dive in any diving operation unless the DPIC and the complete Dive Team present. 10.3.5 Assistants and Duties of Dive Team The Contractor shall appoint such Divers and support assistants within each Dive Team as are considered necessary by the DPIC for the Dive Team to discharge its duties in a safe and competent manner. All Dive Team support assistants shall have the duties and responsibilities required by the content of this Chapter and the specified OSHA requirements, including the following: (1) Operate the air compressors. (2) Control the valve for the surface supply of breathing air. (3) Communicate with the Diver so that the Diver descends and ascends properly.

	descends and ascends properly. (4) Communicate to supply the air to the Diver properly between the assistants in charge to control the valve and to communicate with the Diver; (5) Inform the Diver immediately when there is any risk due to a failure of air supply, weather change, sea condition changes, operations of other vessels and potential hazards. (6) Inspect the connection between the helmet and the breastplate of the Diver before the start of diving operations when using a diving helmet. (7) Coordinate the position of the workboat and avoid any conflict with the diver. (8) Ensure the safety of the Diver by receiving the signals from the Diver when the Diver is using the lifeline. (9) Ensure the safety of the Diver by observing the air bubble of breathing of the diver.	descends and ascends properly. (4) Communicate to supply the air to the Diver properly between the assistants in charge to control the valve and to communicate with the Diver; (5) Inform the Diver immediately when there is any risk due to a failure of air supply, weather change, sea condition changes, operations of other vessels and potential hazards. (6) Inspect the connection between the helmet and the breastplate of the Diver before the start of diving operations when using a diving helmet. (7) Coordinate the position of the workboat and avoid any conflict with the diver. (8) Ensure the safety of the Diver by receiving the signals from the Diver when the Diver is using the lifeline. JC: 音声が普通で、line signalling は一般的ではないようなので、改めて内容を確認願います。 OSHA に line signalling はなく、10.5.2(2)(d)を参照。 Communication is usually made verbally and line signalling is not used in common. Please, confirm if this item is appropriate. Refer to 10.5.2.(2)(d). NK: OSHA では、line signalling はスキューバダイビング以外では認められていない。よって本仕様書では、以降の節においても信号索は除外して規定する。 As stipulated in OSHA as below, line-pull signal shall not be used except for scuba diving. 29 CFR 1910.422(c) Communications. An operational two-way voice communication system is required for communications between each surface-supplied air diver or mixed-gas diver and a member of the dive team at the dive location or in the diving bell (if a diving bell is provided or required). Line-pull signals do not meet this requirement, except for the SCUBA-diving mode. A two-way voice communication system is required for communications between the diving bell and the dive location. Modified and deleted line pull signals in other clauses. (9) Ensure the safety of the Diver by observing the air bubble of breathing of the diver.	(4) Communicate to supply the air to the Diver properly between the assistants in charge to control the valve and to communicate with the Diver; (5) Inform the Diver immediately when there is any risk due to a failure of air supply, weather change, sea condition changes, operations of other vessels and potential hazards. (6) Inspect the connection between the helmet and the breastplate of the Diver before the start of diving operations when using a diving helmet. (7) Coordinate the position of the workboat and avoid any conflict with the diver. (8) Ensure the safety of the Diver by maintaining communication with voice or video communication device. (9) Ensure the safety of the Diver by observing the air bubble of breathing of the diver.
10.4 作業員への安全教育と指導、周知 請負者は、潜水作業の作業員に次の安全教育と指導、周知を行わなければならない。 (1) 本仕様書 4.1.4[安全教育と指導]に準じて、各作業の特性に応じて、作業員に対して教育訓練を実施すること。→E10.2.1(1)に規定済み (2) 本仕様書 4.1.2[各作業の作業員への周知]に準じて、各作業の特性に応じた役割分担、作業内容、方法、手順、安全措置事項を作業員に周知すること。→E10.5.1(1)(a)-(d)に規定済み	10.3.6. Health Checks (1) In addition to the requirements of JSSS 1.8.1 [*Proper Placement of Contractor's Personnel*] and in compliance with the OSHA requirement for the Contractor to make himself fully aware, the Contractor shall carry out particular health checks on all Divers to ascertain that they are medically and physically fit to perform their duties. (2) Such checks shall include for example checks for the existence of any illness or any	10.3.6 Health Checks (1) In addition to the requirements of JSSS 1.8.1 [*Proper Placement of Contractor's Personnel*] and in compliance with the OSHA requirement for the Contractor to make himself fully aware, the Contractor shall carry out particular health checks on all Divers to ascertain that they are medically and physically fit to perform their duties. (2) Such checks shall include for example checks for the existence of any illness or any	10.3.6 Health Checks (1) In addition to the requirements of JSSS 1.8.1 [*Proper Placement of Contractor's Personnel*] and in compliance with the OSHA requirement for the Contractor to make himself fully aware, the Contractor shall carry out particular health checks on all Divers to ascertain that they are medically and physically fit to perform their duties. (2) Such checks shall include for example checks for the existence of any illness or any

	deficiency in: (a) The respiratory system, cardiovascular system, nervous system, musculoskeletal system, ear, nose and throat, and endocrine system; (b) Vision; (c) Dental health (d) Any other health conditions and disease which may affect the diving operation. (3) Any Diver that does not pass the above checks shall not be allowed to dive until the condition has improved and after further checks are successful. (4) Additionally, and in accordance with the OSHA standard: (a) The DPIC must inquire into each Diver's health prior to any task assignment. (b) The Contractor shall advise all Divers of the procedures for reporting physical problems or adverse physiological effects during and after diving. (5) Consistent with the above and the OSHA provisions, the Contractor shall not require any Diver to dive or otherwise work under hyperbaric conditions when the Diver: (a) Has any ailment that is likely to adversely affect the safety or health of any member of the Dive Team; (b) Lacks the necessary training or education; or (c) Refuses to work under such hyperbaric conditions.	deficiency in: (a) The respiratory system, cardiovascular system, nervous system, musculoskeletal system, ear, nose and throat, and endocrine system; (b) Vision; (c) Dental health (d) Any other health conditions and disease which may affect the diving operation. (3) Any Diver that does not pass the above checks shall not be allowed to dive until the condition has improved and after further checks are successful. (4) Additionally, and in accordance with the OSHA standard: (a) The DPIC must inquire into each Diver's health prior to any task assignment. JC: この"must"は"shall"ではないか？ Isn't this "shall" instead of "must"? NK: modified to make terms consistent as commented. (b) The Contractor shall advise all Divers of the procedures for reporting physical problems or adverse physiological effects during and after diving. (5) Consistent with the above and the OSHA provisions, the Contractor shall not require any Diver to dive or otherwise work under hyperbaric conditions when the Diver: (a) Has any ailment that is likely to adversely affect the safety or health of any member of the Dive Team; JC: "ailment"は、通例軽い又は慢性の病気、不快の意であるが、ここにその意味で適切か？ Is "ailment" proper in this clause? (Ailment means slight or chronic disease/symptoms.) NK:「体調にわずかでも不調等があれば潜水作業させてはならない」の意味で、"sickness", "disease", "illness"等より"ailment"が適切と考える。そのままとする。 This means that the Contractor shall not require any Diver to dive when the Diver has any even slight physical problem. In this sense, "ailment" is more suitable than "sickness", "disease" or "illness". Left as it is. (b) Lacks the necessary training or education; or (c) Refuses to work under such hyperbaric conditions. (6) Should a Diver request termination during a	deficiency in: (a) The respiratory system, cardiovascular system, nervous system, musculoskeletal system, ear, nose and throat, and endocrine system; (b) Vision; (c) Dental health (d) Any other health conditions and disease which may affect the diving operation. (3) Any Diver that does not pass the above checks shall not be allowed to dive until the condition has improved and after further checks are successful. (4) Additionally, and in accordance with the OSHA standard: (a) The DPIC shall inquire into each Diver's health prior to any task assignment. (b) The Contractor shall advise all Divers of the procedures for reporting physical problems or adverse physiological effects during and after diving. (5) Consistent with the above and the OSHA provisions, the Contractor shall not require any Diver to dive or otherwise work under hyperbaric conditions when the Diver: (a) Has any ailment that is likely to adversely affect the safety or health of any member of the Dive Team; (b) Lacks the necessary training or education; or (c) Refuses to work under such hyperbaric conditions. (6) Should a Diver request termination during a dive, it may be necessary to prolong the

10.5 潜水設備・器具及び作業船

10.5.1 潜水作業用の設備及び器具

請負者は、OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations、§1910.430 Equipment. の規定を遵守し、潜水方式に応じて適切な設備及び器具を配置しなくてはならない。→E10.4.1 に規定済み

10.5.2 潜水作業船

請負者は、潜水作業のために次を遵守した潜水作業船を配置しなくてはならない。→E10.4.2(1)に規定済み

(1) 堅牢で、かつ対波性及び復元性の高い構造であること、当該国の法律に基づく設備を有し、かつ作業現場に応じた大きさのものであること。
→E10.4.2(1)(a)&(b)&(c)に規定済み

(2) 潜水士の乗降用のはしごが設置されていること。
→E10.4.2(1)(g)に規定済み

(3) 雨よけ並びに日よけの覆を設置されていること。
→E10.4.2(1)(h)に規定済み

(6) Should a Diver request termination during a dive, it may be necessary to prolong the diver's exposure to hyperbaric conditions to complete decompression or medical recompression treatment to avoid serious physical harm or death to the Diver.

10.4. DIVING EQUIPMENT, TOOLS, FACILITIES AND WORKBOATS,

10.4.1. Diving Equipment

(1) The Contractor shall provide workboats, diving equipment, work tools and other facilities fully in compliance with OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations, §1910.430 Equipment.

(2) Workboats, diving equipment, work tools and other facilities are defined as Contractor's Equipment and shall therefore comply with JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*].

10.4.2. Diving Workboats

(1) Workboats shall be:

(a) Robust and seaworthy;

(b) Stable in operation;

(c) Suitable size, draft and shape to suit the diving operations;

(d) Equipped with marine band radio and with a shore station that is attended at all time that the Workboat is in operation and can provide emergency support if required;

(e) Equipped with marine lighting;

(f) Equipped with life jackets, first aid sets, distress flares and other necessary emergency equipment;

(g) Provided with secure and robust ladders or platforms for Divers to easily enter or exit the water; and

(h) Provided with a roof and cabin to protect the crew and Dive Team from heat, cold and rain.

(2) Workboats shall be provided with the means to assist an injured Diver from the water (such as an in-water platform, small boat or basket stretcher) or into a diving bell. The Contractor shall ensure that there are sufficient Dive Team members or additional Contractor's Personnel to assist.

(3) Unless otherwise specified the Contractor shall provide a separate small boat for rescue at the workboat, suitable for assisting and recovering Divers who are in difficulty or dive, it may be necessary to prolong the diver's exposure to hyperbaric conditions to complete decompression or medical recompression treatment to avoid serious physical harm or death to the Diver.

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(e) Equipped with marine lighting;

(f) Equipped with life jackets, first aid sets, distress flares and other necessary emergency equipment;

(g) Provided with secure and robust ladders or platforms for Divers to easily enter or exit the water; and

(h) Provided with a roof and cabin to protect the crew and Dive Team from heat, cold and rain.

(2) Workboats shall be provided with the means to assist an injured Diver from the water (such as an in-water platform, small boat or basket stretcher) or into a diving bell. The Contractor shall ensure that there are sufficient Dive Team members or additional Contractor's Personnel to assist.

(3) Unless otherwise specified the Contractor shall provide a separate small boat for rescue at the workboat, suitable for assisting and recovering Divers who are in difficulty or

10.5.3 点検・整備

請負者は、保守管理のために、当該国の法律及び当該潜水設備・器具及び作業船の製造者のマニュアルの規定に従い、本仕様書 4.1.6[機器の点検・整備]に準じ、当該当該潜水作業に使用する潜水設備・器具及び作業船の日常点検表、定期点検表を作成し、点検、検査を実施しなければならない。

点検検査結果は、記録・保管し、エンジニアから要求がある場合は提示しなければならない。

整備が完了するまで、潜水設備・器具及び作業船は、使用してはならない。→E10.4.3 に規定済み

10.6 潜水作業の安全措置

10.6.1 潜水作業前の安全措置→E10.5.1 に規定済み

請負者は、潜水作業の開始前に次の措置を講じなければならない。

(1) 作業員

(a) 作業の方法、手順、作業員の配置及び業務分担について打合せること。
→E10.5.1(1)(a)&(b)に規定済み

(b) 潜水タイムテーブルの順守を指示すること。
→E10.5.1(1)(c)に規定済み

(c) 作業場所の気象・海象の状況、障害物の有無及びその状況、その他注意すべき点について周知すること。→E10.5.1(d)に規定済み

(d) 潜水士の健康状態を確認すること。
→E10.5.1(e)に規定済み

(2) 潜水設備・器具

潜水設備・器具の作業前点検を行い、不備がある場合は使用を禁止すること。→E10.5.1(2)に規定済み

(3) 潜水作業船

(a) 作業前に点検を行い、不備がある場合は使用を禁止すること。→E10.5.1(3)(a)に規定済み

(b) 潜水作業船に潜水作業を表示する国際信号 A 旗板を掲げること。→E10.5.1(3)(c)に規定済

at the workboat, suitable for assisting and recovering Divers who are in difficulty or have drifted away from position.

10.4.3. Inspections and Maintenance

The Contractor shall comply with all requirements of JSSS 4.2 [*Inspection, Maintenance and Repair*] and ensure that workboats, equipment, tools and facilities are inspected, fully maintained and operational when mobilised to the Site and thereafter are inspected, maintained and repaired before the commencement of the first and of all subsequent days of operation.

The Contractor shall keep the inspection and working records and make them available for the inspection of the Engineer upon request.

The Contractor shall prohibit use of workboats, equipment, tools and facilities until the requirements of JSSS 4.2 [*Inspection, Maintenance and Repair*] are fully complied with.

10.5. PARTICULAR SAFETY MEASURES

10.5.1. Measures before Diving operations

The Contractor shall take the following measures before commencement of any diving operation:

(1) Dive Teams

(a) Discuss the diving methods and safety procedures,

(b) Discuss the work methods and procedures and the assignment and placing of the Divers and work task sharing;

(c) Advise of the diving timetable and required compliance;

(d) Inform of the climatic, marine, natural and physical conditions; and

(e) Conduct the health check.

(2) Equipment, work tools and other facilities

Inspect the equipment, work tools and other facilities, prohibit use when any defect or non-compliance is found, reinspect when a repair or replacement is completed.

(3) Diving workboats

(a) Inspect workboats and rescue boats;

recovering Divers who are in difficulty or have drifted away from position.

10.4.3 Inspections and Maintenance

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(c) Advise of the diving timetable and required compliance;

(d) Inform of the climatic, marine, natural and physical conditions; and

(e) Conduct the health check.

(f) Check that support assistant and crew on the workboat are wearing life jackets.

JC: Moved from 10.5.1.(5)(d)

(2) Equipment, work tools and other facilities

Inspect the equipment, work tools and other facilities, prohibit use when any defect or non-compliance is found, reinspect when a repair or replacement is completed.

(3) Diving workboats

(a) Inspect workboats and rescue boats;

(b) Display the international maritime diving signal flag and display signs and

have drifted away from position.

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(d) Inform of the climatic, marine, natural and physical conditions; and

(e) Conduct the health check.

(f) Check that support assistant and crew on the workboat are wearing life jackets.

(2) Equipment, work tools and other facilities

Inspect the equipment, work tools and other facilities, prohibit use when any defect or non-compliance is found, reinspect when a repair or replacement is completed.

(3) Diving workboats

(a) Inspect workboats and rescue boats;

(b) Display the international maritime diving signal flag and display signs and lights as necessary on the workboat;

(c) Securely anchor the workboat to the

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(c) 潜水作業船は作業中に移動しないように確実にびょう泊すること。→E10.5.1(3)(d)に規定済み

(d) エンジンを停止すること。→E10.5.1(3)(e)に規定済み

(4) 潜水作業現場

(a) 潜水作業の区域を示す赤旗等を設置すること。→E10.5.1(4)(a)に規定済み

(b) 潜水作業現場には、3m 毎に水深を表示したさがり綱を設置すること。→E10.5.1(4)(b)に規定済み

(5) 潜水開始前の確認

(a) 潜水士の携行品

(i) 他給気式潜水の場合：信号索、水中時計、水深計、通話装置、ナイフ （注：通話装置を携行する場合は信号索、水中時計、水深計を携行させないことができる。）→E10.5.1(5)(a)(i)に規定済み

(ii) 自給気式潜水の場合： 水中時計、水深計、ナイフ、救命胴衣又は浮力調整具、（携行可能な場合は通話装置）→E10.5.1(5)(a)(ii)に規定済み

(b) 自給気式潜水の潜水士への当該作業に使用するボンベの現に有する給気能力→E10.5.1(5)(b)に規定済み

(c) 潜水士船のさがり綱の緊結状況→E10.5.1(5)(c)に規定済み

(d) 通話装置の稼働→E10.5.1(5)(d)に規定済み

(e) 船上作業員の救命胴衣の着用→E10.5.1(5)(f)に規定済み

(f) 監視船の配備状況（配備している場合）→E10.5.1(5)(g)に規定済み

上記の確認で不備又は異常がある場合は、作業を行わないこと。→E10.5.1(5)に規定済み

(b) Display the international maritime diving signal flag and display signs and lights as necessary on the workboat;

(c) Securely anchor the workboat to the seabed; and

(d) Stop the engine during diving operation.

(4) Diving operation site

(a) Provide signs including red flags, buoys and notices to demarcate the diving operation site; and

(b) Install a downline with depth indication marks at 3m intervals from the workboat to the sea bed at the diving operation site to act as a guideline for descending or ascending and as a guide for transfer of tools and equipment.

(5) Diving Equipment

(a) Check the diving equipment to be carried by the Divers;

(i) For surface-supplied air diving, check for example: air connections, compressed air supply, weight belt, signal halyard, communication device, torch, watch, water depth gauge, knife and the like.

(ii) For SCUBA diving, check for example: first stage, second stage and spare regulators, available air volume, secondary air supply, buoyancy control device, weight belt, tank straps, air valve, communication device, watch, water depth gauge, knife and the

lights as necessary on the workboat;

(c) Securely anchor the workboat to the seabed; and

(d) Stop the engine during diving operation.

(4) Diving operation site

(a) Provide signs including red flags, buoys and notices to demarcate the diving operation site; and

(b) Install a downline with depth indication marks at 3m intervals from the workboat to the sea bed at the diving operation site to act as a guideline for descending or ascending and as a guide for transfer of tools and equipment.

(5) Diving Equipment

(a) Check the diving equipment to be carried by the Divers;

(i) For surface-supplied air diving, check for example: air connections, compressed air supply, weight belt, signal halyard communication device, torch, watch, water depth gauge, knife and the like.

JC: ここでの信号索は、水上と水中でコミュニケーションするため引っ張って合図（Line Signaling）するためのロープなので、英語でも halyard（揚げ綱）とは言わないかと。ここでの信号索は、水上と水中でコミュニケーションするため引っ張って合図（Line Signalling）するためのロープなので、英語でも halyard（揚げ綱）とは言わないかと。なお、信号索は現在あまり使われず、双方向通話可能な機器の利用が一般的かと思われ、信号索そのものをここであげる必要もないのでは？

"Signal halyard" is a rope for raising a flag. The term in Japanese means a rope for line signalling to communicate on board and in water. The line signalling is recently seldom used, it would not necessary to mention about it here.
As commented above, OSHA has no provision about line signalling, and video or voice communication is in the major stream. It is recommended to modify the phrase.

NK: As commented above and 10.3.5.(8), line signalling is not used. Deleted "signal halyard" and added "voice and video" for communication device.

(ii) For SCUBA diving, check for example: first stage, second stage and spare regulators, available air volume, secondary air supply, buoyancy control device, weight belt, tank straps, air valve, communication device, watch, water depth gauge, knife and the

seabed; and

(d) Stop the engine during diving operation.

(4) Diving operation site

(a) Provide signs including red flags, buoys and notices to demarcate the diving operation site; and

(b) Install a downline with depth indication marks at 3m intervals from the workboat to the sea bed at the diving operation site to act as a guideline for descending or ascending and as a guide for transfer of tools and equipment.

(5) Diving Equipment

(a) Check the diving equipment to be carried by the Divers;

(i) For surface-supplied air diving, check for example: air connections, compressed air supply, weight belt, ~~signal halyard,~~ voice or video communication device, torch, watch, water depth gauge, knife and the like.

(ii) For SCUBA diving, check for example: first stage, second stage and spare regulators, available air volume, secondary air supply, buoyancy control device, weight belt, tank straps, air valve, communication device, watch, water depth gauge, knife and the like.

	like. (b) Inform the Diver of the air supply capacity of the air tank(s) for SCUBA diving; (c) Check that the downline is secure and tight; (d) Ensure as a minimum, that a two-way voice or video communication link is set up and working between at least between a single selected working Diver and the DPIC at the surface control point; and (e) Check that support assistant and crew on the workboat are wearing life jackets. If any defect is identified by the above checks, prohibit the dive operation from commencing.	like. ~~(b) Inform the Diver of the air supply capacity of the air tank(s) for SCUBA diving~~ JC: 「現に有する給気能力」current とか要らない？よく見るとこの上にある available air volume と重複。(これってダイバーが自身でチェックできるなら、こっちは不要では？) また、inform はおかしい→If any defect is identified by the above checks, prohibit the dive operation from commencing. "Air supply capacity" is a duplication of "available air volume" in (ii) above. And, "inform" is not proper. → If any defect is identified by the above checks, prohibit the dive operation from commencing. NK: (b)は削除、→の先の文章は本項の最後の文章であるが指示内容が不明のため、そのまま残します。です。 (b) is deleted. The comment to the Sentence marked by → is not clear, so no change to this sentence is made. (c) Check that the downline is secure and tight; (d) Ensure as a minimum, that a two-way voice or video communication link is set up and working between at least between a single selected working Diver and the DPIC at the surface control point; and ~~(e) Check that support assistant and crew on the workboat are wearing life jackets.~~ JC: e)は少なくとも潜水器具じゃないので違うかと。 Item (e) is not diving equipment. NK: Considering the content, moved to 10.5.1.(1)(f). If any defect is identified by the above checks, prohibit the dive operation from commencing.	(b) Check that the downline is secure and tight; (c) Ensure as a minimum, that a two-way voice or video communication link is set up and working between at least between a single selected working Diver and the DPIC at the surface control point; and If any defect is identified by the above checks, prohibit the dive operation from commencing.
10.6.2 潜水作業中の安全措置→E10.5.2 に規定済み 請負者は、潜水作業中は、次の安全措置を講じなければならない。 (1) 作業に無関係な船舶の潜水作業場所付近への接近を監視する専任の監視員を配置し、潜水作業場所付近に近づく船舶に対し、ハンドマイク、旗等により現場へ接近させないこと。→E10.5.2(1)に規定済み (2) 潜水士への措置 (a) 潜水作業の管理者及び作業の支援員がいないときは、潜水士に潜水作業を行わせないこと。→E10.5.2(2)(a)に規定済み (b) 作業船の乗降には、乗降用はしごを使用させること。→E10.5.2(2)(b)に規定済み (c) 潜降及び浮上するときは、さがり綱を使用させること。→E10.5.2(2)(c)に規定済み (d) 有線又は無線の通話装置、信号索等で、連絡員と常に連絡をとらせること。→E10.5.2(2)(d)に規定済み (3) 気象・海象状況の変化を早期に把握し、計画で定めた作業中止基準に合致する状況となった場合	10.5.2. Measures during Diving Operations The Contractor shall take the following safety measures during each diving operation: (1) A designated member of the workboat crew on the workboat shall observe the diving operation and workboat operation and look out for any other vessels that may approach the diving operation site. The designated member shall alert any other vessels related or not related with the diving operations with requisite warning blasts from	10.5.2. Measures during Diving Operations The Contractor shall take the following safety measures during each diving operation: (1) A designated member of the workboat crew on the workboat shall ~~observe the diving operation and workboat operation and~~ look out for any other vessels that may approach the diving operation site. JC: ダイビングオペレーションは DPIC が主として見ているので不要。他の船を見ているのは別の人材であり、この規定はそれを主眼とした記述にすべき。 "Observe the diving operation" is unnecessary because the DPIC mainly supervises the operation. The personnel who looks out for other vessels must be the other designated member. This item shall be written for this purpose. NK: deleted as commented. The designated member shall alert any other vessels related or not related with the diving	10.5.2. Measures during Diving Operations The Contractor shall take the following safety measures during each diving operation: (1) A designated member of the workboat crew on the workboat shall ~~observe the diving operation and workboat operation and~~ look out for any other vessels that may approach the diving operation site. The designated member shall alert any other vessels related or not related with the diving operations with requisite warning blasts from the workboat's siren, loudhailer, flares and/or

は、直ちに作業を中止すること。→E10.5.2(3)に規定済み

(4) 潜水士の作業時間の管理

(a) 潜水士の作業内容に応じた適切な休憩時間の取得や交代等の労務管理を行うこと。
→E10.5.2(4)(a), (b)&(c)に規定済み

(b) 各潜水士の潜水作業に要した時間、潜水作業内容、潜水回数、潜水深度等を記録すること。→E10.5.2(4)(d)に規定済み

10.7 緊急救護措置

請負者は、本仕様書 1.11[救急救護計画]に従い、潜水作業時の救急救護計画を作成しなければならない。→E10.6.1 に規定済み

詳細な救急救護施設と医療要員に関する要求事項が、本契約の中で別途規定されている場合は、それを遵守しなければならない。E10.6.1(3)に規定済み。ただし、規定内容が異なるため、追記する。

水深 10m 以上の場所において潜水作業を行うとき、又は水深 10m 以下の水深であっても減圧症等にかかるおそれのある作業を行うときは、本契約で別途規定する措置を講じなければならない。→E10.6.1(1)&(2)に規定済み。ただし、規定内容が異なるため、追記する。

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the workboat's siren, loudhailer, flares and/or flags, etc. in order to prevent them from approaching and entering the diving operation site.

(2) Measures for the Divers

(a) Prohibit the Dive Team from commencing any diving operation without the DPIC and the complete Dive Team present, ready and equipped;

(b) Ensure that the Divers use the ladders for entering and exiting the water for the diving operation;

(c) Ensure that Divers use the downline for descending and ascending;

(d) Maintain constant voice or video communication through the provided link; and

(e) Ensue that the Divers constantly communicate with each other by hand signals and slate messaging.

(3) Ensure the DPIC or a Dive Team member at the surface, constantly observe the weather and marine conditions and there is any change that meets the work stop criteria, or if the conditions are considered to be otherwise unsafe by the DPIC, immediately stop the diving operation and ensure that the Divers are removed from the water in a safe and controlled manner;

(4) Safety and Health Management of Diving Operations

(a) Manage the Diving Works for each Diver so the Diver takes sufficient and safe surface time between dives so that there is no risk to his health and

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operations with requisite warning blasts from the workboat's siren, loudhailer, flares and/or flags, etc. in order to prevent them from approaching and entering the diving operation site.

(2) Measures for the Divers

(a) Prohibit the Dive Team from commencing any diving operation without the DPIC and the complete Dive Team present, ready and equipped;

(b) Ensure that the Divers use the ladders for entering and exiting the water for the diving operation;

(c) Ensure that Divers use the downline for descending and ascending;

(d) Maintain constant voice or video communication through the provided link; and

JC: 通話装置必須なら、信号索不要では？(注:通話装置を携行する場合は信号索、水中時計、水深計を携行させないことができる。)和文 10.6.(2)(d)では、「有線又は無線の通話装置、信号索等で、連絡員と常に連絡をとらせること。」となっているけど、信号索はもはや使わない前提で MD さん書き直していて、整合性がとれてないかと
If "voice or video communication" is a must, "line signalling" is unnecessary. It is stipulated in the Japanese draft 10.6.(2) (d) that when using voice communication device, it is not necessary to use signal line, underwater watch and hydro-barometer.
There is inconsistent between 10.3.5.(8) and 10.5.1(5) (a) (i) and the above (d) is inconsistent.

NK: 10.3.5.(8)で信号索を使用しない規定とした。上記(6)は変更なし。
10.3.5.(8) stipulated no line signaling is used in JSSS. No change of (d) above.

(e) Ensue that the Divers constantly communicate with each other by hand signals and slate messaging.

(3) Ensure the DPIC or a Dive Team member at the surface, constantly observe the weather and marine conditions and there is any change that meets the work stop criteria, or if the conditions are considered to be otherwise unsafe by the DPIC, immediately stop the diving operation and ensure that the Divers are removed from the water in a safe and controlled manner;

(4) Safety and Health Management of Diving Operations

(a) Manage the Diving Works for each Diver so the Diver takes sufficient and safe surface time between dives so that

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flags, etc. in order to prevent them from approaching and entering the diving operation site.

(2) Measures for the Divers

(a) Prohibit the Dive Team from commencing any diving operation without the DPIC and the complete Dive Team present, ready and equipped;

(b) Ensure that the Divers use the ladders for entering and exiting the water for the diving operation;

(c) Ensure that Divers use the downline for descending and ascending;

(d) Maintain constant voice or video communication through the provided link; and

(e) Ensue that the Divers constantly communicate with each other by hand signals and slate messaging.

(3) Ensure the DPIC or a Dive Team member at the surface, constantly observe the weather and marine conditions and there is any change that meets the work stop criteria, or if the conditions are considered to be otherwise unsafe by the DPIC, immediately stop the diving operation and ensure that the Divers are removed from the water in a safe and controlled manner;

(4) Safety and Health Management of Diving Operations

(a) Manage the Diving Works for each Diver so the Diver takes sufficient and safe surface time between dives so that there is no risk to his health and wellbeing;

wellbeing;

(b) Ensure that sufficient numbers of Divers and standby Divers are available to ensure that Divers are not in the water for excessive periods;

(c) Design shift times and patterns to preserve Divers' health and safety;

(d) Ensure that each Diver keeps an accurate record of his dive profile for every dive, showing overall time, bottom time and depth, decompression times and depths and that these are summarised with a record of the number of dives on a daily, weekly and monthly basis.

(e) Ensure that the DPIC reviews and approves such records and that same are submitted by the DPIC to the HSO for the HSO's review and countersignature and made available for the Engineer's inspection.

10.6. DIVING ACCIDENT CONTROL PLAN

10.6.1. General

(1) The Contractor shall prepare an Accident Response Plan for the Diving Works in accordance with JSSS 1.21 [*Accident Response Plan*].

10.6.2. Provisions by the Contractor

The Contractor shall comply with following requirements prior to Diving Works.

(1) The Contractor shall make decompression chamber available to treat decompression sickness in accordance with OSHA

there is no risk to his health and wellbeing;

(b) Ensure that sufficient numbers of Divers and standby Divers are available to ensure that Divers are not in the water for excessive periods;

(c) Design shift times and patterns to preserve Divers' health and safety;

(d) Ensure that each Diver keeps an accurate record of his dive profile for every dive, showing overall time, bottom time and depth, decompression times and depths and that these are summarised with a record of the number of dives on a daily, weekly and monthly basis.

JC: 個々の Diver が記録を保管するのでしょうか。DPIC ではないでしょうか。
Each diver should keep record individually? Isn't it the duty of DPIC?

NK: OSHA では、下記のように具体的に誰が記録をとるかは規定していないが、雇用者が保管することを規定している。各ダイバーが自分の作業記録をとり(keep a record)、それを DPIC がまとめ、請負者が保管することが実際的であると考える。(DPIC は潜水作業期間のみ現場にいることから請負者が保管することが妥当と考えます。)右のように変更する。
OSHA 29 Subpart T 1910.440 Recordkeeping requirements.
(3) Records and documents required by this standard shall be retained by the employer for the following period:
The OSHA does not stipulate who prepare records but the Contractor shall retain the records. (d) is modified for practical way at the Site as right. (DPIC may be assigned at the site during the diving work, so the Contractor shall retain the records.)

(e) Ensure that the DPIC reviews and approves such records and that same are submitted by the DPIC to the HSO for the HSO's review and countersignature and made available for the Engineer's inspection.

10.6 DIVING ACCIDENT CONTROL PLAN

10.6.1. General

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(b) Ensure that sufficient numbers of Divers and standby Divers are available to ensure that Divers are not in the water for excessive periods;

(c) Design shift times and patterns to preserve Divers' health and safety;

(d) Ensure that each Diver ~~keeps~~ take an accurate record of his dive profile for every dive, showing overall time, bottom time and depth, decompression times and depths and that these are summarised with a record of the number of dives on a daily, weekly and monthly basis by the DPIC, and the Contractor retain the records.

(e) Ensure that the DPIC reviews and approves such records and that same are submitted by the DPIC to the HSO for the HSO's review and countersignature and made available for the Engineer's inspection.

10.6. DIVING ACCIDENT CONTROL PLAN

10.6.1. General

The Contractor shall prepare an Accident Response Plan for the Diving Works in accordance with JSSS 1.21 [*Accident Response Plan*].

10.6.2. Provisions by the Contractor

The Contractor shall comply with following requirements prior to Diving Works.

(1) The Contractor shall make decompression chamber available to treat decompression sickness decompression illness (DCI) in accordance with the requirements of HSE Commercial diving projects inland/inshore, Diving at Work Regulations 1997,

	requirements by means of: (a) Contract with a medical facility having a suitable and operational decompression chamber and having established a system to transport any affected Divers to immediately receive suitable recompression and decompression treatment with specialist medical support; or (b) Provision of a temporary decompression chamber located at the Diving Works location of a type, specification and capacity to suit the diving operation together with medical support facilities and specialist medical	~~requirements of by means of:~~ JC: HSE の Commercial diving projects inland/inshore-Diving at Work Regulations1997 の 114-118（再圧室関連の条項）を参照して記述願います。 読み間違いかもしれませんが、OSHA の 1910.423(c)(1)を見ると、水深 50m を越えないと再圧室の現場での設置は必要ないように読めます。 それは不十分に思えるので、10m を基準として記述されている HSE を参照する必要があると考えています。 要するに水深と必要な搬送時間等を考慮し、現場での設置の要否を定めることにします。 Modify this part referring to Commercial diving projects inland/inshore-Diving at Work Regulations1997 of HSE (re. compression chamber) because the criteria for providing compression chamber of OSHA seems to be read that the compression chamber needs deeper than 50 m. It is not sufficient, so JC considers HSE shall be applied to JSSS. The necessity of compression chamber shall be determined based on the depth of diving and the time necessary for transporting the patient to nearest chamber available. NK: OSHA は再圧室の現場での必要性を、1910.424 と 425 に次のように規定して、30m 以上の潜水、又は深度に関係なく NDL（減圧の不要な潜水時間）を越えた潜水の場合に、再圧室の現場の設置を規定しています。（なお、1910.423 は再圧室の能力を規定しています。） §1910.424 SCUBA diving. (b) Limits. SCUBA diving shall not be conducted: (1) At depths deeper than 130 fsw(=40m);. (2) At depths deeper than 100 fsw(=30m) or outside the no-decompression limits (NDL) unless a decompression chamber is ready for use; §1910.425 Surface-supplied air diving. (b) Limits. (2) A decompression chamber shall be ready for use at the dive location for any dive outside the no-decompression limits (NDL) or deeper than 100 fsw(=30m). NK: OSHA は潜水深度と NDL での規定しています。一方、HSE は水中の減圧時間と潜水深度で規定しています。コメントのように 10m より浅い潜水も規定しており、HSE の順守と規定します。 Revised as commented to comply with HSE (a) ~~Contract with~~ Identify a medical facility having a suitable and operational decompression chamber and having established a system to transport any affected Divers to immediately receive suitable recompression and decompression treatment with specialist medical support; or (b) Provision of a temporary decompression chamber located at the Diving Works location of a type, specification and capacity to suit the diving operation together with medical	Availability of compression chambers, Clauses 114 to 118 by means of: (a) For dives that are shallower than 10 m with planned in-water decompression not exceeding 20 minutes, the Contractor shall identify the nearest suitable operational two-person, two-compartment chamber. Under no circumstances this shall be more than 6 hours travelling distance from the dive site; (b) for dives between 10 and 50 m with planned in-water decompression not exceeding 20 minutes, the Contractor shall assess the risk of DCI and likelihood of a diver requiring emergency recompression.

	support.	support facilities and specialist medical support. JC: Replaced by JC. NK: (a) and (b) are replaced with (a) to (c) as right following HSE.	This shall be based on the depth and duration of the planned dives. The assessment shall also consider factors which may increase the risk of DCI such as water temperature, type of work, and the number of dives/ascents. If the assessment demonstrates a significant risk of DCI a suitable, operational, two-person, two-compartment chamber shall be provided for immediate use at the site of the diving work. If the assessment demonstrates relatively low risk of DCI, the Contractor shall identify the nearest suitable operational two-person, two-compartment chamber. Under no circumstances this shall be more than 6 hours travelling distance from the dive site; (c) for dives with planned in-water decompression stops greater than 20 minutes the Contractor shall provide a suitable, operational, two-person, two-compartment chamber for immediate use at the site of the diving work. The diver shall be able to leave the water quickly and easily and be pressurised within the chamber to the appropriate recompression pressure as defined by the time in the decompression schedule being used. The controls of a compression chamber shall only be operated by people competent to do so. Such competence will be achieved by a combination of training and experience. The degree of supervision provided shall reflect the experience of the operator.
	(2) In accordance with OSHA requirements the Contractor shall provide an emergency aid contact list, rescue and safety equipment (including decompression facilities) and first-aid supplies. The rescue and safety equipment and first-aid supplies provided at the Diving Works location must be appropriate for the diving operations, approved by a physician and where necessary any medication shall be suitable for use under hyperbaric conditions.		(2) In accordance with OSHA requirements the Contractor shall provide an emergency aid contact list, rescue and safety equipment (including decompression facilities), a first - aid kit and supplies. The rescue and safety equipment and first-aid kit and supplies provided at the Diving Works location shall be appropriate for the diving operations, approved by a physician. When used in a decompression chamber or bell, the first aid kit shall be suitable for use under hyperbaric conditions.
	(3) The HSO and DPIC shall determine whether the emergency aid list is complete and is available to all Dive Team members and also determine whether the rescue and safety equipment (including decompression facilities) and first-aid kit are complete and available at the Diving Works location.	(2) In accordance with OSHA requirements the Contractor shall provide an emergency aid contact list, rescue and safety equipment (including decompression facilities) and first-aid supplies. The rescue and safety equipment and first-aid supplies provided at the Diving Works location must be appropriate for the diving operations, approved by a physician and where necessary any medication shall be suitable for use under hyperbaric conditions. JC: OSHA1910.421 (c)だと first aid kit という記載ですが、これは薬物の使用のことでしょうか？高圧下での使用が薬物の使用に影響を与えるからこのような書き方になっているのでしょうか。OSHA のままの記述に戻した方が良いのではないでしょうか。 OSHA 1910.421 (c) is titled as “first aid supplies”. Does “medication” above means usage of medicines? Is “medication” used because of specifying use of medicines	

		under hyperbaric conditions which affects their use? Isn't it better to stipulate as "first aid kit" as mentioned in OSHA? NK: Medication は治療との意味で考える。OSHA では高圧の条件下では適切な救急用具を使用することのみ規定あり。"first aid kit"に変更する。 It is guessed that "medication" is used for treating someone with a medicine. The term is replaced with "first aid kit". (3) The HSO and DPIC shall determine whether the emergency aid list is complete and is available to all Dive Team members and also determine whether the rescue and safety equipment (including decompression facilities) and first-aid kit are complete and available at the Diving Works location.	(3) The HSO and DPIC shall determine whether the emergency aid list is complete and is available to all Dive Team members and also determine whether the rescue and safety equipment (including decompression facilities) and first-aid kit are complete and available at the Diving Works location.

(copy from OSHA)

OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations

§ 1910.424 SCUBA diving.

(a) General. Employers engaged in SCUBA diving shall comply with the following requirements, unless otherwise specified.

(b) Limits. SCUBA diving shall not be conducted:

(1) At depths deeper than 130 fsw(=40m);.

(2) At depths deeper than 100 fsw(=30m). or outside the no-decompression limits unless a decompression chamber is ready for use;

§ 1910.425 Surface-supplied air diving.

(a) General. Employers engaged in surface-supplied air diving shall comply with the following requirements, unless otherwise specified.

(b) Limits. (1) Surface-supplied air diving shall not be conducted at depths deeper than 190 fsw (=58m), except that dives with bottom times of 30 minutes or less may be conducted to depths of 220 fsw(=67m);.

(2) A decompression chamber shall be ready for use at the dive location for any dive outside the no-decompression limits or deeper than 100 fsw(=30m).

1910.423(c) Recompression capability. Decompression chambers provide the only effective therapy (i.e., recompression) for decompression sickness and arterial gas embolism. …

1910.423(c)(1). This provision requires the use of a decompression chamber capable of recompressing the diver at the surface to a minimum of 165 fsw (=50m, 6 ATA) at the dive location for: SCUBA dives deeper than 100 fsw (=30m); surface-supplied air dives deeper than 100 fsw but shallower than 220 fsw (=66m); mixed-gas dives shallower than 300 fsw (=90m); or diving outside the no-decompression limits shallower than 300 fsw.

(copy from HSE)

HSE Commercial diving projects inland/inshore-Diving at Work Regulations1997

114 The diving contractor has a responsibility to ensure the provision of facilities so that a diver can be recompressed in an emergency, should this be necessary. Treatment of DCI (Decompression illness) in a compression chamber should commence as soon as possible (subject to medical advice). The provision of a compression chamber should be in accordance with the decompression procedures selected as part of the diving project plan.

115 In addition, the following minimum standards should be applied:

(a) for dives that are shallower than 10 metres with planned in-water decompression not exceeding 20 minutes, the diving contractor should identify the nearest suitable operational two-person, two-compartment chamber. Under no circumstances should this be more than 6 hours travelling distance from the dive site;

(b) for dives between 10 and 50 metres with planned in-water decompression not exceeding 20 minutes, the diving contractor should assess the risk of DCI and likelihood of a diver requiring emergency recompression.

This should be based on the depth and duration of the planned dives. The assessment should also consider factors which may increase the risk of DCI such as water temperature, type of work, and the number of dives/ascents.

If the assessment demonstrates a significant risk of DCI a suitable, operational, two-person, two-compartment chamber should be provided for immediate use at the site of the diving project. If the assessment demonstrates relatively low risk of DCI, the diving contractor should identify the nearest suitable operational two-person, two-compartment chamber. Under no circumstances should this be more than 6 hours travelling distance from the dive site;

(c) for dives with planned in-water decompression stops greater than 20 minutes the diving contractor should provide a suitable, operational, two-person, two-compartment chamber for immediate use at the site of the diving project.

The diver should be able to leave the water quickly and easily and be pressurised within the chamber to the appropriate recompression pressure as defined by the time in the decompression schedule being used.

The controls of a compression chamber should only be operated by people competent to do so. Such competence will be achieved by a combination of training and experience. The degree of supervision provided should reflect the experience of the operator.

116 The diving project plan should demonstrate that in an emergency, where the compression chamber is not located on the site, a diver will be able to be transported and recompressed to ensure, so far as reasonably practicable, their safety.

If the diving project plan relies on the support of any emergency services, then that plan should be subject to continued assessment and take into account any factors which may affect such support (for example changing weather conditions).

117 If a situation arises where a diver may need hyperbaric treatment at a chamber provided by another chamber owner, then provision for this should be made in the diving project plan.

118 If the diving contractor is responsible for transporting the injured diver to a hospital or other place, their duty will continue until the diver is admitted to the hospital or other place.

Copy of OSHA

§1910.421 Pre-dive procedures.

(a) General. The employer shall comply with the following requirements prior to each diving operation, unless otherwise specified.

(b) Emergency aid. A list shall be kept at the dive location of the telephone or call numbers of the following:

(1) An operational decompression chamber (if not at the dive location);
(2) Accessible hospitals;
(3) Available physicians;
(4) Available means of transportation; and
(5) The nearest U.S. Coast Guard Rescue Coordination Center.

(c) First aid supplies.

(1) A first aid kit appropriate for the diving operation and approved by a physician shall be available at the dive location.
(2) When used in a decompression chamber or bell, the first aid kit shall be suitable for use under hyperbaric conditions.
(3) In addition to any other first aid supplies, an American Red Cross standard first aid handbook or equivalent, and a bag-type manual resuscitator with transparent mask and tubing shall be available at the dive location.

(d) Planning and assessment.

Planning of a diving operation shall include an assessment of the safety and health aspects of the following:

JICA Standard Safety Specification Preparation Study
10 DIVING WORKS (English R3 for Issue 2)

2020.5.1 NK Eng.R3

JSSS in English R2 for Issue 2 (2020/4/6)	JICA Comments on R2(2020/4/24) JC: JICA comments and revision in blue letters and underlined Red letters: last revision in R2 draft, NK: NK actions	JSSS in English R3 for Issue 2 (2020/5/1) Blue letters: JICA revised on the draft R2 Red letters: Revision from last issue
10. DIVING WORK **10.1 GENERAL** 10.1.1 Scope 10.1.2 Definitions 10.1.3 Compliance Standards **10.2 DIVE SAFETY PLAN** 10.2.1 General Content 10.2.2 Climatic, Marine, Natural and Physical Conditions 10.2.3 Further Technical Detail in Dive Safety Plan **10.3 PERSONNEL FOR DIVING OPERATION** 10.3.1 Qualification of Diving Personnel 10.3.2 Designated Person-in-Charge (DPIC) 10.3.3 Duties of DPIC 10.3.4 Diver Assignments 10.3.5 Assistants and Duties of Members Dive Team Members 10.3.6 Health Check **10.4 DIVING EQUIPMENT, TOOLS, FACILITIES AND WORKBOATS** 10.4.1 Diving Equipment 10.4.2 Diving Workboats 10.4.3 Inspections and Maintenance **10.5 PARTICULAR SAFETY MEASURES** 10.5.1 Measures before Diving Operations 10.5.2 Measures during Diving Operations **10.6 DIVING ACCIDENT CONTROL PLAN** 10.6.1 General 10.6.2 Provisions by Contractors	**10. DIVING WORK** **10.1 GENERAL** 10.1.1 Scope 10.1.2 Definitions 10.1.3 Compliance Standards **10.2 DIVE SAFETY PLAN** 10.2.1 General Content 10.2.2 Climatic, Marine, Natural and Physical Conditions 10.2.3 Further Technical Detail in Dive Safety Plan **10.3 PERSONNEL FOR DIVING OPERATION** 10.3.1 Qualification of Diving Personnel 10.3.2 Designated Person-in-Charge (DPIC) 10.3.3 Duties of DPIC 10.3.4 Diver Assignments 10.3.5 Assistants and Duties of Members Dive Team Members 10.3.6 Health Check **10.4 DIVING EQUIPMENT, TOOLS, FACILITIES AND WORKBOATS** 10.4.1 Diving Equipment 10.4.2 Diving Workboats 10.4.3 Inspections and Maintenance **10.5 PARTICULAR SAFETY MEASURES** 10.5.1 Measures before Diving Operations 10.5.2 Measures during Diving Operations **10.6 DIVING ACCIDENT CONTROL PLAN** 10.6.1 General 10.6.2 Provisions by Contractors	**10. DIVING WORK** **10.1 GENERAL** 10.1.1 Scope 10.1.2 Definitions 10.1.3 Compliance Standards **10.2 DIVE SAFETY PLAN AND DIVE SAFETY PROCEDURE** 10.2.1 Preparation of Dive Safety Plan and Dive Safety Procedure 10.2.2 General Content 10.2.3 Climatic, Marine, Natural and Physical Conditions 10.2.4 Further Technical Detail in Dive Safety Plan **10.3 PERSONNEL FOR DIVING OPERATION** 10.3.1 Qualification of Diving Personnel 10.3.2 Designated Person-in-Charge (DPIC) 10.3.3 Duties of DPIC 10.3.4 Diver Assignments 10.3.5 Assistants and Duties of Members Dive Team Members 10.3.6 Health Check **10.4 DIVING EQUIPMENT, TOOLS, FACILITIES AND WORKBOATS** 10.4.1 Diving Equipment 10.4.2 Diving Workboats 10.4.3 Inspections and Maintenance **10.5 PARTICULAR SAFETY MEASURES** 10.5.1 Measures before Diving Operations 10.5.2 Measures during Diving Operations **10.6 DIVING ACCIDENT ~~CONTROL~~ RESPONSE PLAN** 10.6.1 General 10.6.2 Provisions by Contractors
	JICA Comments 頂いたドラフトを改めて拝見すると、Plan について in advance of each diving operation で作成するものと記述があります(ドラフトの 10.1.2 (f))。 また特に 10.2.3 の Further Technical Details の内容をみると、例えば Time Schedule や Composition of Dive Team 等、正に一回一回のダイビングのための「手順書」に該当するものを強くイメージされていると理解しました。 これはダイビング作業全体に関して作成されるべき Safety Plan(for diving)ではなく、Procedure に該当するものであると判断し、Dive Safety Procedure と書き換えるようお願いする内容になっています。 ただ、それだけだと上位文書になる Safety Plan が存在せず、いきなり Procedure の話になってしまうので、まず ①1 章の総則を引用しながら Safety Plan について簡単に記述する(本当にごくごく簡単な記述でよいと思います)、 ②その Safety Plan を作成するにあたって・・・という文脈で 10.2.2 の自然条件調査について記述する、 ③最後に Procedure についてまとめて記述する、という順序で再整理をお願いしています。	JICA Comments We reviewed the R2. There is stipulation that the Plan shall be prepared in advance of each diving operation in the draft 10.1.2 (f). We guessed that NK prepared some kinds of stipulations for work procedure of each diving work from the stipulations of Further Technical Details in 10.2.3 for example Time Schedule, Composition of Dive Team, etc. We judged that these are not Safety Plan (for diving) to be prepared for overall diving works but stipulations for the Work Procedure. Therefore, our comments are to request NK to revise the Dive safety Plan to Dive Safety Procedure. However, it needs to specify Diving Safety Plan at first before Dive Safety Procedure as follows: 1) Specify simply about Dive Safety Plan referring to Chapter 1 General (really, we think, very simple stipulation is enough.). 2) Stipulate about the study of national conditions mentioned in 10.2.2 with pre-wording "when preparation of the Safety Plan,", and 3) At the end, stipulate all requirements about Procedure. We request NK to rearrange the stipulations as mentioned above.
10 DIVING WORK **10.1 GENERAL** 10.1.1 Scope This Chapter specifies the safety requirements for diving operations which	**10 DIVING WORK** **10.1 GENERAL** 10.1.1 Scope This Chapter specifies the safety requirements for diving operations which	**10 DIVING WORK** **10.1 GENERAL** 10.1.1 Scope This Chapter specifies the safety requirements for diving operations which

shall include surface-supplied air diving and SCUBA diving and which are hereinafter collectively referred to as “Diving Works”.

Saturation diving and mixed-gas diving are not included.

10.1.2 Definitions

(1) Definition of terms is as follows:

(a) “Surface-supplied air diving” means a diving mode in which the Diver is supplied at the dive location with a piped supply of compressed air for breathing;

(b) “SCUBA diving” means a diving mode independent of surface supply in which the Diver uses open circuit self-contained underwater breathing apparatus;

(c) “Diver” means a worker working in water using underwater breathing apparatus which supplies compressed breathing gas at the ambient pressure;

(d) “Dive Team” means Divers and support assistants involved in a diving operation, including the Designated Person-in-Charge;

(e) “Designated Person-in-Charge” or “DPIC” means a senior person who, through qualification, experience and capability is deemed by the HSO to be qualified to be in charge of all aspects of the diving operation including those affecting the safety and health of members of the Dive Team;

(f) “Dive Safety Plan” means the safety plan prepared in advance of each diving operation and the nature and size of any diving operation so identified shall be such that it can be safely supervised by one DPIC.

10.1.3 Compliance Standards

(1) For provisions which are not stipulated in the JSSS, the Contractor shall comply ~~as a minimum~~ with ~~all of~~ the requirements specified in OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations for surface-supplied air diving and SCUBA diving (excluding saturation and mixed-gas diving).

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shall include surface-supplied air diving and SCUBA diving and which are hereinafter collectively referred to as “Diving Works”.

Saturation diving and mixed-gas diving are not included.

10.1.2 Definitions

(1) Definition of terms is as follows:

(a) “Surface-supplied air diving” means a diving mode in which the Diver is supplied at the dive location with a piped supply of compressed air for breathing;

(b) “SCUBA diving” means a diving mode independent of surface supply in which the Diver uses open circuit self-contained underwater breathing apparatus;

(c) “Diver” means a worker working in water using underwater breathing apparatus which supplies compressed breathing gas at the ambient pressure;

(d) “Dive Team” means Divers and support assistants involved in a diving operation, including the Designated Person-in-Charge;

(e) “Designated Person-in-Charge” or “DPIC” means a senior person who, through qualification, experience and capability is deemed by the HSO to be qualified to be in charge of all aspects of the diving operation including those affecting the safety and health of members of the Dive Team; (JC1)

JC1: Operation Leader とは異なることを是としても、Diving Work だけの人材なので(for diving works)を追記しました。

“Designated Person-in-Charge” may be one of Operation Leaders, but he is exclusively for diving work. Therefore, (for diving works) is added as right.

NK: Added.

(f) “Dive Safety Plan” means the safety plan prepared in advance of each diving operation and the nature and size of any diving operation so identified shall be such that it can be safely supervised by one DPIC. (JC2)

JC2: Diving operation 全体にプランはほかにあるという前提で、ここでは個々の潜水作業についての手順書というイメージで書かれているものと理解しました。

Our understanding is that the Dive Safety Plan is defined as it specify the procedure of individual diving work on the premise that there is an overall safety dive plan. We modified as the right.

NK: Dive Safety Plan と Dive Safety Procedure の関係が明確になるように、(f)に Dive Safety Plan、(g)に Dive Safety Procedure の定義を追加します。メール(2020/4/24)のコメントに従い、10.2.1 に第 1 章との関係を追加しました。

To make clear the relation between Dive Safety Plan and Dive Safety Procedure, (f) Dive Safety Plan is modified and (g) Dive Safety Procedure is added.

Stipulations are added in 10.2.1 in accordance with the JICA mail (2020.4.24) to relate the Safety Procedure to the Safety Plan and Method Statement.

10.1.3 Compliance Standards

(1) For provisions which are not stipulated in the JSSS, the Contractor shall comply with the requirements specified in OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations for surface-supplied air diving and SCUBA diving (excluding saturation and mixed-gas diving). (JC3)

JC3: これこそ、Unless otherwise specified in the Contract とすべき。

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shall include surface-supplied air diving and SCUBA diving and which are hereinafter collectively referred to as “Diving Works”.

Saturation diving and mixed-gas diving are not included.

10.1.2 Definitions

(1) Definition of terms is as follows:

(a) “Surface-supplied air diving” means a diving mode in which the Diver is supplied at the dive location with a piped supply of compressed air for breathing;

(b) “SCUBA diving” means a diving mode independent of surface supply in which the Diver uses open circuit self-contained underwater breathing apparatus;

(c) “Diver” means a worker working in water using underwater breathing apparatus which supplies compressed breathing gas at the ambient pressure;

(d) “Dive Team” means Divers and support assistants involved in a diving operation, including the Designated Person-in-Charge;

(e) “Designated Person-in-Charge (for diving works) or “DPIC” means a senior person who, through qualification, experience and capability is deemed by the HSO to be qualified to be in charge of all aspects of the diving operation including those affecting the safety and health of members of the Dive Team;

(f) “Dive Safety Plan” means the safety plan for diving operation as a part of Safety Plan specified in JSSS 1.7 [Contractor’s Safety Plans] and is the basis of the Dive Safety Procedure;

(g) “Dive Safety ~~Plan~~ Procedure” means the safety ~~plan~~ procedure prepared in advance of each diving operation in which the nature, size and other details are specified ~~as described in JSSS 10.2 [Dive Safety Procedure]~~ . ~~and the nature and size of any diving operation so identified shall be such that it can be safely supervised by one DPIC~~.

10.1.3 Compliance Standards

(1) ~~For provisions which are not stipulated in the JSSS~~ Unless otherwise specified in the Contract, the Contractor shall comply with the requirements specified in OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations for surface-supplied air diving and SCUBA diving (excluding saturation and mixed-gas diving).

This phrase should be “Unless otherwise specified in the Contract.

NK: コメントに従い修正しました。Modified as commented.

10.2 DIVE SAFETY PLAN

10.2.1 General Content

(1) The Contractor shall prepare a Dive Safety Plan for the Diving Works, inform and if necessary further train and test all Dive Team members in the content of the Plan.

(2) A copy of the Dive Safety Plan shall be made available at the dive location to each Dive Team member.

(3) For each required diving operation and diving mode, the Dive Safety Plan shall include:

(a) Safety procedures and checklists for each diving operation;

(b) Assignments and responsibilities of each of the Dive Team members;

(c) ~~Equipment l~~ Lists, procedures and checklists of diving equipment, tools, materials, workboat, fuel and other consumables;

(d) Emergency procedures including for equipment failure, fire, adverse climatic, marine, natural and physical conditions, adverse environmental conditions, medical illness and injury;

(e) Work stop criteria for change of the weather and marine conditions;

~~(e) Details of the workboat and all diving equipment, fuel, and other consumables;~~

~~(f) Equipment, tools, materials and consumables for the assigned work tasks;~~

(f) Scope of work for each Diver and all support assistants in the Dive Team throughout the diving operation;

10.2 DIVE SAFETY PLAN (JC4)

JC4: 以下、全部 procedure にしておいてください。

Please replace all Dive Safety Plan with Dive Safety Procedure.

NK: Dive Safety Plan と Dive Safety Procedure の関係について 10.2.1 に規定し、その後 Dive Safety Procedure について規定します。タイトルを“DIVE SAFETY PLAN and DIVE SAFETY PROCEDURE”へ変更しました。

We will stipulate the relation between Dive Safety Plan and Dive Safety Procedure in 10.2.1 at first and do Dive Safety Procedure later.

The title of the section is changed to “DIVE SAFETY Plan and DIVE SAFETY PROCEDURE”.

10.2.1 General Content

(1) The Contractor shall prepare a Dive Safety Plan for the Diving Works, inform and if necessary further train and test all Dive Team members in the content of the Plan. (JC5)

JC5: Safety Procedure はコントラクターがダイビングの知見を持った人の知見を用いて作成するという意味の記載にしてください。

Please, modify the description so that the safety procedure shall be created by the Contractor obtaining opinions of persons who have diving knowledges.

NK: コメントに従い、右のように変更しました。また、10.2.2 へのコメントを反映させるため、冒頭に Dive Safety Plan について記述し、Procedure との関係を明確にしました。

Modified in accordance with the comment as right. and in order to reflect the comment at 10.2.2, a paragraph is added to clarify the relationship between the Plan and Procedure.

(2) A copy of the Dive Safety Plan shall be made available at the dive location to each Dive Team member.

JC6: Clauses (3) and after (3) are separated from 10.2.1, and contents are independently described as 10.2.2 “Content” with some modification and deletion. (5) is moved from (4)

NK: Modified as commented.

(3) For each required diving operation and diving mode, the Dive Safety Plan shall include:

(a) Safety procedures and checklists for each diving operation;

(b) Assignments and responsibilities of each of the Dive Team members;

(c) Lists, procedures and checklists of diving equipment, tools, materials, workboat, fuel and other consumables;

(d) Emergency procedures including for equipment failure, fire, adverse climatic, marine, natural and physical conditions, adverse environmental conditions, medical illness and injury;

(e) Work stop criteria for change of the weather and marine conditions;

(f) Scope of work for each Diver and all support assistants in the Dive Team throughout the diving operation;

(g) Information and instructions to be given to the Divers,

10.2 DIVE SAFETY PLAN AND DIVE SAFETY PROCEDURE

10.2.1 Preparation of Dive Safety Plan and Dive Safety Procedure

(1) The Contractor shall prepare the Dive Safety Plan as a part of Safety Plan specified in JSSS 1.7.6 [Bid Stage Safety Plan] or 1.7.7 [Commencement Stage Safety Plan], or 1.7.8 [Particular Safety Plans] as required depending on the development of necessary information for the Diving Work.

(2) The Contractor shall prepare the Dive Safety Procedure in advance of individual diving operation in addition to Method Statement specified in JSSS 1.9 [Contractor’s Method Statements] and the Diving Safety Plan.

(3) The Dive Safety Plan and the Dive Safety Procedure shall be prepared consulting Diver(s) for expert opinions who has the qualification and capability deemed sufficient by the HSO. They shall be incorporated the advice of and be approved by DPIC when prepared in the Works, and reviewed and approved by the HSO.

(4) The Contractor shall inform and if necessary further train and test all Dive Team members the content of the Dive Safety Plan and the Dive Safety Procedure.

(5) A copy of the Dive Safety Plan and the Dive Safety Procedure shall be made available at the dive location to each Dive Team member.

10.2.2 Dive Safety Plan

The Dive Safety Plan shall describe the Contractor’s plan regarding items related with the diving operation listed in Annex 1.2 of Chapter 1 [Content of Bid Stage Safety Plan] and in accordance with the following:

(1) The Contractor shall compile relevant information from statistical records, recent records and forecasts of conditions for the Dive Safety Plan. Relevant information shall be obtained by the Contractor from all available sources and shall include for example the following:

(a) Climatic information and forecasting at the diving location:

(i) Wind speed and direction;

(ii) Air temperature;

(iii) Surface visibility, fog, sea mist;

(iv) Likelihood and intensity of electrical storm; and

(v) Weather forecasting.

(b) Water/Marine Conditions

(g) Information and instructions to be given to the Divers, support assistants and other workers related with the diving operations and the working methods and safety measures; and

(h) Communication systems and procedures.

(4) The Dive Safety Plan shall analyse the tasks of the assigned diving operation, assess all risks involved and describe all measures to ~~avoid~~ mitigate such risks.

(5) The Dive Safety Plan shall be prepared by a Diver that has the qualification, experience and capability deemed sufficient by the HSO and it shall ~~incorporate the advice of and~~ be approved by the DPIC.

(6) The Dive Safety Plan shall be further reviewed and approved by the HSO.

10.2.2 Climatic, Marine, Natural and Physical Conditions

The Contractor shall compile relevant information from statistical records, recent records and forecasts of conditions for the Dive Safety Plan.

The Contractor shall establish criteria ~~to permit~~ for commencement, continuation or stopping of any diving operations due to the climatic, marine, natural and physical conditions. The Dive Safety Plan shall describe how such controls shall be implemented.

The Contractor shall make exploratory dives to survey and establish conditions at the diving location.

Relevant information shall be obtained by the Contractor from all available sources and shall include for example the following:

(1) Climatic information and forecasting at the diving location:

(a) Wind speed and direction;

support assistants and other workers related with the diving operations and the working methods and safety measures; and

(h) Communication systems and procedures. (JC7)

JC7: ここでいう Communication system とはダイバーとボート間のことなら、そう記載すべき。

If the “communication system” is for that between the diver and the boat, it shall be described so.

NK: ダイバーと作業船とのシステムということを追加します。

Added phrase that the system between the diver and the workboat.

(4) The Dive Safety Plan shall analyse the tasks of the assigned diving operation, assess all risks involved and describe all measures to mitigate such risks. (JC8)

JC8: これは Safety Plan のレベルで行われることなので、Procedure では不要。

As this is to be done at the Safety Plan, therefore unnecessary to describe here.

NK: 10.2.1(2)に Dive Safety Plan で規定すべき事項として、(4) の事項を含んでいる Annex 1.2 of Chapter 1 [Content of Bid Stage Safety Plan]にもとづくことと追記しました。

Contents of Dive Safety Plan including those mentioned (4) are specified in 10.2.1(2) in accordance with Annex 1.2 of Chapter 1 [Content of Bid Stage Safety Plan].

(5) The Dive Safety Plan shall be prepared by a Diver that has the qualification, experience and capability deemed sufficient by the HSO and it shall be approved by the DPIC. (JC9)

(6) The Dive Safety Plan shall be further reviewed and approved by the HSO (JC9)

JC9: The contents of clause (5) and (6) are included in 10.2.1 (1). Deleted here.

10.2.2 Climatic, Marine, Natural and Physical Conditions (JC10)

JC10: まず 10.2 として「1 章の総則に従って Safety Plan（Safety Procedure ではない）を作成する」と記述してください。そのうえで、この 10.2.2 の内容を続けてください。その次に Safety Procedure の話をまとめて書いてください。

10.2 specifies that firstly Safety Plan (not Safety Procedure) shall be prepared in accordance with Chapter 1, secondly specify the contents of 10.2.2, and after those, specifies the contents for Safety Procedure.

NK: 10.2.1 (1)に Dive Safety Plan について記述を加え、Dive Safety Procedure との関係を明確にしました。

An explanation is added in 10.2.1 (1) to clarify the relationship between Dive Safety Plan and Dive Safety Procedure.

The Contractor shall compile relevant information from statistical records, recent records and forecasts of conditions for the Dive Safety Plan.

The Contractor shall establish criteria for commencement, continuation or stopping of any diving operations due to the climatic, marine, natural and physical conditions. The Dive Safety Plan shall describe how such controls shall be implemented.

The Contractor shall make exploratory dives to survey and establish conditions at the diving location.

Relevant information shall be obtained by the Contractor from all

(i) Sea state; wave height and direction;

(ii) Height and time of tides;

(iii) Water depths;

(iv) Water Temperatures;

(v) Water currents, direction and speed;

(vi) Visibility at depths; and

(vii) Water level variation in rivers or lakes during flood periods.

(c) Physical Conditions

(i) Underwater cables and pipes;

(ii) Wreckage and other artificial obstacles;

(iii) Geotechnical conditions affecting the work; and

(iv) UXO, Dangerous Goods and Hazardous Substances.

(d) Natural Conditions

(i) Natural obstructions;

(ii) Coral reef or other marine life to be protected; and

(iii) Danger from ~~marine~~ wildlife ~~and precautions~~.

(e) Surface Traffic

(i) Surface traffic details, timings and restrictions, and

(ii) Danger, precautions and control of surface traffic.

(f) Diving Works Area

(i) Demarcation of diving location; and

(ii) Limits of working area.

(2) The Dive Safety Plan shall describe the safety measures for the diving operations including the following:

(a) Safety procedures and checklists for ~~each~~ diving operation;

(b) Assignments and responsibilities of each of the Dive Team members;

(c) Lists~~, procedures and checklists~~ of diving equipment, tools, PPE, materials, workboat, fuel and ~~other consumables~~ others necessary for ~~each~~ diving operation;

(d) Emergency procedures including for equipment failure, fire, adverse climatic, marine, natural and physical conditions, adverse environmental conditions, medical illness and injury;

(e) Work stop criteria for change of ~~the weather and marine conditions~~ the climatic, marine, natural and physical conditions;

(f) Scope of work for each Diver and all support assistants in the Dive Team throughout the diving operation;

(g) Information and instructions to be given to the Divers, support assistants and other workers related with the diving operations and the working methods and safety measures; and

(h) Communication systems and procedures between the diver and

(b) Air temperature;

(c) Surface visibility, fog, sea mist;

(d) Likelihood and intensity of electrical storm; and

(e) Weather forecasting.

(2) Water/Marine Conditions

(a) Sea state; wave height and direction;

(b) Height and time of tides;

(c) Water depths;

(d) Water Temperatures;

(e) Water currents, direction and speed;

(f) Visibility at depths; and

(g) Water level variation in rivers or lakes during flood periods.

(3) Physical Conditions

(a) Underwater cables and pipes;

(b) Other artificial obstacles;

(c) Geotechnical conditions affecting the work; and

(d) UXO, Dangerous Goods and Hazardous Substances.

(4) Natural Conditions

(a) Natural obstructions;

(b) Coral reef or other marine life to be protected; and

(c) Danger from marine wildlife and precautions.

(5) Surface Traffic

(a) Surface traffic details, timings and restrictions, and

(b) Danger, precautions and control of surface traffic.

(6) Diving Works Area

(a) Demarcation of diving location; and

(b) Limits of working area.

10.2.3 Further Technical Detail in Dive Safety Plan

In addition to the above, the Contractor shall provide further technical detail in the Dive Safety Plan including:

(1) Equipment for the Dive Works of air compressor system, breathing-gas supply hoses, buoyancy control, compressed gas cylinders, gauges and timekeeping devices, masks and helmets, etc.

(2) Time schedule, the various works of the Divers, support assistants and workboats, traffic conditions of the workboats and other marine craft that may affect the diving operations.

(3) Composition of the Dive Team, command structure, assigned tasks, required licenses for the work.

(4) Communications, recovery and first aid measures in the event of an accident or emergency.

(5) Emergency medical facilities including the provision of a

available sources and shall include for example the following:

(1) Climatic information and forecasting at the diving location:

(a) Wind speed and direction;

(b) Air temperature;

(c) Surface visibility, fog, sea mist;

(d) Likelihood and intensity of electrical storm; and

(e) Weather forecasting.

(2) Water/Marine Conditions

(a) Sea state; wave height and direction;

(b) Height and time of tides;

(c) Water depths;

(d) Water Temperatures;

(e) Water currents, direction and speed;

(f) Visibility at depths; and

(g) Water level variation in rivers or lakes during flood periods.

(3) Physical Conditions

(a) Underwater cables and pipes;

(b) Other artificial obstacles;

(c) Geotechnical conditions affecting the work; and

(d) UXO, Dangerous Goods and Hazardous Substances.

(4) Natural Conditions

(a) Natural obstructions;

(b) Coral reef or other marine life to be protected; and

(c) Danger from marine wildlife and precautions.

(5) Surface Traffic

(a) Surface traffic details, timings and restrictions, and

(b) Danger, precautions and control of surface traffic.

(6) Diving Works Area

(a) Demarcation of diving location; and

(b) Limits of working area.

10.2.3 Further Technical Detail in Dive Safety Plan

In addition to the above, the Contractor shall provide further technical detail in the Dive Safety Plan including:

(1) Equipment for the Dive Works of air compressor system, breathing-gas supply hoses, buoyancy control, compressed gas cylinders, gauges and timekeeping devices, masks and helmets, etc.

(2) Time schedule, the various works of the Divers, support assistants and workboats, traffic conditions of the workboats and other marine craft that may affect the diving operations.

(3) Composition of the Dive Team, command structure, assigned tasks, required licenses for the work.

the workboat.

(i) Emergency medical facilities including the provision of a decompression chamber at the Diving Works location together with medical support. Or (alternatively and by reference to JSSS Section 10.6 [*Diving Accident Control Plan*] the address, contact details of an existing decompression chamber that the Contractor intends to use together with a description of the facilities, age and condition and location.

(3) The Contractor shall establish criteria for commencement, continuation or stopping of any diving operations due to the climatic, marine, natural and physical conditions. The Dive Safety Plan shall describe how such controls shall be implemented.

(4) The Contractor shall make exploratory dives to survey and establish conditions at the diving location.

10.2.3 Dive Safety Procedure

The Dive Safety Procedure shall describe the technical details for the individual diving operation including the following:

(1) Equipment for the Dive Works of air compressor system, breathing-gas supply hoses, buoyancy control, compressed gas cylinders, gauges and timekeeping devices, masks and helmets, etc.

(2) Time schedule, the various works of the Divers, support assistants and workboats, traffic conditions of the workboats and other marine craft that may affect the diving operations.

(3) Composition of the Dive Team, command structure, assigned tasks, required licenses for the work.

(4) Communications, recovery and first aid measures in the event of an accident or emergency.

(5) Emergency medical facilities including the decompression chamber or the address, contact details of an existing decompression chamber.

(6) Contact system between the Contractor/diving workboats and the authorities which manage the area around the diving works site at normal and emergency times.

decompression chamber at the Diving Works location together with medical support. (6) Or (alternatively and by reference to JSSS Section 10.6 [*Diving Accident Control Plan*] the address, contact details of an existing decompression chamber that the Contractor intends to use together with a description of the facilities, age and condition and location. (7) Contact system between the Contractor/diving workboats and the authorities which manage the area around the diving works site at normal and emergency times.	(4) Communications, recovery and first aid measures in the event of an accident or emergency. (5) Emergency medical facilities including the provision of a decompression chamber at the Diving Works location together with medical support. (6) Or (alternatively and by reference to JSSS Section 10.6 [*Diving Accident Control Plan*] the address, contact details of an existing decompression chamber that the Contractor intends to use together with a description of the facilities, age and condition and location. (7) Contact system between the Contractor/diving workboats and the authorities which manage the area around the diving works site at normal and emergency times.	
10.3 PERSONNEL FOR DIVING OPERATIONS 10.3.1 Qualification of Diving Personnel Qualification of the Dive Team members shall be in accordance with the specified OSHA requirements and shall for example include the following: (1) Each Diver shall possess a valid commercial diving certification for the appropriate training level issued by an internationally recognised Diver competence assessment organisation and as approved by the HSO and Engineer. (2) Each Dive Team member shall have the experience and training necessary to perform assigned tasks in a safe and healthful manner. (3) Each Dive Team member shall have experience and training in the following: (a) The use of tools, equipment and systems relevant to assigned tasks; (b) Techniques of the assigned diving mode; and (c) Diving operations and emergency procedures. (4) All Dive Team members shall be trained in cardiopulmonary resuscitation and first aid to a minimum standard of that recommended by the International Federation of Red Cross and Red Crescent Societies standard course or equivalent. (5) Dive Team members who are exposed to or control the exposure of others to hyperbaric conditions shall be trained in diving-related physics and physiology. (6) The qualifications of all Divers shall be checked and verified in accordance with the specified OSHA requirements. 10.3.2 Designated Person-in-Charge (DPIC) (1) The Contractor shall assign a DPIC to each diving operation. (2) The DPIC shall have experience in, and knowledge of all phases of the diving operation for which he is responsible.	**10.3 PERSONNEL FOR DIVING OPERATIONS** 10.3.1 Qualification of Diving Personnel Qualification of the Dive Team members shall be in accordance with the specified OSHA requirements and shall for example include the following: (1) Each Diver shall possess a valid commercial diving certification for the appropriate training level issued by an internationally recognised Diver competence assessment organisation and as approved by the HSO and Engineer. (2) Each Dive Team member shall have the experience and training necessary to perform assigned tasks in a safe and healthful manner. (3) Each Dive Team member shall have experience and training in the following: (a) The use of tools, equipment and systems relevant to assigned tasks; (b) Techniques of the assigned diving mode; and (c) Diving operations and emergency procedures. (4) All Dive Team members shall be trained in cardiopulmonary resuscitation and first aid to a minimum standard of that recommended by the International Federation of Red Cross and Red Crescent Societies standard course or equivalent. (5) Dive Team members who are exposed to or control the exposure of others to hyperbaric conditions shall be trained in diving-related physics and physiology. (6) The qualifications of all Divers shall be checked and verified in accordance with the specified OSHA requirements. 10.3.2 Designated Person-in-Charge (DPIC) (JC11) JC11: 10.1.2.(e)のコメントのように(for diving works)を加える。 As commented to 10.1.2.(e), (for diving works) is added. MK: Added. (1) The Contractor shall assign a DPIC to each diving operation. (2) The DPIC shall have experience in, and knowledge of all phases of the diving operation for which he is responsible.	**10.3 PERSONNEL FOR DIVING OPERATIONS** 10.3.1 Qualification of Diving Personnel Qualification of the Dive Team members shall be in accordance with the specified OSHA requirements and shall for example include the following: (1) Each Diver shall possess a valid commercial diving certification for the appropriate training level issued by an internationally recognised Diver competence assessment organisation and as approved by the HSO and the Engineer. (2) Each Dive Team member shall have the experience and training necessary to perform assigned tasks in a safe and healthful manner. (3) Each Dive Team member shall have experience and training in the following: (a) The use of tools, equipment and systems relevant to assigned tasks; (b) Techniques of the assigned diving mode; and (c) Diving operations and emergency procedures. (4) All Dive Team members shall be trained in cardiopulmonary resuscitation and first aid to a minimum standard of that recommended by the International Federation of Red Cross and Red Crescent Societies standard course or equivalent. (5) Dive Team members who are exposed to or control the exposure of others to hyperbaric conditions shall be trained in diving-related physics and physiology. (6) The qualifications of all Divers shall be checked and verified in accordance with the specified OSHA requirements. 10.3.2 Designated Person-in-Charge (for Diving Works) (DPIC) (1) The Contractor shall assign a DPIC to each diving operation. (2) The DPIC shall have experience in, and knowledge of all phases of the diving operation for which he is responsible.

(3) The DPIC shall be immediately responsible for the health and safety of the Dive Team. (4) The DPIC shall be stationed at the dive location, and shall not be stationed at another dive location (i.e., the DPIC must be stationed at one dive location and be responsible only for the diving operation at that location). (5) The DPIC can be a Diver when qualified as a diver, and when another dive-team member is available at the dive location who is trained and capable of performing the necessary functions of the DPIC's duties. (6) The qualifications of the DPIC shall be checked and verified in accordance with the specified OSHA requirements.	(3) The DPIC shall be immediately responsible for the health and safety of the Dive Team. (4) The DPIC shall be stationed at the dive location, and shall not be stationed at another dive location (i.e., the DPIC must be stationed at one dive location and be responsible only for the diving operation at that location). (5) The DPIC can be a Diver when qualified as a diver, and when another dive-team member is available at the dive location who is trained and capable of performing the necessary functions of the DPIC's duties. (6) The qualifications of the DPIC shall be checked and verified in accordance with the specified OSHA requirements.	(3) The DPIC shall be immediately responsible for the health and safety of the Dive Team. (4) The DPIC shall be stationed at the dive location, and shall not be stationed at another dive location (i.e., the DPIC must be stationed at one dive location and be responsible only for the diving operation at that location). (5) The DPIC can be a Diver when qualified as a diver, and when another dive-team member is available at the dive location who is trained and capable of performing the necessary functions of the DPIC's duties. (6) The qualifications of the DPIC shall be checked and verified in accordance with the specified OSHA requirements.
10.3.3 Duties of DPIC The DPIC shall have the duties and responsibilities required by the content of this Chapter and the specified OSHA requirements, including the following: (1) Manage the health and safety of the Dive Team; (2) Manage and supervise-the diving operation; (3) Issue instructions for the diving operation to the Dive Team; (4) Issue instructions to temporarily stop work when the DPIC considers that it is not safe to continue; (5) Support the HSO with the health and safety management of the diving operations; (6) Ensure that all members of the Dive Team keep records; and (7) Collect or summarise records and submit to HSO.	10.3.3 Duties of DPIC (JC12) JC12: Operation Leader と変更する場合には、in addition to the provisions described in the Chapter 1 hereof とする？ If "DPIC" is replaced with "Operation leader", is it necessary to subscribe "in addition to the provisions described in the Chapter 1 hereof"? NK: DPIC は潜水という特殊な工事の場合であり、OSHA で使用されている用語であることから、Operation Leader に含める必要はないと思います。このままとします。 DPIC is used in JSSS only for diving works which are special works, and it is a term being used in OSHA. It is deemed that it is not necessarily included in Operation Leaders. Therefore, DPIC is left as it is.. The DPIC shall have the duties and responsibilities required by the content of this Chapter and the specified OSHA requirements, including the following: (1) Manage the health and safety of the Dive Team; (2) Manage and supervise-the diving operation; (3) Assignment of tasks to Diving Team members NK: 下記 10.3.4 (1)の対応参照。See the comment for 10.3.4 (1). (4) Issue instructions for the diving operation to the Dive Team; (5) Issue instructions to temporarily stop work when the DPIC considers that it is not safe to continue; (6) Support the HSO with the health and safety management of the diving operations; (7) Ensure that all members of the Dive Team keep records; and (8) Collect or summarise records and submit to HSO.	10.3.3 Duties of DPIC The DPIC shall have the duties and responsibilities required by the content of this Chapter and the specified OSHA requirements, including the following: (1) Manage the health and safety of the Dive Team; (2) Manage and supervise-the diving operation; (3) Assignment of tasks to Diving Team members; (4) Issue instructions for the diving operation to the Dive Team; (5) Issue instructions to temporarily stop work when the DPIC considers that it is not safe to continue; (6) Support the HSO with the health and safety management of the diving operations; (7) Ensure that all members of the Dive Team keep records; and (8) Collect or summarise records and submit to HSO.
10.3.4 Diver Assignments. (1) Each Dive Team member shall be assigned tasks commensurate to the persons experience and training, except that limited additional tasks may be assigned to a Diver undergoing training provided that these tasks are performed under the direct supervision of an experienced Dive Team member. (2) The Contractor shall not require a Dive Team member to be exposed to hyperbaric conditions against the member's will, except	10.3.4 Diver Assignments. (1) Each Dive Team member shall be assigned tasks commensurate to the persons experience and training, except that limited additional tasks may be assigned to a Diver undergoing training provided that these tasks are performed under the direct supervision of an experienced Dive Team member. (JC13) JC13: 誰が Assign するのか。DPIC なら 10.3.3 に追記必要では？ Who will assign tasks to the Dive team members? If DPIC is the one, it should be	10.3.4 Diver Assignments. (1) Each Dive Team member shall be assigned tasks commensurate to the persons experience and training, except that limited additional tasks may be assigned to a Diver undergoing training provided that these tasks are performed under the direct supervision of an experienced Dive Team member.

when necessary to complete decompression or treatment procedures. (3) The Contractor shall not permit a Dive Team member to dive or be exposed to hyperbaric conditions or any other condition which is likely to affect adversely the safety or health of a Dive Team member that may cause any physical impairment. (4) No Diver shall dive in any diving operation unless the DPIC and the complete Dive Team present.	added in 10.3.3? NK: 役割の割り当ては DPIC の責務ですので、10.3.3 (3)にその旨を追加します。 Assignment of tasks to Diving Team members is one of important responsibilities of DPIC. Added as 10.3.3 (3). (2) The Contractor shall not require a Dive Team member to be exposed to hyperbaric conditions against the member's will, except when necessary to complete decompression or treatment procedures. (3) The Contractor shall not permit a Dive Team member to dive or be exposed to hyperbaric conditions or any other condition which is likely to affect adversely the safety or health of a Dive Team member that may cause any physical impairment. (JC14) JC14: Revised by JC. NK: MD will review this revision. (4) No Diver shall dive in any diving operation unless the DPIC and the complete Dive Team present.	(2) The Contractor shall not require a Dive Team member to be exposed to hyperbaric conditions against the member's will, except when necessary to complete decompression or treatment procedures. (3) The Contractor shall not permit a Dive Team member to dive or be exposed to hyperbaric conditions for an excessive duration or any other condition which ~~is likely to affect adversely the safety or health of a Dive Team member that~~ may cause any physical impairment. (4) No Diver shall dive in any diving operation unless the DPIC and the complete Dive Team present.
10.3.5 Assistants and Duties of Dive Team The Contractor shall appoint such Divers and support assistants within each Dive Team as are considered necessary by the DPIC for the Dive Team to discharge its duties in a safe and competent manner. All Dive Team support assistants shall have the duties and responsibilities required by the content of this Chapter and the specified OSHA requirements, including the following: (1) Operate the air compressors. (2) Control the valve for the surface supply of breathing air. (3) Communicate with the Diver so that the Diver descends and ascends properly. (4) Communicate to supply the air to the Diver properly between the assistants in charge to control the valve and to communicate with the Diver; (5) Inform the Diver immediately when there is any risk due to a failure of air supply, weather change, sea condition changes, operations of other vessels and potential hazards. (6) Inspect the connection between the helmet and the breastplate of the Diver before the start of diving operations when using a diving helmet. (7) Coordinate the position of the workboat and avoid any conflict with the diver. (8) Ensure the safety of the Diver by maintaining communication with voice or video communication device. (9) Ensure the safety of the Diver by observing the air bubble of breathing of the diver.	10.3.5 Assistants and Duties of Dive Team The Contractor shall appoint such Divers and support assistants within each Dive Team as are considered necessary by the DPIC for the Dive Team to discharge its duties in a safe and competent manner. All Dive Team support assistants shall have the duties and responsibilities required by the content of this Chapter and the specified OSHA requirements, including the following: (1) Operate the air compressors. (2) Control the valve for the surface supply of breathing air. (3) Communicate with the Diver so that the Diver descends and ascends properly. (4) Communicate to supply the air to the Diver properly between the assistants in charge to control the valve and to communicate with the Diver; (5) Inform the Diver immediately when there is any risk due to a failure of air supply, weather change, sea condition changes, operations of other vessels and potential hazards. (JC15) JC15: Revised by JC. (6) Inspect the connection between the helmet and the breastplate of the Diver before the start of diving operations when using a diving helmet. (7) Coordinate the position of the workboat and avoid any conflict with the diver. (8) Ensure the safety of the Diver by maintaining communication with voice or video communication device. (9) Ensure the safety of the Diver by observing the air bubble of breathing of the diver.	10.3.5 Assistants and Duties of Dive Team The Contractor shall appoint such Divers and support assistants within each Dive Team as are considered necessary by the DPIC for the Dive Team to discharge its duties in a safe and competent manner. All Dive Team support assistants shall have the duties and responsibilities required by the content of this Chapter and the specified OSHA requirements, including the following: (1) Operate the air compressors. (2) Control the valve for the surface supply of breathing air. (3) Communicate with the Diver so that the Diver descends and ascends properly. (4) Communicate to supply the air to the Diver properly between the assistants in charge to control the valve and to communicate with the Diver; (5) Inform the Diver immediately when there is any ~~risk~~ trouble due to a failure of air supply, weather change, sea condition changes, operations of other vessels and potential hazards. (6) Inspect the connection between the helmet and the breastplate of the Diver before the start of diving operations when using a diving helmet. (7) Coordinate the position of the workboat and avoid any conflict with the diver. (8) Ensure the safety of the Diver by maintaining communication with voice or video communication device. (9) Ensure the safety of the Diver by observing the air bubble of breathing of the diver.
10.3.6 Health Checks (1) In addition to the requirements of JSSS 1.8.1 [*Proper Placement of Contractor's Personnel*] and in compliance with the OSHA requirement for the Contractor to make himself fully aware, the Contractor shall carry out particular health checks on all Divers to	10.3.6 Health Checks (1) In addition to the requirements of JSSS 1.8.1 [*Proper Placement of Contractor's Personnel*] and in compliance with the OSHA requirement for the Contractor to make himself fully aware, the Contractor shall carry out particular health checks on all Divers to	10.3.6 Health Checks (1) In addition to the requirements of JSSS 1.8.1 [*Proper Placement of Contractor's Personnel*] and in compliance with the OSHA requirement for the Contractor to make himself fully aware, the Contractor shall carry out particular health checks on all Divers to

ascertain that they are medically and physically fit to perform their duties.

(2) Such checks shall include for example checks for the existence of any illness or any deficiency in:

(a) The respiratory system, cardiovascular system, nervous system, musculoskeletal system, ear, nose and throat, and endocrine system;

(b) Vision;

(c) Dental health

(d) Any other health conditions and disease which may affect the diving operation.

(3) Any Diver that does not pass the above checks shall not be allowed to dive until the condition has improved and after further checks are successful.

(4) Additionally, and in accordance with the OSHA standard:

(a) The DPIC shall inquire into each Diver's health prior to any task assignment.

(b) The Contractor shall advise all Divers of the procedures for reporting physical problems or adverse physiological effects during and after diving.

(5) Consistent with the above and the OSHA provisions, the Contractor shall not require any Diver to dive or otherwise work under hyperbaric conditions when the Diver:

(a) Has any ailment that is likely to adversely affect the safety or health of any member of the Dive Team;

(b) Lacks the necessary training or education; or

(c) Refuses to work under such hyperbaric conditions.

(6) Should a Diver request termination during a dive, it may be necessary to prolong the diver's exposure to hyperbaric conditions to complete decompression or medical recompression treatment to avoid serious physical harm or death to the Diver.

10.4 DIVING EQUIPMENT, TOOLS, FACILITIES AND WORKBOATS

10.4.1 Diving Equipment

(1) The Contractor shall provide workboats, diving equipment, work tools and other facilities fully in compliance with OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations, §1910.430 Equipment.

(2) Workboats, diving equipment, work tools and other facilities are defined as Contractor's Equipment and shall therefore comply with JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*].

10.4.2 Diving Workboats

ascertain that they are medically and physically fit to perform their duties.

(2) Such checks shall include for example checks for the existence of any illness or any deficiency in:

(a) The respiratory system, cardiovascular system, nervous system, musculoskeletal system, ear, nose and throat, and endocrine system;

(b) Vision;

(c) Dental health

(d) Any other health conditions and disease which may affect the diving operation.

(3) Any Diver that does not pass the above checks shall not be allowed to dive until the condition has improved and after further checks are successful.

(4) Additionally, and in accordance with the OSHA standard:

(a) The DPIC shall inquire into each Diver's health prior to any task assignment. (JC16)

JC16: Revised by JC.

(b) The Contractor shall advise all Divers of the procedures for reporting physical problems or adverse physiological effects during and after diving.

(5) Consistent with the above and the OSHA provisions, the Contractor shall not require any Diver to dive or otherwise work under hyperbaric conditions when the Diver:

(a) Has any ailment that is likely to adversely affect the safety or health of any member of the Dive Team;

(b) Lacks the necessary training or education; or

(c) Refuses to work under such hyperbaric conditions.

(6) Should a Diver request termination during a dive, it may be necessary to prolong the diver's exposure to hyperbaric conditions to complete decompression or medical recompression treatment to avoid serious physical harm or death to the Diver.

10.4 DIVING EQUIPMENT, TOOLS, FACILITIES AND WORKBOATS

10.4.1 Diving Equipment

(1) The Contractor shall provide workboats, diving equipment, work tools and other facilities fully in compliance with OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations, §1910.430 Equipment.

(2) Workboats, diving equipment, work tools and other facilities are defined as Contractor's Equipment and shall therefore comply with JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*].

10.4.2 Diving Workboats (JC17)

JC17: Contractor's Equipment の一部であるが、Chapter 4 の記載は作業船をイメージ

ascertain that they are medically and physically fit to perform their duties.

(2) Such checks shall include for example checks for the existence of any illness or any deficiency in:

(a) The respiratory system, cardiovascular system, nervous system, musculoskeletal system, ear, nose and throat, and endocrine system;

(b) Vision;

(c) Dental health

(d) Any other health conditions and disease which may affect the diving operation.

(3) Any Diver that does not pass the above checks shall not be allowed to dive until the condition has improved and after further checks are successful.

(4) Additionally, and in accordance with the OSHA standard:

(a) The DPIC shall inquire into each Diver's health prior to ~~any task assignment~~ each diving operation.

(b) The Contractor shall advise all Divers of the procedures for reporting physical problems or adverse physiological effects during and after diving.

(5) Consistent with the above and the OSHA provisions, the Contractor shall not require any Diver to dive or otherwise work under hyperbaric conditions when the Diver:

(a) Has any ailment that is likely to adversely affect the safety or health of any member of the Dive Team;

(b) Lacks the necessary training or education; or

(c) Refuses to work under such hyperbaric conditions.

(6) Should a Diver request termination during a dive, it may be necessary to prolong the diver's exposure to hyperbaric conditions to complete decompression or medical recompression treatment to avoid serious physical harm or death to the Diver.

10.4 DIVING EQUIPMENT, TOOLS, FACILITIES AND WORKBOATS

10.4.1 Diving Equipment

(1) The Contractor shall provide workboats, diving equipment, work tools and other facilities fully in compliance with OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations, §1910.430 Equipment.

(2) Workboats, diving equipment, work tools and other facilities are defined as Contractor's Equipment and shall therefore comply with JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*].

10.4.2 Diving Workboats

(1) Workboats shall be: (a) Robust and seaworthy; (b) Stable in operation; (c) Suitable size, draft and shape to suit the diving operations; (d) Equipped with marine band radio and with a shore station that is attended at all time that the Workboat is in operation and can provide emergency support if required; (e) Equipped with marine lighting; (f) Equipped with life jackets, first aid sets, distress flares and other necessary emergency equipment; (g) Provided with secure and robust ladders or platforms for Divers to easily enter or exit the water; and (h) Provided with a roof and cabin to protect the crew and Dive Team from heat, cold and rain. (2) Workboats shall be provided with the means to assist an injured Diver from the water (such as an in-water platform, small boat or basket stretcher) or into a diving bell. The Contractor shall ensure that there are sufficient Dive Team members or additional Contractor's Personnel to assist. (3) Unless otherwise specified the Contractor shall provide a separate small boat for rescue at the workboat, suitable for assisting and recovering Divers who are in difficulty or have drifted away from position. 10.4.3 Inspections and Maintenance The Contractor shall comply with all requirements of JSSS 4.2 [*Inspection, Maintenance and Repair*] and ensure that workboats, equipment, tools and facilities are inspected, fully maintained and operational when mobilised to the Site and thereafter are inspected, maintained and repaired before the commencement of the first and of all subsequent days of operation. The Contractor shall keep the inspection and working records and make them available for the inspection of the Engineer upon request. The Contractor shall prohibit use of workboats, equipment, tools and facilities until the requirements of JSSS 4.2 [*Inspection, Maintenance and Repair*] are fully complied with.	していないので Chapter 4 に追記が必要(たとえば作業船の名前を追記するなど)。 Workboat is one of the Contractor's Equipment, however, it is not specifically itemised in Chapter 4. It is necessary to describe workboat in Chapter 4. NK: コメントに従い、第 4 章 4.1.1 (5)に Workboat for diving works を追加します。 As commented, "Workboat for diving works" will be added to 4.11(5). (1) Workboats shall be: (a) Robust and seaworthy; (b) Stable in operation; (c) Suitable size, draft and shape to suit the diving operations; (d) Equipped with marine band radio and with a shore station that is attended at all time that the Workboat is in operation and can provide emergency support if required; (e) Equipped with marine lighting; (f) Equipped with life jackets, first aid sets, distress flares and other necessary emergency equipment; (g) Provided with secure and robust ladders or platforms for Divers to easily enter or exit the water; and (h) Provided with a roof and cabin to protect the crew and Dive Team from heat, cold and rain. (2) Workboats shall be provided with the means to assist an injured Diver from the water (such as an in-water platform, small boat or basket stretcher) or into a diving bell. The Contractor shall ensure that there are sufficient Dive Team members or additional Contractor's Personnel to assist. 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10.5 PARTICULAR SAFETY MEASURES 10.5.1 Measures before Diving operations The Contractor shall take the following measures before commencement of any diving operation:	**10.5 PARTICULAR SAFETY MEASURES** 10.5.1 Measures before Diving operations The Contractor shall take the following measures before commencement of any diving operation:	**10.5 PARTICULAR SAFETY MEASURES** 10.5.1 Measures before Diving operations The Contractor shall take the following measures before commencement of any diving operation:

(1) Dive Teams

(a) Discuss the diving methods and safety procedures,

(b) Discuss the work methods and procedures and the assignment and placing of the Divers and work task sharing;

(c) Advise of the diving timetable and required compliance;

(d) Inform of the climatic, marine, natural and physical conditions; and

(e) Conduct the health check.

(f) Check that support assistant and crew on the workboat are wearing life jackets.

(2) Equipment, work tools and other facilities

Inspect the equipment, work tools and other facilities, prohibit use when any defect or non-compliance is found, reinspect when a repair or replacement is completed.

(3) Diving workboats

(a) Inspect workboats and rescue boats;

(b) Display the international maritime diving signal flag and display signs and lights as necessary on the workboat;

(c) Securely anchor the workboat to the seabed; and

(d) Stop the engine during diving operation.

(4) Diving operation site

(a) Provide signs including red flags, buoys and notices to demarcate the diving operation site; and

(b) Install a downline with depth indication marks at 3m intervals from the workboat to the sea bed at the diving operation site to act as a guideline for descending or ascending and as a guide for transfer of tools and equipment.

(5) Diving Equipment

(a) Check the diving equipment to be carried by the Divers;

(i) For surface-supplied air diving, check for example: air connections, compressed air supply, weight belt, ~~signal halyard,~~ voice or video communication device, torch, watch, water depth gauge, knife and the like.

(ii) For SCUBA diving, check for example: first stage, second stage and spare regulators, available air volume, secondary air supply, buoyancy control device, weight belt, tank straps, air valve, communication device, watch, water depth gauge, knife and the like.

(b) Check that the downline is secure and tight;

(c) Ensure as a minimum, that a two-way voice or video communication link is set up and working between at least between a single selected working Diver and the DPIC at the surface control point; and

If any defect is identified by the above checks, prohibit the dive operation from commencing.

(1) Dive Teams

(a) Discuss the diving methods and safety procedures,

(b) Discuss the work methods and procedures and the assignment and placing of the Divers and work task sharing;

(c) Advise of the diving timetable and required compliance;

(d) Inform of the climatic, marine, natural and physical conditions; and

(e) Conduct the health check.

(f) Check that support assistant and crew on the workboat are wearing life jackets.

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Inspect the equipment, work tools and other facilities, prohibit use when any defect or non-compliance is found, reinspect when a repair or replacement is completed.

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(ii) For SCUBA diving, check for example: first stage, second stage and spare regulators, available air volume, secondary air supply, buoyancy control device, weight belt, tank straps, air valve, communication device, watch, water depth gauge, knife and the like.

(b) Check that the downline is secure and tight;

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(b) Discuss the work methods and procedures and the assignment and placing of the Divers and work task sharing;

(c) Advise of the diving timetable and required compliance;

(d) Inform of the climatic, marine, natural and physical conditions; and

(e) Conduct the health check.

(f) Check that support assistant and crew on the workboat are wearing life jackets.

(2) Equipment, work tools and other facilities

Inspect the equipment, work tools and other facilities, prohibit use when any defect or non-compliance is found, reinspect when a repair or replacement is completed.

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(4) Diving operation site

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(5) Diving Equipment

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(i) For surface-supplied air diving, check for example: air connections, compressed air supply, weight belt, voice or video communication device, torch, watch, water depth gauge, knife and the like.

(ii) For SCUBA diving, check for example: first stage, second stage and spare regulators, available air volume, secondary air supply, buoyancy control device, weight belt, tank straps, air valve, communication device, watch, water depth gauge, knife and the like.

(b) Check that the downline is secure and tight;

(c) Ensure as a minimum, that a two-way voice or video communication link is set up and working between at least between a single selected working Diver and the DPIC at the surface control point; and

If any defect is identified by the above checks, prohibit the dive operation from commencing.

10.5.2 Measures during Diving Operations

The Contractor shall take the following safety measures during each diving operation:

(1) A designated member of the workboat crew on the workboat shall ~~observe the diving operation and workboat operation and~~ look out for any other vessels that may approach the diving operation site.

The designated member shall alert any other vessels related or not related with the diving operations with requisite warning blasts from the workboat's siren, loudhailer, flares and/or flags, etc. in order to prevent them from approaching and entering the diving operation site.

(2) Measures for the Divers

(a) Prohibit the Dive Team from commencing any diving operation without the DPIC and the complete Dive Team present, ready and equipped;

(b) Ensure that the Divers use the ladders for entering and exiting the water for the diving operation;

(c) Ensure that Divers use the downline for descending and ascending;

(d) Maintain constant voice or video communication through the provided link; and

(e) Ensue that the Divers constantly communicate with each other by hand signals and slate messaging.

(3) Ensure the DPIC or a Dive Team member at the surface, constantly observe the weather and marine conditions and there is any change that meets the work stop criteria, or if the conditions are considered to be otherwise unsafe by the DPIC, immediately stop the diving operation and ensure that the Divers are removed from the water in a safe and controlled manner;

(4) Safety and Health Management of Diving Operations

(a) Manage the Diving Works for each Diver so the Diver takes sufficient and safe surface time between dives so that there

10.5.2 Measures during Diving Operations

The Contractor shall take the following safety measures during each diving operation:

(1) A designated member of the workboat crew on the workboat shall look out for any other vessels that may approach the diving operation site.

The designated member shall alert any other vessels related or not related with the diving operations with requisite warning blasts from the workboat's siren, loudhailer, flares and/or flags, etc. in order to prevent them from approaching and entering the diving operation site.

(2) Measures for the Divers

(a) Prohibit the Dive Team from commencing any diving operation without the DPIC and the complete Dive Team present, ready and equipped;

(b) Ensure that the Divers use the ladders for entering and exiting the water for the diving operation; (JC18)

(c) Ensure that Divers use the downline for descending and ascending; (JC18)

(d) Maintain constant voice or video communication through the provided link; and

JC18：通常スキューバダイバーは入水時にはバックドロップすると思います。少なくとも(b)と(c)はスキューバのときに該当するか調べてください。

For scuba diving entering, backdrop method is used. Please, check if (b) and (c) can be applied for scuba diving.

NK: OSHA は次を規定しています。スキューバと区別はしていません。レジャーボートのように水面までの高さが低い場合は、後ろ向きに入水しますが、水面まで高さがある場合、はしご又は水中踏み台が必要です。Inwater stages を追記します。

29 CFR 1910.422 Procedures during dive
1. 29 CFR 1910.422(b) Water entry and exit. A means capable of supporting the diver (such as an inwater stage or ladder) while entering or exiting the water is required.

If it is a fixed structure, such as a ladder, it must extend below the water sufficiently to allow adequate diver access and support (a minimum of one meter is recommended). Portable ladders should be secured to maintain stability and to prevent pinch points.

The employer also must provide a means for assisting an injured diver from the water to the surface or into a diving bell (such as an inwater stage, stokes basket, or harness)

NK: OSHA は、潮流がある場所では索（line-tended）の使用を規定しています。OHSA に downline の規定はありませんが、Wikipidia に downline の下降上昇使用、潮流のある場所での潜水の深度のコントロール等に使用できるとの記述があります。

OSHA: 29 CFR 1910.424(b)(3) requires SCUBA divers to be line-tended against currents exceeding one (1) knot (1.689 feet per second, or about 17 feet per 10 seconds).

Wikipedia: https://en.wikipedia.org/wiki/Downline_(diving)

In underwater diving, a downline is a piece of substantial cordage running from a point at the surface to the underwater workplace, and kept under some tension. It can be used as a guideline for divers descending or ascending, for depth control in blue-water diving...

10.5.2 Measures during Diving Operations

The Contractor shall take the following safety measures during each diving operation:

(1) A designated member of the workboat crew on the workboat shall look out for any other vessels that may approach the diving operation site.

The designated member shall alert any other vessels related or not related with the diving operations with requisite warning blasts from the workboat's siren, loudhailer, flares and/or flags, etc. in order to prevent them from approaching and entering the diving operation site.

(2) Measures for the Divers

(a) Prohibit the Dive Team from commencing any diving operation without the DPIC and the complete Dive Team present, ready and equipped;

(b) Ensure that the Divers use the ladders or inwater stages for entering and exiting the water for the diving operation;

(c) Ensure that Divers use the downline for descending and ascending;

(d) Maintain constant voice or video communication through the provided link; and

is no risk to his health and wellbeing; (b) Ensure that sufficient numbers of Divers and standby Divers are available to ensure that Divers are not in the water for excessive periods; (c) Design shift times and patterns to preserve Divers' health and safety; (d) Ensure that each Diver ~~keeps~~ take an accurate record of his dive profile for every dive, showing overall time, bottom time and depth, decompression times and depths and that these are summarised with a record of the number of dives on a daily, weekly and monthly basis by the DPIC, and the Contractor retain the records. (e) Ensure that the DPIC reviews and approves such records and that same are submitted by the DPIC to the HSO for the HSO's review and countersignature and made available for the Engineer's inspection.	*日本の高気圧作業安全衛生規則では、スキューバを区別せず潜水作業者を規定しています。* *(さがり綱) 第三十三条　事業者は、潜水業務を行なうときは、潜水作業者が潜降し、及び浮上するためのさがり綱を備え、これを潜水作業者に使用させなければならない。* *Japanese Ordinance on Safety and Health of Work under High Pressure* *https://www.jniosh.johas.go.jp/icpro/jicosh-old/japanese/country/japan/laws/03_rel/09_highpressure_reg/03c.html* *(Life Line) Article 33. When the employer has the said diving workers engage in diving operations, he shall provide a life line and make the said diving workers use it in descending and ascending.* JSSS は、日本の安全規則をベースにしており、(c)の規定は上記規則にもとづき、原文のままとします。 Because JSSS is based on Japanese regulation, (c) is left as it is as stipulated in Japanese Ordinance above. (e) Ensue that the Divers constantly communicate with each other by hand signals and slate messaging. (3) Ensure the DPIC or a Dive Team member at the surface, constantly observe the weather and marine conditions and there is any change that meets the work stop criteria, or if the conditions are considered to be otherwise unsafe by the DPIC, immediately stop the diving operation and ensure that the Divers are removed from the water in a safe and controlled manner; (4) Safety and Health Management of Diving Operations (a) Manage the Diving Works for each Diver so the Diver takes sufficient and safe surface time between dives so that there is no risk to his health and wellbeing; (b) Ensure that sufficient numbers of Divers and standby Divers are available to ensure that Divers are not in the water for excessive periods; (JC19) JC19: Sufficient は言い過ぎでは？大勢の控えがいる訳がない。 "Sufficient" is too much to say. There shouldn't be many standby divers. NK:　節の意味は、長時間の水中作業を避けるために十分な数の潜水士と、必要な予備潜水士をそろえるという意味で、十分な数の予備潜水士という意味ではありませんが、誤解を生む可能性がありますので、コメントに従い修正します。 The meaning is that sufficient numbers of Divers shall be available to avoid excessive in-water period and necessary standby divers shall be provided. To avoid misunderstanding, the sufficient is replaced with suitable. To MD, please review this wording. (c) Design shift times and patterns to preserve Divers' health and safety; (d) Ensure that each Diver take an accurate record of his dive profile for every dive, showing overall time, bottom time and depth, decompression times and depths and that these are summarised with a record of the number of dives on a daily, weekly and monthly basis by the DPIC, and the Contractor retain the records. (J20) JC20: JICA modifies. (e) Ensure that the DPIC reviews and approves such records and that same are submitted by the DPIC to the HSO for the HSO's	(e) Ensue that the Divers constantly communicate with each other by hand signals and slate messaging. (3) Ensure the DPIC or a Dive Team member at the surface, constantly observe the weather and marine conditions and there is any change that meets the work stop criteria, or if the conditions are considered to be otherwise unsafe by the DPIC, immediately stop the diving operation and ensure that the Divers are removed from the water in a safe and controlled manner; (4) Safety and Health Management of Diving Operations (a) Manage the Diving Works for each Diver so the Diver takes sufficient and safe surface time between dives so that there is no risk to his health and wellbeing; (b) Ensure that ~~sufficient~~ suitable numbers of Divers and standby Divers are available to ensure that Divers are not in the water for excessive periods; (c) Design shift times and patterns to preserve Divers' health and safety; (d) Ensure that each Diver takes an accurate record of his dive profile for every dive, showing overall time, bottom time and depth, decompression times and depths and submit it to DPIC ~~that these are summarised with a record of the number of dives on a daily, weekly and monthly basis by the DPIC, and the Contractor retain the records~~. (e) Ensure that the DPIC summarises such records and submits them to the HSO for review and keep them available for the Engineer's inspection.

	review and countersignature and made available for the Engineer's inspection. (JC21) JC21: JICA modifies.	~~Ensure that the DPIC reviews and approves such records and that same are submitted by the DPIC to the HSO for the HSO's review and countersignature and made available for the Engineer's inspection.~~
10.6 DIVING ACCIDENT CONTROL PLAN 10.6.1 General The Contractor shall prepare an Accident Response Plan for the Diving Works in accordance with JSSS 1.21 [*Accident Response Plan*]. 10.6.2 Provisions by the Contractor The Contractor shall comply with following requirements prior to Diving Works. (1) The Contractor shall make decompression chamber available to treat decompression sickness decompression illness (DCI) in accordance with the requirements of HSE Commercial diving projects inland/inshore, Diving at Work Regulations 1997, Availability of compression chambers, Clauses 114 to 118 by means of: (j) For dives that are shallower than 10 m with planned in-water decompression not exceeding 20 minutes, the Contractor shall identify the nearest suitable operational two-person, two-compartment chamber. Under no circumstances this shall be more than 6 hours travelling distance from the dive site; (k) for dives between 10 and 50 m with planned in-water decompression not exceeding 20 minutes, the Contractor shall assess the risk of DCI and likelihood of a diver requiring emergency recompression. This shall be based on the depth and duration of the planned dives. The assessment shall also consider factors which may increase the risk of DCI such as water temperature, type of work, and the number of dives/ascents. If the assessment demonstrates a significant risk of DCI a suitable, operational, two-person, two-compartment chamber shall be provided for immediate use at the site of the diving work. If the assessment demonstrates relatively low risk of DCI, the Contractor shall identify the nearest suitable operational two-person, two-compartment chamber. Under no circumstances this shall be more than 6 hours travelling distance from the dive site; (l) for dives with planned in-water decompression stops greater than 20 minutes the Contractor shall provide a suitable, operational, two-person, two-compartment chamber for immediate use at the site of the diving work. The diver shall be able to leave the water quickly and easily and be pressurised within the chamber to the appropriate recompression pressure as defined by the time in the decompression schedule being used.	**10.6 DIVING ACCIDENT CONTROL PLAN** JC22: JICA modifies. 10.6.1 General The Contractor shall prepare an Accident Response Plan for the Diving Works in accordance with JSSS 1.21 [*Accident Response Plan*]. 10.6.2 Provisions by the Contractor The Contractor shall comply with following requirements prior to Diving Works. 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The diver shall be able to leave the water quickly and easily and be pressurised within the chamber to the appropriate recompression pressure as defined by the time in the decompression schedule being used.	**10.6 DIVING ACCIDENT ~~CONTROL~~ RESPONSE PLAN** 10.6.1 General The Contractor shall prepare an Accident Response Plan for the Diving Works in accordance with JSSS 1.21 [*Accident Response Plan*]. 10.6.2 Provisions by the Contractor The Contractor shall comply with following requirements prior to Diving Works. 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The diver shall be able to leave the water quickly and easily and be pressurised within the chamber to the appropriate recompression pressure as defined by the time in the decompression schedule being used. The controls of a decompression chamber shall only be operated by people competent to do so. Such competence will

The controls of a compression chamber shall only be operated by people competent to do so. Such competence will be achieved by a combination of training and experience. The degree of supervision provided shall reflect the experience of the operator. (2) In accordance with OSHA requirements the Contractor shall provide an emergency aid contact list, rescue and safety equipment (including decompression facilities), a first -aid kit and supplies. The rescue and safety equipment and first-aid kit and supplies provided at the Diving Works location shall be appropriate for the diving operations, approved by a physician. When used in a decompression chamber or bell, the first aid kit shall be suitable for use under hyperbaric conditions. (3) The HSO and DPIC shall determine whether the emergency aid list is complete and is available to all Dive Team members and also determine whether the rescue and safety equipment (including decompression facilities) and first-aid kit are complete and available at the Diving Works location.	The controls of a compression chamber shall only be operated by people competent to do so. Such competence will be achieved by a combination of training and experience. The degree of supervision provided shall reflect the experience of the operator. (2) In accordance with OSHA requirements the Contractor shall provide an emergency aid contact list, rescue and safety equipment (including decompression facilities), a first -aid kit and supplies. The rescue and safety equipment and first-aid kit and supplies provided at the Diving Works location shall be appropriate for the diving operations, approved by a physician. When used in a decompression chamber or bell, the first aid kit shall be suitable for use under hyperbaric conditions. (3) The HSO and DPIC shall determine whether the emergency aid list is complete and is available to all Dive Team members and also determine whether the rescue and safety equipment (including decompression facilities) and first-aid kit are complete and available at the Diving Works location.	be achieved by a combination of training and experience. The degree of supervision provided shall reflect the experience of the operator. (2) In accordance with OSHA requirements the Contractor shall provide an emergency aid contact list, rescue and safety equipment (including decompression facilities), a first -aid kit and supplies. The rescue and safety equipment and first-aid kit and supplies provided at the Diving Works location shall be appropriate for the diving operations, approved by a physician. When used in a decompression chamber or bell, the first aid kit shall be suitable for use under hyperbaric conditions. (3) The HSO and DPIC shall determine whether the emergency aid list is complete and is available to all Dive Team members and also determine whether the rescue and safety equipment (including decompression facilities) and first-aid kit are complete and available at the Diving Works location.

2020.5.12 NK R3

JSSS in English R3 for Issue 2 (2020/04/24)	JSSS in English Issue 3（2020/05/10）	JSSS in English Issue 3 Clear Copy（2020/05/10）
CHAPTER 10 DIVING WORKS	**CHAPTER 10 DIVING WORKS**	**CHAPTER 10 DIVING WORKS**
10.1 GENERAL	**10.1 GENERAL**	**10.1 GENERAL**
10.1.1 Scope	10.1.1 Scope	10.1.1 Scope
10.1.2 Definition	10.1.2 Definition	10.1.2 Definition
10.1.3 Compliance Standards	10.1.3 Compliance Standards	10.1.3 Compliance Standards
10.2 DIVE SAFETY PLAN AND DIVE SAFETY PROCEDURE	**10.2 DIVE SAFETY PLAN ~~AND DIVE SAFETY PROCEDURE~~**	**10.2 DIVE SAFETY PLAN**
10.2.1 General Content	10.2.1 General Requirements for the Dive Safety Plans	10.2.1 General Requirements for the Dive Safety Plans
10.2.2 Climatic, Marine, Natural and Physical Conditions	10.2.2 Bid Stage Dive Safety Plan	10.2.2 Bid Stage Dive Safety Plan
10.2.3 Further Technical Detail in Dive Safety Plan	10.2.3 Commencement Stage Dive Safety Plan	10.2.3 Commencement Stage Dive Safety Plan
10.3 PERSONNEL FOR DIVING OPERATION	10.2.4 Particular Dive Safety Plans	10.2.4 Particular Dive Safety Plans
10.3.1 Qualification of Diving Personnel	**10.3 CLIMATIC, MARINE, NATURAL AND PHYSICAL CONDITIONS**	**10.3 CLIMATIC, MARINE, NATURAL AND PHYSICAL CONDITIONS**
10.3.2 Designated Person-in-Charge (DPIC)	10.3.1 General	10.3.1 General
10.3.3 Duties of DPIC	10.3.2 Information on Conditions for Particular Dive safety Plans	10.3.2 Information on Conditions for Particular Dive safety Plans
10.3.4 Diver Assignments	**10.4 PERSONNEL FOR DIVING OPERATION**	**10.4 PERSONNEL FOR DIVING OPERATION**
10.3.5 Assistants and Duties of Members Dive Team Members	10.4.1 Qualification of Diving Personnel	10.4.1 Qualification of Diving Personnel
10.3.6 Health Check	10.4.2 Designated Person-in-Charge (DPIC)	10.4.2 Designated Person-in-Charge (DPIC)
10.4. DIVING EQUIPMENT, TOOLS, FACILITIES AND WORKBOATS	10.4.3 Duties of DPIC	10.4.3 Duties of DPIC
10.4.1 Diving Equipment	10.4.4 Diver Assignments	10.4.4 Diver Assignments
10.4.2 Diving Workboats	10.4.5 Assistants and Duties of Members Dive Team Members	10.4.5 Assistants and Duties of Members Dive Team Members
10.4.3 Inspections and Maintenance	10.4.6 Health Check	10.4.6 Health Check
10.5 PARTICULAR SAFETY MEASURES	**10.5 DIVING EQUIPMENT, TOOLS, FACILITIES AND WORKBOATS**	**10.5 DIVING EQUIPMENT, TOOLS, FACILITIES AND WORKBOATS**
10.5.1 Measures before Diving Operations	10.5.1 Diving Equipment	10.5.1 Diving Equipment
10.5.2 Measures during Diving Operations	10.5.2 Diving Workboats	10.5.2 Diving Workboats
10.6 DIVING ACCIDENT CONTROL PLAN	10.5.3 Inspections and Maintenance	10.5.3 Inspections and Maintenance
10.6.1 General	**10.6 PARTICULAR SAFETY MEASURES**	**10.6 PARTICULAR SAFETY MEASURES**
10.6.2 Provisions by Contractors	10.6.1 Measures before Diving Operations	10.6.1 Measures before Diving Operations
	10.6.2 Measures during Diving Operations	10.6.2 Measures during Diving Operations
	10.7 DIVING ACCIDENT RESPONSE PLAN	**10.7 DIVING ACCIDENT RESPONSE PLAN**
	10.7.1 General	10.7.1 General
	10.7.2 Provisions by Contractors	10.7.2 Provisions by Contractors
10 DIVING WORK	**10 DIVING WORK**	**10 DIVING WORK**
10.1 GENERAL	**10.1 GENERAL**	**10.1 GENERAL**
JC: JICA Comments (2020/04/24)	**JC: JICA Comments (2020/04/24)**	
We reviewed the R2. There is stipulation that the Plan shall be prepared in advance of each diving operation in the draft 10.1.2 (f).	We reviewed the R2. There is stipulation that the Plan shall be prepared in advance of each diving operation in the draft 10.1.2 (f).	
We guessed that NK prepared some kinds of stipulations for work procedure of each diving work from the stipulations of Further Technical Details in 10.2.3 for	We guessed that NK prepared some kinds of stipulations for work procedure of each diving work from the stipulations of Further Technical Details in 10.2.3 for	

example Time Schedule, Composition of Dive Team, etc.

We judged that these are not Safety Plan (for diving) to be prepared for overall diving works but stipulations for the Work Procedure. Therefore, our comments are to request NK to revise the Dive safety Plan to Dive Safety Procedure.

However, it needs to specify Diving Safety Plan at first before Dive Safety Procedure as follows:

1) Specify simply about Dive Safety Plan referring to Chapter 1 General (really, we think, very simple stipulation is enough.).

2) Stipulate about the study of national conditions mentioned in 10.2.2 with pre-wording “when preparation of the Safety Plan,”, and

3) At the end, stipulate all requirements about Procedure.

We request NK to rearrange the stipulations as mentioned above.

NK: NK modified this Chapter based on the above comments.

example Time Schedule, Composition of Dive Team, etc.

We judged that these are not Safety Plan (for diving) to be prepared for overall diving works but stipulations for the Work Procedure. Therefore, our comments are to request NK to revise the Dive safety Plan to Dive Safety Procedure.

However, it needs to specify Diving Safety Plan at first before Dive Safety Procedure as follows:

1) Specify simply about Dive Safety Plan referring to Chapter 1 General (really, we think, very simple stipulation is enough.).

2) Stipulate about the study of national conditions mentioned in 10.2.2 with pre-wording “when preparation of the Safety Plan,”, and

3) At the end, stipulate all requirements about Procedure.

We request NK to rearrange the stipulations as mentioned above.

NK: NK modified this Chapter based on the above comments.

In my original draft I had inserted a definition for “Diving Project” which also defined “Diving Operations” and consequently safety plans could be understood to be relative to either. Unfortunately, “Diving Project” was deleted and all safety plan references were changed “Diving Operations which was not the best choice and I think that this has created the difficulty for JICA. It is important to define and segregate these two terms because they each demand a separate and different type of safety plan.

Operation stage dive safety plans are much more important for diving safety than the equivalent plan for work on land and far more numerous as they will actually be required before every single dive.

As I had explained previously, although OSHA does not clearly define “diving operation” or “diving project” it makes frequent reference to the former and single mention of the latter. In terms of JSSS requirements for safety plans therefore, I believe that if this is not defined and explained further, this will give rise to interpretation problems in the future confusing.

“Operations” (plural) therefore has implied meaning taken as each separate dive generally understood to be a part of a “diving project”.

HSE is more comprehensive on this subject by defining both and providing rules for both whereby a Diving Project is comprised of one or more diving operations.

I therefore again suggest that definitions for Diving Project and Diving Operation be put back into the definitions and that subsequent requirements should be written clearly for each.

I have now reinserted definitions for both of the above and with the benefit of more time for consideration, I have considerably simplified both.

Similar to all other types of Works, Safety plans are required separately for Diving Works each of the above in accordance with JSSS 1.7.3 as follows:

(1) Bid Stage Safety Plan (Outline Dive Safety Plan).

(2) Commencement Stage Safety Plan (Updated Dive Safety Plan)

(3) Particular Safety Plans (Individual safety plans for each Diving Operation

The required content of each of the above is now clearly and simply described in the text.

	Although not really necessary, the Outline Overall safety plan submitted for the Bid in accordance with JSSS Chapter 1 Annex 1.2 item (9), can be further clarified to specifically mention diving with additional phrasing such as: *"If the Works include any Diving Works, the Safety Plan shall include safety requirements for such works in accordance with JSSS Chapter 10 [Diving Works]."* ***I can add the above to the next draft of Chapter 1 if required.*** *I have put back in the definitions of Diving Project and Diving Operation in 10.1.1, edited/simplified them considerably significantly, and then redrafted 10.2.1 to make the correlation between Chapter 10 and Chapter 1 (1.1.3) and OSHA requirements clear.* *Safety Plans for each and every Diving Operation are very necessary because each Diving Operation is under different conditions (depth, current, visibility etc etc). Also, and maybe more importantly with repetitive dives the intensity and nature of previous Diving Operations and restricted surface time to release residual nitrogen can prevent some divers not being allowed to dive. If this is not managed properly then serious injury or death can result.* *I have edited the remainder of your draft to reflect the above basic consideration on the assumption that the above basis is accepted by you in principle and so that there is one document for further joint review.*	
10.1.1 Scope This Chapter specifies the safety requirements for diving operations which shall include surface-supplied air diving and SCUBA diving and which are hereinafter collectively referred to as "Diving Works". Saturation diving and mixed-gas diving are not included.	10.1.1 Scope This Chapter specifies the safety requirements for Diving Operations which shall include surface-supplied air diving and SCUBA diving and which are hereinafter collectively referred to as "Diving Works". Saturation diving and mixed-gas diving are not included.	10.1.1 Scope This Chapter specifies the safety requirements for Diving Operations which shall include surface-supplied air diving and SCUBA diving and which are hereinafter collectively referred to as "Diving Works". Saturation diving and mixed-gas diving are not included.
	I have suggested the use of Nitrox before for the reasons given below but still do not understand why JSSS does not include mixed gas diving with Nitrox (also called Enhanced Air Nitrogen and others). This is air with enhanced oxygen which can be mixed and bottled at the site with relatively simple equipment under properly controlled conditions and it is commonly used in commercial diving basically because it reduces the effects of decompression sickness and provides further benefits for commercial diving operations such as: • *Longer Bottom Times. Divers who use nitrox absorb less nitrogen, making them stay underwater for longer.* • *Less Fatigue* • *Longer Dive Times.* • *Shorter Surface Intervals therefore less risk with repetitive dives.* *It is useful for dives up to 120 fsw (EAN32) or around 110 fsw (EAN36)* *If so I suggest that the second paragraph above is changed to* Diving with Nitrox is included, diving with other mixed-gases is not included. Saturation diving is not included.	
10.1.2 Definitions (1) Definition of terms is as follows:	10.1.2 Definitions (1) The definition of terms for the purpose of this Chapter are as	10.1.2 Definitions (1) The definition of terms for the purpose of this Chapter are as

(a) "Surface-supplied air diving" means a diving mode in which the Diver is supplied at the dive location with a piped supply of compressed air for breathing;

(b) "SCUBA diving" means a diving mode independent of surface supply in which the Diver uses open circuit self-contained underwater breathing apparatus;

(c) "Diver" means a worker working in water using underwater breathing apparatus which supplies compressed breathing gas at the ambient pressure;

(d) "Dive Team" means Divers and support assistants involved in a diving operation, including the Designated Person-in-Charge;

(e) "Designated Person-in-Charge" or "DPIC" means a senior person who, through qualification, experience and capability is deemed by the HSO to be qualified to be in charge of all aspects of the diving operation including those affecting the safety and health of members of the Dive Team;

JC: Operation Leader とは異なることを是としても、Diving Work だけの人材なので、このように追記しました。
"Designated Person-in-Charge" may be one of Operation Leaders, but he is exclusively for diving work. Therefore, supplemented as right.

(f) "Dive Safety Plan" means the safety plan prepared in advance of each diving operation and the nature and size of any diving operation so identified shall be such that it can be safely supervised by one DPIC.

JC: Diving operation 全体にプランはほかにあるという前提で、ここでは個々の潜水作業についての手順書というイメージで書かれているものと理解しました。
On the premise that there would be a plan for whole diving work, it is understood that this clause is describing about individual diving work.

NK:メール(2020/4/24)のコメントに従い、10.2.1 に第 1 章との関係を追加しました。
An expression is added in 10.2.1 in accordance with the JICA mail (2020.4.24) to relate the Safety Procedure to the Safety Plan and Method Statement.

follows:

(a) "Surface-supplied air diving" means a diving mode in which the Diver is supplied at the dive location with a piped supply of compressed air for breathing;

(b) "SCUBA diving" means a diving mode independent of surface supply in which the Diver uses open circuit self-contained underwater breathing apparatus;

(c) "Diver" means a worker working in water using underwater breathing apparatus which supplies compressed breathing gas at the ambient pressure;

(d) "Dive Team" means Divers, support assistants and dive boat crew who are involved in any Diving Operation, including the Designated Person-in-Charge;

(e) "Designated Person-in-Charge" ~~(for diving works)~~ or "DPIC" means a senior person who, through qualification, experience and capability is deemed by the HSO to be qualified to be in charge of all aspects of the diving operation including those affecting the safety and health of members of the Dive Team;

JC1: Operation Leader とは異なることを是としても、Diving Work だけの人材なので(for diving works)を追記しました。
"Designated Person-in-Charge" may be one of Operation Leaders, but he is exclusively for diving work. Therefore, (for diving works) is added as right.

NK: Added.

I think that the suggested addition is not necessary in view of the reworded first sentence of the subclause which is "for the purpose of this chapter i.e. Diving Works

Regarding deletion of the following, please refer to my notes and explanations on pages 1 and 2 and the revised clauses inserted below

(f) ~~"Dive Safety Plan" means the safety plan prepared in advance of each diving operation and the nature and size of any diving operation so identified shall be such that it can be safely supervised by one DPIC. the safety plan for diving operation as a part of Safety Plan specified in JSSS 1.7 [Contractor's Safety Plans] and is the basis of the Dive Safety Procedure;~~

(g) ~~"Dive Safety Plan Procedure" means the safety plan procedure prepared in advance of each diving operation in which the nature, size and other details are specified as described in JSSS 10.2 [Dive Safety Procedure] , and the nature and size of any diving operation so identified shall be such that it can be safely supervised by one DPIC.~~

JC2: Diving operation 全体にプランはほかにあるという前提で、ここでは個々の潜水作業についての手順書というイメージで書かれているものと理解しました。
Our understanding is that the Dive Safety Plan is defined as it specify the procedure of individual diving work on the premise that there is an overall safety dive plan. We modified as the right.

NK: Dive Safety Plan と Dive Safety Procedure の関係が明確になるように、(f)に Dive Safety Plan、(g)に Dive Safety Procedure の定義を追加します。メール(2020/4/24)のコメントに従い、10.2.1 に第 1 章との関係を追加しました。

follows:

(a) "**Surface-supplied air diving**" means a diving mode in which the Diver is supplied at the dive location with a piped supply of compressed air for breathing;

(b) "**SCUBA diving**" means a diving mode independent of surface supply in which the Diver uses open circuit self-contained underwater breathing apparatus;

(c) "**Diver**" means a worker working in water using underwater breathing apparatus which supplies compressed breathing gas at the ambient pressure;

(d) "**Dive Team**" means Divers, support assistants and dive boat crew who are involved in any Diving Operation, including the Designated Person-in-Charge;

(e) "**Designated Person-in-Charge**" or "**DPIC**" means a senior person who, through qualification, experience and capability is deemed by the HSO to be qualified to be in charge of all aspects of the diving operation including those affecting the safety and health of members of the Dive Team;

(f) "**Diving Operation**" means one single diving activity for one Diver or a team of Divers commencing from the time when the first Diver enters the water and extending until the last Diver has left the water, chamber or other environment in which the dive, or any part of the dive, took place and has completed any requisite decompression procedures, including, where it may be reasonably anticipated that this will be needed, any therapeutic recompression.

(g) "**Diving Project**" means any activity, made up of one or more Diving Operations, commencing from the first Diving Operation and extending until the latest Diver in the last Diving Operation has left the water, chamber or other environment in which the dive, or any part of the dive, took place and has completed any requisite decompression procedures, including, where it may be reasonably anticipated that this will be needed, any therapeutic recompression; "Diving Project' is the term used for the overall diving job – whether it lasts two hours or two months, and it can be made up of one or more Diving Operation; and

(h) "**Dive Safety Plan**" means the Safety Plan prepared for Diving Works in accordance with JSSS 10.2 [*Dive Safety Plan*].

10.1.3 Compliance Standards

(1) For provisions which are not stipulated in the JSSS, the Contractor shall comply with the requirements specified in OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations for surface-supplied air diving and SCUBA diving (excluding saturation and mixed-gas diving).

JC: これこそ、Unless otherwise specified in the Contract とすべき。
This phrase should be "Unless otherwise specified in the Contract.

NK: コメントに従い修正しました。
Modified as commented.

To make clear the relation between Dive Safety Plan and Dive Safety Procedure, (f) Dive Safety Plan is modified and (g) Dive Safety Procedure is added. Stipulations are added in 10.2.1 in accordance with the JICA mail (2020.4.24) to relate the Safety Procedure to the Safety Plan and Method Statement.

I understand the reason for the query but instead of the above, I suggest the reinsertion of the following definitions in accordance with my notes on page 1 and 2 above, followed later by clear, properly correlated and simple safety plan requirements for each:

(f) "**Diving Operation**" means one single diving activity for one Diver or a team of Divers commencing from the time when the first Diver enters the water and extending until the last Diver has left the water, chamber or other environment in which the dive, or any part of the dive, took place and has completed any requisite decompression procedures, including, where it may be reasonably anticipated that this will be needed, any therapeutic recompression.

The nature and size of any Diving Operation shall be such that it can be safely supervised by one person;

(g) "**Diving Project**" means any activity, made up of one or more Diving Operations, commencing from the first Diving Operation and extending until the latest Diver in the last Diving Operation has left the water, chamber or other environment in which the dive, or any part of the dive, took place and has completed any requisite decompression procedures, including, where it may be reasonably anticipated that this will be needed, any therapeutic recompression; "Diving Project' is the term used for the overall diving job – whether it lasts two hours or two months, and it can be made up of one or more Diving Operation; and

(h) "**Dive Safety Plan**" means the Safety Plan prepared for Diving Works in accordance with JSSS 10.2 [*Dive Safety Plan*].

All definitions shall be realigned in alphabetical order

10.1.3 Compliance Standards

(1) ~~For provisions which are not stipulated in the JSSS Unless otherwise specified in the Contract, the Contractor shall comply as a minimum with all of the requirements specified in OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations for surface-supplied air diving and SCUBA diving (excluding saturation and mixed-gas diving).~~

JC1: このスペックに書いていない基準については OSHA に従うという記述にしてください。(最後のページのコメントにあるとおり、減圧室に関する記述は OSHA では不十分に見え、HSE を参照することとしたため)
For the provisions which are not stipulated in this specification, please state that they shall comply with OSHA.
(As mentioned in the comment in the last page, it seems that the statement of OSHA regarding decompression chamber is not sufficient, thus this chapter shall refer to HSE.)

NK: modified as commented.

JC3: これこそ、Unless otherwise specified in the Contract とすべき。

10.1.3 Compliance Standards

By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*], for any items in this Chapter or relevant to the subject of this Chapter and which are not fully covered by JSSS, the Contractor shall take necessary measures for Diving Works complying with the technical requirements specified in OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations for surface-supplied air diving and SCUBA diving (excluding saturation and mixed-gas diving).

	This phrase should be “Unless otherwise specified in the Contract. NK: コメントに従い修正しました。Modified as commented. *I suggest the following wording which was requested earlier by JICA and is now used consistently in every other Chapter and Section where necessary:* *Please note that this is a standard description that basically means that whatever is written here in this Section or Chapter of JSSS has priority and prevails over the stated compliance standard which in this case is OSHA.* *If nothing was added in JSSS each Chapter could simply consist of one line stating “Comply with JSSS” which is obviously not be acceptable.* *This does mean that whatever is written in the detail of JSSS must be necessary, correct and completely clear as for these parts there should be no further reliance on OSHA for example as JSSS has superseded it.* *It also means that the clause for Compliance Standards must be exactly the same wording wherever it used otherwise different interpretations (e.g. of priority) may be necessary in different parts of JSSS which is not advisable.* By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*], for any items in this Chapter or relevant to the subject of this Chapter and which are not fully covered by JSSS, the Contractor shall take necessary measures for Diving Works complying with the technical requirements specified in OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations for surface-supplied air diving and SCUBA diving (excluding saturation and mixed-gas diving).	
10.2 DIVE SAFETY PLAN 10.2.1 General Content (1) The Contractor shall prepare a Dive Safety Plan for the Diving Works, inform and if necessary further train and test all Dive Team members in the content of the Plan. JC: Safety Procedure はコントラクターがダイビングの知見を持った人の知見を用いて作成するという意味の記載にしてください。 Please, modify the description son that it means that the safety procedure shall be created by the Contractor applying opinions of persons who have diving knowledges. NK: コメントに従い、右のように修正しました。また、(2), (3), (4)を JICA の意見に従い追加しました。また、10.2.2 のコメントを反映させるため、冒頭に Dive Safety Plan について記述し、Procedure との関係を明確にしました。 Modified in accordance with the comment as right. Clause (2), (3) and (4) are added as suggested by JICA. The title of the section is changed to “DIVE SAFETY Plan and DIVE SAFETY PROCEDURE” and in order to reflect the comment at 10.2.2, a paragraph is added to clarify the relationship between the Plan and Procedure. (2) A copy of the Dive Safety Plan shall be made available at the dive location to each Dive Team member. JC: Clause (3) and after are separated from 10.2.1 and contents are independently described as 10.2.2 “General Content” with some modification and deletion. (5)is move from (4)	**10.2 DIVE SAFETY PLANS ~~AND DIVE SAFETY PROCEDURE~~** ~~10.2.1 General Content~~ JC4: 以下、全部 procedure にしておいてください。 Please replace all Dive Safety Plan with Dive Safety Procedure. NK: Dive Safety Plan と Dive Safety Procedure の関係について 10.2.1 に規定し、その後 Dive Safety Procedure について規定します。タイトルを“DIVE SAFETY PLAN and DIVE SAFETY PROCEDURE”へ変更しました。 We will stipulate the relation between Dive Safety Plan and Dive Safety Procedure in 10.2.1 at first and do Dive Safety Procedure later. The title of the section is changed to “DIVE SAFETY Plan and DIVE SAFETY PROCEDURE”. To MD, the above JICA comments are different from those mentioned in 10.1, therefore NK modified this Chapter following the comments given in 10. To MD, 10.2 is modified by relocating the stipulations in last issue as below. Please review the following 10.2 referring the JICA comments and NK responses given below. *Regarding the above, I can understand JICA’s confusion over the various safety plans covering the Diving Project and the Diving Operations but I suggest this problem is created by the lack of definition and lack of description of what safety plans are required for reach.* *I have simply modified the earlier clause 10.1 and this now again defines what each of these are and all that now remains is to describe the content of the requisite safety plans for each.*	**10.2 DIVE SAFETY PLANS**

(3) For each required diving operation and diving mode, the Dive Safety Plan shall include:

(a) Safety procedures and checklists for each diving operation;

(b) Assignments and responsibilities of each of the Dive Team members;

(c) Lists, procedures and checklists of diving equipment, tools, materials, workboat, fuel and other consumables;

(d) Emergency procedures including for equipment failure, fire, adverse climatic, marine, natural and physical conditions, adverse environmental conditions, medical illness and injury;

(e) Work stop criteria for change of the weather and marine conditions;

(f) Scope of work for each Diver and all support assistants in the Dive Team throughout the diving operation;

(g) Information and instructions to be given to the Divers, support assistants and other workers related with the diving operations and the working methods and safety measures; and

(h) Communication systems and procedures.

JC: ここでいう Communication system とはダイバーとボート間のことなら、そう記載すべき。
If the "communication system" is for that between the diver and the boat, it shall be described so.

NK: ダイバーと作業船とのシステムということを追加します。
Add an expression that the system between the diver and the workboat.

(4) The Dive Safety Plan shall analyse the tasks of the assigned diving operation, assess all risks involved and describe all measures to mitigate such risks.

JC: これは Safety Plan のレベルで行われることなので、Procedure では不要。
As this is to be done at the Safety Plan, therefore unnecessary to describe here.

NK: 重要な事項であるので、10.2.1 (5)に文章を修正して移動します。
As this clause includes important items to be made, it is moved to 10.2.1 (5) (in new construction) with some modification.

(5) The Dive Safety Plan shall be prepared by a Diver that has the qualification, experience and capability deemed sufficient by the HSO and it shall be approved by the DPIC.

(6) The Dive Safety Plan shall be further reviewed and approved by the HSO

JC: The contents of clause (5) and (6) are included 10.2.1 (1). Deleted here.

10.2.2 Climatic, Marine, Natural and Physical Conditions

JC: まず 10.2 として「1 章の総則に従って Safety Plan（Safety Procedure ではない）を作成する」と記述してください。そのうえで、この 10.2.2 の内容を続けてください。その次に Safety Procedure の話をまとめて書いてください。
Firstly, describe that Safety Plan shall be prepared according to Chapter 1, add secondly continue the contents of 10.2.2. Thirdly, describe the contents of Safety Procedure.

I do not think it is necessary to introduce "Dive Safety Procedure" as a new additional topic to the Dive safety Plan as all components of this clause are actually parts of the Safety Plan as defined in Chapter 1 and referred to in JSSS 1.7.3. The last part to be submitted before each Diving Operation, is actually a Particular Safety Plan required by 1.7.3.

These are basically the same as safety plans for other Chapters, the Bid and commencement stage dive plans will include all general safety compliance matters and the particular dive safety plans are effectively the pre-dive planning, referred to in OSHA (29 CFR 1910.421(d) Planning and assessment). Particular Dive Safety Plane will not repeat the general information and will usually be largely checklist based but will be numerous as one is required before any diver enters the water to work.

To incorporate the theme of your comment, to tie this in with JSSS Chapter 1 and also to avoid future ambiguity by using or referring to the framework and terms used in the OSHA standard, I suggest that this entire clause is reworded as follows:

10.2.1 General Requirements for the Dive Safety Plans

(1) The Contractor shall prepare Dive Safety Plans as part of the Safety Plan for the Works in compliance with the requirements of with JSSS 1.7 [*Contractor's Safety Plans*].

(2) The submission requirements in accordance with JSSS 1.7.3 shall be as follows:

(a) The Bid Stage Safety Plan shall include the Outline Dive Safety Plan;

(b) The Commencement Stage Safety Plan shall include the Updated Dive Safety Plan; and

(c) The Particular Safety Plans shall include the individual Particular Dive Safety Plans to be submitted for and in advance of each Diving Operation.

10.2.2 Bid Stage Dive Safety Plan

(1) In compliance with JSSS 1.7.6 [*Bid Stage Safety Plan*], the Bid Stage Dive Safety Plan shall include an outline plan indicating the Contractor's operational procedures for each diving mode to be used in the Works (referred to in OSHA as the "safe practices manual"). This shall be in sufficient detail to give an understanding of the Contractor's intentions regarding the diving safety procedures that the Contractor intends to implement.

(2) The Bid Stage Dive Safety Plan shall contain a copy of the OSHA standard and the Contractor's policies for implementing the requirements of this standard.

Regarding the comment that this clause (b) be deleted, I do not recommend this.

It is a requirement of OSHA as stated already but as diving regulations vary around the world many divers will not be familiar with US domestic i.e. OSHA requirements, It is important that they are given the opportunity to study this document and check that their employer is complying particularly with regard to OSHA Under 29 CFR 1910.410(b)(1).

Also "the Contractor's policies for implementing the requirements of this standard" are an important requirement of OSHA and really should be provided as it is evidence of what the Contractor intends to do. This is

10.2.1 General Requirements for the Dive Safety Plans

(1) The Contractor shall prepare Dive Safety Plans as part of the Safety Plan for the Works in compliance with the requirements of with JSSS 1.7 [*Contractor's Safety Plans*].

(2) The submission requirements in accordance with JSSS 1.7.3 shall be as follows:

(a) The Bid Stage Safety Plan shall include the Outline Dive Safety Plan;

(b) The Commencement Stage Safety Plan shall include the Updated Dive Safety Plan; and

(c) The Particular Safety Plans shall include the individual Particular Dive Safety Plans to be submitted for and in advance of each Diving Operation.

10.2.2 Bid Stage Dive Safety Plan

(1) In compliance with JSSS 1.7.6 [*Bid Stage Safety Plan*], the Bid Stage Dive Safety Plan shall include an outline plan indicating the Contractor's operational procedures for each diving mode to be used in the Works (referred to in OSHA as the "safe practices manual"). This shall be in sufficient detail to give an understanding of the Contractor's intentions regarding the diving safety procedures that the Contractor intends to implement.

(2) The Bid Stage Dive Safety Plan shall contain a copy of the OSHA standard and the Contractor's policies for implementing the requirements of this standard.

NK: 10.2.1 (1)に Dive Safety Plan について記述を加え、Dive Safety Procedure との関係を明確にしました。
An explanation is added in 10.2.1 (1) to clarify the relationship between Dive Safety Plan and Dive Safety Procedure.

The Contractor shall compile relevant information from statistical records, recent records and forecasts of conditions for the Dive Safety Plan.

The Contractor shall establish criteria for commencement, continuation or stopping of any diving operations due to the climatic, marine, natural and physical conditions. The Dive Safety Plan shall describe how such controls shall be implemented.

The Contractor shall make exploratory dives to survey and establish conditions at the diving location.

Relevant information shall be obtained by the Contractor from all available sources and shall include for example the following:

(1) Climatic information and forecasting at the diving location:
  (a) Wind speed and direction;
  (b) Air temperature;
  (c) Surface visibility, fog, sea mist;
  (d) Likelihood and intensity of electrical storm; and
  (e) Weather forecasting.

(2) Water/Marine Conditions
  (a) Sea state; wave height and direction;
  (b) Height and time of tides;
  (c) Water depths;
  (d) Water Temperatures;
  (e) Water currents, direction and speed;
  (f) Visibility at depths; and
  (g) Water level variation in rivers or lakes during flood periods.

(3) Physical Conditions
  (a) Underwater cables and pipes;
  (b) Other artificial obstacles;
  (c) Geotechnical conditions affecting the work; and
  (d) UXO, Dangerous Goods and Hazardous Substances.

(4) Natural Conditions
  (a) Natural obstructions;
  (b) Coral reef or other marine life to be protected; and
  (c) Danger from marine wildlife and precautions.

(5) Surface Traffic
  (a) Surface traffic details, timings and restrictions, and
  (b) Danger, precautions and control of surface traffic.

(6) Diving Works Area

included in the Bid Stage Dive Safety plan in 10.2.1 above, as it can and should be evaluated at that stage. It is usually a fairly standard document and easy for any Diving Contractor to prepare.

10.2.3 Commencement Stage Dive Safety Plan

(1) In compliance with JSSS 1.7.7 [*Commencement Stage Safety Plan*], the Commencement Stage Dive Safety Plan shall be a development of the Bid Stage Dive Safety Plan and shall include detailed safety procedures and standard checklists to apply to all Diving Operations, equipment procedures, and emergency procedures (at a minimum covering fire, equipment malfunction or failure, adverse environmental conditions and medical illness and injury).

(2) The HSO shall review the Commencement Stage Dive Safety Plan to determine if it is correct and compliant with the requirements of OSHA and JSSS.

(3) A copy of the Commencement Stage Dive Safety Plan together with a copy of the OSHA standard and the Contractor's policies for implementing the requirements of OSHA (from the Bid Stage Dive Plan) shall be made available at the dive location to each Dive Team member and explained to the Dive Team by the HSO and DPIC.

10.2.4 Particular Dive Safety Plans

(1) In compliance with JSSS 1.7.8 [*Particular Safety Plans*], the Particular Dive Safety Plans shall contain all further information specific to each Diving Operation not covered by the foregoing Bid Stage and Commencement Stage Dive Plans together with all supplemental information obtained during pre-dive planning and assessment, to collectively demonstrate the Contractor's compliance with the requirements OSHA and JSSS for each Diving Operation, including for example:

  (a) Safety procedures and checklists for each Diving Operation;

  (b) Name of each Dive Team member, buddy diver assignments, individual work assignment and responsibility and confirmation from the DPIC that they each comply with all diving health and safety requirements and are therefore approved to work on the Diving Operation;

  (c) The planned dive profile for each Diver showing their maximum bottom time and ascent rate with decompression stages and times and taking account of repetitive dives;

Please note that this may be different for each diver according to their accumulated repetitive diving record

  (d) Description of all diving equipment, diving gases and consumables, PPE, procedures for their use and signed checklists to confirm compliance;

  (e) Description of the workboat and workboat facilities, together with information on the location of the workboat in relation to the dive site, and procedures for the use and operation of the dive boat during Diving Operations, any surface hazards and any restriction in operation due to surface traffic conditions;

Please note that "surface traffic conditions" are actually covered by 10.3.1 below but have more significance if mentioned here also

10.2.3 Commencement Stage Dive Safety Plan

(1) In compliance with JSSS 1.7.7 [*Commencement Stage Safety Plan*], the Commencement Stage Dive Safety Plan shall be a development of the Bid Stage Dive Safety Plan and shall include detailed safety procedures and standard checklists to apply to all Diving Operations, equipment procedures, and emergency procedures (at a minimum covering fire, equipment malfunction or failure, adverse environmental conditions and medical illness and injury).

(2) The HSO shall review the Commencement Stage Dive Safety Plan to determine if it is correct and compliant with the requirements of OSHA and JSSS.

(3) A copy of the Commencement Stage Dive Safety Plan together with a copy of the OSHA standard and the Contractor's policies for implementing the requirements of OSHA (from the Bid Stage Dive Plan) shall be made available at the dive location to each Dive Team member and explained to the Dive Team by the HSO and DPIC.

10.2.4 Particular Dive Safety Plans

(1) In compliance with JSSS 1.7.8 [*Particular Safety Plans*], the Particular Dive Safety Plans shall contain all further information specific to each Diving Operation not covered by the foregoing Bid Stage and Commencement Stage Dive Plans together with all supplemental information obtained during pre-dive planning and assessment, to collectively demonstrate the Contractor's compliance with the requirements OSHA and JSSS for each Diving Operation, including for example:

  (a) Safety procedures and checklists for each Diving Operation;

  (b) Name of each Dive Team member, buddy diver assignments, individual work assignment and responsibility and confirmation from the DPIC that they each comply with all diving health and safety requirements and are therefore approved to work on the Diving Operation;

  (c) The planned dive profile for each Diver showing their maximum bottom time and ascent rate with decompression stages and times and taking account of repetitive dives;

  (d) Description of all diving equipment, diving gases and consumables, PPE, procedures for their use and signed checklists to confirm compliance;

  (e) Description of the workboat and workboat facilities, together with information on the location of the workboat in relation to the dive site, and procedures for the use and operation of the dive boat during Diving Operations, any surface hazards and any restriction in operation due to surface traffic conditions;

  (f) Description of all other Contractor's Equipment, tools and consumables for the assigned work tasks, procedures for their use and checklists;

  (g) The climatic, marine, natural and physical conditions that are likely to be encountered during any Diving Operation and the

(a) Demarcation of diving location; and

(b) Limits of working area.

10.2.3 Further Technical Detail in Dive Safety Plan

In addition to the above, the Contractor shall provide further technical detail in the Dive Safety Plan including:

(1) Equipment for the Dive Works of air compressor system, breathing-gas supply hoses, buoyancy control, compressed gas cylinders, gauges and timekeeping devices, masks and helmets, etc.

(2) Time schedule, the various works of the Divers, support assistants and workboats, traffic conditions of the workboats and other marine craft that may affect the diving operations.

(3) Composition of the Dive Team, command structure, assigned tasks, required licenses for the work.

(4) Communications, recovery and first aid measures in the event of an accident or emergency.

(5) Emergency medical facilities including the provision of a decompression chamber at the Diving Works location together with medical support.

(6) Or (alternatively and by reference to JSSS Section 10.6 [*Diving Accident Control Plan*] the address, contact details of an existing decompression chamber that the Contractor intends to use together with a description of the facilities, age and condition and location.

(7) Contact system between the Contractor/diving workboats and the authorities which manage the area around the diving works site at normal and emergency times.

(f) Description of all other Contractor's Equipment, tools and consumables for the assigned work tasks, procedures for their use and checklists;

(g) The climatic, marine, natural and physical conditions that are likely to be encountered during any Diving Operation and the procedures for commencement, continuation or stopping of any Diving Operation following any change in these conditions in accordance with JSSS 10.3 [*Climatic, Marine, Natural and Physical Conditions*];

(h) Communication systems and procedures for communications:

(i) between Divers;

(ii) between Divers and the workboat; and

(iii) Between the work boat and the relevant marine authorities.

(i) Any further information and instructions to be given to the Divers, support assistants and other workers related with the Diving Operations and the working methods and safety measures;

(j) The Particular Dive Safety Plan shall be prepared by the DPIC or another Diver that that has the qualification, experience and capability deemed sufficient by the HSO;

(k) The Particular Dive Safety Plan shall be reviewed and approved by the HSO;

(l) The content of the Particular Dive Safety Plan shall be explained to all Dive Team members during the employee briefing by the HSO or DPIC in accordance with OSHA 29 CFR 1910.421(f));

(m) If considered necessary by either the HSO or DPIC, individual Dive Team members shall be given additional training and testing; and

I assume that the above is a suitable response to your revision of 10.2.2 (5)

(n) A copy of the Particular Dive Safety Plan shall be made available at the dive location to each Dive Team member.

The above aims to ensure compliance with OSHA _ D. 29 CFR 1910.420 Safe practices manual.

Please note that it is not necessary to cover recompression facilities and arrangements; these are part of the Commencement Stage Dive Plan and also referred to in a later clause.

Much or all of the following is replaced by the above, hence the deletions

~~(1) [6 [Bid Stage Safety Plan] or 1.7.7 [Commencement Stage Safety Plan], or 1.7.8 [Particular Safety Plans] as required depending on the development of necessary information for the Diving Work.~~

~~10.2.2 Preparation of Dive Safety Plan and Dive Safety Procedure~~

~~(2) The Contractor shall prepare the Dive Safety Plan as a part of Safety Plan specified in JSSS 1.7.6 [Bid Stage Safety Plan] or 1.7.7 [Commencement Stage Safety Plan], or 1.7.8 [Particular Safety Plans] as required depending on the development of necessary~~

procedures for commencement, continuation or stopping of any Diving Operation following any change in these conditions in accordance with JSSS 10.3 [*Climatic, Marine, Natural and Physical Conditions*];

(h) Communication systems and procedures for communications:

(i) between Divers;

(ii) between Divers and the workboat; and

(iii) Between the work boat and the relevant marine authorities.

(i) Any further information and instructions to be given to the Divers, support assistants and other workers related with the Diving Operations and the working methods and safety measures;

(j) The Particular Dive Safety Plan shall be prepared by the DPIC or another Diver that that has the qualification, experience and capability deemed sufficient by the HSO;

(k) The Particular Dive Safety Plan shall be reviewed and approved by the HSO;

(l) The content of the Particular Dive Safety Plan shall be explained to all Dive Team members during the employee briefing by the HSO or DPIC in accordance with OSHA 29 CFR 1910.421(f));

(m) If considered necessary by either the HSO or DPIC, individual Dive Team members shall be given additional training and testing; and

(n) A copy of the Particular Dive Safety Plan shall be made available at the dive location to each Dive Team member.

information for the Diving Work.

JC5: Safety Procedure はコントラクターがダイビングの知見を持った人の知見を用いて作成するという意味の記載にしてください。
Please, modify the description so that the safety procedure shall be created by the Contractor obtaining opinions of persons who have diving knowledges.

NK: コメントに従い、上のように変更しました。また、10.2.2 へのコメントを反映させるため、冒頭に Dive Safety Plan について記述し、Procedure との関係を明確にしました。
Modified in accordance with the comment as above and in order to reflect the comment at 10.2.2, a paragraph is added to clarify the relationship between the Plan and Procedure.

(3) The Contractor shall prepare the Dive Safety Procedure in advance of individual diving operation in addition to Method Statement specified in JSSS 1.9 [Contractor's Method Statements] and the Diving Safety Plan.

(4) The Dive Safety Plan and the Dive Safety Procedure shall be prepared consulting Diver(s) for expert opinions who has the qualification and capability deemed sufficient by the HSO. They shall be incorporated the advice of and be approved by DPIC when prepared in the Works, and reviewed and approved by the HSO.

(5) The Contractor shall inform and if necessary further train and test all Dive Team members the content of the Dive Safety Plan and the Dive Safety Procedure.

(6) A copy of the Dive Safety Plan and the Dive Safety Procedure shall be made available at the dive location to each Dive Team member.

10.2.2 Dive Safety Plan

The Dive Safety Plan shall describe the Contractor's plan regarding items related with the Diving Operation listed in Annex 1.2 of Chapter 1 [Content of Bid Stage Safety Plan] and in accordance with the following:

JC8: これは Safety Plan のレベルで行われることなので、Procedure では不要。
As this is to be done at the Safety Plan, therefore unnecessary to describe here.

NK: 10.2.1(2)に Dive Safety Plan で規定すべき事項として、(4) の事項を含んでいる Annex 1.2 of Chapter 1 [Content of Bid Stage Safety Plan]にもとづくことと追記しました。
Contents of Dive Safety Plan including those mentioned (4) are specified in 10.2.1(2) in accordance with Annex 1.2 of Chapter 1 [Content of Bid Stage Safety Plan].

(1) The Contractor shall compile relevant information from statistical records, recent records and forecasts of conditions for the Dive Safety Plan. Relevant information shall be obtained by the Contractor from all available sources and shall include for example the following:

JC10: まず 10.2 として「1 章の総則に従って Safety Plan（Safety Procedure ではない）を作成する」と記述してください。そのうえで、この 10.2.2 の内容を続けてください。その次に Safety Procedure の話をまとめて書いてください。
10.2 specifies that firstly Safety Plan (not Safety Procedure) shall be prepared in accordance with Chapter 1, secondly specify the contents of 10.2.2, and after those, specifies the contents for Safety Procedure.

NK: 10.2.1 (1)に Dive Safety Plan について記述を加え、Dive Safety Procedure との関係を明確にしました。
An explanation is added in 10.2.1 (1) to clarify the relationship between Dive Safety Plan and Dive Safety Procedure.

10.3 CLIMATIC, MARINE, NATURAL AND PHYSICAL CONDITIONS

10.3.1 General

I suggest that the above heading from my earlier draft is relevant and simplifies the structure, please can this be put back together with the following opening clauses, which I have reinserted below with suitable editing:

(1) The Contractor shall compile relevant information from statistical records, recent and current forecasts of conditions which may be encountered in support of the Particular Dive Safety Plan and shall establish criteria and controls for commencement, continuation or stopping of any Diving Operation due to such conditions.

(2) The Commencement Stage Dive Safety Plan shall describe how such criteria shall be applied and how such controls shall be implemented.

10.3.2 Information on Conditions for Particular Dive safety Plans

(1) Where necessary, the Contractor shall make exploratory dives to survey and establish all relevant conditions at the dive site such that all Particular Dive Safety Plans are based upon the best and most timely available information.

(2) Relevant information shall also be obtained by the Contractor from all available sources and shall include for example the following:

(a) Climatic information and forecasting at the diving location:

(i) Wind speed and direction;

(ii) Air temperature;

(iii) Surface visibility, fog, sea mist;

(iv) Likelihood and intensity of electrical storm; and

(v) Weather forecasting.

(b) Water/Marine Conditions

(i) Sea state; wave height and direction;

(ii) Height and time of tides;

(iii) Water depths;

(iv) Water Temperatures;

(v) Water currents, direction and speed;

(vi) Visibility at depths; and

(vii) Water level variation in rivers or lakes during flood periods.

(c) Physical Conditions

(i) Underwater cables and pipes;

(ii) Wreckage and other artificial obstacles;

(iii) Geotechnical conditions affecting the work; and

(iv) UXO, Dangerous Goods and Hazardous Substances.

(d) Natural Conditions

(i) Natural obstructions;

(ii) Coral reef or other marine life to be protected; and

10.3 CLIMATIC, MARINE, NATURAL AND PHYSICAL CONDITIONS

10.3.1 General

(1) The Contractor shall compile relevant information from statistical records, recent and current forecasts of conditions which may be encountered in support of the Particular Dive Safety Plan and shall establish criteria and controls for commencement, continuation or stopping of any Diving Operation due to such conditions.

(2) The Commencement Stage Dive Safety Plan shall describe how such criteria shall be applied and how such controls shall be implemented.

10.3.2 Information on Conditions for Particular Dive safety Plans

(1) Where necessary, the Contractor shall make exploratory dives to survey and establish all relevant conditions at the dive site such that all Particular Dive Safety Plans are based upon the best and most timely available information.

(2) Relevant information shall also be obtained by the Contractor from all available sources and shall include for example the following:

(a) Climatic information and forecasting at the diving location:

(i) Wind speed and direction;

(ii) Air temperature;

(iii) Surface visibility, fog, sea mist;

(iv) Likelihood and intensity of electrical storm; and

(v) Weather forecasting.

(b) Water/Marine Conditions

(i) Sea state; wave height and direction;

(ii) Height and time of tides;

(iii) Water depths;

(iv) Water Temperatures;

(v) Water currents, direction and speed;

(vi) Visibility at depths; and

(vii) Water level variation in rivers or lakes during flood periods.

(c) Physical Conditions

(i) Underwater cables and pipes;

(ii) Wreckage and other artificial obstacles;

(iii) Geotechnical conditions affecting the work; and

(iv) UXO, Dangerous Goods and Hazardous Substances.

(d) Natural Conditions

(i) Natural obstructions;

(ii) Coral reef or other marine life to be protected; and

(iii) Danger from ~~marine~~ wildlife and precautions to be taken.

(e) Surface Traffic

(i) Surface traffic details, timings and restrictions, and

(ii) Danger, precautions and control of surface traffic.

(f) Diving Works Area

(i) Demarcation of diving location; and

(ii) Limits of working area.

(2) ~~The Particular Dive Safety Plan shall describe the safety measures for the Diving Operations including the following:~~

(a) ~~Safety procedures and checklists for each Diving Operation;~~

(b) ~~Assignments and responsibilities of each of the Dive Team members;~~

(c) ~~Lists, procedures and checklists of diving equipment, tools, PPE, materials, workboat, fuel and other consumables others necessary for each Diving Operation;~~

(d) ~~Emergency procedures including for equipment failure, fire, adverse climatic, marine, natural and physical conditions, adverse environmental conditions, medical illness and injury;~~

(e) ~~Work stop criteria for change of the weather and marine conditions the climatic, marine, natural and physical conditions;~~

(f) ~~Scope of work for each Diver and all support assistants in the Dive Team throughout the Diving Operation;~~

(g) ~~Information and instructions to be given to the Divers, support assistants and other workers related with the Diving Operations and the working methods and safety measures; and~~

(h) ~~Communication systems and procedures between the diver and the workboat.~~

~~JC7: ここでいう Communication system とはダイバーとボート間のことなら、そう記載すべき。~~

~~6. If the "communication system" is for that between the diver and the boat, it shall be described so.~~

~~NK: ダイバーと作業船とのシステムということを追加します。~~

~~Added phrase that the system between the diver and the workboat.~~

(i) ~~Emergency medical facilities including the provision of a decompression chamber at the Diving Works location together with medical support. Or (alternatively and by reference to JSSS Section 10.6 [*Diving Accident Control Plan*] the address, contact details of an existing decompression chamber that the Contractor intends to use together with a description of the facilities, age and condition and location.~~

(3) ~~The Contractor shall establish criteria for commencement, continuation or stopping of any Diving Operations due to the climatic, marine, natural and physical conditions. The Dive Safety Plan shall describe how such controls shall be implemented.~~

(4) ~~The Contractor shall make exploratory dives to survey and establish conditions at the diving location.~~

(iii) Danger from marine wildlife and precautions to be taken.

(e) Surface Traffic

(i) Surface traffic details, timings and restrictions, and

(ii) Danger, precautions and control of surface traffic.

(f) Diving Works Area

(i) Demarcation of diving location; and

(ii) Limits of working area.

The above is not now necessary as relevant items (as edited where necessary to include your comments) are already covered by Clause 10.2.1

~~10.2.4 Dive Safety Procedure~~

~~The Dive Safety Procedure shall describe the technical details for the individual Diving Operation including the following:~~

~~(1) Equipment for the Dive Works of air compressor system, breathing gas supply hoses, buoyancy control, compressed gas cylinders, gauges and timekeeping devices, masks and helmets, etc.~~

~~(2) Time schedule, the various works of the Divers, support assistants and workboats, traffic conditions of the workboats and other marine craft that may affect the Diving Operations.~~

~~(3) Composition of the Dive Team, command structure, assigned tasks, required licenses for the work.~~

~~(4) Communications, recovery and first aid measures in the event of an accident or emergency.~~

~~(5) Emergency medical facilities including the decompression chamber or the address, contact details of an existing decompression chamber.~~

~~(6) Contact system between the Contractor/diving workboats and the authorities which manage the area around the diving works site at normal and emergency times.~~

The above is not now necessary as relevant items (as edited where necessary to include your comments) are already covered by Clause 10.2.1

To MD, the sentences from below to before 10.3 are replaced with the above 10.2. Please review the above 10.2.

The following is not now necessary as relevant items (as edited where necessary to include your comments) are already covered by Clause 10.2.1

(1) ~~The Contractor shall prepare a Dive Safety Plan for the Diving Works, inform and if necessary further train and test all Dive Team members in the content of the Plan.~~

(2) ~~A copy of the Dive Safety Plan shall be made available at the dive location to each Dive Team member.~~

~~(3) The Dive Safety Plan shall contain a copy of the OSHA standard and the Contractor's policies for implementing the requirements of this standard.~~

JC1: 意図が不明であることもあり、不要に思います。
The intention of this provision is unknown. This item is not necessary.

NK: OSHA Subpart T, 1910.420 Safe practices manual stipulate "(b) Contents. (1) The safe practices manual shall contain a copy of this standard and the employer's policies for implementing the requirements of this standard."
Item (3) is deleted as commented.

The above clause (3) has been deleted in your comment and we do not recommend this as it is an OSHA stipulated requirement and an important aspect of for safety compliance purposes.

This is a requirement of OSHA as stated already but as diving regulations vary around the world many divers will not be familiar with US i.e. OSHA requirements, It is very important that they are given the opportunity to study this document and check that their employer is complying particularly with regard to OSHA Under 29 CFR 1910.410(b)(1).

Also "the Contractor's policies for implementing the requirements of this standard" are an important requirement of OSHA and really should be provided as it is evidence of what the Contractor intends to do. This is included in the Bid Stage Dive Safety plan in 10.2.1 above, as it can and should be evaluated at that stage . It is usually a fairly standard document and easy for any Diving Contractor to prepare.

The following is not now necessary as relevant items (as edited where necessary to include your comments) are already covered by Clause 10.2.1

(3) ~~For each required Diving Operation and diving mode, the Dive Safety Plan shall include:~~

~~JC1: work stop criteria を入れておいた方が良いと思います。10.5.2(3)に突然出てきているので~~

~~7. It is better to mention the work stop criteria here as it appears suddenly at 10.5.2 (3).~~

~~NK: Though it is stipulated to establish the criteria for stopping the work in 10.2.2., Item (e) is added.~~

(a) ~~Safety procedures and checklists for each Diving Operation;~~

(b) ~~Assignments and responsibilities of each of the Dive Team members;~~

(c) ~~Equipment l Lists, procedures and checklists of diving equipment, tools, materials, workboat, fuel and other consumables;~~

~~JC1: (e)及び(f)と重複感があります。違いがあるということであれば、分かるように明記してください。~~

~~(3) The item (c) seems duplicated with (e) and (f). If there is difference and reasons to state, describe it so that the difference can be understood clearly.~~

~~NK: OSHA Subpart T, 1910.420 Safe practices manual.の(a)から(d)を（3）に規定し、(e)以降を追記していました。(e) & (f)を(e)に含めます。~~

~~OSHA Subpart T, 1910.420 Safe practices manual.(a) to (d) is specified in (3) and other requirements are added to (3) as (e) to (i). Combined (e) and (f) in (e).~~

(d) ~~Emergency procedures including for equipment failure, fire, adverse climatic, marine, natural and physical conditions, adverse environmental conditions, medical illness and injury;~~

(e) ~~Work stop criteria for change of the weather and marine conditions;~~

~~(e) Details of the workboat and all diving equipment, fuel and other consumables;~~

~~(f) Equipment, tools, materials and consumables for the assigned work tasks;~~

(f) ~~Scope of work for each Diver and all support assistants in the Dive Team throughout the Diving Operation;~~

(g) ~~Information and instructions to be given to the Divers, support assistants and other workers related with the Diving Operations and the working methods and safety measures;~~

and

(h) Communication systems and procedures.

(4) The Dive Safety Plan shall analyse the tasks of the assigned Diving Operation, assess all risks involved and describe all measures to avoid mitigate such risks.

(5)

JC1: changed.

(6) The Dive Safety Plan shall be prepared by a Diver that has the qualification, experience and capability deemed sufficient by the HSO and it shall incorporate the advice of and be approved by the DPIC.

JC1: これでは実際に潜る人が計画を作ることになる(Diver の定義を参照)。OSHA を見ると基本は DPIC が作ることになっていないか？
8. This sentence can be read that the diver himself will make the Dive Safety Plan. (Refer to the definition of Diver,) DPIC shall make the Plan basically if comply with the provisions of OSHA?

JC1: DPIC が自分でアドバイスして、自分で承認するという言い方はおかしい。
It seems strange that DPIC gives advice to and approves the Dive Safety Plan.

NK: OSHA では、Safety Plan (Safety practice manual)を、雇用者（請負者）が作成するとのみ規定し、誰が作成するべきとは規定していません。
提案の(6)は、実際現場で潜るかに関係せず潜水士である者が、DPIC の助言を得て作成し、DPIC の承認を得ることを規定しています。
潜水作業という特殊な作業であることから、潜水士の作成、DPIC の review and approval 承認という手続きで、漏れや間違いのない品質の Safety Plan が確保できると考えます。
単なる潜水士ではなく、HSO が能力を認めた潜水士に作成することが規定されております。
一方、DPIC が作成しますと、review and approval の任務に HSO は専門家でないため不適であり、別途潜水専門家を任命する必要があります。
そのため、DPIC の助言は削除した原案を推奨致します。
The OSHA stipulates only that the employer shall develop a safe practices manual (Safety Plan) but not mention who prepare it.
The proposed (6) stipulates a diver shall prepare it. The diver is not restricted to a diver who actually engages in the diving work. The diver prepares it getting advice and DPIC approve it.
Because the diving work is special work, by the preparation by the diver and review and approval by the DPIC, quality of SP which does not have missing/errors can be secured. The diver is not normal diver but one HSO admits his ability.
On the other hand, if DPIC prepare the SP, it is necessary to assign other professional person who is qualified for diving works because HSO cannot review and approve as normally he is not qualified for diving works.
With reasons, NK propose to leave this (6) with deletion of "incorporate the advice of and".

(7) The Dive Safety Plan shall be reviewed and approved by the HSO.

JC1: HSO による review & approval の後に Engineer に提出することにした方がよくないか？
Isn't it better that after review and approval of the Dive Safety Plan, then submit it to the Engineer?

NK: DPIC が review and approval を(6)で規定していますが、最終的に HSO が承認することとし、下記の第 1 章 1.7.7 に規定の通り、作業開始前にエンジニアへ提出することが良いと考えます。第 1 章に規定されておりここでの提出の規定は不要と考えます。(6)には Further を追記します。

1.7.7 Commencement Stage Safety Plan

(1) This shall be submitted within twenty-eight (28) days after the Commencement Date and not less than twenty-eight (28) days before commencing any work at the Site,
(6) stipulate DPIC shall review and approval the Safety Plan (SP), and HSO shall finally approve the SP. As JSSS 1.7.7. above has specified its submission, no need to specify it in (6).

10.2.1 Climatic, Marine, Natural and Physical Conditions

The Contractor shall compile relevant information from statistical records, recent records and forecasts of conditions for the Dive Safety Plan.

The Contractor shall establish criteria to permit for commencement, continuation or stopping of any Diving Operations due to the climatic, marine, natural and physical conditions. The Dive Safety Plan shall describe how such controls shall be implemented.

JC1: permit to stop という言い方があるのでしょうか。
We wonder if there is expression of "permit to stop"?

NK: 作業開始、継続、中止は DPIC が基準(criteria)に基づき現場で指示することから、請負者は基準を設定することへ変更します。
The commencement, continuation or stopping is directed in accordance with the criteria at the site, therefore this clause specifies only to establish the criteria as modified.

The Contractor shall make exploratory dives to survey and establish conditions at the diving location.

Relevant information shall be obtained by the Contractor from all available sources and shall include for example the following:

(1) Climatic information and forecasting at the diving location:
  (a) Wind speed and direction;
  (b) Air temperature;
  (c) Surface visibility, fog, sea mist;
  (d) Likelihood and intensity of electrical storm; and
  (e) Weather forecasting.
(2) Water/Marine Conditions
  (a) Sea state; wave height and direction;
  (b) Height and time of tides;
  (c) Water depths;
  (d) Water Temperatures;
  (e) Water currents, direction and speed;
  (f) Visibility at depths; and
  (g) Water level variation in rivers or lakes during flood periods.
(3) Physical Conditions
  (a) Underwater cables and pipes;
  (b) Other artificial obstacles;
  (c) Geotechnical conditions affecting the work; and
  (d) UXO, Dangerous Goods and Hazardous Substances.

(4) ~~Natural Conditions~~

(a) ~~Natural obstructions;~~

(b) ~~Coral reef or other marine life to be protected; and~~

(c) ~~Danger from marine wildlife and precautions.~~

(5) ~~Surface Traffic~~

(a) ~~Surface traffic details, timings and restrictions, and~~

(b) ~~Danger, precautions and control of surface traffic.~~

(6) ~~Diving Works Area~~

(a) ~~Demarcation of diving location; and~~

(b) ~~Limits of working area.~~

~~10.2.2 Further Technical Detail in Dive Safety Plan~~

~~In addition to the above, the Contractor shall provide further technical detail in the Dive Safety Plan including:~~

(1) ~~Equipment for the Dive Works of air compressor system, breathing gas supply hoses, buoyancy control, compressed gas cylinders, gauges and timekeeping devices, masks and helmets, etc.~~

(2) ~~Time schedule, the various works of the Divers, support assistants and workboats, traffic conditions of the workboats and other marine craft that may affect the Diving Operations.~~

(3) ~~Composition of the Dive Team, command structure, assigned tasks, required licenses for the work.~~

(4) ~~Communications, recovery and first aid measures in the event of an accident or emergency.~~

(5) ~~Emergency medical facilities including the provision of a decompression chamber at the Diving Works location together with medical support.~~

(6) ~~Or (alternatively and by reference to JSSS Section 10.6 [*Diving Accident Control Plan*]~~ ~~the address, contact details of an existing decompression chamber that the Contractor intends to use together with a description of the facilities, age and condition and location.~~

(7) ~~Contact system between the Contractor/diving workboats and the authorities which manage the area around the diving works site at normal and emergency times.~~

10.3 PERSONNEL FOR DIVING OPERATION

10.3.1 Qualification of Diving Personnel

Qualification of the Dive Team members shall be in accordance with the specified OSHA requirements and shall for example include the following:

(1) Each Diver shall possess a valid commercial diving certification for the appropriate training level issued by an internationally recognised Diver competence assessment organisation and as approved by the HSO and Engineer.

(2) Each Dive Team member shall have the experience and training necessary to perform assigned tasks in a safe and healthful manner.

(3) Each Dive Team member shall have experience and training in the following:

(a) The use of tools, equipment and systems relevant to assigned tasks;

(b) Techniques of the assigned diving mode; and

(c) Diving operations and emergency procedures.

(4) All Dive Team members shall be trained in cardiopulmonary resuscitation and first aid to a minimum standard of that recommended by the International Federation of Red Cross and Red Crescent Societies standard course or equivalent.

(5) Dive Team members who are exposed to or control the exposure of others to hyperbaric conditions shall be trained in diving-related physics and physiology.

(6) The qualifications of all Divers shall be checked and verified in accordance with the specified OSHA requirements.

10.3.2 Designated Person-in-Charge (DPIC)

JC: 10.1.2.(e)のコメントのように(for diving works)を加える。

(1) The Contractor shall assign a DPIC to each diving operation.

(2) The DPIC shall have experience in, and knowledge of all phases of the diving operation for which he is responsible.

(3) The DPIC shall be immediately responsible for the health and safety of the Dive Team.

(4) The DPIC shall be stationed at the dive location, and shall not be stationed at another dive location (i.e., the DPIC must be stationed at one dive location and be responsible only for the diving operation at that location).

(5) The DPIC can be a Diver when qualified as a diver, and when another dive-team member is available at the dive location who is trained and capable of performing the necessary functions of the DPIC's duties.

(6) The qualifications of the DPIC shall be checked and verified in accordance with the specified OSHA requirements.

10.4 PERSONNEL FOR DIVING OPERATIONS

10.4.1 Qualification of Diving Personnel

Qualification of the Dive Team members shall be in accordance with the specified OSHA requirements and shall for example include the following:

(1) Each Diver shall possess a valid commercial diving certification for the appropriate training level issued by an internationally recognised Diver competence assessment organisation which shall be approved by the HSO and Engineer.

JC: JICA added "the".

NK: MD will review necessity of this "the".¥

No need "the"

(2) Each Dive Team member shall have the experience and training necessary to perform assigned tasks in a safe and healthful manner.

(3) Each Dive Team member shall have experience and training in the following:

(a) The use of tools, equipment and systems relevant to assigned tasks;

(b) Techniques of the assigned diving mode; and

(c) Diving Operations and emergency procedures.

(4) All Dive Team members shall be trained in cardiopulmonary resuscitation and first aid to a minimum standard of that recommended by the International Federation of Red Cross and Red Crescent Societies standard course or equivalent.

(5) Dive Team members who are exposed to or control the exposure of others to hyperbaric conditions shall be trained in diving-related physics and physiology.

(6) The qualifications of all Divers shall be checked and verified in accordance with the specified OSHA requirements.

10.4.2 Designated Person-in-Charge (~~for Diving Works~~) (DPIC).

JC11: 10.1.2.(e)のコメントのように(for diving works)を加える。
As commented to 10.1.2.(e), (for diving works) is added.

MK: Added.

Not necessary: please refer to 10.1.2 Definitions

(1) The Contractor shall assign a DPIC to each Diving Operation.

(2) The DPIC shall have experience in, and knowledge of all phases of the Diving Operation for which he is responsible.

(3) The DPIC shall be immediately responsible for the health and safety of the Dive Team.

(4) The DPIC shall be stationed at the dive location, and shall not be stationed at another dive location (i.e., the DPIC must be stationed at one dive location and be responsible only for the Diving Operation at that location).

(5) The DPIC can be a Diver when qualified as a Diver, and when another Dive Team member is available at the dive location who is trained and capable of performing the necessary functions of the DPIC's duties when the DPIC is a Diver in the water.

10.4 PERSONNEL FOR DIVING OPERATIONS

10.4.1 Qualification of Diving Personnel

Qualification of the Dive Team members shall be in accordance with the specified OSHA requirements and shall for example include the following:

(1) Each Diver shall possess a valid commercial diving certification for the appropriate training level issued by an internationally recognised Diver competence assessment organisation which shall be approved by the HSO and Engineer.

(2) Each Dive Team member shall have the experience and training necessary to perform assigned tasks in a safe and healthful manner.

(3) Each Dive Team member shall have experience and training in the following:

(a) The use of tools, equipment and systems relevant to assigned tasks;

(b) Techniques of the assigned diving mode; and

(c) Diving Operations and emergency procedures.

(4) All Dive Team members shall be trained in cardiopulmonary resuscitation and first aid to a minimum standard of that recommended by the International Federation of Red Cross and Red Crescent Societies standard course or equivalent.

(5) Dive Team members who are exposed to or control the exposure of others to hyperbaric conditions shall be trained in diving-related physics and physiology.

(6) The qualifications of all Divers shall be checked and verified in accordance with the specified OSHA requirements.

10.4.2 Designated Person-in-Charge (DPIC).

(1) The Contractor shall assign a DPIC to each Diving Operation.

(2) The DPIC shall have experience in, and knowledge of all phases of the Diving Operation for which he is responsible.

(3) The DPIC shall be immediately responsible for the health and safety of the Dive Team.

(4) The DPIC shall be stationed at the dive location, and shall not be stationed at another dive location (i.e., the DPIC must be stationed at one dive location and be responsible only for the Diving Operation at that location).

(5) The DPIC can be a Diver when qualified as a Diver, and when another Dive Team member is available at the dive location who is trained and capable of performing the necessary functions of the DPIC's duties when the DPIC is a Diver in the water.

(6) The qualifications of the DPIC shall be checked and verified in accordance with the specified OSHA requirements.

10.3.3 Duties of DPIC

JC: Operation Leader と変更する場合には、in addition to the provisions described in the Chapter 1 hereof とする？
If DPIC is changed, “in addition to the provisions described in the Chapter 1 hereof” should be added?

NK: DPIC は潜水という特殊な工事の場合であり、OSHA 等で使用されている用語であることから、Operation Leader に含める必要はないと思います。このままとします。
DPIC is for diving works which is not one of general construction works, and it is a term being used in OSHA etc. It is deemed that it is not necessarily included in Operation Leaders. No change.

The DPIC shall have the duties and responsibilities required by the content of this Chapter and the specified OSHA requirements, including the following:

(1) Manage the health and safety of the Dive Team;

(2) Manage and supervise the diving operation;

(3) Assignment of tasks to Diving Team members

NK: 下記 10.3.4 (1)の対応参照。
See the comment for 10.3.4 (1).

(4) Issue instructions for the diving operation to the Dive Team;

(5) Issue instructions to temporarily stop work when the DPIC considers that it is not safe to continue;

(6) Support the HSO with the health and safety management of the diving operations;

(7) Ensure that all members of the Dive Team keep records; and

(8) Collect or summarise records and submit to HSO.

10.3.4 Diver Assignments.

(1) Each Dive Team member shall be assigned tasks commensurate to the persons experience and training, except that limited additional tasks may be assigned to a Diver undergoing training provided that these tasks are performed under the direct supervision of an experienced Dive Team member.

JC: 誰が Assign するのか。DPIC なら 10.3.3 に追記必要では？
Who will assign tasks to the Dive team members? If DPIC is the one, it should be added in 10.3.3?

NK: 役割の割り当ては当然 DPIC の責務ですので、10.3.3 (3)にその旨を追加します。
Assignment of tasks to Diving Team members is one of important responsibilities od DPIC. Added as 10.3.3 (3).

(2) The Contractor shall not require a Dive Team member to be exposed to hyperbaric conditions against the member’s will, except

(6) The qualifications of the DPIC shall be checked and verified in accordance with the specified OSHA requirements.

(7) ~~No Diver shall dive in any Diving Operation unless the DPIC and the complete Dive Team present.~~

JC1: 10.3.4 に入れるべき事項
This item should be in 10.3.4.

NK: Moved to 10.3.4.(4).

The move is correct, no problem

10.4.3 Duties of DPIC

JC12: Operation Leader と変更する場合には、in addition to the provisions described in the Chapter 1 hereof とする？
If “DPIC” is replaced with “Operation leader”, is it necessary to subscribe “in addition to the provisions described in the Chapter 1 hereof”?

NK: DPIC は潜水という特殊な工事の場合であり、OSHA で使用されている用語であることから、Operation Leader に含める必要はないと思います。このままとします。
DPIC is used in JSSS only for diving works which are special works, and it is a term being used in OSHA. It is deemed that it is not necessarily included in Operation Leaders. Therefore, DPIC is left as it is.

The DPIC shall have the duties and responsibilities required by the content of this Chapter and the specified OSHA requirements, including the following:

(1) Manage the health and safety of the Dive Team;

(2) Manage and supervise the Diving Operation;

(3) Assign tasks to Dive Team members;

(4) Issue instructions for the Diving Operation to the Dive Team;

(5) Issue instructions to temporarily stop work when the DPIC considers that it is not safe to continue;

(6) Support the HSO with the health and safety management of the Diving Operations;

(7) Ensure that all members of the Dive Team keep records; and

(8) Collect records, check, approve and submit to HSO.

Modified so consistent with 10.6.2 (5)

10.4.4 Diver Assignments.

(1) Each Dive Team member shall be assigned tasks commensurate to the persons experience and training, except that limited additional tasks may be assigned to a Diver undergoing training provided that these tasks are performed under the direct supervision of an experienced Dive Team member.

JC13: 誰が Assign するのか。DPIC なら 10.3.3 に追記必要では？
Who will assign tasks to the Dive team members? If DPIC is the one, it should be added in 10.3.3?

NK: 役割の割り当ては DPIC の責務ですので、10.3.3 (3)にその旨を追加します。
Assignment of tasks to Diving Team members is one of important responsibilities of DPIC. Added as 10.3.3 (3).

Added above already

(2) The Contractor shall not require a Dive Team member to be

10.4.3 Duties of DPIC

The DPIC shall have the duties and responsibilities required by the content of this Chapter and the specified OSHA requirements, including the following:

(1) Manage the health and safety of the Dive Team;

(2) Manage and supervise the Diving Operation;

(3) Assign tasks to Dive Team members;

(4) Issue instructions for the Diving Operation to the Dive Team;

(5) Issue instructions to temporarily stop work when the DPIC considers that it is not safe to continue;

(6) Support the HSO with the health and safety management of the Diving Operations;

(7) Ensure that all members of the Dive Team keep records; and

(8) Collect records, check, approve and submit to HSO.

10.4.4 Diver Assignments.

(1) Each Dive Team member shall be assigned tasks commensurate to the persons experience and training, except that limited additional tasks may be assigned to a Diver undergoing training provided that these tasks are performed under the direct supervision of an experienced Dive Team member.

(2) The Contractor shall not require a Dive Team member to be exposed to hyperbaric conditions against the member’s will, except when necessary to complete decompression or treatment procedures.

(3) The Contractor shall not permit a Dive Team member to dive or be otherwise exposed to hyperbaric conditions for the duration of any temporary physical impairment or condition which is known to the employer and is likely to affect adversely the safety or health of a

when necessary to complete decompression or treatment procedures.

(3) The Contractor shall not permit a Dive Team member to dive or be exposed to hyperbaric conditions or any other condition which is likely to affect adversely the safety or health of a Dive Team member that may cause any physical impairment.

(4) No Diver shall dive in any diving operation unless the DPIC and the complete Dive Team present.

10.3.5 Assistants and Duties of Dive Team

The Contractor shall appoint such Divers and support assistants within each Dive Team as are considered necessary by the DPIC for the Dive Team to discharge its duties in a safe and competent manner.

All Dive Team support assistants shall have the duties and responsibilities required by the content of this Chapter and the specified OSHA requirements, including the following:

(1) Operate the air compressors.

(2) Control the valve for the surface supply of breathing air.

(3) Communicate with the Diver so that the Diver descends and ascends properly.

exposed to hyperbaric conditions against the member's will, except when necessary to complete decompression or treatment procedures.

(3) ~~The Contractor shall not permit a Dive Team member to dive or be otherwise exposed to hyperbaric conditions for the duration of any temporary physical impairment or condition which is known to the Contractor and is likely to affect adversely the safety or health of a Dive Team member.~~ ~~exposed to hyperbaric conditions or any other condition which is likely to affect adversely the safety or health of a Dive Team member that may cause any physical impairment.~~ The Contractor shall not permit a Dive Team member to dive or be exposed to hyperbaric conditions for an excessive duration or any other condition which ~~is likely to affect adversely the safety or health of a Dive Team member that~~ may cause any physical impairment.

JC1: 趣旨が分からないので、non-native に分かるような記述に修正してください。
The meaning of this item is hard to understand. Please, modify the sentence so that non-native can easily understand.

NK: Modified. MD will review this.

JC14: Revised by JC.

NK: MD will review this revision.

I am sorry but this is not my English, it is actually a direct copy from OSHA of their precise requirements which I had included (together with explanatory notes) in my original draft document.

Please refer to OSHA: Appendix I: Checklist for Commercial Diving Operations, 1910.410 QUALIFICATIONS OF DIVE TEAM. (b) Assignments

As these checklists are an important requirement and an integral form in OSHA, I do suggest that they are not changed.

On the assumption that this is acceptable I have I have deleted the amended clause and re-inserted the original.

(4) The Contractor shall not permit a Dive Team member to dive or be otherwise exposed to hyperbaric conditions for the duration of any temporary physical impairment or condition which is known to the employer and is likely to affect adversely the safety or health of a Dive Team member.

(5) No Diver shall dive in any Diving Operation unless the DPIC and the complete Dive Team are present.

NK1: moved from 10.3.2 (7) to (4).

Correct

10.4.5 Assistants and Duties of Dive Team

The Contractor shall appoint such Divers and support assistants within each Dive Team as are considered necessary by the DPIC for the Dive Team to discharge its duties in a safe and competent manner.

All Dive Team support assistants shall have the duties and responsibilities required by the content of this Chapter and the specified OSHA requirements, including the following:

(1) Operate the air compressors.

(2) Control the valve for the surface supply of breathing air.

(3) Communicate with the Diver so that the Diver descends and ascends properly.

Dive Team member.

(4) No Diver shall dive in any Diving Operation unless the DPIC and the complete Dive Team are present.

10.4.5 Assistants and Duties of Dive Team

The Contractor shall appoint such Divers and support assistants within each Dive Team as are considered necessary by the DPIC for the Dive Team to discharge its duties in a safe and competent manner.

All Dive Team support assistants shall have the duties and responsibilities required by the content of this Chapter and the specified OSHA requirements, including the following:

(1) Operate the air compressors.

(2) Control the valve for the surface supply of breathing air.

(3) Communicate with the Diver so that the Diver descends and ascends properly.

(4) Communicate to supply the air to the Diver properly between the assistants in charge to control the valve and to communicate with the Diver;

(5) Inform the Diver immediately when there is any risk due to a failure of air supply, weather change, sea condition changes, operations of other vessels and potential hazards.

(6) Inspect the connection between the helmet and the breastplate of the Diver before the start of diving operations when using a diving helmet.

(7) Coordinate the position of the workboat and avoid any conflict with the diver.

(8) Ensure the safety of the Diver by maintaining communication with voice or video communication device.

(9) Ensure the safety of the Diver by observing the air bubble of breathing of the diver.

10.3.6 Health Checks

(1) In addition to the requirements of JSSS 1.8.1 [*Proper Placement of Contractor's Personnel*] and in compliance with the OSHA requirement for the Contractor to make himself fully aware, the Contractor shall carry out particular health checks on all Divers to ascertain that they are medically and physically fit to perform their duties.

(2) Such checks shall include for example checks for the existence of any illness or any deficiency in:

(a) The respiratory system, cardiovascular system, nervous

(4) Communicate to supply the air to the Diver properly between the assistants in charge to control the valve and to communicate with the Diver;

(5) Inform the Diver immediately when there is any risk ~~trouble~~ due to a failure of air supply, weather change, sea condition changes, operations of other vessels and potential hazards.

JC15: Revised by JC.

I do not recommend this change.

The use of "risk" anticipates and is ahead of any "trouble".

The use of "trouble" means that it has already happened and information then is too late.

On the assumption that this is acceptable I have I have deleted the amendment.

(6) Inspect the connection between the helmet and the breastplate of the Diver before the start of Diving Operations when using a diving helmet.

(7) Coordinate the position of the workboat and avoid any conflict with the Diver.

(8) Ensure the safety of the Diver ~~by receiving the signals from the Diver when the Diver is using the lifeline.~~ by maintaining communication with voice or video communication device.

JC1: 音声が普通で、line signalling は一般的ではないようなので、改めて内容を確認願います。
OSHA に line signalling はなく、10.5.2(2)(d)を参照。
Communication is usually made verbally and line signalling is not used in common. Please, confirm if this item is appropriate. Refer to 10.5.2.(2)(d).

NK: OSHA では、line signalling はスキューバダイビング以外では認められていない。よって本仕様書では、以降の節においても信号索は除外して規定する。
As stipulated in OSHA as below, line-pull signal shall not be used except for scuba diving.
29 CFR 1910.422(c) Communications.
An operational two-way voice communication system is required for communications between each surface-supplied air diver or mixed-gas diver and a member of the dive team at the dive location or in the diving bell (if a diving bell is provided or required). Line-pull signals do not meet this requirement, except for the SCUBA-diving mode. A two-way voice communication system is required for communications between the diving bell and the dive location.
Modified and deleted line pull signals in other clauses.

Your change is correct

(9) Ensure the safety of the Diver by observing the air bubble of breathing of the Diver.

10.4.6 Health Checks

(1) In addition to the requirements of JSSS 1.18 [*Proper Placement of Contractor's Personnel*] and in compliance with the OSHA requirement for the Contractor to make himself fully aware, the Contractor shall carry out particular health checks on all Divers to ascertain that they are medically and physically fit to perform their duties.

(2) Such checks shall include for example checks for the existence of any illness or any deficiency in:

(a) The respiratory system, cardiovascular system, nervous system, musculoskeletal system, ear, nose and throat, and

(4) Communicate to supply the air to the Diver properly between the assistants in charge to control the valve and to communicate with the Diver;

(5) Inform the Diver immediately when there is any risk due to a failure of air supply, weather change, sea condition changes, operations of other vessels and potential hazards.

(6) Inspect the connection between the helmet and the breastplate of the Diver before the start of Diving Operations when using a diving helmet.

(7) Coordinate the position of the workboat and avoid any conflict with the Diver.

(8) Ensure the safety of the Diver by maintaining communication with voice or video communication device.

(9) Ensure the safety of the Diver by observing the air bubble of breathing of the Diver.

10.4.6 Health Checks

(1) In addition to the requirements of JSSS 1.18 [*Proper Placement of Contractor's Personnel*] and in compliance with the OSHA requirement for the Contractor to make himself fully aware, the Contractor shall carry out particular health checks on all Divers to ascertain that they are medically and physically fit to perform their duties.

(2) Such checks shall include for example checks for the existence of any illness or any deficiency in:

(a) The respiratory system, cardiovascular system, nervous

system, musculoskeletal system, ear, nose and throat, and endocrine system;

(b) Vision;

(c) Dental health

(d) Any other health conditions and disease which may affect the diving operation.

(3) Any Diver that does not pass the above checks shall not be allowed to dive until the condition has improved and after further checks are successful.

(4) Additionally, and in accordance with the OSHA standard:

(a) The DPIC shall inquire into each Diver's health prior to any task assignment.

(b) The Contractor shall advise all Divers of the procedures for reporting physical problems or adverse physiological effects during and after diving.

(5) Consistent with the above and the OSHA provisions, the Contractor shall not require any Diver to dive or otherwise work under hyperbaric conditions when the Diver:

(a) Has any ailment that is likely to adversely affect the safety or health of any member of the Dive Team;

(b) Lacks the necessary training or education; or

(c) Refuses to work under such hyperbaric conditions.

(6) Should a Diver request termination during a dive, it may be necessary to prolong the diver's exposure to hyperbaric conditions to complete decompression or medical recompression treatment to avoid serious physical harm or death to the Diver.

endocrine system;

(b) Vision;

(c) Dental health; and

(d) Any other health conditions and disease which may affect the Diving Operation.

(3) Any Diver that does not pass the above checks shall not be allowed to dive until the condition has improved and after further checks are successful.

(4) Additionally, and in accordance with the OSHA standard:

(a) The DPIC ~~must~~ shall inquire into each Diver's health prior to ~~any task assignment~~ each Diving Operation; and

J1C: この"must"は"shall"ではないか？
Isn't this "shall" instead of "must"?

NK: modified to make terms consistent as commented.

JC16: Revised by JC.

For clarity, I have referred to and used the text of OSHA Directive No. CPL 02-00-151 for 29 CFR Part 1910, Subpart T – Commercial Diving Operations. OSHA use "must" and also refer to "task assignment". Please refer to page 17 item 3.

(b) The Contractor shall advise all Divers of the procedures for reporting physical problems or adverse physiological effects during and after diving.

(5) Consistent with the above and the OSHA provisions, the Contractor shall not require any Diver to dive or otherwise work under hyperbaric conditions when the Diver:

(a) Has any ailment that is likely to adversely affect the safety or health of any member of the Dive Team;

JC1: "ailment"は、通例軽い又は慢性の病気、不快の意であるが、ここにその意味で適切か？
Is "ailment" proper in this clause? (Ailment means slight or chronic disease/symptoms.)

NK: 「体調にわずかでも不調等があれば潜水作業させてはならない」の意味で、"sickness", "disease", "illness"等より"ailment"が適切と考える。そのままとする。
This means that the Contractor shall not require any Diver to dive when the Diver has any even slight physical problem. In this sense, "ailment" is more suitable than "sickness", "disease" or "illness". Left as it is.

"Ailment" is correct

(b) Lacks the necessary training or education; or

(c) Refuses to work under such hyperbaric conditions.

(6) Should a Diver request termination during a dive, it may be necessary to prolong the Diver's exposure to hyperbaric conditions to complete decompression or medical recompression treatment to avoid serious physical harm or death to the Diver.

system, musculoskeletal system, ear, nose and throat, and endocrine system;

(b) Vision;

(c) Dental health; and

(d) Any other health conditions and disease which may affect the Diving Operation.

(3) Any Diver that does not pass the above checks shall not be allowed to dive until the condition has improved and after further checks are successful.

(4) Additionally, and in accordance with the OSHA standard:

(a) The DPIC shall inquire into each Diver's health prior to each Diving Operation; and

(b) The Contractor shall advise all Divers of the procedures for reporting physical problems or adverse physiological effects during and after diving.

(5) Consistent with the above and the OSHA provisions, the Contractor shall not require any Diver to dive or otherwise work under hyperbaric conditions when the Diver:

(a) Has any ailment that is likely to adversely affect the safety or health of any member of the Dive Team;

(b) Lacks the necessary training or education; or

(c) Refuses to work under such hyperbaric conditions.

(6) Should a Diver request termination during a dive, it may be necessary to prolong the Diver's exposure to hyperbaric conditions to complete decompression or medical recompression treatment to avoid serious physical harm or death to the Diver.

10.4 DIVING EQUIPMENT, TOOLS, FACILITIES AND WORKBOATS

10.4.1 Diving Equipment

(1) The Contractor shall provide workboats, diving equipment, work tools and other facilities fully in compliance with OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations, §1910.430 Equipment.

(2) Workboats, diving equipment, work tools and other facilities are defined as Contractor's Equipment and shall therefore comply with JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*].

10.4.2 Diving Workboats

JC: Contractor's Equipment の一部であるが、Chapter 4 の記載は作業船をイメージしていないので Chapter 4 に追記が必要（たとえば作業船の名前を追記するなど）。
Workboat is one of the Contractor's Equipment, however, it is not specifically itemised in Chapter 4. It is necessary to describe workboat in Chapter 4.

NK: コメントに従い、第 4 章 4.1.1 (6)に Workboat for diving works を追加します。
As commented, "Workboat for diving works" will be added to 4.11(6).

(1) Workboats shall be:

(a) Robust and seaworthy;

(b) Stable in operation;

(c) Suitable size, draft and shape to suit the diving operations;

(d) Equipped with marine band radio and with a shore station that is attended at all time that the Workboat is in operation and can provide emergency support if required;

(e) Equipped with marine lighting;

(f) Equipped with life jackets, first aid sets, distress flares and other necessary emergency equipment;

(g) Provided with secure and robust ladders or platforms for Divers to easily enter or exit the water; and

10.5 DIVING EQUIPMENT, TOOLS, FACILITIES AND WORKBOATS

Please note that your draft refers to OSHA which in turn refer to the US Navy Dive tables and there is no reference at all to personal dive computers which have actually completely changed and improved dive safety and productivity since their inception more than 30 years ago.

Dive tables are setup under the absolute safe assumption that the diver stayed at the maximum depth for the entire dive. The nitrogen absorption is calculated based on these parameters. Dive computers however record the actual time and depth of a scuba diver at all times and then calculate the nitrogen absorption based on these actual values. This higher level of accuracy results in longer dive times and shorter surface intervals which has major benefits in commercial diving.

A dive at 120 feet, based on US dive tables gives a maximum bottom time of for around 15 minutes on the assumption is that the whole dive is at 120 feet. A dive computer taking actual values into consideration and may give a bottom time of around 30 minutes.

10.5.1 Diving Equipment

(1) The Contractor shall provide workboats, diving equipment, work tools and other facilities fully in compliance with OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations, §1910.430 Equipment.

(2) Workboats, diving equipment, work tools and other facilities are defined as Contractor's Equipment and shall therefore comply with JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*].

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9. Workboat is one of the Contractor's Equipment, however, it is not specifically itemised in Chapter 4. It is necessary to describe workboat in Chapter 4.

NK: コメントに従い、第 4 章 4.1.1 (5)に Workboat for diving works を追加します。
As commented, "Workboat for diving works" will be added to 4.11(5).

There is no 4.11.5 in my copy but I think I have not yet seen the Issue 2 draft for this chapter yet?

I think that as diving workboats only apply to tis chapter, there may be no need to separately mention them in Chapter 3, all relevant requirements should e are here or in OSHA.

(1) Workboats shall be:

(a) Robust and seaworthy;

(b) Stable in operation;

(c) Suitable size, draft and shape to suit the Diving Operations;

(d) Equipped with marine band radio and with a shore station that is attended at all time that the Workboat is in operation and can provide emergency support if required;

10.5 DIVING EQUIPMENT, TOOLS, FACILITIES AND WORKBOATS

10.5.1 Diving Equipment

(1) The Contractor shall provide workboats, diving equipment, work tools and other facilities fully in compliance with OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations, §1910.430 Equipment.

(2) Workboats, diving equipment, work tools and other facilities are defined as Contractor's Equipment and shall therefore comply with JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*].

10.5.2 Diving Workboats

(1) Workboats shall be:

(a) Robust and seaworthy;

(b) Stable in operation;

(c) Suitable size, draft and shape to suit the Diving Operations;

(d) Equipped with marine band radio and with a shore station that is attended at all time that the Workboat is in operation and can provide emergency support if required;

(e) Equipped with marine lighting;

(f) Equipped with life jackets, first aid sets, distress flares and other necessary emergency equipment;

(g) Provided with secure and robust ladders or platforms for Divers to easily enter or exit the water; and

(h) Provided with a roof and cabin to protect the crew and Dive Team from heat, cold and rain.

(2) Workboats shall be provided with the means to assist an injured Diver from the water (such as an in-water platform, small boat or basket stretcher) or into a diving bell. The Contractor shall ensure that there are sufficient Dive Team members or additional Contractor's Personnel to assist.

(h) Provided with a roof and cabin to protect the crew and Dive Team from heat, cold and rain.

(2) Workboats shall be provided with the means to assist an injured Diver from the water (such as an in-water platform, small boat or basket stretcher) or into a diving bell. The Contractor shall ensure that there are sufficient Dive Team members or additional Contractor's Personnel to assist.

(3) Unless otherwise specified the Contractor shall provide a separate small boat for rescue at the workboat, suitable for assisting and recovering Divers who are in difficulty or have drifted away from position.

10.4.3 Inspections and Maintenance

The Contractor shall comply with all requirements of JSSS 4.2 [*Inspection, Maintenance and Repair*] and ensure that workboats, equipment, tools and facilities are inspected, fully maintained and operational when mobilised to the Site and thereafter are inspected, maintained and repaired before the commencement of the first and of all subsequent days of operation.

The Contractor shall keep the inspection and working records and make them available for the inspection of the Engineer upon request.

The Contractor shall prohibit use of workboats, equipment, tools and facilities until the requirements of JSSS 4.2 [*Inspection, Maintenance and Repair*] are fully complied with.

(e) Equipped with marine lighting;

(f) Equipped with life jackets, first aid sets, distress flares and other necessary emergency equipment;

(g) Provided with secure and robust ladders or platforms for Divers to easily enter or exit the water; and

(h) Provided with a roof and cabin to protect the crew and Dive Team from heat, cold and rain.

(2) Workboats shall be provided with the means to assist an injured Diver from the water (such as an in-water platform, small boat or basket stretcher) or into a diving bell. The Contractor shall ensure that there are sufficient Dive Team members or additional Contractor's Personnel to assist.

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The Contractor shall keep the inspection and working records and make them available for the inspection of the Engineer upon request.

The Contractor shall prohibit use of workboats, equipment, tools and facilities until the requirements of JSSS 4.2 [*Inspection, Maintenance and Repair*] are fully complied with.

10.5 PARTICULAR SAFETY MEASURES

10.5.1 Measures before Diving operations

The Contractor shall take the following measures before commencement of any diving operation:

(1) Dive Teams

(a) Discuss the diving methods and safety procedures,

(b) Discuss the work methods and procedures and the assignment and placing of the Divers and work task sharing;

(c) Advise of the diving timetable and required compliance;

(d) Inform of the climatic, marine, natural and physical conditions; and

(e) Conduct the health check.

(f) Check that support assistant and crew on the workboat are wearing life jackets.

(2) Equipment, work tools and other facilities

Inspect the equipment, work tools and other facilities, prohibit use when any defect or non-compliance is found, reinspect when a repair or replacement is completed.

(3) Diving workboats

(a) Inspect workboats and rescue boats;

(b) Display the international maritime diving signal flag and display signs and lights as necessary on the workboat;

(c) Securely anchor the workboat to the seabed; and

(d) Stop the engine during diving operation.

(4) Diving operation site

(a) Provide signs including red flags, buoys and notices to demarcate the diving operation site; and

(b) Install a downline with depth indication marks at 3m intervals from the workboat to the sea bed at the diving operation site to act as a guideline for descending or ascending and as a guide for transfer of tools and equipment.

(5) Diving Equipment

(a) Check the diving equipment to be carried by the Divers;

(a) For surface-supplied air diving, check for example: air connections, compressed air supply, weight belt, voice or video communication device, torch, watch, water depth gauge, knife and the like.

(ii) For SCUBA diving, check for example: first stage, second stage and spare regulators, available air volume, secondary air supply, buoyancy control device, weight belt, tank straps, air valve, communication device, watch, water depth gauge, knife and the like.

(b) Check that the downline is secure and tight;

(c) Ensure as a minimum, that a two-way voice or video

10.6 PARTICULAR SAFETY MEASURES

10.6.1 Measures before Diving Operations

The Contractor shall take the following measures before commencement of any Diving Operation:

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(b) Discuss the work methods and procedures and the assignment and placing of the Divers and work task sharing;

(c) Advise of the diving timetable and required compliance;

(d) Inform of the climatic, marine, natural and physical conditions;

(e) Conduct the health check; and

(f) Check that support assistants and crew on the workboat are wearing life jackets.

JC1: Moved from 10.5.1.(5)(d)

(2) Equipment, work tools and other facilities

Inspect the equipment, work tools and other facilities, prohibit use when any defect or non-compliance is found, reinspect when a repair or replacement is completed.

(3) Diving workboats

(a) Inspect workboats and rescue boats;

(b) Display the international maritime diving signal flag and display signs and lights as necessary on the workboat;

(c) Securely anchor the workboat to the seabed; and

(d) Stop the engine during Diving Operation.

(4) Diving Operation site

(a) Provide signs including red flags, buoys and notices to demarcate the Diving Operation site; and

(b) Install a downline with depth indication marks at 3m intervals from the workboat to the sea bed at the Diving Operation site to act as a guideline for descending or ascending and as a guide for transfer of tools and equipment.

(5) Diving Equipment

(a) Check the diving equipment to be carried by the Divers;

(i) For surface-supplied air diving, check for example: air connections, compressed air supply, weight belt, ~~signal halyard,~~ voice or video, communication device, torch, watch, water depth gauge, knife and the like.

JC1: ここでの信号索は、水上と水中でコミュニケーションするため引っ張って合図(Line Signaling)するためのロープなので、英語でも halyard(揚げ綱)とは言わないかと。ここでの信号索は、水上と水中でコミュニケーションするため引っ張って合図(Line Signalling)するためのロープなので、英語でも halyard(揚げ綱)とは言わないかと。なお、信号索は現在あまり使われず、双方向通話可能な機器の利用が一般的かと思われ、信号索そのものをここであげる必要もないのでは？

10.6 PARTICULAR SAFETY MEASURES

10.6.1 Measures before Diving Operations

The Contractor shall take the following measures before commencement of any Diving Operation:

(1) Dive Teams

(a) Discuss the diving methods and safety procedures,

(b) Discuss the work methods and procedures and the assignment and placing of the Divers and work task sharing;

(c) Advise of the diving timetable and required compliance;

(d) Inform of the climatic, marine, natural and physical conditions;

(e) Conduct the health check; and

(f) Check that support assistants and crew on the workboat are wearing life jackets.

(2) Equipment, work tools and other facilities

Inspect the equipment, work tools and other facilities, prohibit use when any defect or non-compliance is found, reinspect when a repair or replacement is completed.

(3) Diving workboats

(a) Inspect workboats and rescue boats;

(b) Display the international maritime diving signal flag and display signs and lights as necessary on the workboat;

(c) Securely anchor the workboat to the seabed; and

(d) Stop the engine during Diving Operation.

(4) Diving Operation site

(a) Provide signs including red flags, buoys and notices to demarcate the Diving Operation site; and

(b) Install a downline with depth indication marks at 3m intervals from the workboat to the sea bed at the Diving Operation site to act as a guideline for descending or ascending and as a guide for transfer of tools and equipment.

(5) Diving Equipment

(a) Check the diving equipment to be carried by the Divers;

(i) For surface-supplied air diving, check for example: air connections, compressed air supply, weight belt, signal halyard, voice or video, communication device, torch, watch, water depth gauge, knife and the like.

(ii) For SCUBA diving, check for example: first stage, second stage and spare regulators, available air volume, secondary air supply, buoyancy control device, weight belt, tank straps, air valve, communication device, watch, water depth gauge, knife and the like.

(b) Check that the downline is secure and tight;

(c) Ensure as a minimum, that a two-way voice or video communication link is set up and working between at least

communication link is set up and working between at least between a single selected working Diver and the DPIC at the surface control point; and

If any defect is identified by the above checks, prohibit the dive operation from commencing.

10.5.2 Measures during Diving Operations

The Contractor shall take the following safety measures during each diving operation:

"Signal halyard" is a rope for raising a flag. The term in Japanese means a rope for line signalling to communicate on board and in water. The line signalling is recently seldom used, it would not necessary to mention about it here.
As commented above, OSHA has no provision about line signalling, and video or voice communication is in the major stream. It is recommended to modify the phrase.

NK: As commented above and 10.3.5.(8), line signalling is not used. Deleted "signal halyard" and added "voice and video" for communication device.

No problem

(ii) For SCUBA diving, check for example: first stage, second stage and spare regulators, available air volume, secondary air supply, buoyancy control device, weight belt, tank straps, air valve, communication device, watch, water depth gauge, knife and the like.

~~(b) Inform the Diver of the air supply capacity of the air tank(s) for SCUBA diving;~~

JC1:「現に有する給気能力」current とか要らない？よく見るとこの上にある available air volume と重複。(これってダイバーが自身でチェックできるなら、こっちは不要では？)
また、inform はおかしい→If any defect is identified by the above checks, prohibit the dive operation from commencing.
"Air supply capacity" is a duplication of "available air volume" in (ii) above. And, "inform" is not proper. → If any defect is identified by the above checks, prohibit the dive operation from commencing.

NK: (b)は削除、→の先の文章は本項の最後の文章であるが指示内容が不明のため、そのまま残します。です。
(b) is deleted. The comment to the Sentence marked by → is not clear, so no change to this sentence is made.

No problem

(b) Check that the downline is secure and tight;

(c) Ensure as a minimum, that a two-way voice or video communication link is set up and working between at least between a single selected working Diver and the DPIC at the surface control point; and

~~(c) Check that support assistant and crew on the workboat are wearing life jackets.~~

JC1: e)は少なくとも潜水器具じゃないので違うかと。
Item (e) is not diving equipment.
NK: Considering the content, moved to 10.5.1.(1)(f).

No problem

If any defect is identified by the above checks, prohibit the Diving Operation from commencing.

10.6.2 Measures during Diving Operations

The Contractor shall take the following safety measures during each Diving Operation:

(1) A designated member (or members) of the workboat crew shall assist the DPIC by observing the Diving Operation during SCUBA diving and inform the DPIC when divers are carried away by

between a single selected working Diver and the DPIC at the surface control point; and

If any defect is identified by the above checks, prohibit the Diving Operation from commencing.

10.6.2 Measures during Diving Operations

The Contractor shall take the following safety measures during each Diving Operation:

(1) A designated member (or members) of the workboat crew shall assist the DPIC by observing the Diving Operation during SCUBA

(1) A designated member of the workboat crew on the workboat shall look out for any other vessels that may approach the diving operation site.

The designated member shall alert any other vessels related or not related with the diving operations with requisite warning blasts from the workboat's siren, loudhailer, flares and/or flags, etc. in order to prevent them from approaching and entering the diving operation site.

(2) Measures for the Divers

(a) Prohibit the Dive Team from commencing any diving operation without the DPIC and the complete Dive Team present, ready and equipped;

(b) Ensure that the Divers use the ladders for entering and exiting the water for the diving operation;

(c) Ensure that Divers use the downline for descending and ascending;

(d) Maintain constant voice or video communication through the provided link; and

JC: 通常スキューバダイバーは入水時にはバックドロップすると思います。少なくとも(b)と(c)はスキューバのときに該当するか調べてください。
For scuba diving entering, backdrop method is used. Please, check if (b) and (c) can be applied for scuba diving.

NK: OSHA には次のような記述がありますが、スキューバの際の区別はしていないようです。レジャーボートのように水面までの高さが低い場合は、後ろ向きに入水しますが、高さがある場合にはやはりはしごを使うのではないでしょうか。また、船に戻るには、はしご若しくはステップは必須となります。
downline は safety line としての記述が下記にあります。以上よりこのままとします。
29 CFR 1910.422 Procedures during dive
1. 29 CFR 1910.422(b) Water entry and exit. A means capable of supporting the diver (such as an inwater stage or ladder) while entering or exiting the water is required. If it is a fixed structure, such as a ladder, it must extend below the water sufficiently to allow adequate diver access and support (a minimum of one meter is recommended). Portable ladders should be secured to maintain stability and to prevent pinch points. The employer also must provide a means for assisting an injured diver from the water to the surface or into a diving bell (such as an inwater stage, stokes basket, or harness)

29 CFR 1910.424(b)(3) requires SCUBA divers to be line-tended against currents exceeding one (1) knot (1.689 feet per second, or about 17 feet per 10 seconds).

currents and their location when they surface after their dive ascent.

(2) A designated member (or members) of the workboat crew on the workboat shall also keep a look-out for any other vessels that may approach the Diving Operation site.

JC1: ダイビングオペレーションは DPIC が主として見ているので不要。他の船を見ているのは別の人材であり、この規定はそれを主眼とした記述にすべき。
"Observe the diving operation" is unnecessary because the DPIC mainly supervises the operation. The personnel who looks out for other vessels must be the other designated member.
This item shall be written for this purpose.

NK: deleted as commented.

They should also observe the water and diving operations particularly in SCUBA dives in case currents carry divers away and they emerge at a distance from the dive boat. They usually work as a team, all helping the others and DPIC. In heavy water such assistance is vital.

As suggested by JICA, I have modified for this purpose.

The designated member(s) shall alert any other vessels related or not related with the Diving Operations with requisite warning blasts from the workboat's siren, loudhailer, flares and/or flags, etc. in order to prevent them from approaching and entering the Diving Operation site.

(3) Measures for the Divers

(a) Prohibit the Dive Team from commencing any Diving Operation without the DPIC and the complete Dive Team present, ready and equipped;

(b) Ensure that the Divers use the ladders for entering and exiting the water for the Diving Operation;

(c) Ensure that Divers use the downline for descending and ascending;

(d) Maintain constant voice or video communication through the provided link; and

JC1: 通話装置必須なら、信号索不要では？(注:通話装置を携行する場合は信号索、水中時計、水深計を携行させないことができる。)和文 10.6.(2)(d)では、「有線又は無線の通話装置、信号索等で、連絡員と常に連絡をとらせること。」となっているけど、信号索はもはや使わない前提で MD さん書き直していて、整合性がとれてないかと
If "voice or video communication" is a must, "line signalling" is unnecessary. It is stipulated in the Japanese draft 10.6.(2) (d) that when using voice communication device, it is not necessary to use signal line, underwater watch and hydro-barometer. There is inconsistent between 10.3.5.(8) and 10.5.1(5) (a) (i) and the above (d) is inconsistent.

NK: 10.3.5.(8)で信号索を使用しない規定とした。上記(6)は変更なし。
10.3.5.(8) stipulated no line signaling is used in JSSS.
No change of (d) above.

JC18 : 通常スキューバダイバーは入水時にはバックドロップすると思います。少なくとも(b)と(c)はスキューバのときに該当するか調べてください。
For scuba diving entering, backdrop method is used. Please, check if (b) and (c) can be applied for scuba diving.

NK: OSHA は次を規定しています。スキューバと区別はしていません。レジャーボートのように水面までの高さが低い場合は、後ろ向きに入水しますが、水面まで高さがある場合、はしご又は水中踏み台が必要です。Inwater stages

diving and inform the DPIC when divers are carried away by currents and their location when they surface after their dive ascent.

(2) A designated member (or members) of the workboat crew on the workboat shall also keep a look-out for any other vessels that may approach the Diving Operation site.

The designated member(s) shall alert any other vessels related or not related with the Diving Operations with requisite warning blasts from the workboat's siren, loudhailer, flares and/or flags, etc. in order to prevent them from approaching and entering the Diving Operation site.

(3) Measures for the Divers

(a) Prohibit the Dive Team from commencing any Diving Operation without the DPIC and the complete Dive Team present, ready and equipped;

(b) Ensure that the Divers use the ladders for entering and exiting the water for the Diving Operation;

(c) Ensure that Divers use the downline for descending and ascending;

(d) Maintain constant voice or video communication through the provided link; and

(e) Ensure that the Divers constantly communicate with each other by hand signals and slate messaging.

(e) Ensue that the Divers constantly communicate with each other by hand signals and slate messaging.

(3) Ensure the DPIC or a Dive Team member at the surface, constantly observe the weather and marine conditions and there is any change that meets the work stop criteria, or if the conditions are considered to be otherwise unsafe by the DPIC, immediately stop the diving operation and ensure that the Divers are removed from the water in a safe and controlled manner;

(4) Safety and Health Management of Diving Operations

(a) Manage the Diving Works for each Diver so the Diver takes sufficient and safe surface time between dives so that there is no risk to his health and wellbeing;

(b) Ensure that sufficient numbers of Divers and standby Divers are available to ensure that Divers are not in the water for excessive periods;

JC: Sufficient は言い過ぎでは？大勢の控えがいる訳がない。
"Sufficient" is too much to say. There shouldn't be many standby divers.

NK: 節の意味は、長時間の水中作業を避けるために十分な数の潜水士と、必要な予備潜水士をそろえるという意味で、十分な数の予備潜水士という意味ではありませんが、誤解を生む可能性がありますので、コメントに従い修正します。
The meaning is that sufficient numbers of Divers shall be available to avoid excessive in-water period and necessary standby divers shall be provided. To avoid misunderstanding, the sentence is modified according to JICA comment as right.

(c) Design shift times and patterns to preserve Divers' health and safety;

(d) Ensure that each Diver take an accurate record of his dive profile for every dive, showing overall time, bottom time and depth, decompression times and depths and that these are summarised with a record of the number of dives on a daily, weekly and monthly basis by the DPIC, and the Contractor retain the records.

(e) Ensure that the DPIC reviews and approves such records and that same are submitted by the DPIC to the HSO for the HSO's review and countersignature and made available for the Engineer's inspection.

を追記します。
29 CFR 1910.422 Procedures during dive
1. 29 CFR 1910.422(b) Water entry and exit. A means capable of supporting the diver (such as an inwater stage or ladder) while entering or exiting the water is required.
If it is a fixed structure, such as a ladder, it must extend below the water sufficiently to allow adequate diver access and support (a minimum of one meter is recommended). Portable ladders should be secured to maintain stability and to prevent pinch points.
The employer also must provide a means for assisting an injured diver from the water to the surface or into a diving bell (such as an inwater stage, stokes basket, or harness)

NK: OSHA は、潮流がある場所では索（line-tended）の使用を規定しています。OHSA に downline の規定はありませんが、Wikipidia に downline の下降上昇使用、潮流のある場所での潜水の深度のコントロール等に使用できるとの記述があります。
OSHA: 29 CFR 1910.424(b)(3) requires SCUBA divers to be line-tended against currents exceeding one (1) knot (1.689 feet per second, or about 17 feet per 10 seconds).
Wikipedia: https://en.wikipedia.org/wiki/Downline_(diving)
In underwater diving, a downline is a piece of substantial cordage running from a point at the surface to the underwater workplace, and kept under some tension. It can be used as a guideline for divers descending or ascending, for depth control in blue-water diving...
日本の高気圧作業安全衛生規則では、スキューバを区別せず潜水作業者を規定しています。
(さがり綱) 第三十三条　事業者は、潜水業務を行なうときは、潜水作業者が潜降し、及び浮上するためのさがり綱を備え、これを潜水作業者に使用させなければならない。
Japanese Ordinance on Safety and Health of Work under High Pressure
https://www.jniosh.johas.go.jp/icpro/jicosh-old/japanese/country/japan/laws/03_rel/09_highpressure_reg/03c.html
(Life Line) Article 33. When the employer has the said diving workers engage in diving operations, he shall provide a life line and make the said diving workers use it in descending and ascending.
JSSS は、日本の安全規則をベースにしており、(c)の規定は上記規則にもとづき、原文のままとします。
Because JSSS is based on Japanese regulation, (c) is left as it is as stipulated in Japanese Ordinance above.

OK no problem, this is not for communication it is very useful particularly for SCUBA divers when working in currents or getting through surface currents.

Also note that OSHA "29 CFR 1910.424(b)(3) requires SCUBA divers to be line-tended against currents exceeding one (1) knot (1.689 feet per second, or about 17 feet per 10 seconds)"

(e) Ensure that the Divers constantly communicate with each other by hand signals and slate messaging.

(4) Ensure the DPIC or a Dive Team member at the surface, constantly observe the weather and marine conditions and there is any change that meets the work stop criteria, or if the conditions are considered to be otherwise unsafe by the DPIC, immediately stop the Diving Operation and ensure that the Divers are removed from the water in a safe and controlled manner;

(5) Safety and Health Management of Diving Operations

(a) Manage the Diving Works for each Diver so the Diver takes sufficient and safe surface time between dives so that there

(4) Ensure the DPIC or a Dive Team member at the surface, constantly observe the weather and marine conditions and there is any change that meets the work stop criteria, or if the conditions are considered to be otherwise unsafe by the DPIC, immediately stop the Diving Operation and ensure that the Divers are removed from the water in a safe and controlled manner;

(5) Safety and Health Management of Diving Operations

(a) Manage the Diving Works for each Diver so the Diver takes sufficient and safe surface time between dives so that there

	is no risk to his health and wellbeing; (b) Ensure that sufficient ~~suitable~~ numbers of Divers and standby Divers are available to ensure that Divers are not in the water for excessive periods; JC19: Sufficient は言い過ぎでは？大勢の控えがいる訳がない。 "Sufficient" is too much to say. There shouldn't be many standby divers. NK: 節の意味は、長時間の水中作業を避けるために十分な数の潜水士と、必要な予備潜水士をそろえるという意味で、十分な数の予備潜水士という意味ではありませんが、誤解を生む可能性がありますので、コメントに従い修正します。 The meaning is that sufficient numbers of Divers shall be available to avoid excessive in-water period and necessary standby divers shall be provided. To avoid misunderstanding, the sufficient is replaced with suitable. To MD, please review this wording. *"Suitable" is not correct, "sufficient" is correct and necessary for safety purposes.* *Balancing the numbers of available divers against work volume and time deadlines and any requirement for repetitive dives in commercial diving needs to be carefully managed otherwise diver safety is very much at risk.* *OSHA requires an available standby diver for SCUBA operation shall always be available, for all liveboating operations and other occasions.* *The Diving at Work Regulations 1997 (basis of HSE) is clear and under the duties of the diving contractor, requires that contractor's:* *"ensure that there are sufficient people with suitable competence to carry out safely and without risk to health … the diving project … " and also HSE under Regulation 6 Duties of diving contractors:* (f) there are sufficient personnel in the dive team to enable the diving project to be carried out safely (see 'Dive teams and associated working practice'); (c) ~~Design shift times and patterns to preserve Divers' health and safety;~~ (d) Arrange the number, times and duration, of every Diving Operation and all shift times and patterns, to preserve the health and safety of each Diver; *I suggest the above rewording of the original clause for greater clarity* *I have deleted the following amended clause for clarity and reinstated the original, please see explanation below* ~~(e) Ensure that each Diver keeps takes an accurate record of his dive profile for every dive, showing overall time, bottom time and depth, decompression times and depths and that these are summarised with a record of the number of dives on a daily, weekly and monthly basis by the DPIC, and the Contractor retain the records submit it to DPIC.~~ JC1: 個々の Diver が記録を保管するのでしょうか。DPIC ではないでしょうか。 Each diver should keep record individually? Isn't it the duty of DPIC? NK: OSHA では、下記のように具体的に誰が記録をとるかは規定していないが、雇用者が保管することを規定している。各ダイバーが自分の作業記録をとり(keep a record)、それを DPIC がまとめ、請負者が保管することが実際的であると考える。(DPIC は潜水作業期間のみ現場にいることから請負者が	is no risk to his health and wellbeing; (b) Ensure that sufficient numbers of Divers and standby Divers are available to ensure that Divers are not in the water for excessive periods; (c) Arrange the number, times and duration, of every Diving Operation and all shift times and patterns, to preserve the health and safety of each Diver; (d) Ensure that each Diver keeps an accurate record of his dive profile for every dive, showing overall time, bottom time and depth, decompression times and depths and that these are summarised by the Diver with a record of the number of dives on a daily, weekly and monthly basis. (e) Ensure that the DPIC reviews and approves such records and that same are submitted by the DPIC to the HSO for the HSO's review and countersignature and made available for the Engineer's inspection. (f) Unless otherwise required by the Law, the Contractor shall retain all dive records for the periods specified in the OSHA 29 Subpart T 1910.440

保管することが妥当と考えます。)上のように変更する。

OSHA 29 Subpart T 1910.440 Recordkeeping requirements.
(3) Records and documents required by this standard shall be retained by the employer for the following period:
The OSHA does not stipulate who prepare records but the Contractor shall retain the records. (d) is modified for practical way at the Site as above.
(DPIC may be assigned at the site during the diving work, so the Contractor shall retain the records.)

JC20: JICA modifies.

~~(f) Ensure that the DPIC reviews and approves such records and that same are submitted by the DPIC to the HSO for the HSO's review and countersignature and made available for the Engineer's inspection. Ensure that the DPIC summarises such records and submits them to the HSO for review and keep them available for the Engineer's inspection.~~

JC21: JICA modifies.

I suggest that the original text of the above two subclauses is correct and the revision is not recommended.

"Each diver should keep record individually? Isn't it the duty of DPIC?"

Diving is different to normal construction in that each diver will normally keep his own records and summaries usually on a standard sheet before and after each dive to ensure that it is prepared correctly and at the right time. Only the diver can immediately summarise the cumulative allowable bottom time and surface time between repetitive dives to determine for himself if it is safe to dive again on his next dive. Yes, this will be checked by the DPIC but whether he has the time to do this in a timely manner is not certain.

It is important to appreciate that to some extent the individual diver is responsible for his own safety and he can refuse to dive without penalty if he thinks it is unsafe to do so and will of course be immediately required to do so, he must therefore have immediately available information to support this and cannot wait for someone else to do this for him or compute/summarise this perhaps incorrectly. Rather than assuming what a DPIC might be able to do, I suggest that this is a very important consideration for safety.

"keeps" records is the correct wording.

Your point on retention of records is correct and important and whilst covered by OSHA this may vary in different countries I suggest the use of requisite period or similar.

(e) Ensure that each Diver keeps an accurate record of his dive profile for every dive, showing overall time, bottom time and depth, decompression times and depths and that these are summarised by the Diver with a record of the number of dives on a daily, weekly and monthly basis.

(f) Ensure that the DPIC reviews and approves such records and that same are submitted by the DPIC to the HSO for the HSO's review and countersignature and made available for the Engineer's inspection.

(g) Unless otherwise required by the Law, the Contractor shall retain all dive records for the periods specified in the OSHA 29 Subpart T 1910.440

10.6 DIVING ACCIDENT CONTROL PLAN

10.6.1 General

The Contractor shall prepare an Accident Response Plan for the Diving Works in accordance with JSSS 1.21 [*Accident Response Plan*].

10.6.2 Provisions by the Contractor

The Contractor shall comply with following requirements prior to Diving Works.

(1) The Contractor shall make decompression chamber available to treat decompression sickness decompression illness (DCI) in accordance with the requirements of HSE Commercial diving projects inland/inshore, Diving at Work Regulations 1997, Availability of compression chambers, Clauses 114 to 118 by means of:

(a) For dives that are shallower than 10 m with planned in-water decompression not exceeding 20 minutes, the Contractor shall identify the nearest suitable operational two-person, two-compartment chamber. Under no circumstances this shall be more than 6 hours travelling distance from the dive site;

(b) for dives between 10 and 50 m with planned in-water decompression not exceeding 20 minutes, the Contractor shall assess the risk of DCI and likelihood of a diver requiring emergency recompression.

This shall be based on the depth and duration of the planned dives. The assessment shall also consider factors which may increase the risk of DCI such as water temperature, type of work, and the number of dives/ascents.

If the assessment demonstrates a significant risk of DCI a suitable, operational, two-person, two-compartment chamber shall be provided for immediate use at the site of the diving work.

If the assessment demonstrates relatively low risk of DCI, the Contractor shall identify the nearest suitable operational two-person, two-compartment chamber. Under no circumstances this shall be more than 6 hours travelling distance from the dive site;

(c) for dives with planned in-water decompression stops greater than 20 minutes the Contractor shall provide a suitable, operational, two-person, two-compartment chamber for immediate use at the site of the diving work.

The diver shall be able to leave the water quickly and easily and be pressurised within the chamber to the appropriate recompression pressure as defined by the time in the decompression schedule being used.

10.7 DIVING ACCIDENT RESPONSE PLAN

JC22: JICA modifies.

Yes, the change in heading is better for consistency with JSSS 1.24 [Accident Response Plan] to which it relates.

10.7.1 General

The Contractor shall prepare an Accident Response Plan for the Diving Works in accordance with JSSS 1.24 [*Accident Response Plan*].

10.7.2 Provisions by the Contractor

The Contractor shall comply with following requirements prior to Diving Works.

(1) The Contractor shall make decompression chamber available to treat decompression sickness decompression illness (DCI) in accordance with the requirements of HSE Commercial diving projects inland/inshore, Diving at Work Regulations 1997, Availability of decompression chambers, Clauses 114 to 118 by means of:

I suggest that the above change is not necessary and I do not recommend it for the following reasons.

This apparently simple change will have profound effects upon the remainder of this Chapter

I consider that the suggestion to use HSE is not based upon a correct interpretation of OSHA: meaning that the following JICA statement is not correct:

"the criteria for providing compression chamber of OSHA seems to be read that the compression chamber needs deeper than 50 m".

The criteria for providing a decompression chamber is NOT related only to dives in excess of 50m.

In any event the maximum depth of any dive is not the sole or even principle cause of decompression sickness or criteria for providing a chamber, it is any dive outside the no-decompression limits

A chamber must be available for any dive which is outside the no-decompression limits and these start at are 25 fsw.(7.62m).

OSHA actually requires that a "decompression chamber … be available at the dive location" for any dive which is outside the no-decompression limits up to 300 fsw quoted as follows:

1910.423(c)(1)

A decompression chamber capable of recompressing the diver at the surface to a minimum of 165 fsw (6 ATA) shall be available at the dive location for:

1910.423(c)(1)(i)

Surface-supplied air diving to depths deeper than 100 fsw and shallower than 220 fsw;

1910.423(c)(1)(ii)

Mixed gas diving shallower than 300 fsw; or

1910.423(c)(1)(iii)

Diving outside the no-decompression limits shallower than 300 fsw.

10.7 DIVING ACCIDENT RESPONSE PLAN

10.7.1 General

The Contractor shall prepare an Accident Response Plan for the Diving Works in accordance with JSSS 1.24 [*Accident Response Plan*].

10.7.2 Provisions by the Contractor

The Contractor shall comply with following requirements prior to Diving Works.

(1) In accordance with the requirements of OSHA 1910.423(c) [*Recompression facility*], the Contractor shall make a decompression chamber available at the dive location to treat decompression sickness.

(2) The decompression chamber shall comply with the requirements of OSHA 1910.423(c) [*Recompression facility*].

(3) The Contractor shall also provide such medical support facilities as are necessary to ensure the health and safety of any members of the Dive Team that may require treatment for decompression sickness.

(4) In accordance with OSHA requirements the Contractor shall provide an emergency aid contact list, rescue and safety equipment (including decompression facilities), a first-aid kit and supplies. The rescue and safety equipment and first-aid kit and supplies provided at the dive location shall be appropriate for the diving works and approved by a physician. When used in a decompression chamber or bell, the first-aid kit and any medication shall be suitable for use under hyperbaric conditions.

(5) The HSO and DPIC shall determine whether the emergency aid list is complete and is available to all Dive Team members and also determine whether the rescue and safety equipment (including decompression facilities) and first-aid kit are complete and available at the dive location.

The controls of a compression chamber shall only be operated by people competent to do so. Such competence will be achieved by a combination of training and experience. The degree of supervision provided shall reflect the experience of the operator. (2) In accordance with OSHA requirements the Contractor shall provide an emergency aid contact list, rescue and safety equipment (including decompression facilities), a first -aid kit and supplies. The rescue and safety equipment and first-aid kit and supplies provided at the Diving Works location shall be appropriate for the diving operations, approved by a physician. When used in a decompression chamber or bell, the first aid kit shall be suitable for use under hyperbaric conditions. (3) The HSO and DPIC shall determine whether the emergency aid list is complete and is available to all Dive Team members and also determine whether the rescue and safety equipment (including decompression facilities) and first-aid kit are complete and available at the Diving Works location.	*(underline added by me)* *And also refer to https://www.osha.gov/laws-regs/interlinking/standards/1910.423(c)(1)(iii)* ***Diving outside the NDL is the crucial part of this requirement (not maximum depth) and this is managed by compliance with the Decompression, repetitive, and no-decompression tables (as appropriate) which OSHA requires to be available at the dive location.*** *The OSHA commercial diving standard provides for the use of either the U.S. Navy Diving Tables or equivalent limits which the divers' employer can demonstrate to be equally effective.* *These tables are contained in the OSHA DIRECTIVE NUMBER: CPL 02-00-151 for 29 CFR Part 1910, Subpart T – Commercial Diving Operations, APPENDIX D: No-Decompression Limits and Repetitive-Group Designation Table for No-Decompression Air Dives* *"The information in this appendix (including the table on page D-3) was adapted from the U.S. Navy Diving Manual (Revision 6), Volume 2 ("Air Decompression"), Section 9-7 ("No- Decompression Limits and Repetitive Group Designators for No-Decompression Air Dives"). "* *The Appendix provides that any dive to 25 fsw or deeper that has a bottom time greater than the no-decompression limits provided in this table is a decompression dive, and must comply with the appropriate air decompression table.* *If a dive is outside this limit then OSHA requires that a decompression chamber be available.* *Please note that most decompression is achieved in the water with time-controlled ascent.* *Also:* *"Even though decompression is not required when diving within the no-decompression limits listed in the table, some nitrogen remains in the diver's tissues for up to 12 hours following an air dive. Consideration must be given to this residual nitrogen in the diver's tissues when calculating decompression for subsequent (i.e., repetitive) dives. "* *It is not correct to state that OSHA contains no requirements other than for dives over 50m.* *The US Navy requirements are used and accepted internationally as safe and they are not inferior to HSE for example.* *I do recommend therefore that there is no need to use any additional compliance standard for this part of Chapter 10. OSHA does cover this and if other standards are used here for any parts the this actually complicates the entire structure of Chapter 10 as:* *1) Different definitions will apply for different parts or items (e.g. OSHA - compression sickness, HSE compression illness)* *2) If HSE rules are applied to the provision and use of a decompression chamber in this item, the OSHA recommended (US Navy) dive tables and decompression tables will somehow need to be substituted by the HSE dive tables. This means effectively that OSHA does not apply.* *This will greatly complicate if not corrupt Chapter 10.* *In addition, OSHA is the prevailing standard for this chapter. OSHA defines this as "decompression sickness" not "decompression illness". Use of different*	

definitions in the same document is not really good practice

I suggest that reference to OSHA is therefore sufficient and that no change is necessary or recommended

I suggest the clauses should be simply as follows:

(1) In accordance with the requirements of OSHA 1910.423(c) [*Recompression facility*], the Contractor shall make a decompression chamber available at the dive location to treat decompression sickness.

(2) The decompression chamber shall comply with the requirements of OSHA 1910.423(c) [*Recompression facility*].

(3) The Contractor shall also provide such medical support facilities as are necessary to ensure the health and safety of any members of the Dive Team that may require treatment for decompression sickness.

JC1: HSE の Commercial diving projects inland/inshore-Diving at Work Regulations1997 の 114-118（再圧室関連の条項）を参照して記述願います。
読み間違いかもしれませんが、OSHA の 1910.423(c)(1)を見ると、水深 50m を越えないと再圧室の現場での設置は必要ないように読めます。それは不十分に思えるので、10m を基準として記述されている HSE を参照する必要があると考えています。
要するに水深と必要な搬送時間等を考慮し、現場での設置の要否を定めることにします。
Modify this part referring to Commercial diving projects inland/inshore-Diving at Work Regulations1997 of HSE (re. compression chamber) because the criteria for providing compression chamber of OSHA seems to be read that the compression chamber needs deeper than 50 m.
It is not sufficient, so JC considers HSE shall be applied to JSSS. The necessity of compression chamber shall be determined based on the depth of diving and the time necessary for transporting the patient to nearest chamber available.

NK: OSHA は再圧室の現場での必要性を、1910.424 と 425 に次のように規定して、30m 以上の潜水、又は深度に関係なく NDL（減圧の不要な潜水時間）を越えた潜水の場合に、再圧室の現場の設置を規定しています。（なお、1910.423 は再圧室の能力を規定しています。）

§1910.424 SCUBA diving.
(b) Limits. SCUBA diving shall not be conducted:
(1) At depths deeper than 130 fsw(=40m);.
(2) At depths deeper than 100 fsw(=30m) or outside the no-decompression limits (NDL) unless a decompression chamber is ready for use;
§1910.425 Surface-supplied air diving.
(b) Limits.
(2) A decompression chamber shall be ready for use at the dive location for any dive outside the no-decompression limits (NDL) or deeper than 100 fsw(=30m).

NK: OSHA は潜水深度と NDL での規定しています。一方、HSE は水中の減圧時間と潜水深度で規定しています。コメントのように 10m より浅い潜水も規定しており、HSE の順守と規定します。
Revised as commented to comply with HSE

(a) Contract with Identify a medical facility having a suitable and operational decompression chamber and having established a system to transport any affected Divers to immediately receive suitable recompression and decompression treatment with specialist medical support; or
(b) Provision of a temporary decompression chamber located at the Diving Works location of a type, specification and capacity to suit the Diving Operation together with medical support

facilities and specialist medical support.

JC1: Replaced by JC.
NK: (a) and (b) are replaced with (a) to (c) as right following HSE.

I do not suggest HSE be adopted for this part and therefore the addition of the following from HSE is not necessary or recommended as this is in conflict with OSHA.

IF however HSE is selected in place of OSHA, please advise and I will review revise Chapter 10 accordingly.

(a) ~~For dives that are shallower than 10 m with planned in-water decompression not exceeding 20 minutes, the Contractor shall identify the nearest suitable operational two-person, two-compartment chamber. Under no circumstances this shall be more than 6 hours travelling distance from the dive site;~~

On ODA projects there is not likely to be any locally available chamber.

Should be 6 hours by road, flying is not allowable.

Please note that OSHA criteria is simple and unambiguous.

Depths and time limitations between OSHA (US Navy based Dive Table (see OSHA Appendix D)) and HSE are different. I suggest that these added clauses are incompatible with OSHA and that they will also confuse the criteria of whether a decompression facility is required or not.

(b) ~~for dives between 10 and 50 m with planned in-water decompression not exceeding 20 minutes, the Contractor shall assess the risk of DCI and likelihood of a diver requiring emergency recompression.~~

~~This shall be based on the depth and duration of the planned dives. The assessment shall also consider factors which may increase the risk of DCI such as water temperature, type of work, and the number of dives/ascents.~~

~~If the assessment demonstrates a significant risk of DCI a suitable, operational, two-person, two-compartment chamber shall be provided for immediate use at the site of the diving work.~~

~~If the assessment demonstrates relatively low risk of DCI, the Contractor shall identify the nearest suitable operational two-person, two-compartment chamber. Under no circumstances this shall be more than 6 hours travelling distance from the dive site;~~

(c) ~~for dives with planned in-water decompression stops greater than 20 minutes the Contractor shall provide a suitable, operational, two-person, two-compartment chamber for immediate use at the site of the diving work.~~

~~The diver shall be able to leave the water quickly and easily and be pressurised within the chamber to the appropriate recompression pressure as defined by the time in the decompression schedule being used.~~

~~The controls of a decompression chamber shall only be operated by people competent to do so. Such competence will be achieved by a combination of training and experience. The~~

	~~degree of supervision provided shall reflect the experience of the operator.~~ JC1: OSHA1910.421 (c)だと first aid kit という記載ですが、これは薬物の使用のことでしょうか？高圧下での使用が薬物の使用に影響を与えるからこのような書き方になっているのでしょうか。OSHA のままの記述に戻した方が良いのではないでしょうか。 OSHA 1910.421 (c) is titled as “first aid supplies”. Does “medication” above means usage of medicines? Is “medication” used because of specifying use of medicines under hyperbaric conditions which affects their use? Isn’t it better to stipulate as “first aid kit” as mentioned in OSHA? NK: Medication は治療との意味で考える。OSHA では高圧の条件下では適切な救急用具を使用することのみ規定あり。 “first aid kit”に変更する。 It is guessed that “medication” is used for treating someone with a medicine. The term is replaced with “first aid kit”. *The following is edited to include NK/JICA requirements* (4) In accordance with OSHA requirements the Contractor shall provide an emergency aid contact list, rescue and safety equipment (including decompression facilities), a first-aid kit and supplies. The rescue and safety equipment and first-aid kit and supplies provided at the dive location shall be appropriate for the diving works and approved by a physician. When used in a decompression chamber or bell, the first-aid kit and any medication shall be suitable for use under hyperbaric conditions. (5) The HSO and DPIC shall determine whether the emergency aid list is complete and is available to all Dive Team members and also determine whether the rescue and safety equipment (including decompression facilities) and first-aid kit are complete and available at the dive location.	

JICA Comments on R2 (2020/04/24), NK R3 for Issue 2 (2020/4/30) JC: JICA comments, Red letters: last revision in R2 draft, NK: NK actions	JSSS in English Issue 2 (2020/5/11 by MD) With comments by MD *MD Comments* NK6/21: Comments	JSSS in English R4 for Issue 3 DFR on Issue 2 of 2020/5/11 (2020/6/22) NK: Comment and Revision
CHAPTER 10 DIVING WORKS **10.1 GENERAL** 10.1.1 Scope 10.1.2 Definition 10.1.3 Compliance Standards **10.2 DIVE SAFETY PLAN AND DIVE SAFETY PROCEDURE** 10.2.1 General Content 10.2.2 Climatic, Marine, Natural and Physical Conditions 10.2.3 Further Technical Detail in Dive Safety Plan **10.3 PERSONNEL FOR DIVING OPERATION** 10.3.1 Qualification of Diving Personnel 10.3.2 Designated Person-in-Charge (DPIC) 10.3.3 Duties of DPIC 10.3.4 Diver Assignments 10.3.5 Assistants and Duties of Members Dive Team Members 10.3.6 Health Check **10.4. DIVING EQUIPMENT, TOOLS, FACILITIES AND WORKBOATS** 10.4.1 Diving Equipment 10.4.2 Diving Workboats 10.4.3 Inspections and Maintenance **10.5 PARTICULAR SAFETY MEASURES** 10.5.1 Measures before Diving Operations 10.5.2 Measures during Diving Operations **10.6 DIVING ACCIDENT CONTROL PLAN** 10.6.1 General 10.6.2 Provisions by Contractors	**CHAPTER 10 DIVING WORKS** **10.1 GENERAL** 10.1.1 Scope 10.1.2 Definition 10.1.3 Compliance Standards **10.2 DIVE SAFETY PLAN ~~AND DIVE SAFETY PROCEDURE~~** 10.2.1 General Requirements for the Dive Safety Plans 10.2.2 Bid Stage Dive Safety Plan 10.2.3 Commencement Stage Dive Safety Plan 10.2.4 Particular Dive Safety Plans **10.3 CLIMATIC, MARINE, NATURAL AND PHYSICAL CONDITIONS** 10.3.1 General 10.3.2 Information on Conditions for Particular Dive safety Plans **10.4 PERSONNEL FOR DIVING OPERATION** 10.4.1 Qualification of Diving Personnel 10.4.2 Designated Person-in-Charge (DPIC) 10.4.3 Duties of DPIC 10.4.4 Diver Assignments 10.4.5 Assistants and Duties of Members Dive Team Members 10.4.6 Health Check **10.5 DIVING EQUIPMENT, TOOLS, FACILITIES AND WORKBOATS** 10.5.1 Diving Equipment 10.5.2 Diving Workboats 10.5.3 Inspections and Maintenance **10.6 PARTICULAR SAFETY MEASURES** 10.6.1 Measures before Diving Operations 10.6.2 Measures during Diving Operations **10.7 DIVING ACCIDENT RESPONSE PLAN** 10.7.1 General 10.7.2 Provisions by Contractors	**CHAPTER 10 DIVING WORKS** **10.1 GENERAL** 10.1.1 Scope 10.1.2 Definition 10.1.3 Compliance Standards **10.2 DIVE SAFETY PLAN** 10.2.1 General Requirements for the Dive Safety Plans 10.2.2 Bid Stage Dive Safety Plan 10.2.3 Commencement Stage Dive Safety Plan 10.2.4 Particular Dive Safety Plans **10.3 CLIMATIC, MARINE, NATURAL AND PHYSICAL CONDITIONS** 10.3.1 General 10.3.2 Information on Conditions for Particular Dive safety Plans **10.4 PERSONNEL FOR DIVING OPERATION** 10.4.1 Qualification of Diving Personnel 10.4.2 Designated Person-in-Charge (DPIC) 10.4.3 Duties of DPIC 10.4.4 Diver Assignments 10.4.5 Assistants and Duties of Members Dive Team Members 10.4.6 Health Check **10.5 DIVING EQUIPMENT, TOOLS, FACILITIES AND WORKBOATS** 10.5.1 Diving Equipment 10.5.2 Diving Workboats 10.5.3 Inspections and Maintenance **10.6 PARTICULAR SAFETY MEASURES** 10.6.1 Measures before Diving Operations 10.6.2 Measures during Diving Operations **10.7 DIVING ACCIDENT RESPONSE PLAN** 10.7.1 General 10.7.2 Provisions by Contractors
10. DIVING WORK **10.8 GENERAL7** **JC: JICA Comments (2020/04/24)** We reviewed the R2. There is stipulation that the Plan shall be prepared in advance of each diving operation in the draft 10.1.2 (f). We guessed that NK prepared some kinds of stipulations for work procedure of each diving work from the stipulations of Further Technical Details in 10.2.3 for example Time Schedule, Composition of Dive Team, etc. We judged that these are not Safety Plan (for diving) to be prepared for overall diving works but stipulations for the Work Procedure. Therefore, our comments are to request NK to revise the Dive safety Plan to Dive Safety Procedure. However, it needs to specify Diving Safety Plan at first before Dive Safety Procedure as follows: 1) Specify simply about Dive Safety Plan referring to Chapter 1 General (really, we think, very simple stipulation is enough.).	**10. DIVING WORK** **10.1 GENERAL** **JC: JICA Comments (2020/04/24)** We reviewed the R2. There is stipulation that the Plan shall be prepared in advance of each diving operation in the draft 10.1.2 (f). We guessed that NK prepared some kinds of stipulations for work procedure of each diving work from the stipulations of Further Technical Details in 10.2.3 for example Time Schedule, Composition of Dive Team, etc. We judged that these are not Safety Plan (for diving) to be prepared for overall diving works but stipulations for the Work Procedure. Therefore, our comments are to request NK to revise the Dive safety Plan to Dive Safety Procedure. However, it needs to specify Diving Safety Plan at first before Dive Safety Procedure as follows: 1) Specify simply about Dive Safety Plan referring to Chapter 1 General (really, we think, very simple stipulation is enough.).	**10. DIVING WORK** **10.1 GENERAL**

2) Stipulate about the study of national conditions mentioned in 10.2.2 with pre-wording “when preparation of the Safety Plan,”, and

3) At the end, stipulate all requirements about Procedure.

We request NK to rearrange the stipulations as mentioned above.

NK: NK modified this Chapter based on the above comments.

2) Stipulate about the study of national conditions mentioned in 10.2.2 with pre-wording “when preparation of the Safety Plan,”, and

3) At the end, stipulate all requirements about Procedure.

We request NK to rearrange the stipulations as mentioned above.

NK: NK modified this Chapter based on the above comments.

In my original draft I had inserted a definition for “Diving Project” which also defined “Diving Operations” and consequently safety plans could be understood to be relative to either. Unfortunately, “Diving Project” was deleted and all safety plan references were changed “Diving Operations which was not the best choice and I think that this has created the difficulty for JICA. It is important to define and segregate these two terms because they each demand a separate and different type of safety plan.

Operation stage dive safety plans are much more important for diving safety than the equivalent plan for work on land and far more numerous as they will actually be required before every single dive.

As I had explained previously, although OSHA does not clearly define “diving operation” or “diving project” it makes frequent reference to the former and single mention of the latter. In terms of JSSS requirements for safety plans therefore, I believe that if this is not defined and explained further, this will give rise to interpretation problems in the future confusing.

“Operations” (plural) therefore has implied meaning taken as each separate dive generally understood to be a part of a “diving project”.

HSE is more comprehensive on this subject by defining both and providing rules for both whereby a Diving Project is comprised of one or more diving operations.

I therefore again suggest that definitions for Diving Project and Diving Operation be put back into the definitions and that subsequent requirements should be written clearly for each.

I have now reinserted definitions for both of the above and with the benefit of more time for consideration, I have considerably simplified both.

Similar to all other types of Works, Safety plans are required separately for Diving Works each of the above in accordance with JSSS 1.7.3 as follows:

(1) Bid Stage Safety Plan (Outline Dive Safety Plan).

(2) Commencement Stage Safety Plan (Updated Dive Safety Plan)

(3) Particular Safety Plans (Individual safety plans for each Diving Operation

The required content of each of the above is now clearly and simply described in the text.

Although not really necessary, the Outline Overall safety plan submitted for the Bid in accordance with JSSS Chapter 1 Annex 1.2 item (9), can be further clarified to specifically mention diving with additional phrasing such as:

“If the Works include any Diving Works, the Safety Plan shall include safety requirements for such works in accordance with JSSS Chapter 10 [Diving Works].”

I can add the above to the next draft of Chapter 1 if required.

I have put back in the definitions of Diving Project and Diving Operation in 10.1.1, edited/simplified them considerably significantly, and then redrafted

	10.2.1 to make the correlation between Chapter 10 and Chapter 1 (1.1.3) and OSHA requirements clear. *Safety Plans for each and every Diving Operation are very necessary because each Diving Operation is under different conditions (depth, current, visibility, etc.). Also, and maybe more importantly with repetitive dives the intensity and nature of previous Diving Operations and restricted surface time to release residual nitrogen can prevent some divers not being allowed to dive. If this is not managed properly then serious injury or death can result.* *I have edited the remainder of your draft to reflect the above basic consideration on the assumption that the above basis is accepted by you in principle and so that there is one document for further joint review.* NK6/21: Chapter 1 defines the Project in Annex as follows: *(10) "Project" means the particular Works and services to be implemented by the Borrower and described in the loan agreement, utilising the funds provided by JICA under the terms mutually agreed for that purpose.* I considered the Diving Project in the original draft implies that a Project to execute diving works by the Borrower. The Works include diving works as a part of construction works which may consist of machine excavation, dumping rocks by ships, concrete placing by machine, etc., and diving works by divers such as levelling of dumped rocks, placing of concrete blocks, welding works by hands of divers, etc. I proposed "diving operations" instead of "project" in last draft to avoid JICA's comment which I assumed JICA will have same opinion. Now I want to propose "Diving Project" defined in 10.1.2 (g) to change to "Diving Works" used in 10.1.1. This change will be understandable for me to avoid confusion between "the Project" and "the Diving Project". Please review the above.	
10.8.1 Scope This Chapter specifies the safety requirements for diving operations which shall include surface-supplied air diving and SCUBA diving and which are hereinafter collectively referred to as "Diving Works". Saturation diving and mixed-gas diving are not included.	**10.1.1 Scope** This Chapter specifies the safety requirements for Diving Operations which shall include surface-supplied air diving and SCUBA diving and which are hereinafter collectively referred to as "Diving Works". Saturation diving and mixed-gas diving are not included. *I have suggested the use of Nitrox before for the reasons given below but still do not understand why JSSS does not include mixed gas diving with Nitrox (also called Enhanced Air Nitrogen and others). This is air with enhanced oxygen which can be mixed and bottled at the site with relatively simple equipment under properly controlled conditions and it is commonly used in commercial diving basically because it reduces the effects of decompression sickness and provides further benefits for commercial diving operations such as:* • *Longer Bottom Times. Divers who use nitrox absorb less nitrogen, making them stay underwater for longer.* • *Less Fatigue* • *Longer Dive Times.* • *Shorter Surface Intervals therefore less risk with repetitive dives.* *It is useful for dives up to 120 fsw (EAN32) or around 110 fsw (EAN36)* *If so I suggest that the second paragraph above is changed to* Diving with Nitrox is included, diving with other mixed-gases is not	**10.1.1 Scope** This Chapter specifies the safety requirements for Diving Operations which shall include surface-supplied air diving and SCUBA diving and which are hereinafter collectively referred to as "Diving Works". Saturation diving and mixed-gas diving are not included.

10.8.2 Definitions

(1) Definition of terms is as follows:

(a) "Surface-supplied air diving" means a diving mode in which the Diver is supplied at the dive location with a piped supply of compressed air for breathing;

(b) "SCUBA diving" means a diving mode independent of surface supply in which the Diver uses open circuit self-contained underwater breathing apparatus;

(c) "Diver" means a worker working in water using underwater breathing apparatus which supplies compressed breathing gas at the ambient pressure;

(d) "Dive Team" means Divers and support assistants involved in a diving operation, including the Designated Person-in-Charge;

(e) "Designated Person-in-Charge" (for diving works) or "DPIC" means a senior person who, through qualification, experience and capability is deemed by the HSO to be qualified to be in charge of all aspects of the diving operation including those affecting the safety and health of members of the Dive Team;

JC1: Operation Leader とは異なることを是としても、Diving Work だけの人材なので(for diving works)を追記しました。
"Designated Person-in-Charge" may be one of Operation Leaders, but he is exclusively for diving work. Therefore, (for diving works) is added as right.

NK: Added.

(f) "Dive Safety Plan" means ~~the safety plan prepared in advance of each diving operation and the nature and size of any diving operation so identified shall be such that it can be safely supervised by one DPIC.~~ the safety plan for diving operation as a part of Safety Plan specified in JSSS 1.7 [Contractor's Safety Plans] and is the basis of the Dive Safety Procedure;

(g) "Dive Safety ~~Plan~~ Procedure" means the safety ~~plan~~ procedure prepared in advance of each diving operation in

included.

Saturation diving is not included.

NK6/21: We know mixed gas diving is actually executed in construction projects. JICA instructed us not to include in JSSS because saturation diving and mixed-gas diving methods is rare to adopt them and not common in the ODA projects though tunnel construction projects in deep sea such as the underwater subway system in the Bosporus Strait adopted them.)
(JC: ボスポラス地下鉄等、大深度海底トンネルの工事の際に使われるもの。一般的ではないので、対象外と整理します)。
We leave this as it is.

10.1.2 Definitions

(1) The definition of terms for the purpose of this Chapter are as follows:

(a) "Surface-supplied air diving" means a diving mode in which the Diver is supplied at the dive location with a piped supply of compressed air for breathing;

(b) "SCUBA diving" means a diving mode independent of surface supply in which the Diver uses open circuit self-contained underwater breathing apparatus;

(c) "Diver" means a worker working in water using underwater breathing apparatus which supplies compressed breathing gas at the ambient pressure;

(d) "Dive Team" means Divers, support assistants and dive boat crew who are involved in any Diving Operation, including the Designated Person-in-Charge;

(e) "Designated Person-in-Charge" ~~(for diving works)~~ or "DPIC" means a senior person who, through qualification, experience and capability is deemed by the HSO to be qualified to be in charge of all aspects of the diving operation including those affecting the safety and health of members of the Dive Team;

JC1: Operation Leader とは異なることを是としても、Diving Work だけの人材なので(for diving works)を追記しました。
"Designated Person-in-Charge" may be one of Operation Leaders, but he is exclusively for diving work. Therefore, (for diving works) is added as right.

NK: Added.

I think that the suggested addition is not necessary in view of the reworded first sentence of the subclause which is "for the purpose of this chapter i.e. Diving Works

Regarding deletion of the following, please refer to my notes and explanations on pages 1 and 2 and the revised clauses inserted below.

NK6/21: agreed.

(f) ~~"Dive Safety Plan" means the safety plan prepared in advance of each diving operation and the nature and size of any diving operation so identified shall be such that it can be safely supervised by one DPIC. the safety plan for diving operation as a part of Safety Plan specified in JSSS 1.7 [Contractor's Safety Plans] and is the basis of the Dive Safety Procedure;~~

(g) ~~"Dive Safety Plan Procedure" means the safety plan procedure prepared in advance of each diving operation in~~

10.1.2 Definitions

(1) The definition of terms for the purpose of this Chapter are as follows:

(a) "**Surface-supplied air diving**" means a diving mode in which the Diver is supplied at the dive location with a piped supply of compressed air for breathing;

(b) "**SCUBA diving**" means a diving mode independent of surface supply in which the Diver uses open circuit self-contained underwater breathing apparatus;

(c) "**Diver**" means a worker working in water using underwater breathing apparatus which supplies compressed breathing gas at the ambient pressure;

(d) "**Dive Team**" means Divers, support assistants and dive boat crew who are involved in any Diving Operation, including the Designated Person-in-Charge;

(e) "**Designated Person-in-Charge**" or "**DPIC**" means a senior person who, through qualification, experience and capability is deemed by the HSO to be qualified to be in charge of all aspects of the diving operation including those affecting the safety and health of members of the Dive Team;

which the nature, size and other details are specified ~~as described in JSSS~~ 10.2 [Dive Safety Procedure] . ~~and the nature and size of any diving operation so identified shall be such that it can be safely supervised by one DPIC.~~

JC2: Diving operation 全体にプランはほかにあるという前提で、ここでは個々の潜水作業についての手順書というイメージで書かれているものと理解しました。
Our understanding is that the Dive Safety Plan is defined as it specify the procedure of individual diving work on the premise that there is an overall safety dive plan. We modified as the right.

NK: Dive Safety Plan と Dive Safety Procedure の関係が明確になるように、(f)に Dive Safety Plan、(g)に Dive Safety Procedure の定義を追加します。メール(2020/4/24)のコメントに従い、10.2.1 に第 1 章との関係を追加しました。
To make clear the relation between Dive Safety Plan and Dive Safety Procedure, (f) Dive Safety Plan is modified and (g) Dive Safety Procedure is added. Stipulations are added in 10.2.1 in accordance with the JICA mail (2020.4.24) to relate the Safety Procedure to the Safety Plan and Method Statement.

10.8.3 Compliance Standards

(1) ~~For provisions which are not stipulated in the JSSS~~ Unless otherwise specified in the Contract, the Contractor shall comply ~~as a minimum~~ with ~~all of~~ the requirements specified in OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations for surface-

~~which the nature, size and other details are specified as described in JSSS 10.2 [Dive Safety Procedure] . and the nature and size of any diving operation so identified shall be such that it can be safely supervised by one DPIC.~~

JC2: Diving operation 全体にプランはほかにあるという前提で、ここでは個々の潜水作業についての手順書というイメージで書かれているものと理解しました。
Our understanding is that the Dive Safety Plan is defined as it specify the procedure of individual diving work on the premise that there is an overall safety dive plan. We modified as the right.

NK: Dive Safety Plan と Dive Safety Procedure の関係が明確になるように、(f)に Dive Safety Plan、(g)に Dive Safety Procedure の定義を追加します。メール(2020/4/24)のコメントに従い、10.2.1 に第 1 章との関係を追加しました。
To make clear the relation between Dive Safety Plan and Dive Safety Procedure, (f) Dive Safety Plan is modified and (g) Dive Safety Procedure is added. Stipulations are added in 10.2.1 in accordance with the JICA mail (2020.4.24) to relate the Safety Procedure to the Safety Plan and Method Statement.

I understand the reason for the query but instead of the above, I suggest the reinsertion of the following definitions in accordance with my notes on page 1 and 2 above, followed later by clear, properly correlated and simple safety plan requirements for each:

(f) "**Diving Operation**" means one single diving activity for one Diver or a team of Divers commencing from the time when the first Diver enters the water and extending until the last Diver has left the water, chamber or other environment in which the dive, or any part of the dive, took place and has completed any requisite decompression procedures, including, where it may be reasonably anticipated that this will be needed, any therapeutic recompression.

The nature and size of any Diving Operation shall be such that it can be safely supervised by one person;

(g) "**Diving Project**" means any activity, made up of one or more Diving Operations, commencing from the first Diving Operation and extending until the latest Diver in the last Diving Operation has left the water, chamber or other environment in which the dive, or any part of the dive, took place and has completed any requisite decompression procedures, including, where it may be reasonably anticipated that this will be needed, any therapeutic recompression; "Diving Project' is the term used for the overall diving job – whether it lasts two hours or two months, and it can be made up of one or more Diving Operation; and

(h) "**Dive Safety Plan**" means the Safety Plan prepared for Diving Works in accordance with JSSS 10.2 [*Dive Safety Plan*].

All definitions shall be realigned in alphabetical order

NK6/22: As mentioned above, we propose to replace " Diving project" with "Diving Works". We submit the definition in DFR and wait JICA comments.

10.1.3 Compliance Standards

(1) ~~For provisions which are not stipulated in the JSSS Unless otherwise specified in the Contract, the Contractor shall comply as a minimum with all of the requirements specified in OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations for~~

(f) "**Diving Operation**" means one single diving activity for one Diver or a team of Divers commencing from the time when the first Diver enters the water and extending until the last Diver has left the water, chamber or other environment in which the dive, or any part of the dive, took place and has completed any requisite decompression procedures, including, where it may be reasonably anticipated that this will be needed, any therapeutic recompression.

(g) "**Diving Project**" => **"Diving Works"** means any activity, made up of one or more Diving Operations, commencing from the first Diving Operation and extending until the latest Diver in the last Diving Operation has left the water, chamber or other environment in which the dive, or any part of the dive, took place and has completed any requisite decompression procedures, including, where it may be reasonably anticipated that this will be needed, any therapeutic recompression; "Diving Project' => "Diving Works" is the term used for the overall diving job – whether it lasts two hours or two months, and it can be made up of one or more Diving Operation; and

(h) "**Dive Safety Plan**" means the Safety Plan prepared for Diving Works in accordance with JSSS 10.2 [*Dive Safety Plan*].

10.1.3 Compliance Standards

By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*], for any items in this Chapter or relevant to the subject of this Chapter and which are not fully covered by JSSS, the Contractor shall take necessary

supplied air diving and SCUBA diving (excluding saturation and mixed-gas diving). JC1: このスペックに書いていない基準については OSHA に従うという記述にしてください。(最後のページのコメントにあるとおり、減圧室に関する記述は OSHA では不十分に見え、HSE を参照することとしたため) For the provisions which are not stipulated in this specification, please state that they shall comply with OSHA. (As mentioned in the comment in the last page, it seems that the statement of OSHA regarding decompression chamber is not sufficient, thus this chapter shall refer to HSE.) NK: modified as commented. JC3: これこそ、Unless otherwise specified in the Contract とすべき。 This phrase should be "Unless otherwise specified in the Contract. NK: コメントに従い修正しました。Modified as commented.	~~surface-supplied air diving and SCUBA diving (excluding saturation and mixed-gas diving).~~ JC1: このスペックに書いていない基準については OSHA に従うという記述にしてください。(最後のページのコメントにあるとおり、減圧室に関する記述は OSHA では不十分に見え、HSE を参照することとしたため) For the provisions which are not stipulated in this specification, please state that they shall comply with OSHA. (As mentioned in the comment in the last page, it seems that the statement of OSHA regarding decompression chamber is not sufficient, thus this chapter shall refer to HSE.) NK: modified as commented. JC3: これこそ、Unless otherwise specified in the Contract とすべき。 This phrase should be "Unless otherwise specified in the Contract. NK: コメントに従い修正しました。Modified as commented. *I suggest the following wording which was requested earlier by JICA and is now used consistently in every other Chapter and Section where necessary:* *Please note that this is a standard description that basically means that whatever is written here in this Section or Chapter of JSSS has priority and prevails over the stated compliance standard which in this case is OSHA.* *If nothing was added in JSSS each Chapter could simply consist of one line stating "Comply with JSSS" which is obviously not be acceptable.* *This does mean that whatever is written in the detail of JSSS must be necessary, correct and completely clear as for these parts there should be no further reliance on OSHA for example as JSSS has superseded it.* *It also means that the clause for Compliance Standards must be exactly the same wording wherever it used otherwise different interpretations (e.g. of priority) may be necessary in different parts of JSSS which is not advisable.* By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*], for any items in this Chapter or relevant to the subject of this Chapter and which are not fully covered by JSSS, the Contractor shall take necessary measures for Diving Works complying with the technical requirements specified in OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations for surface-supplied air diving and SCUBA diving (excluding saturation and mixed-gas diving). NK6/22: We agreed to modify to make it standard description.	measures for Diving Works complying with the technical requirements specified in OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations for surface-supplied air diving and SCUBA diving (excluding saturation and mixed-gas diving).
10.2 DIVE SAFETY PLAN AND DIVE SAFETY PROCEDURE ~~10.2.1 General Content~~ JC4: 以下、全部 procedure にしておいてください。 Please replace all Dive Safety Plan with Dive Safety Procedure. NK: Dive Safety Plan と Dive Safety Procedure の関係について 10.2.1 に規定し、その後 Dive Safety Procedure について規定します。タイトルを"DIVE SAFETY PLAN and DIVE SAFETY PROCEDURE"へ変更しました。 We will stipulate the relation between Dive Safety Plan and Dive Safety Procedure in 10.2.1 at first and do Dive Safety Procedure later. The title of the section is changed to "DIVE SAFETY Plan and DIVE SAFETY PROCEDURE". To MD, the above JICA comments are different from those mentioned in 10.1, therefore NK modified this Chapter following the comments given in 10.	**10.2 DIVE SAFETY PLANS AND DIVE SAFETY PROCEDURE** ~~10.2.1 General Content~~ JC4: 以下、全部 procedure にしておいてください。 Please replace all Dive Safety Plan with Dive Safety Procedure. NK: Dive Safety Plan と Dive Safety Procedure の関係について 10.2.1 に規定し、その後 Dive Safety Procedure について規定します。タイトルを"DIVE SAFETY PLAN and DIVE SAFETY PROCEDURE"へ変更しました。 We will stipulate the relation between Dive Safety Plan and Dive Safety Procedure in 10.2.1 at first and do Dive Safety Procedure later. The title of the section is changed to "DIVE SAFETY Plan and DIVE SAFETY PROCEDURE". To MD, the above JICA comments are different from those mentioned in 10.1, therefore NK modified this Chapter following the comments given in 10.	**10.2 DIVE SAFETY PLANS**

To MD, 10.2 is modified by relocating the stipulations in last issue as below. Please review the following 10.2 referring the JICA comments and NK responses given below.

10.2.1 Preparation of Dive Safety Plan and Dive Safety Procedure

(1) The Contractor shall prepare the Dive Safety Plan as a part of Safety Plan specified in JSSS 1.7.6 [Bid Stage Safety Plan] or 1.7.7 [Commencement Stage Safety Plan], or 1.7.8 [Particular Safety Plans] as required depending on the development of necessary information for the Diving Work.

JC5: Safety Procedure はコントラクターがダイビングの知見を持った人の知見を用いて作成するという意味の記載にしてください。
Please, modify the description so that the safety procedure shall be created by the Contractor obtaining opinions of persons who have diving knowledges.

NK: コメントに従い、上のように変更しました。また、10.2.2 へのコメントを反映させるため、冒頭に Dive Safety Plan について記述し、Procedure との関係を明確にしました。
Modified in accordance with the comment as above and in order to reflect the comment at 10.2.2, a paragraph is added to clarify the relationship between the Plan and Procedure.

(2) The Contractor shall prepare the Dive Safety Procedure in advance of individual diving operation in addition to Method Statement specified in JSSS 1.9 [Contractor's Method Statements] and the Diving Safety Plan.

(3) The Dive Safety Plan and the Dive Safety Procedure shall be prepared consulting Diver(s) for expert opinions who has the qualification and capability deemed sufficient by the HSO. They shall be incorporated the advice of and be approved by DPIC when prepared in the Works, and reviewed and approved by the HSO.

To MD, 10.2 is modified by relocating the stipulations in last issue as below. Please review the following 10.2 referring the JICA comments and NK responses given below.

Regarding the above, I can understand JICA's confusion over the various safety plans covering the Diving Project and the Diving Operations but I suggest this problem is created by the lack of definition and lack of description of what safety plans are required for reach.

I have simply modified the earlier clause 10.1 and this now again defines what each of these are and all that now remains is to describe the content of the requisite safety plans for each.

I do not think it is necessary to introduce "Dive Safety Procedure" as a new additional topic to the Dive safety Plan as all components of this clause are actually parts of the Safety Plan as defined in Chapter 1 and referred to in JSSS 1.7.3. The last part to be submitted before each Diving Operation, is actually a Particular Safety Plan required by 1.7.3.

These are basically the same as safety plans for other Chapters, the Bid and commencement stage dive plans will include all general safety compliance matters and the particular dive safety plans are effectively the pre-dive planning, referred to in OSHA (29 CFR 1910.421(d) Planning and assessment). Particular Dive Safety Plane will not repeat the general information and will usually be largely checklist based but will be numerous as one is required before any diver enters the water to work.

To incorporate the theme of your comment, to tie this in with JSSS Chapter 1 and also to avoid future ambiguity by using or referring to the framework and terms used in the OSHA standard, I suggest that this entire clause is reworded as follows:

10.2.1 General Requirements for the Dive Safety Plans

(1) The Contractor shall prepare Dive Safety Plans as part of the Safety Plan for the Works in compliance with the requirements of with JSSS 1.7 [*Contractor's Safety Plans*].

(2) The submission requirements in accordance with JSSS 1.7.3 shall be as follows:

(a) The Bid Stage Safety Plan shall include the Outline Dive Safety Plan;

(b) The Commencement Stage Safety Plan shall include the Updated Dive Safety Plan; and

(c) The Particular Safety Plans shall include the individual Particular Dive Safety Plans to be submitted for and in advance of each Diving Operation.

10.2.2 Bid Stage Dive Safety Plan

(1) In compliance with JSSS 1.7.6 [*Bid Stage Safety Plan*], the Bid Stage Dive Safety Plan shall include an outline plan indicating the Contractor's operational procedures for each diving mode to be used in the Works (referred to in OSHA as the "safe practices manual"). This shall be in sufficient detail to give an understanding of the Contractor's intentions regarding the diving safety procedures that the Contractor intends to implement.

(2) The Bid Stage Dive Safety Plan shall contain a copy of the OSHA standard and the Contractor's policies for implementing the

10.2.1 General Requirements for the Dive Safety Plans

(1) The Contractor shall prepare Dive Safety Plans as part of the Safety Plan for the Works in compliance with the requirements of with JSSS 1.7 [*Contractor's Safety Plans*].

(2) The submission requirements in accordance with JSSS 1.7.3 shall be as follows:

(a) The Bid Stage Safety Plan shall include the Outline Dive Safety Plan;

(b) The Commencement Stage Safety Plan shall include the Updated Dive Safety Plan; and

(c) The Particular Safety Plans shall include the individual Particular Dive Safety Plans to be submitted for and in advance of each Diving Operation.

10.2.2 Bid Stage Dive Safety Plan

(1) In compliance with JSSS 1.7.6 [*Bid Stage Safety Plan*], the Bid Stage Dive Safety Plan shall include an outline plan indicating the Contractor's operational procedures for each diving mode to be used in the Works (referred to in OSHA as the "safe practices manual"). This shall be in sufficient detail to give an understanding of the Contractor's intentions regarding the diving safety procedures that the Contractor intends to implement.

(2) The Bid Stage Dive Safety Plan shall contain a copy of the OSHA standard and the Contractor's policies for implementing the

(4) The Contractor shall inform and if necessary further train and test all Dive Team members the content of the Dive Safety Plan and the Dive Safety Procedure.

(5) A copy of the Dive Safety Plan and the Dive Safety Procedure shall be made available at the dive location to each Dive Team member.

10.2.2 Dive Safety Plan

The Dive Safety Plan shall describe the Contractor's plan regarding items related with the diving operation listed in Annex 1.2 of Chapter 1 [Content of Bid Stage Safety Plan] and in accordance with the following:

JC8: これは Safety Plan のレベルで行われることなので、Procedure では不要。
As this is to be done at the Safety Plan, therefore unnecessary to describe here.

NK: 10.2.1(2)に Dive Safety Plan で規定すべき事項として、(4) の事項を含んでいる Annex 1.2 of Chapter 1 [Content of Bid Stage Safety Plan]にもとづくことと追記しました。
Contents of Dive Safety Plan including those mentioned (4) are specified in 10.2.1(2) in accordance with Annex 1.2 of Chapter 1 [Content of Bid Stage Safety Plan].

(2) The Contractor shall compile relevant information from statistical records, recent records and forecasts of conditions for the Dive Safety Plan. Relevant information shall be obtained by the Contractor from all available sources and shall include for example the following:

JC10: まず 10.2 として「1 章の総則に従って Safety Plan（Safety Procedure ではない）を作成する」と記述してください。そのうえで、この 10.2.2 の内容を続けてください。その次に Safety Procedure の話をまとめて書いてください。
10.2 specifies that firstly Safety Plan (not Safety Procedure) shall be prepared in accordance with Chapter 1, secondly specify the contents of 10.2.2, and after those, specifies the contents for Safety Procedure.

NK: 10.2.1 (1)に Dive Safety Plan について記述を加え、Dive Safety Procedure との関係を明確にしました。
An explanation is added in 10.2.1 (1) to clarify the relationship between Dive Safety Plan and Dive Safety Procedure.

(a) Climatic information and forecasting at the diving location:
- (i) Wind speed and direction;
- (ii) Air temperature;
- (iii) Surface visibility, fog, sea mist;
- (iv) Likelihood and intensity of electrical storm; and
- (v) Weather forecasting.

(b) Water/Marine Conditions
- (i) Sea state; wave height and direction;
- (ii) Height and time of tides;
- (iii) Water depths;
- (iv) Water Temperatures;
- (v) Water currents, direction and speed;
- (vi) Visibility at depths; and
- (vii) Water level variation in rivers or lakes during flood periods.

(c) Physical Conditions
- (i) Underwater cables and pipes;
- (ii) Wreckage and other artificial obstacles;
- (iii) Geotechnical conditions affecting the work; and
- (iv) UXO, Dangerous Goods and Hazardous Substances.

requirements of this standard.

Regarding the comment that this clause (b) be deleted, I do not recommend this.

It is a requirement of OSHA as stated already but as diving regulations vary around the world many divers will not be familiar with US domestic i.e. OSHA requirements, It is important that they are given the opportunity to study this document and check that their employer is complying particularly with regard to OSHA Under 29 CFR 1910.410(b)(1).

(b) Assignments. (1) Each dive team member shall be assigned tasks in accordance with the employee's experience or training, except that limited additional tasks may be assigned to an employee undergoing training provided that these tasks are performed under the direct supervision of an experienced dive team member.

Also "the Contractor's policies for implementing the requirements of this standard" are an important requirement of OSHA and really should be provided as it is evidence of what the Contractor intends to do. This is included in the Bid Stage Dive Safety plan in 10.2.1 above, as it can and should be evaluated at that stage. It is usually a fairly standard document and easy for any Diving Contractor to prepare.

10.2.3 Commencement Stage Dive Safety Plan

(1) In compliance with JSSS 1.7.7 [*Commencement Stage Safety Plan*], the Commencement Stage Dive Safety Plan shall be a development of the Bid Stage Dive Safety Plan and shall include detailed safety procedures and standard checklists to apply to all Diving Operations, equipment procedures, and emergency procedures (at a minimum covering fire, equipment malfunction or failure, adverse environmental conditions and medical illness and injury).

(2) The HSO shall review the Commencement Stage Dive Safety Plan to determine if it is correct and compliant with the requirements of OSHA and JSSS.

(3) A copy of the Commencement Stage Dive Safety Plan together with a copy of the OSHA standard and the Contractor's policies for implementing the requirements of OSHA (from the Bid Stage Dive Plan) shall be made available at the dive location to each Dive Team member and explained to the Dive Team by the HSO and DPIC.

requirements of this standard.

10.2.3 Commencement Stage Dive Safety Plan

(1) In compliance with JSSS 1.7.7 [*Commencement Stage Safety Plan*], the Commencement Stage Dive Safety Plan shall be a development of the Bid Stage Dive Safety Plan and shall include detailed safety procedures and standard checklists to apply to all Diving Operations, equipment procedures, and emergency procedures (at a minimum covering fire, equipment malfunction or failure, adverse environmental conditions and medical illness and injury).

(2) The HSO shall review the Commencement Stage Dive Safety Plan to determine if it is correct and compliant with the requirements of OSHA and JSSS.

(3) A copy of the Commencement Stage Dive Safety Plan together with a copy of the OSHA standard and the Contractor's policies for implementing the requirements of OSHA (from the Bid Stage Dive Plan) shall be made available at the dive location to each Dive Team member and explained to the Dive Team by the HSO and DPIC.

(d) Natural Conditions
  (i) Natural obstructions;
  (ii) Coral reef or other marine life to be protected; and
  (iii) Danger from ~~marine~~ wildlife ~~and precautions~~.

(e) Surface Traffic
  (i) Surface traffic details, timings and restrictions, and
  (ii) Danger, precautions and control of surface traffic.

(f) Diving Works Area
  (i) Demarcation of diving location; and
  (ii) Limits of working area.

(3) The Dive Safety Plan shall describe the safety measures for the diving operations including the following:

(a) Safety procedures and checklists for ~~each~~ diving operation;

(b) Assignments and responsibilities of each of the Dive Team members;

(c) Lists~~, procedures and checklists~~ of diving equipment, tools, PPE, materials, workboat, fuel and ~~other consumables~~ others necessary for ~~each~~ diving operation;

(d) Emergency procedures including for equipment failure, fire, adverse climatic, marine, natural and physical conditions, adverse environmental conditions, medical illness and injury;

(e) Work stop criteria for change of ~~the weather and marine conditions~~ the climatic, marine, natural and physical conditions;

(f) Scope of work for each Diver and all support assistants in the Dive Team throughout the diving operation;

(g) Information and instructions to be given to the Divers, support assistants and other workers related with the diving operations and the working methods and safety measures; and

(h) Communication systems and procedures between the diver and the workboat.

JC7: ここでいう Communication system とはダイバーとボート間のことなら、そう記載すべき。
If the "communication system" is for that between the diver and the boat, it shall be described so.

NK: ダイバーと作業船とのシステムということを追加します。
Added phrase that the system between the diver and the workboat.

(i) Emergency medical facilities including the provision of a decompression chamber at the Diving Works location together with medical support. Or (alternatively and by reference to JSSS Section 10.6 [*Diving Accident Control Plan*] the address, contact details of an existing decompression chamber that the Contractor intends to use together with a description of the facilities, age and condition and location.

(4) The Contractor shall establish criteria for commencement, continuation or stopping of any diving operations due to the climatic, marine, natural and physical conditions. The Dive Safety Plan shall describe how such controls shall be implemented.

(5) The Contractor shall make exploratory dives to survey and establish conditions at the diving location.

10.2.4 Particular Dive Safety Plans

(1) In compliance with JSSS 1.7.8 [*Particular Safety Plans*], the Particular Dive Safety Plans shall contain all further information specific to each Diving Operation not covered by the foregoing Bid Stage and Commencement Stage Dive Plans together with all supplemental information obtained during pre-dive planning and assessment, to collectively demonstrate the Contractor's compliance with the requirements OSHA and JSSS for each Diving Operation, including for example:

(a) Safety procedures and checklists for each Diving Operation;

(b) Name of each Dive Team member, buddy diver assignments, individual work assignment and responsibility and confirmation from the DPIC that they each comply with all diving health and safety requirements and are therefore approved to work on the Diving Operation;

(c) The planned dive profile for each Diver showing their maximum bottom time and ascent rate with decompression stages and times and taking account of repetitive dives;

Please note that this may be different for each diver according to their accumulated repetitive diving record

(d) Description of all diving equipment, diving gases and consumables, PPE, procedures for their use and signed checklists to confirm compliance;

(e) Description of the workboat and workboat facilities, together with information on the location of the workboat in relation to the dive site, and procedures for the use and operation of the dive boat during Diving Operations, any surface hazards and any restriction in operation due to surface traffic conditions;

Please note that "surface traffic conditions" are actually covered by 10.3.1 below but have more significance if mentioned here also

(f) Description of all other Contractor's Equipment, tools and consumables for the assigned work tasks, procedures for their use and checklists;

(g) The climatic, marine, natural and physical conditions that are likely to be encountered during any Diving Operation and the procedures for commencement, continuation or stopping of any Diving Operation following any change in these conditions in accordance with JSSS 10.3 [*Climatic, Marine, Natural and Physical Conditions*];

(h) Communication systems and procedures for communications:

(i) between Divers;

(ii) between Divers and the workboat; and

(iii) Between the work boat and the relevant marine authorities.

10.2.4 Particular Dive Safety Plans

(1) In compliance with JSSS 1.7.8 [*Particular Safety Plans*], the Particular Dive Safety Plans shall contain all further information specific to each Diving Operation not covered by the foregoing Bid Stage and Commencement Stage Dive Plans together with all supplemental information obtained during pre-dive planning and assessment, to collectively demonstrate the Contractor's compliance with the requirements OSHA and JSSS for each Diving Operation, including for example:

(a) Safety procedures and checklists for each Diving Operation;

(b) Name of each Dive Team member, buddy diver assignments, individual work assignment and responsibility and confirmation from the DPIC that they each comply with all diving health and safety requirements and are therefore approved to work on the Diving Operation;

(c) The planned dive profile for each Diver showing their maximum bottom time and ascent rate with decompression stages and times and taking account of repetitive dives;

(d) Description of all diving equipment, diving gases and consumables, PPE, procedures for their use and signed checklists to confirm compliance;

(e) Description of the workboat and workboat facilities, together with information on the location of the workboat in relation to the dive site, and procedures for the use and operation of the dive boat during Diving Operations, any surface hazards and any restriction in operation due to surface traffic conditions;

(f) Description of all other Contractor's Equipment, tools and consumables for the assigned work tasks, procedures for their use and checklists;

(g) The climatic, marine, natural and physical conditions that are likely to be encountered during any Diving Operation and the procedures for commencement, continuation or stopping of any Diving Operation following any change in these conditions in accordance with JSSS 10.3 [*Climatic, Marine, Natural and Physical Conditions*];

(h) Communication systems and procedures for communications:

(i) between Divers;

(ii) between Divers and the workboat; and

(iii) Between the work boat and the relevant marine authorities.

(i) Any further information and instructions to be given to the

10.2.3 Dive Safety Procedure

The Dive Safety Procedure shall describe the technical details for the individual diving operation including the following:

(1) Equipment for the Dive Works of air compressor system, breathing-gas supply hoses, buoyancy control, compressed gas cylinders, gauges and timekeeping devices, masks and helmets, etc.

(2) Time schedule, the various works of the Divers, support assistants and workboats, traffic conditions of the workboats and other marine craft that may affect the diving operations.

(3) Composition of the Dive Team, command structure, assigned tasks, required licenses for the work.

(4) Communications, recovery and first aid measures in the event of an accident or emergency.

(5) Emergency medical facilities including the decompression chamber or the address, contact details of an existing decompression chamber.

(6) Contact system between the Contractor/diving workboats and the authorities which manage the area around the diving works site at normal and emergency times.

To MD, the sentences from below to before 10.3 are replaced with the above 10.2. Please review the above 10.2.

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(1) The Contractor shall prepare a Dive Safety Plan for the Diving Works, inform and if necessary further train and test all Dive Team members in the content of the Plan.

(2) A copy of the Dive Safety Plan shall be made available at the dive location to each Dive Team member.

~~3) The Dive Safety Plan shall contain a copy of the OSHA standard and the Contractor's policies for implementing the requirements of this standard.~~

JC1: 意図が不明であることもあり、不要に思います。
The intention of this provision is unknown. This item is not necessary.

NK: OSHA Subpart T, 1910.420 Safe practices manual stipulate "(b) Contents. (1) The safe practices manual shall contain a copy of this standard and the employer's policies for implementing the requirements of this standard."
Item (3) is deleted as commented.

(3) For each required diving operation and diving mode, the Dive Safety Plan shall include:

JC1: work stop criteria を入れておいた方が良いと思います。10.5.2(3)に突然出てきているので
It is better to mention the work stop criteria here as it appears suddenly at 10.5.2 (3).

(i) Any further information and instructions to be given to the Divers, support assistants and other workers related with the Diving Operations and the working methods and safety measures;

(j) The Particular Dive Safety Plan shall be prepared by the DPIC or another Diver that that has the qualification, experience and capability deemed sufficient by the HSO;

(k) The Particular Dive Safety Plan shall be reviewed and approved by the HSO;

(l) The content of the Particular Dive Safety Plan shall be explained to all Dive Team members during the employee briefing by the HSO or DPIC in accordance with OSHA 29 CFR 1910.421(f));

(m) If considered necessary by either the HSO or DPIC, individual Dive Team members shall be given additional training and testing; and

I assume that the above is a suitable response to your revision of 10.2.2 (5).

(n) A copy of the Particular Dive Safety Plan shall be made available at the dive location to each Dive Team member.

The above aims to ensure compliance with OSHA _ D. 29 CFR 1910.420 Safe practices manual.

Please note that it is not necessary to cover recompression facilities and arrangements; these are part of the Commencement Stage Dive Plan and also referred to in a later clause.

Much or all of the following is replaced by the above, hence the deletions

~~(1) [6 [Bid Stage Safety Plan] or 1.7.7 [Commencement Stage Safety Plan], or 1.7.8 [Particular Safety Plans] as required depending on the development of necessary information for the Diving Work.~~

~~10.2.2 Preparation of Dive Safety Plan and Dive Safety Procedure~~

~~(2) The Contractor shall prepare the Dive Safety Plan as a part of Safety Plan specified in JSSS 1.7.6 [Bid Stage Safety Plan] or 1.7.7 [Commencement Stage Safety Plan], or 1.7.8 [Particular Safety Plans] as required depending on the development of necessary information for the Diving Work.~~

~~JC5: Safety Procedure はコントラクターがダイビングの知見を持った人の知見を用いて作成するという意味の記載にしてください。~~
~~Please, modify the description so that the safety procedure shall be created by the Contractor obtaining opinions of persons who have diving knowledges.~~

~~NK: コメントに従い、上のように変更しました。また、10.2.2 へのコメントを反映させるため、冒頭に Dive Safety Plan について記述し、Procedure との関係を明確にしました。~~
~~Modified in accordance with the comment as above and in order to reflect the comment at 10.2.2, a paragraph is added to clarify the relationship between the Plan and Procedure.~~

~~(3) The Contractor shall prepare the Dive Safety Procedure in advance of individual diving operation in addition to Method Statement specified in JSSS 1.9 [Contractor's Method Statements] and the Diving Safety Plan.~~

~~(4) The Dive Safety Plan and the Dive Safety Procedure shall be prepared consulting Diver(s) for expert opinions who has the qualification and capability deemed sufficient by the HSO. They~~

Divers, support assistants and other workers related with the Diving Operations and the working methods and safety measures;

(j) The Particular Dive Safety Plan shall be prepared by the DPIC or another Diver that that has the qualification, experience and capability deemed sufficient by the HSO;

(k) The Particular Dive Safety Plan shall be reviewed and approved by the HSO;

(l) The content of the Particular Dive Safety Plan shall be explained to all Dive Team members during the employee briefing by the HSO or DPIC in accordance with OSHA 29 CFR 1910.421(f));

(m) If considered necessary by either the HSO or DPIC, individual Dive Team members shall be given additional training and testing; and

(n) A copy of the Particular Dive Safety Plan shall be made available at the dive location to each Dive Team member.

NK: Though it is stipulated to establish the criteria for stopping the work in 10.2.2., Item (e) is added.

(a) Safety procedures and checklists for each diving operation;

(b) Assignments and responsibilities of each of the Dive Team members;

(c) ~~Equipment~~ l Lists, procedures and checklists of diving equipment, tools, materials, workboat, fuel and other consumables;

JC1: (e)及び(f)と重複感があります。違いがあるということであれば、分かるように明記してください。
The item (c) seems duplicated with (e) and (f). If there is difference and reasons to state, describe it so that the difference can be understood clearly.

NK: OSHA Subpart T, 1910.420 Safe practices manual.の(a)から(d)を（3）に規定し、(e)以降を追記していました。(e) & (f)を(c)に含めます。
OSHA Subpart T, 1910.420 Safe practices manual.(a) to (d) is specified in (3) and other requirements are added to (3) as (e) to (i). Combined (e) and (f) in (c).

(d) Emergency procedures including for equipment failure, fire, adverse climatic, marine, natural and physical conditions, adverse environmental conditions, medical illness and injury;

(e) Work stop criteria for change of the weather and marine conditions;

~~(e) Details of the workboat and all diving equipment, fuel and other consumables;~~

~~(f) Equipment, tools, materials and consumables for the assigned work tasks;~~

(f) Scope of work for each Diver and all support assistants in the Dive Team throughout the diving operation;

(g) Information and instructions to be given to the Divers, support assistants and other workers related with the diving operations and the working methods and safety measures; and

(h) Communication systems and procedures.

(4) The Dive Safety Plan shall analyse the tasks of the assigned diving operation, assess all risks involved and describe all measures to ~~avoid~~ mitigate such risks.

JC1: changed.

(5) The Dive Safety Plan shall be prepared by a Diver that has the qualification, experience and capability deemed sufficient by the HSO and it shall ~~incorporate the advice of and~~ be approved by the DPIC.

JC1: これでは実際に潜る人が計画を作ることになる（Diver の定義を参照）。OSHA を見ると基本は DPIC が作ることになっていないか？
This sentence can be read that the diver himself will make the Dive Safety Plan. (Refer to the definition of Diver,) DPIC shall make the Plan basically if comply with the provisions of OSHA?

JC1: DPIC が自分でアドバイスして、自分で承認するという言い方はおかしい。
It seems strange that DPIC gives advice to and approves the Dive Safety Plan.

NK: OSHA では、Safety Plan (Safety practice manual)を、雇用者（請負者）が作成

~~shall be incorporated the advice of and be approved by DPIC when prepared in the Works, and reviewed and approved by the HSO.~~

~~(5) The Contractor shall inform and if necessary further train and test all Dive Team members the content of the Dive Safety Plan and the Dive Safety Procedure.~~

~~(6) A copy of the Dive Safety Plan and the Dive Safety Procedure shall be made available at the dive location to each Dive Team member.~~

~~10.2.2 Dive Safety Plan~~

~~The Dive Safety Plan shall describe the Contractor's plan regarding items related with the Diving Operation listed in Annex 1.2 of Chapter 1 [Content of Bid Stage Safety Plan] and in accordance with the following:~~

~~JC8: これは Safety Plan のレベルで行われることなので、Procedure では不要。~~
~~As this is to be done at the Safety Plan, therefore unnecessary to describe here.~~

~~NK: 10.2.1(2)に Dive Safety Plan で規定すべき事項として、(4) の事項を含んでいる Annex 1.2 of Chapter 1 [Content of Bid Stage Safety Plan]にもとづくことと追記しました。~~
~~Contents of Dive Safety Plan including those mentioned (4) are specified in 10.2.1(2) in accordance with Annex 1.2 of Chapter 1 [Content of Bid Stage Safety Plan].~~

するとのみ規定し、誰が作成するべきとは規定していません。
提案の(6)は、実際現場で潜るかに関係せず潜水士である者が、DPIC の助言を得て作成し、DPIC の承認を得ることを規定しています。
潜水作業という特殊な作業であることから、潜水士の作成、DPIC の review and approval 承認という手続きで、漏れや間違いのない品質の Safety Plan が確保できると考えます。
単なる潜水士ではなく、HSO が能力を認めた潜水士に作成することが規定されております。
一方、DPIC が作成しますと、review and approval の任務に HSO は専門家でないため不適であり、別途潜水専門家を任命する必要があります。
そのため、 DPIC の助言は削除した原案を推奨致します。
The OSHA stipulates only that The employer shall develop a safe practices manual (Safety Plan) but not mention who prepare it.
The proposed (6) stipulates a diver shall prepare it . The diver is not restricted to a diver who actually engages in the diving work. The diver prepares it getting advice and DPIC approve it.
Because the diving work is special work, by the preparation by the diver and review and approval by the DPIC, quality of SP which does not have missing/errors can be secured. The diver is not normal diver but one HSO admits his ability.
On the other hand, if DPIC prepare the SP, it is necessary to assign other professional person who is qualified for diving works because HSO cannot review and approve as normally he is not qualified for diving works.
With reasons, NK propose to leave this (6) with deletion of " incorporate the advice of and".

(6) The Dive Safety Plan shall be reviewed and approved by the HSO.

JC1: HSO による review & approval の後に Engineer に提出することにした方がよくないか？
Isn't it better that after review and approval of the Dive Safety Plan, then submit it to the Engineer?

NK: DPIC が review and approval を(6)で規定していますが、最終的に HSO が承認することとし、下記の第 1 章 1.7.7 に規定の通り、作業開始前にエンジニアへ提出することが良いと考えます。第 1 章に規定されておりここでの提出の規定は不要と考えます。(6)には Further を追記します。
1.7.7 Commencement Stage Safety Plan
(1) This shall be submitted within twenty-eight (28) days after the Commencement Date and not less than twenty-eight (28) days before commencing any work at the Site,
(6) stipulate DPIC shall review and approval the Safety Plan (SP), and HSO shall finally approve the SP. As JSSS 1.7.7. above has specified its submission, no need to specify it in (6).

~~10.2.4. Climatic, Marine, Natural and Physical Conditions~~

The Contractor shall compile relevant information from statistical records, recent records and forecasts of conditions for the Dive Safety Plan.

The Contractor shall establish criteria ~~to permit~~ for commencement, continuation or stopping of any diving operations due to the climatic, marine, natural and physical conditions. The Dive Safety Plan shall describe how such controls shall be implemented.

JC1: permit to stop という言い方があるのでしょうか。
We wonder if there is expression of "permit to stop"?

NK: 作業開始、継続、中止は DPIC が基準(criteria)に基づき現場で指示することから、請負者は基準を設定することへ変更します。

(3) ~~The Contractor shall compile relevant information from statistical records, recent records and forecasts of conditions for the Dive Safety Plan. Relevant information shall be obtained by the Contractor from all available sources and shall include for example the following:~~

~~JC10: まず 10.2 として「1 章の総則に従って Safety Plan（Safety Procedure ではない）を作成する」と記述してください。そのうえで、この 10.2.2 の内容を続けてください。その次に Safety Procedure の話をまとめて書いてください。~~
~~10.2 specifies that firstly Safety Plan (not Safety Procedure) shall be prepared in accordance with Chapter 1, secondly specify the contents of 10.2.2, and after those, specifies the contents for Safety Procedure.~~

~~NK: 10.2.1 (1)に Dive Safety Plan について記述を加え、Dive Safety Procedure との関係を明確にしました。~~

The commencement, continuation or stopping is directed in accordance with the criteria at the site, therefore this clause specifies only to establish the criteria as modified.

The Contractor shall make exploratory dives to survey and establish conditions at the diving location.

Relevant information shall be obtained by the Contractor from all available sources and shall include for example the following:

(1) Climatic information and forecasting at the diving location:
  (a) Wind speed and direction;
  (b) Air temperature;
  (c) Surface visibility, fog, sea mist;
  (d) Likelihood and intensity of electrical storm; and
  (e) Weather forecasting.

(2) Water/Marine Conditions
  (a) Sea state; wave height and direction;
  (b) Height and time of tides;
  (c) Water depths;
  (d) Water Temperatures;
  (e) Water currents, direction and speed;
  (f) Visibility at depths; and
  (g) Water level variation in rivers or lakes during flood periods.

(3) Physical Conditions
  (a) Underwater cables and pipes;
  (b) Other artificial obstacles;
  (c) Geotechnical conditions affecting the work; and
  (d) UXO, Dangerous Goods and Hazardous Substances.

(4) Natural Conditions
  (a) Natural obstructions;
  (b) Coral reef or other marine life to be protected; and
  (c) Danger from marine wildlife and precautions.

(5) Surface Traffic
  (a) Surface traffic details, timings and restrictions, and
  (b) Danger, precautions and control of surface traffic.

(6) Diving Works Area
  (a) Demarcation of diving location; and
  (b) Limits of working area.

~~10.2.5. Further Technical Detail in Dive Safety Plan~~

In addition to the above, the Contractor shall provide further technical detail in the Dive Safety Plan including:

(1) Equipment for the Dive Works of air compressor system, breathing-gas supply hoses, buoyancy control, compressed gas cylinders, gauges and timekeeping devices, masks and helmets, etc.

(2) Time schedule, the various works of the Divers, support assistants and workboats, traffic conditions of the workboats and other marine craft that may affect the diving operations.

(3) Composition of the Dive Team, command structure, assigned tasks, required licenses for the work.

(4) Communications, recovery and first aid measures in the event of an accident or emergency.

(5) Emergency medical facilities including the provision of a decompression chamber at the Diving Works location together with medical support.

~~An explanation is added in 10.2.1 (1) to clarify the relationship between Dive Safety Plan and Dive Safety Procedure.~~

(6) Or (alternatively and by reference to JSSS Section 10.6 [*Diving Accident Control Plan*] the address, contact details of an existing decompression chamber that the Contractor intends to use together with a description of the facilities, age and condition and location. (7) Contact system between the Contractor/diving workboats and the authorities which manage the area around the diving works site at normal and emergency times.		

10.3 CLIMATIC, MARINE, NATURAL AND PHYSICAL CONDITIONS

10.3.1 General

I suggest that the above heading from my earlier draft is relevant and simplifies the structure, please can this be put back together with the following opening clauses, which I have reinserted below with suitable editing:

(1) The Contractor shall compile relevant information from statistical records, recent and current forecasts of conditions which may be encountered in support of the Particular Dive Safety Plan and shall establish criteria and controls for commencement, continuation or stopping of any Diving Operation due to such conditions.

(2) The Commencement Stage Dive Safety Plan shall describe how such criteria shall be applied and how such controls shall be implemented.

10.3.2 Information on Conditions for Particular Dive safety Plans

(1) Where necessary, the Contractor shall make exploratory dives to survey and establish all relevant conditions at the dive site such that all Particular Dive Safety Plans are based upon the best and most timely available information.

(2) Relevant information shall also be obtained by the Contractor from all available sources and shall include for example the following:

(a) Climatic information and forecasting at the diving location:

(i) Wind speed and direction;

(ii) Air temperature;

(iii) Surface visibility, fog, sea mist;

(iv) Likelihood and intensity of electrical storm; and

(v) Weather forecasting.

(b) Water/Marine Conditions

(i) Sea state; wave height and direction;

(ii) Height and time of tides;

(iii) Water depths;

(iv) Water Temperatures;

(v) Water currents, direction and speed;

(vi) Visibility at depths; and

(vii) Water level variation in rivers or lakes during flood periods.

(c) Physical Conditions

(i) Underwater cables and pipes;

(ii) Wreckage and other artificial obstacles;

(iii) Geotechnical conditions affecting the work; and

(iv) UXO, Dangerous Goods and Hazardous Substances.

(d) Natural Conditions

(i) Natural obstructions;

10.3 CLIMATIC, MARINE, NATURAL AND PHYSICAL CONDITIONS

10.3.1 General

(1) The Contractor shall compile relevant information from statistical records, recent and current forecasts of conditions which may be encountered in support of the Particular Dive Safety Plan and shall establish criteria and controls for commencement, continuation or stopping of any Diving Operation due to such conditions.

(2) The Commencement Stage Dive Safety Plan shall describe how such criteria shall be applied and how such controls shall be implemented.

10.3.2 Information on Conditions for Particular Dive safety Plans

(1) Where necessary, the Contractor shall make exploratory dives to survey and establish all relevant conditions at the dive site such that all Particular Dive Safety Plans are based upon the best and most timely available information.

(2) Relevant information shall also be obtained by the Contractor from all available sources and shall include for example the following:

(a) Climatic information and forecasting at the diving location:

(i) Wind speed and direction;

(ii) Air temperature;

(iii) Surface visibility, fog, sea mist;

(iv) Likelihood and intensity of electrical storm; and

(v) Weather forecasting.

(b) Water/Marine Conditions

(i) Sea state; wave height and direction;

(ii) Height and time of tides;

(iii) Water depths;

(iv) Water Temperatures;

(v) Water currents, direction and speed;

(vi) Visibility at depths; and

(vii) Water level variation in rivers or lakes during flood periods.

(c) Physical Conditions

(i) Underwater cables and pipes;

(ii) Wreckage and other artificial obstacles;

(iii) Geotechnical conditions affecting the work; and

(iv) UXO, Dangerous Goods and Hazardous Substances.

(d) Natural Conditions

(i) Natural obstructions;

(ii) Coral reef or other marine life to be protected; and

(ii) Coral reef or other marine life to be protected; and

(iii) Danger from ~~marine~~ wildlife and precautions to be taken.

(e) Surface Traffic

(i) Surface traffic details, timings and restrictions, and

(ii) Danger, precautions and control of surface traffic.

(f) Diving Works Area

(i) Demarcation of diving location; and

(ii) Limits of working area.

(2) ~~The Particular Dive Safety Plan shall describe the safety measures for the Diving Operations including the following:~~

(a) ~~Safety procedures and checklists for each Diving Operation;~~

(b) ~~Assignments and responsibilities of each of the Dive Team members;~~

(c) ~~Lists, procedures and checklists of diving equipment, tools, PPE, materials, workboat, fuel and other consumables others necessary for each Diving Operation;~~

(d) ~~Emergency procedures including for equipment failure, fire, adverse climatic, marine, natural and physical conditions, adverse environmental conditions, medical illness and injury;~~

(e) ~~Work stop criteria for change of the weather and marine conditions the climatic, marine, natural and physical conditions;~~

(f) ~~Scope of work for each Diver and all support assistants in the Dive Team throughout the Diving Operation;~~

(g) ~~Information and instructions to be given to the Divers, support assistants and other workers related with the Diving Operations and the working methods and safety measures; and~~

(h) ~~Communication systems and procedures between the diver and the workboat.~~

~~JC7: ここでいうCommunication systemとはダイバーとボート間のことなら、そう記載すべき。~~

~~6. If the "communication system" is for that between the diver and the boat, it shall be described so.~~

~~NK: ダイバーと作業船とのシステムということを追加します。~~

~~Added phrase that the system between the diver and the workboat.~~

(i) ~~Emergency medical facilities including the provision of a decompression chamber at the Diving Works location together with medical support. Or (alternatively and by reference to JSSS Section 10.6 [*Diving Accident Control Plan*] the address, contact details of an existing decompression chamber that the Contractor intends to use together with a description of the facilities, age and condition and location.~~

(3) ~~The Contractor shall establish criteria for commencement, continuation or stopping of any Diving Operations due to the climatic, marine, natural and physical conditions. The Dive Safety Plan shall describe how such controls shall be implemented.~~

(4) ~~The Contractor shall make exploratory dives to survey and establish conditions at the diving location.~~

The above is not now necessary as relevant items (as edited where necessary to include your comments) are already covered by Clause 10.2.1, 10.3.2.

NK: Where is (i) Emergency medical facilities specified?

~~10.2.4 Dive Safety Procedure~~

(iii) Danger from wildlife and precautions to be taken.

(e) Surface Traffic

(i) Surface traffic details, timings and restrictions, and

(ii) Danger, precautions and control of surface traffic.

(f) Diving Works Area

(i) Demarcation of diving location; and

(ii) Limits of working area.

~~The Dive Safety Procedure shall describe the technical details for the individual Diving Operation including the following:~~

~~(1) Equipment for the Dive Works of air compressor system, breathing gas supply hoses, buoyancy control, compressed gas cylinders, gauges and timekeeping devices, masks and helmets, etc.~~

~~(2) Time schedule, the various works of the Divers, support assistants and workboats, traffic conditions of the workboats and other marine craft that may affect the Diving Operations.~~

~~(3) Composition of the Dive Team, command structure, assigned tasks, required licenses for the work.~~

~~(4) Communications, recovery and first aid measures in the event of an accident or emergency.~~

~~(5) Emergency medical facilities including the decompression chamber or the address, contact details of an existing decompression chamber.~~

~~(6) Contact system between the Contractor/diving workboats and the authorities which manage the area around the diving works site at normal and emergency times.~~

The above is not now necessary as relevant items (as edited where necessary to include your comments) are already covered by Clause 10.2.1

NK6/21: Is the Clause 10.2.1 correct?

To MD, the sentences from below to before 10.3 are replaced with the above 10.2. Please review the above 10.2.

The following is not now necessary as relevant items (as edited where necessary to include your comments) are already covered by Clause 10.2.1

NK6/21: Is the Clause 10.2.1 correct?

(7) ~~The Contractor shall prepare a Dive Safety Plan for the Diving Works, inform and if necessary further train and test all Dive Team members in the content of the Plan.~~

(8) ~~A copy of the Dive Safety Plan shall be made available at the dive location to each Dive Team member.~~

~~(3) The Dive Safety Plan shall contain a copy of the OSHA standard and the Contractor's policies for implementing the requirements of this standard.~~

JC1: 意図が不明であることもあり、不要に思います。
The intention of this provision is unknown. This item is not necessary.

NK: OSHA Subpart T, 1910.420 Safe practices manual stipulate "(b) Contents. (1) The safe practices manual shall contain a copy of this standard and the employer's policies for implementing the requirements of this standard."
Item (3) is deleted as commented.

The above clause (3) has been deleted in your comment and we do not recommend this as it is an OSHA stipulated requirement and an important aspect of for safety compliance purposes.

This is a requirement of OSHA as stated already but as diving regulations vary around the world many divers will not be familiar with US i.e. OSHA requirements, It is very important that they are given the opportunity to study this document and check that their employer is complying particularly with regard to OSHA Under 29 CFR 1910.410(b)(1).

Also "the Contractor's policies for implementing the requirements of this standard" are an important requirement of OSHA and really should be provided as it is evidence of what the Contractor intends to do. This is included in the Bid Stage Dive Safety plan in 10.2.1 above, as it can and should be evaluated at that

stage . It is usually a fairly standard document and easy for any Diving Contractor to prepare.

NK6/21: JSSS specify some safety measures shall be taken in accordance with OSHA however does not always specify to attach copy of OSHA in Safety Plan. Now this Chapter specifies that Dive Safety Plan shall include the copy of OSHA. It seems inconsistent. I understand provisions for diving is important. What is your opinion?

The following is not now necessary as relevant items (as edited where necessary to include your comments) are already covered by Clause 10.2.1

NK6/21: confirmed about (9).

(9) ~~For each required Diving Operation and diving mode, the Dive Safety Plan shall include:~~

~~JC1: work stop criteria を入れておいた方が良いと思います。10.5.2(3)に突然出てきているので~~

~~7. It is better to mention the work stop criteria here as it appears suddenly at 10.5.2 (3).~~

~~NK: Though it is stipulated to establish the criteria for stopping the work in 10.2.2., Item (e) is added.~~

(i) ~~Safety procedures and checklists for each Diving Operation;~~

(j) ~~Assignments and responsibilities of each of the Dive Team members;~~

(k) ~~Equipment l Lists, procedures and checklists of diving equipment, tools, materials, workboat, fuel and other consumables;~~

~~JC1: (e)及び(f)と重複感があります。違いがあるということであれば、分かるように明記してください。~~

(3) ~~The item (c) seems duplicated with (e) and (f). If there is difference and reasons to state, describe it so that the difference can be understood clearly.~~

~~NK: OSHA Subpart T, 1910.420 Safe practices manual.の(a)から(d)を（3）に規定し、(e)以降を追記していました。(e) & (f)を(c)に含めます。~~

~~OSHA Subpart T, 1910.420 Safe practices manual.(a) to (d) is specified in (3) and other requirements are added to (3) as (e) to (i). Combined (e) and (f) in (c).~~

(l) ~~Emergency procedures including for equipment failure, fire, adverse climatic, marine, natural and physical conditions, adverse environmental conditions, medical illness and injury;~~

(m) ~~Work stop criteria for change of the weather and marine conditions;~~

~~(e) Details of the workboat and all diving equipment, fuel and other consumables;~~

~~(f) Equipment, tools, materials and consumables for the assigned work tasks;~~

(n) ~~Scope of work for each Diver and all support assistants in the Dive Team throughout the Diving Operation;~~

(o) ~~Information and instructions to be given to the Divers, support assistants and other workers related with the Diving Operations and the working methods and safety measures; and~~

(p) ~~Communication systems and procedures.~~

(10) ~~The Dive Safety Plan shall analyse the tasks of the assigned Diving Operation, assess all risks involved and describe all measures to avoid mitigate such risks.~~

(11)

~~JC1: changed.~~

(12) ~~The Dive Safety Plan shall be prepared by a Diver that has the~~

qualification, experience and capability deemed sufficient by the HSO and it shall incorporate the advice of and be approved by the DPIC.

JC1: これでは実際に潜る人が計画を作ることになる(Diver の定義を参照)。OSHA を見ると基本は DPIC が作ることになっていないか？
8. This sentence can be read that the diver himself will make the Dive Safety Plan. (Refer to the definition of Diver,) DPIC shall make the Plan basically if comply with the provisions of OSHA?

JC1: DPIC が自分でアドバイスして、自分で承認するという言い方はおかしい。
It seems strange that DPIC gives advice to and approves the Dive Safety Plan.

NK: OSHA では、Safety Plan (Safety practice manual)を、雇用者（請負者）が作成するとのみ規定し、誰が作成するべきとは規定していません。
提案の(6)は、実際現場で潜るかに関係せず潜水士である者が、DPIC の助言を得て作成し、DPIC の承認を得ることを規定しています。
潜水作業という特殊な作業であることから、潜水士の作成、DPIC の review and approval 承認という手続きで、漏れや間違いのない品質の Safety Plan が確保できると考えます。
単なる潜水士ではなく、HSO が能力を認めた潜水士に作成することが規定されております。
一方、DPIC が作成しますと、review and approval の任務に HSO は専門家でないため不適であり、別途潜水専門家を任命する必要があります。
そのため、DPIC の助言は削除した原案を推奨致します。
The OSHA stipulates only that the employer shall develop a safe practices manual (Safety Plan) but not mention who prepare it.
The proposed (6) stipulates a diver shall prepare it. The diver is not restricted to a diver who actually engages in the diving work. The diver prepares it getting advice and DPIC approve it.
Because the diving work is special work, by the preparation by the diver and review and approval by the DPIC, quality of SP which does not have missing/errors can be secured. The diver is not normal diver but one HSO admits his ability.
On the other hand, if DPIC prepare the SP, it is necessary to assign other professional person who is qualified for diving works because HSO cannot review and approve as normally he is not qualified for diving works.
With reasons, NK propose to leave this (6) with deletion of "incorporate the advice of and".

(13) The Dive Safety Plan shall be reviewed and approved by the HSO.

JC1: HSO による review & approval の後に Engineer に提出することにした方がよくないか？
Isn't it better that after review and approval of the Dive Safety Plan, then submit it to the Engineer?

NK: DPIC が review and approval を(6)で規定していますが、最終的に HSO が承認することとし、下記の第 1 章 1.7.7 に規定の通り、作業開始前にエンジニアへ提出することが良いと考えます。第 1 章に規定されておりここでの提出の規定は不要と考えます。(6)には Further を追記します。
1.7.7 Commencement Stage Safety Plan
(1) This shall be submitted within twenty-eight (28) days after the Commencement Date and not less than twenty-eight (28) days before commencing any work at the Site,
(6) stipulate DPIC shall review and approval the Safety Plan (SP), and HSO shall finally approve the SP. As JSSS 1.7.7. above has specified its submission, no need to specify it in (6).

10.2.1 Climatic, Marine, Natural and Physical Conditions
The Contractor shall compile relevant information from statistical records, recent records and forecasts of conditions for the Dive Safety

Plan.

The Contractor shall establish criteria to permit for commencement, continuation or stopping of any Diving Operations due to the climatic, marine, natural and physical conditions. The Dive Safety Plan shall describe how such controls shall be implemented.

JC1: permit to stop という言い方があるのでしょうか。
We wonder if there is expression of "permit to stop"?

NK: 作業開始、継続、中止は DPIC が基準(criteria)に基づき現場で指示することから、請負者は基準を設定することへ変更します。
The commencement, continuation or stopping is directed in accordance with the criteria at the site, therefore this clause specifies only to establish the criteria as modified.

The Contractor shall make exploratory dives to survey and establish conditions at the diving location.

Relevant information shall be obtained by the Contractor from all available sources and shall include for example the following:

(7) Climatic information and forecasting at the diving location:
  (a) Wind speed and direction;
  (b) Air temperature;
  (c) Surface visibility, fog, sea mist;
  (d) Likelihood and intensity of electrical storm; and
  (e) Weather forecasting.

(8) Water/Marine Conditions
  (a) Sea state; wave height and direction;
  (b) Height and time of tides;
  (c) Water depths;
  (d) Water Temperatures;
  (e) Water currents, direction and speed;
  (f) Visibility at depths; and
  (g) Water level variation in rivers or lakes during flood periods.

(9) Physical Conditions
  (a) Underwater cables and pipes;
  (b) Other artificial obstacles;
  (c) Geotechnical conditions affecting the work; and
  (d) UXO, Dangerous Goods and Hazardous Substances.

(10) Natural Conditions
  (a) Natural obstructions;
  (b) Coral reef or other marine life to be protected; and
  (c) Danger from marine wildlife and precautions.

(11) Surface Traffic
  (a) Surface traffic details, timings and restrictions, and
  (b) Danger, precautions and control of surface traffic.

(12) Diving Works Area
  (a) Demarcation of diving location; and
  (b) Limits of working area.

10.2.2 Further Technical Detail in Dive Safety Plan

In addition to the above, the Contractor shall provide further technical detail in the Dive Safety Plan including:

(1) Equipment for the Dive Works of air compressor system, breathing gas supply hoses, buoyancy control, compressed gas cylinders, gauges and timekeeping devices, masks and helmets, etc.

(2) Time schedule, the various works of the Divers, support assistants and workboats, traffic conditions of the workboats and other marine craft that may affect the Diving Operations.

(3) Composition of the Dive Team, command structure, assigned tasks, required licenses for the work.

	(4) ~~Communications, recovery and first aid measures in the event of an accident or emergency.~~ (5) ~~Emergency medical facilities including the provision of a decompression chamber at the Diving Works location together with medical support.~~ (6) ~~Or (alternatively and by reference to ISSS Section 10.6 [*Diving Accident Control Plan*]~~ the address, contact details of an existing decompression chamber that the Contractor intends to use together with a description of the facilities, age and condition and location. (7) ~~Contact system between the Contractor/diving workboats and the authorities which manage the area around the diving works site at normal and emergency times.~~	

10.4 PERSONNEL FOR DIVING OPERATIONS

10.4.1 Qualification of Diving Personnel

Qualification of the Dive Team members shall be in accordance with the specified OSHA requirements and shall for example include the following:

(1) Each Diver shall possess a valid commercial diving certification for the appropriate training level issued by an internationally recognised Diver competence assessment organisation and as approved by the HSO and the Engineer.

JC: JICA added “the”.

NK: MD will review necessity of this “the”.

(2) Each Dive Team member shall have the experience and training necessary to perform assigned tasks in a safe and healthful manner.

(3) Each Dive Team member shall have experience and training in the following:

(a) The use of tools, equipment and systems relevant to assigned tasks;

(b) Techniques of the assigned diving mode; and

(c) Diving operations and emergency procedures.

(4) All Dive Team members shall be trained in cardiopulmonary resuscitation and first aid to a minimum standard of that recommended by the International Federation of Red Cross and Red Crescent Societies standard course or equivalent.

(5) Dive Team members who are exposed to or control the exposure of others to hyperbaric conditions shall be trained in diving-related physics and physiology.

(6) The qualifications of all Divers shall be checked and verified in accordance with the specified OSHA requirements.

10.4.2 Designated Person-in-Charge (for Diving Works) (DPIC).

JC11: 10.1.2.(e)のコメントのように(for diving works)を加える。
As commented to 10.1.2.(e), (for diving works) is added.

NK: Added.

(1) The Contractor shall assign a DPIC to each diving operation.

(2) The DPIC shall have experience in, and knowledge of all phases of the diving operation for which he is responsible.

(3) The DPIC shall be immediately responsible for the health and safety of the Dive Team.

(4) The DPIC shall be stationed at the dive location, and shall not be stationed at another dive location (i.e., the DPIC must be stationed at one dive location and be responsible only for the diving operation at that location).

(5) The DPIC can be a Diver when qualified as a diver, and when another dive-team member is available at the dive location who is trained and capable of performing the necessary functions of the DPIC’s duties.

10.4 PERSONNEL FOR DIVING OPERATIONS

10.4.1 Qualification of Diving Personnel

Qualification of the Dive Team members shall be in accordance with the specified OSHA requirements and shall for example include the following:

(1) Each Diver shall possess a valid commercial diving certification for the appropriate training level issued by an internationally recognised Diver competence assessment organisation which shall be approved by the HSO and Engineer.

JC: JICA added “the”.

NK: MD will review necessity of this “the”.¥

No need “the”.

(2) Each Dive Team member shall have the experience and training necessary to perform assigned tasks in a safe and healthful manner.

(3) Each Dive Team member shall have experience and training in the following:

(a) The use of tools, equipment and systems relevant to assigned tasks;

(b) Techniques of the assigned diving mode; and

(c) Diving Operations and emergency procedures.

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(5) Dive Team members who are exposed to or control the exposure of others to hyperbaric conditions shall be trained in diving-related physics and physiology.

(6) The qualifications of all Divers shall be checked and verified in accordance with the specified OSHA requirements.

10.4.2 Designated Person-in-Charge (~~for Diving Works~~) (DPIC).

JC11: 10.1.2.(e)のコメントのように(for diving works)を加える。
As commented to 10.1.2.(e), (for diving works) is added.

MK: Added.

Not necessary: please refer to 10.1.2 Definitions

(1) The Contractor shall assign a DPIC to each Diving Operation.

(2) The DPIC shall have experience in, and knowledge of all phases of the Diving Operation for which he is responsible.

(3) The DPIC shall be immediately responsible for the health and safety of the Dive Team.

(4) The DPIC shall be stationed at the dive location, and shall not be stationed at another dive location (i.e., the DPIC must be stationed at one dive location and be responsible only for the Diving Operation at that location).

(5) The DPIC can be a Diver when qualified as a Diver, and when another Dive Team member is available at the dive location who is trained and capable of performing the necessary functions of the DPIC’s duties when the DPIC is a Diver in the water.

10.4 PERSONNEL FOR DIVING OPERATIONS

10.4.1 Qualification of Diving Personnel

Qualification of the Dive Team members shall be in accordance with the specified OSHA requirements and shall for example include the following:

(1) Each Diver shall possess a valid commercial diving certification for the appropriate training level issued by an internationally recognised Diver competence assessment organisation which shall be approved by the HSO and Engineer.

(2) Each Dive Team member shall have the experience and training necessary to perform assigned tasks in a safe and healthful manner.

(3) Each Dive Team member shall have experience and training in the following:

(a) The use of tools, equipment and systems relevant to assigned tasks;

(b) Techniques of the assigned diving mode; and

(c) Diving Operations and emergency procedures.

(4) All Dive Team members shall be trained in cardiopulmonary resuscitation and first aid to a minimum standard of that recommended by the International Federation of Red Cross and Red Crescent Societies standard course or equivalent.

(5) Dive Team members who are exposed to or control the exposure of others to hyperbaric conditions shall be trained in diving-related physics and physiology.

(6) The qualifications of all Divers shall be checked and verified in accordance with the specified OSHA requirements.

10.4.2 Designated Person-in-Charge (DPIC)

(1) The Contractor shall assign a DPIC to each Diving Operation.

(2) The DPIC shall have experience in, and knowledge of all phases of the Diving Operation for which he is responsible.

(3) The DPIC shall be immediately responsible for the health and safety of the Dive Team.

(4) The DPIC shall be stationed at the dive location, and shall not be stationed at another dive location (i.e., the DPIC must be stationed at one dive location and be responsible only for the Diving Operation at that location).

(5) The DPIC can be a Diver when qualified as a Diver, and when another Dive Team member is available at the dive location who is trained and capable of performing the necessary functions of the DPIC’s duties when the DPIC is a Diver in the water.

(6) The qualifications of the DPIC shall be checked and verified in accordance with the specified OSHA requirements.

(7) ~~No Diver shall dive in any diving operation unless the DPIC and the complete Dive Team present.~~

JC1: 10.3.4 に入れるべき事項
This item should be in 10.3.4.

NK: Moved to 10.3.4.(4).

10.4.3 Duties of DPIC

JC12: Operation Leader と変更する場合には、in addition to the provisions described in the Chapter 1 hereof とする？
If "DPIC" is replaced with "Operation leader", is it necessary to subscribe "in addition to the provisions described in the Chapter 1 hereof"?

NK: DPIC は潜水という特殊な工事の場合であり、OSHA で使用されている用語であることから、Operation Leader に含める必要はないと思います。このままとします。
DPIC is used in JSSS only for diving works which are special works, and it is a term being used in OSHA. It is deemed that it is not necessarily included in Operation Leaders. Therefore, DPIC is left as it is.

The DPIC shall have the duties and responsibilities required by the content of this Chapter and the specified OSHA requirements, including the following:

(1) Manage the health and safety of the Dive Team;

(2) Manage and supervise the diving operation;

(3) Assignment of tasks to Diving Team members;

NK: 下記 10.3.4 (1)の対応参照。See the comment for 10.3.4 (1).

(4) Issue instructions for the diving operation to the Dive Team;

(5) Issue instructions to temporarily stop work when the DPIC considers that it is not safe to continue;

(6) Support the HSO with the health and safety management of the diving operations;

(7) Ensure that all members of the Dive Team keep records; and

(8) Collect or summarise records and submit to HSO.

10.4.4 Diver Assignments.

(1) Each Dive Team member shall be assigned tasks commensurate to the persons experience and training, except that limited additional tasks may be assigned to a Diver undergoing training provided that these tasks are performed under the direct supervision of an experienced Dive Team member.

JC13: 誰が Assign するのか。DPIC なら 10.3.3 に追記必要では？
Who will assign tasks to the Dive team members? If DPIC is the one, it should be added in 10.3.3?

NK: 役割の割り当ては DPIC の責務ですので、10.3.3 (3)にその旨を追加します。
Assignment of tasks to Diving Team members is one of important responsibilities of DPIC. Added as 10.3.3 (3).

(6) The qualifications of the DPIC shall be checked and verified in accordance with the specified OSHA requirements.

(7) ~~No Diver shall dive in any Diving Operation unless the DPIC and the complete Dive Team present.~~

JC1: 10.3.4 に入れるべき事項
This item should be in 10.3.4.

NK: Moved to 10.3.4.(4).

The move is correct, no problem

10.4.3 Duties of DPIC

JC12: Operation Leader と変更する場合には、in addition to the provisions described in the Chapter 1 hereof とする？
If "DPIC" is replaced with "Operation leader", is it necessary to subscribe "in addition to the provisions described in the Chapter 1 hereof"?

NK: DPIC は潜水という特殊な工事の場合であり、OSHA で使用されている用語であることから、Operation Leader に含める必要はないと思います。このままとします。
DPIC is used in JSSS only for diving works which are special works, and it is a term being used in OSHA. It is deemed that it is not necessarily included in Operation Leaders. Therefore, DPIC is left as it is.

The DPIC shall have the duties and responsibilities required by the content of this Chapter and the specified OSHA requirements, including the following:

(1) Manage the health and safety of the Dive Team;

(2) Manage and supervise the Diving Operation;

(3) Assign tasks to Dive Team members;

(4) Issue instructions for the Diving Operation to the Dive Team;

(5) Issue instructions to temporarily stop work when the DPIC considers that it is not safe to continue;

(6) Support the HSO with the health and safety management of the Diving Operations;

(7) Ensure that all members of the Dive Team keep records; and

(8) Collect records, check, approve and submit to HSO.

Modified so consistent with 10.6.2 (5).

10.4.4 Diver Assignments.

(1) Each Dive Team member shall be assigned tasks commensurate to the persons experience and training, except that limited additional tasks may be assigned to a Diver undergoing training provided that these tasks are performed under the direct supervision of an experienced Dive Team member.

JC13: 誰が Assign するのか。DPIC なら 10.3.3 に追記必要では？
Who will assign tasks to the Dive team members? If DPIC is the one, it should be added in 10.3.3?

NK: 役割の割り当ては DPIC の責務ですので、10.3.3 (3)にその旨を追加します。
Assignment of tasks to Diving Team members is one of important responsibilities of DPIC. Added as 10.3.3 (3).

Added above already

(6) The qualifications of the DPIC shall be checked and verified in accordance with the specified OSHA requirements.

10.4.3 Duties of DPIC

The DPIC shall have the duties and responsibilities required by the content of this Chapter and the specified OSHA requirements, including the following:

(1) Manage the health and safety of the Dive Team;

(2) Manage and supervise the Diving Operation;

(3) Assign tasks to Dive Team members;

(4) Issue instructions for the Diving Operation to the Dive Team;

(5) Issue instructions to temporarily stop work when the DPIC considers that it is not safe to continue;

(6) Support the HSO with the health and safety management of the Diving Operations;

(7) Ensure that all members of the Dive Team keep records; and

(8) Collect records, check, approve and submit to HSO.

10.4.4 Diver Assignments

(1) Each Dive Team member shall be assigned tasks commensurate to the persons experience and training, except that limited additional tasks may be assigned to a Diver undergoing training provided that these tasks are performed under the direct supervision of an experienced Dive Team member.

(2) The Contractor shall not require a Dive Team member to be exposed to hyperbaric conditions against the member's will, except when necessary to complete decompression or treatment procedures.

(3) ~~The Contractor shall not permit a Dive Team member to dive or be otherwise exposed to hyperbaric conditions for the duration of any temporary physical impairment or condition which is known to the Contractor and is likely to affect adversely the safety or health of a Dive Team member. exposed to hyperbaric conditions or any other condition which is likely to affect adversely the safety or health of a Dive Team member that may cause any physical impairment.~~ The Contractor shall not permit a Dive Team member to dive or be exposed to hyperbaric conditions for an excessive duration or any other condition which ~~is likely to affect adversely the safety or health of a Dive Team member that~~ may cause any physical impairment.

JC1: 趣旨が分からないので、non-native に分かるような記述に修正してください。
The meaning of this item is hard to understand. Please, modify the sentence so that non-native can easily understand.

NK: Modified. MD will review this.

JC14: Revised by JC.

NK: MD will review this revision.

(4) No Diver shall dive in any diving operation unless the DPIC and the complete Dive Team present.

NK1: moved from 10.3.2 (7) to (4).

10.4.5 Assistants and Duties of Dive Team

The Contractor shall appoint such Divers and support assistants within each Dive Team as are considered necessary by the DPIC for the Dive Team to discharge its duties in a safe and competent manner.

All Dive Team support assistants shall have the duties and responsibilities required by the content of this Chapter and the specified OSHA requirements, including the following:

(1) Operate the air compressors.

(2) Control the valve for the surface supply of breathing air.

(2) The Contractor shall not require a Dive Team member to be exposed to hyperbaric conditions against the member's will, except when necessary to complete decompression or treatment procedures.

(3) ~~The Contractor shall not permit a Dive Team member to dive or be otherwise exposed to hyperbaric conditions for the duration of any temporary physical impairment or condition which is known to the Contractor and is likely to affect adversely the safety or health of a Dive Team member. exposed to hyperbaric conditions or any other condition which is likely to affect adversely the safety or health of a Dive Team member that may cause any physical impairment.~~ The Contractor shall not permit a Dive Team member to dive or be exposed to hyperbaric conditions for an excessive duration or any other condition which ~~is likely to affect adversely the safety or health of a Dive Team member that~~ may cause any physical impairment.

JC1: 趣旨が分からないので、non-native に分かるような記述に修正してください。
The meaning of this item is hard to understand. Please, modify the sentence so that non-native can easily understand.

NK: Modified. MD will review this.

JC14: Revised by JC.

NK: MD will review this revision.

I am sorry but this is not my English, it is actually a direct copy from OSHA of their precise requirements which I had included (together with explanatory notes) in my original draft document.

Please refer to OSHA: Appendix I: Checklist for Commercial Diving Operations, 1910.410 QUALIFICATIONS OF DIVE TEAM. (b) Assignments

As these checklists are an important requirement and an integral form in OSHA, I do suggest that they are not changed.

On the assumption that this is acceptable I have deleted the amended clause and re-inserted the original.

NK6/21: Agreed the above "not changed.to".

(4) The Contractor shall not permit a Dive Team member to dive or be otherwise exposed to hyperbaric conditions for the duration of any temporary physical impairment or condition which is known to the employer and is likely to affect adversely the safety or health of a Dive Team member.

(5) No Diver shall dive in any Diving Operation unless the DPIC and the complete Dive Team are present.

NK1: moved from 10.3.2 (7) to (4).

Correct.

10.4.5 Assistants and Duties of Dive Team

The Contractor shall appoint such Divers and support assistants within each Dive Team as are considered necessary by the DPIC for the Dive Team to discharge its duties in a safe and competent manner.

All Dive Team support assistants shall have the duties and responsibilities required by the content of this Chapter and the specified OSHA requirements, including the following:

(1) Operate the air compressors.

(2) Control the valve for the surface supply of breathing air.

(2) The Contractor shall not require a Dive Team member to be exposed to hyperbaric conditions against the member's will, except when necessary to complete decompression or treatment procedures.

(3) The Contractor shall not permit a Dive Team member to dive or be otherwise exposed to hyperbaric conditions for the duration of any temporary physical impairment or condition which is known to the ~~employer~~ Contractor and is likely to affect adversely the safety or health of a Dive Team member.

(4) No Diver shall dive in any Diving Operation unless the DPIC and the complete Dive Team are present.

10.4.5 Assistants and Duties of Dive Team

The Contractor shall appoint such Divers and support assistants within each Dive Team as are considered necessary by the DPIC for the Dive Team to discharge its duties in a safe and competent manner.

All Dive Team support assistants shall have the duties and responsibilities required by the content of this Chapter and the specified OSHA requirements, including the following:

(1) Operate the air compressors.

(2) Control the valve for the surface supply of breathing air.

(3) Communicate with the Diver so that the Diver descends and

(3) Communicate with the Diver so that the Diver descends and ascends properly.

(4) Communicate to supply the air to the Diver properly between the assistants in charge to control the valve and to communicate with the Diver;

(5) Inform the Diver immediately when there is any ~~risk~~ trouble due to a failure of air supply, weather change, sea condition changes, operations of other vessels and potential hazards.

JC15: Revised by JC.

(6) Inspect the connection between the helmet and the breastplate of the Diver before the start of diving operations when using a diving helmet.

(7) Coordinate the position of the workboat and avoid any conflict with the diver.

(8) Ensure the safety of the Diver ~~by receiving the signals from the Diver when the Diver is using the lifeline.~~ by maintaining communication with voice or video communication device.

JC1: 音声が普通で、line signalling は一般的ではないようなので、改めて内容を確認願います。
OSHA に line signalling はなく、10.5.2(2)(d)を参照。
Communication is usually made verbally and line signalling is not used in common. Please, confirm if this item is appropriate. Refer to 10.5.2.(2)(d).

NK: OSHA では、line signalling はスキューバダイビング以外では認められていない。よって本仕様書では、以降の節においても信号索は除外して規定する。
As stipulated in OSHA as below, line-pull signal shall not be used except for scuba diving.
29 CFR 1910.422(c) Communications.
An operational two-way voice communication system is required for communications between each surface-supplied air diver or mixed-gas diver and a member of the dive team at the dive location or in the diving bell (if a diving bell is provided or required). Line-pull signals do not meet this requirement, except for the SCUBA-diving mode. A two-way voice communication system is required for communications between the diving bell and the dive location.
Modified and deleted line pull signals in other clauses.

(9) Ensure the safety of the Diver by observing the air bubble of breathing of the diver.

10.4.6 Health Checks

(1) In addition to the requirements of JSSS 1.8.1 [*Proper Placement of Contractor's Personnel*] and in compliance with the OSHA requirement for the Contractor to make himself fully aware, the Contractor shall carry out particular health checks on all Divers to ascertain that they are medically and physically fit to perform their duties.

(3) Communicate with the Diver so that the Diver descends and ascends properly.

(4) Communicate to supply the air to the Diver properly between the assistants in charge to control the valve and to communicate with the Diver;

(5) Inform the Diver immediately when there is any risk ~~trouble~~ due to a failure of air supply, weather change, sea condition changes, operations of other vessels and potential hazards.

JC15: Revised by JC.
I do not recommend this change.
The use of "risk" anticipates and is ahead of any "trouble".
The use of "trouble" means that it has already happened and information then is too late.
On the assumption that this is acceptable I have deleted the amendment.
NK6/21: agreed.

(6) Inspect the connection between the helmet and the breastplate of the Diver before the start of Diving Operations when using a diving helmet.

(7) Coordinate the position of the workboat and avoid any conflict with the Diver.

(8) Ensure the safety of the Diver ~~by receiving the signals from the Diver when the Diver is using the lifeline.~~ by maintaining communication with voice or video communication device.

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Modified and deleted line pull signals in other clauses.
Your change is correct.

(9) Ensure the safety of the Diver by observing the air bubble of breathing of the Diver.

10.4.6 Health Checks

(1) In addition to the requirements of JSSS 1.18 [*Proper Placement of Contractor's Personnel*] and in compliance with the OSHA requirement for the Contractor to make himself fully aware, the Contractor shall carry out particular health checks on all Divers to ascertain that they are medically and physically fit to perform their duties.

ascends properly.

(4) Communicate to supply the air to the Diver properly between the assistants in charge to control the valve and to communicate with the Diver;

(5) Inform the Diver immediately when there is any risk due to a failure of air supply, weather change, sea condition changes, operations of other vessels and potential hazards.

(6) Inspect the connection between the helmet and the breastplate of the Diver before the start of Diving Operations when using a diving helmet.

(7) Coordinate the position of the workboat and avoid any conflict with the Diver.

(8) Ensure the safety of the Diver by maintaining communication with voice or video communication device.

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10.4.6 Health Checks

(1) In addition to the requirements of JSSS 1.18 [*Proper Placement of Contractor's Personnel*] and in compliance with the OSHA requirement for the Contractor to make himself fully aware, the Contractor shall carry out particular health checks on all Divers to ascertain that they are medically and physically fit to perform their duties.

(2) Such checks shall include for example checks for the existence of any illness or any deficiency in:

(a) The respiratory system, cardiovascular system, nervous system, musculoskeletal system, ear, nose and throat, and endocrine system;

(b) Vision;

(c) Dental health

(d) Any other health conditions and disease which may affect the diving operation.

(3) Any Diver that does not pass the above checks shall not be allowed to dive until the condition has improved and after further checks are successful.

(4) Additionally, and in accordance with the OSHA standard:

(a) The DPIC ~~must~~ shall inquire into each Diver's health prior to ~~any task assignment~~ each diving operation.

J1C: この"must"は"shall"ではないか？
Isn't this "shall" instead of "must"?

NK: modified to make terms consistent as commented.

JC16: Revised by JC.

(b) The Contractor shall advise all Divers of the procedures for reporting physical problems or adverse physiological effects during and after diving.

(5) Consistent with the above and the OSHA provisions, the Contractor shall not require any Diver to dive or otherwise work under hyperbaric conditions when the Diver:

(a) Has any ailment that is likely to adversely affect the safety or health of any member of the Dive Team;

JC1: "ailment"は、通例軽い又は慢性の病気、不快の意であるが、ここにその意味で適切か？
Is "ailment" proper in this clause? (Ailment means slight or chronic disease/symptoms.)

NK: 「体調にわずかでも不調等があれば潜水作業させてはならない」の意味で、"sickness", "disease", "illness"等より"ailment"が適切と考える。そのままとする。
This means that the Contractor shall not require any Diver to dive when the Diver has any even slight physical problem. In this sense, "ailment" is more suitable than "sickness", "disease" or "illness". Left as it is.

(b) Lacks the necessary training or education; or

(c) Refuses to work under such hyperbaric conditions.

(6) Should a Diver request termination during a dive, it may be necessary to prolong the diver's exposure to hyperbaric conditions to complete decompression or medical recompression treatment to avoid serious physical harm or death to the Diver.

(2) Such checks shall include for example checks for the existence of any illness or any deficiency in:

(a) The respiratory system, cardiovascular system, nervous system, musculoskeletal system, ear, nose and throat, and endocrine system;

(b) Vision;

(c) Dental health; and

(d) Any other health conditions and disease which may affect the Diving Operation.

(3) Any Diver that does not pass the above checks shall not be allowed to dive until the condition has improved and after further checks are successful.

(4) Additionally, and in accordance with the OSHA standard:

(a) The DPIC ~~must~~ shall inquire into each Diver's health prior to ~~any task assignment~~ each Diving Operation; and

J1C: この"must"は"shall"ではないか？
Isn't this "shall" instead of "must"?

NK: modified to make terms consistent as commented.

JC16: Revised by JC.

For clarity, I have referred to and used the text of OSHA Directive No. CPL 02-00-151 for 29 CFR Part 1910, Subpart T – Commercial Diving Operations. OSHA use "must" and also refer to "task assignment". Please refer to page 17 item 3.

NK6/21: understood.

(b) The Contractor shall advise all Divers of the procedures for reporting physical problems or adverse physiological effects during and after diving.

(5) Consistent with the above and the OSHA provisions, the Contractor shall not require any Diver to dive or otherwise work under hyperbaric conditions when the Diver:

(a) Has any ailment that is likely to adversely affect the safety or health of any member of the Dive Team;

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Is "ailment" proper in this clause? (Ailment means slight or chronic disease/symptoms.)

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This means that the Contractor shall not require any Diver to dive when the Diver has any even slight physical problem. In this sense, "ailment" is more suitable than "sickness", "disease" or "illness". Left as it is.

"Ailment" is correct

(b) Lacks the necessary training or education; or

(c) Refuses to work under such hyperbaric conditions.

(6) Should a Diver request termination during a dive, it may be necessary to prolong the Diver's exposure to hyperbaric conditions to complete decompression or medical recompression treatment to avoid serious physical harm or death to the Diver.

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(3) Any Diver that does not pass the above checks shall not be allowed to dive until the condition has improved and after further checks are successful.

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(a) The DPIC shall inquire into each Diver's health prior to each Diving Operation; and

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10.5 DIVING EQUIPMENT, TOOLS, FACILITIES AND WORKBOATS,

10.5.1 Diving Equipment

(1) The Contractor shall provide workboats, diving equipment, work tools and other facilities fully in compliance with OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations, §1910.430 Equipment.

(2) Workboats, diving equipment, work tools and other facilities are defined as Contractor's Equipment and shall therefore comply with JSSS 1.33 [*Contractor's Equipment, Temporary Works, Safety Equipment and Personal Protective Equipment*].

10.5.2 Diving Workboats

JC17: Contractor's Equipment の一部であるが、Chapter 4 の記載は作業船をイメージしていないので Chapter 4 に追記が必要(たとえば作業船の名前を追記するなど)。
Workboat is one of the Contractor's Equipment, however, it is not specifically itemised in Chapter 4. It is necessary to describe workboat in Chapter 4.

NK: コメントに従い、第 4 章 4.1.1 (5)に Workboat for diving works を追加します。
As commented, "Workboat for diving works" will be added to 4.11(5).

(1) Workboats shall be:

(a) Robust and seaworthy;

(b) Stable in operation;

(c) Suitable size, draft and shape to suit the diving operations;

(d) Equipped with marine band radio and with a shore station that is attended at all time that the Workboat is in operation

10.5 DIVING EQUIPMENT, TOOLS, FACILITIES AND WORKBOATS

Please note that your draft refers to OSHA which in turn refer to the US Navy Dive tables and there is no reference at all to personal dive computers which have actually completely changed and improved dive safety and productivity since their inception more than 30 years ago.

Dive tables are setup under the absolute safe assumption that the diver stayed at the maximum depth for the entire dive. The nitrogen absorption is calculated based on these parameters. Dive computers however record the actual time and depth of a scuba diver at all times and then calculate the nitrogen absorption based on these actual values. This higher level of accuracy results in longer dive times and shorter surface intervals which has major benefits in commercial diving.

A dive at 120 feet, based on US dive tables gives a maximum bottom time of for around 15 minutes on the assumption is that the whole dive is at 120 feet. A dive computer taking actual values into consideration and may give a bottom time of around 30 minutes.

10.5.1 Diving Equipment

(1) The Contractor shall provide workboats, diving equipment, work tools and other facilities fully in compliance with OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations, §1910.430 Equipment.

(2) Workboats, diving equipment, work tools and other facilities are defined as Contractor's Equipment and shall therefore comply with JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*].

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NK: コメントに従い、第 4 章 4.1.1 (5)に Workboat for diving works を追加します。
As commented, "Workboat for diving works" will be added to 4.11(5).

There is no 4.11.5 in my copy but I think I have not yet seen the Issue 2 draft for this chapter yet?

I think that as diving workboats only apply to this chapter, there may be no need to separately mention them in Chapter 3, all relevant requirements should be here or in OSHA.

NK: already included in 4.1.1 (5) (l).

(1) Workboats shall be:

(a) Robust and seaworthy;

(b) Stable in operation;

(c) Suitable size, draft and shape to suit the Diving Operations;

(d) Equipped with marine band radio and with a shore station that is attended at all time that the Workboat is in operation

10.5 DIVING EQUIPMENT, TOOLS, FACILITIES AND WORKBOATS

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(1) Workboats shall be:

(a) Robust and seaworthy;

(b) Stable in operation;

(c) Suitable size, draft and shape to suit the Diving Operations;

(d) Equipped with marine band radio and with a shore station that is attended at all time that the Workboat is in operation

and can provide emergency support if required;

(e) Equipped with marine lighting;

(f) Equipped with life jackets, first aid sets, distress flares and other necessary emergency equipment;

(g) Provided with secure and robust ladders or platforms for Divers to easily enter or exit the water; and

(h) Provided with a roof and cabin to protect the crew and Dive Team from heat, cold and rain.

(2) Workboats shall be provided with the means to assist an injured Diver from the water (such as an in-water platform, small boat or basket stretcher) or into a diving bell. The Contractor shall ensure that there are sufficient Dive Team members or additional Contractor's Personnel to assist.

(3) Unless otherwise specified the Contractor shall provide a separate small boat for rescue at the workboat, suitable for assisting and recovering Divers who are in difficulty or have drifted away from position.

10.5.3 Inspections and Maintenance

The Contractor shall comply with all requirements of JSSS 4.2 [*Inspection, Maintenance and Repair*] and ensure that workboats, equipment, tools and facilities are inspected, fully maintained and operational when mobilised to the Site and thereafter are inspected, maintained and repaired before the commencement of the first and of all subsequent days of operation.

The Contractor shall keep the inspection and working records and make them available for the inspection of the Engineer upon request.

The Contractor shall prohibit use of workboats, equipment, tools and facilities until the requirements of JSSS 4.2 [*Inspection, Maintenance and Repair*] are fully complied with.

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The Contractor shall keep the inspection and working records and make them available for the inspection of the Engineer upon request.

The Contractor shall prohibit use of workboats, equipment, tools and facilities until the requirements of JSSS 4.2 [*Inspection, Maintenance and Repair*] are fully complied with.

10.6 PARTICULAR SAFETY MEASURES

10.6.1 Measures before Diving operations

The Contractor shall take the following measures before commencement of any diving operation:

(1) Dive Teams

(a) Discuss the diving methods and safety procedures,

(b) Discuss the work methods and procedures and the assignment and placing of the Divers and work task sharing;

(c) Advise of the diving timetable and required compliance;

(d) Inform of the climatic, marine, natural and physical conditions; and

(e) Conduct the health check.

(f) Check that support assistant and crew on the workboat are wearing life jackets.

JC1: Moved from 10.5.1.(5)(d)

(2) Equipment, work tools and other facilities

Inspect the equipment, work tools and other facilities, prohibit use when any defect or non-compliance is found, reinspect when a repair or replacement is completed.

(3) Diving workboats

(a) Inspect workboats and rescue boats;

(b) Display the international maritime diving signal flag and display signs and lights as necessary on the workboat;

(c) Securely anchor the workboat to the seabed; and

(d) Stop the engine during diving operation.

(4) Diving operation site

(a) Provide signs including red flags, buoys and notices to demarcate the diving operation site; and

(b) Install a downline with depth indication marks at 3m intervals from the workboat to the sea bed at the diving operation site to act as a guideline for descending or ascending and as a guide for transfer of tools and equipment.

(5) Diving Equipment

(a) Check the diving equipment to be carried by the Divers;

(i) For surface-supplied air diving, check for example: air connections, compressed air supply, weight belt, ~~signal halyard,~~ voice or video, communication device, torch, watch, water depth gauge, knife and the like.

JC1: ここでの信号索は、水上と水中でコミュニケーションするため引っ張って合図(Line Signaling)するためのロープなので、英語でも halyard(揚げ綱)とは言わないかと。ここでの信号索は、水上と水中でコミュニケーションするため引っ張って合図(Line Signalling)するためのロープなので、英語でも halyard(揚げ綱)とは言わないかと。なお、信号索は現在あまり使われず、双方向通話可能な機器の利用が一般的かと思われ、信号索そのものをここであげる必要もないのでは？

"Signal halyard" is a rope for raising a flag. The term in Japanese means a rope for

10.6 PARTICULAR SAFETY MEASURES

10.6.1 Measures before Diving Operations

The Contractor shall take the following measures before commencement of any Diving Operation:

(1) Dive Teams

(a) Discuss the diving methods and safety procedures,

(b) Discuss the work methods and procedures and the assignment and placing of the Divers and work task sharing;

(c) Advise of the diving timetable and required compliance;

(d) Inform of the climatic, marine, natural and physical conditions;

(e) Conduct the health check; and

(f) Check that support assistants and crew on the workboat are wearing life jackets.

JC1: Moved from 10.5.1.(5)(d)

(2) Equipment, work tools and other facilities

Inspect the equipment, work tools and other facilities, prohibit use when any defect or non-compliance is found, reinspect when a repair or replacement is completed.

(3) Diving workboats

(a) Inspect workboats and rescue boats;

(b) Display the international maritime diving signal flag and display signs and lights as necessary on the workboat;

(c) Securely anchor the workboat to the seabed; and

(d) Stop the engine during Diving Operation.

(4) Diving Operation site

(a) Provide signs including red flags, buoys and notices to demarcate the Diving Operation site; and

(b) Install a downline with depth indication marks at 3m intervals from the workboat to the sea bed at the Diving Operation site to act as a guideline for descending or ascending and as a guide for transfer of tools and equipment.

(5) Diving Equipment

(a) Check the diving equipment to be carried by the Divers;

(i) For surface-supplied air diving, check for example: air connections, compressed air supply, weight belt, ~~signal halyard,~~ voice or video, communication device, torch, watch, water depth gauge, knife and the like.

JC1: ここでの信号索は、水上と水中でコミュニケーションするため引っ張って合図(Line Signaling)するためのロープなので、英語でも halyard(揚げ綱)とは言わないかと。ここでの信号索は、水上と水中でコミュニケーションするため引っ張って合図(Line Signalling)するためのロープなので、英語でも halyard(揚げ綱)とは言わないかと。なお、信号索は現在あまり使われず、双方向通話可能な機器の利用が一般的かと思われ、信号索そのものをここであげる必要もないのでは？

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The Contractor shall take the following measures before commencement of any Diving Operation:

(1) Dive Teams

(a) Discuss the diving methods and safety procedures,

(b) Discuss the work methods and procedures and the assignment and placing of the Divers and work task sharing;

(c) Advise of the diving timetable and required compliance;

(d) Inform of the climatic, marine, natural and physical conditions;

(e) Conduct the health check; and

(f) Check that support assistants and crew on the workboat are wearing life jackets.

(2) Equipment, work tools and other facilities

Inspect the equipment, work tools and other facilities, prohibit use when any defect or non-compliance is found, reinspect when a repair or replacement is completed.

(3) Diving workboats

(a) Inspect workboats and rescue boats;

(b) Display the international maritime diving signal flag and display signs and lights as necessary on the workboat;

(c) Securely anchor the workboat to the seabed; and

(d) Stop the engine during Diving Operation.

(4) Diving Operation site

(a) Provide signs including red flags, buoys and notices to demarcate the Diving Operation site; and

(b) Install a downline with depth indication marks at 3m intervals from the workboat to the sea bed at the Diving Operation site to act as a guideline for descending or ascending and as a guide for transfer of tools and equipment.

(5) Diving Equipment

(a) Check the diving equipment to be carried by the Divers;

(i) For surface-supplied air diving, check for example: air connections, compressed air supply, weight belt, signal halyard, voice or video, communication device, torch, watch, water depth gauge, knife and the like.

line signalling to communicate on board and in water. The line signalling is recently seldom used, it would not necessary to mention about it here.
As commented above, OSHA has no provision about line signalling, and video or voice communication is in the major stream. It is recommended to modify the phrase.

NK: As commented above and 10.3.5.(8), line signalling is not used. Deleted "signal halyard" and added "voice and video" for communication device.

(ii) For SCUBA diving, check for example: first stage, second stage and spare regulators, available air volume, secondary air supply, buoyancy control device, weight belt, tank straps, air valve, communication device, watch, water depth gauge, knife and the like.

~~(b) Inform the Diver of the air supply capacity of the air tank(s) for SCUBA diving;~~

JC1: 「現に有する給気能力」current とか要らない？よく見るとこの上にある available air volume と重複。(これってダイバーが自身でチェックできるなら、こっちは不要では？)
また、inform はおかしい→If any defect is identified by the above checks, prohibit the dive operation from commencing.
"Air supply capacity" is a duplication of "available air volume" in (ii) above. And, "inform" is not proper. → If any defect is identified by the above checks, prohibit the dive operation from commencing.

NK: (b)は削除、→の先の文章は本項の最後の文章であるが指示内容が不明のため、そのまま残します。です。
(b) is deleted. The comment to the Sentence marked by → is not clear, so no change to this sentence is made.

(b) Check that the downline is secure and tight;

(c) Ensure as a minimum, that a two-way voice or video communication link is set up and working between at least between a single selected working Diver and the DPIC at the surface control point; and

~~(c) Check that support assistant and crew on the workboat are wearing life jackets.~~

JC1: e)は少なくとも潜水器具じゃないので違うかと。
Item (e) is not diving equipment.

NK: Considering the content, moved to 10.5.1.(1)(f).

If any defect is identified by the above checks, prohibit the dive operation from commencing.

10.6.2 Measures during Diving Operations

The Contractor shall take the following safety measures during each diving operation:

(1) A designated member of the workboat crew on the workboat shall ~~observe the diving operation and workboat operation and~~ workboat operation and look out for any other vessels that may approach the diving operation site.

JC1: ダイビングオペレーションは DPIC が主として見ているので不要。他の船を見ているのは別の人材であり、この規定はそれを主眼とした記述にすべき。
"Observe the diving operation" is unnecessary because the DPIC mainly supervises

line signalling to communicate on board and in water. The line signalling is recently seldom used, it would not necessary to mention about it here.
As commented above, OSHA has no provision about line signalling, and video or voice communication is in the major stream. It is recommended to modify the phrase.

NK: As commented above and 10.3.5.(8), line signalling is not used. Deleted "signal halyard" and added "voice and video" for communication device.

No problem

(ii) For SCUBA diving, check for example: first stage, second stage and spare regulators, available air volume, secondary air supply, buoyancy control device, weight belt, tank straps, air valve, communication device, watch, water depth gauge, knife and the like.

~~(b) Inform the Diver of the air supply capacity of the air tank(s) for SCUBA diving;~~

JC1: 「現に有する給気能力」current とか要らない？よく見るとこの上にある available air volume と重複。(これってダイバーが自身でチェックできるなら、こっちは不要では？)
また、inform はおかしい→If any defect is identified by the above checks, prohibit the dive operation from commencing.
"Air supply capacity" is a duplication of "available air volume" in (ii) above. And, "inform" is not proper. → If any defect is identified by the above checks, prohibit the dive operation from commencing.

NK: (b)は削除、→の先の文章は本項の最後の文章であるが指示内容が不明のため、そのまま残します。です。
(b) is deleted. The comment to the Sentence marked by → is not clear, so no change to this sentence is made.

No problem

(b) Check that the downline is secure and tight;

(c) Ensure as a minimum, that a two-way voice or video communication link is set up and working between at least between a single selected working Diver and the DPIC at the surface control point; and

~~(c) Check that support assistant and crew on the workboat are wearing life jackets.~~

JC1: e)は少なくとも潜水器具じゃないので違うかと。
Item (e) is not diving equipment.
NK: Considering the content, moved to 10.5.1.(1)(f).

No problem

If any defect is identified by the above checks, prohibit the Diving Operation from commencing.

10.6.2 Measures during Diving Operations

The Contractor shall take the following safety measures during each Diving Operation:

(1) A designated member (or members) of the workboat crew shall assist the DPIC by observing the Diving Operation during SCUBA diving and inform the DPIC when divers are carried away by currents and their location when they surface after their dive ascent.

(ii) For SCUBA diving, check for example: first stage, second stage and spare regulators, available air volume, secondary air supply, buoyancy control device, weight belt, tank straps, air valve, communication device, watch, water depth gauge, knife and the like.

(b) Check that the downline is secure and tight;

(c) Ensure as a minimum, that a two-way voice or video communication link is set up and working between at least between a single selected working Diver and the DPIC at the surface control point; and

If any defect is identified by the above checks, prohibit the Diving Operation from commencing.

10.6.2 Measures during Diving Operations

The Contractor shall take the following safety measures during each Diving Operation:

(1) A designated member (or members) of the workboat crew shall assist the DPIC by observing the Diving Operation during SCUBA diving and inform the DPIC when divers are carried away by currents and their location when they surface after their dive ascent.

the operation. The personnel who looks out for other vessels must be the other designated member.
This item shall be written for this purpose.

NK: deleted as commented.

The designated member shall alert any other vessels related or not related with the diving operations with requisite warning blasts from the workboat's siren, loudhailer, flares and/or flags, etc. in order to prevent them from approaching and entering the diving operation site.

(2) Measures for the Divers

(a) Prohibit the Dive Team from commencing any diving operation without the DPIC and the complete Dive Team present, ready and equipped;

(b) Ensure that the Divers use the ladders for entering and exiting the water for the diving operation;

(c) Ensure that Divers use the downline for descending and ascending;

(d) Maintain constant voice or video communication through the provided link; and

JC1: 通話装置必須なら、信号索不要では？(注:通話装置を携行する場合は信号索、水中時計、水深計を携行させないことができる。)和文 10.6.(2)(d)では、「有線又は無線の通話装置、信号索等で、連絡員と常に連絡をとらせること。」となっているけど、信号索はもはや使わない前提で MD さん書き直していて、整合性がとれてないかと
If "voice or video communication" is a must, "line signalling" is unnecessary. It is stipulated in the Japanese draft 10.6.(2) (d) that when using voice communication device, it is not necessary to use signal line, underwater watch and hydro-barometer. There is inconsistent between 10.3.5.(8) and 10.5.1(5) (a) (i) and the above (d) is inconsistent.

NK: 10.3.5.(8)で信号索を使用しない規定とした。上記(6)は変更なし。
10.3.5.(8) stipulated no line signaling is used in JSSS.
No change of (d) above.

JC18：通常スキューバダイバーは入水時にはバックドロップすると思います。少なくとも(b)と(c)はスキューバのときに該当するか調べてください。
For scuba diving entering, backdrop method is used. Please, check if (b) and (c) can be applied for scuba diving.

NK: OSHA は次を規定しています。スキューバと区別はしていません。レジャーボートのように水面までの高さが低い場合は、後ろ向きに入水しますが、水面まで高さがある場合、はしご又は水中踏み台が必要です。Inwater stages を追記します。
29 CFR 1910.422 Procedures during dive
1. 29 CFR 1910.422(b) Water entry and exit. A means capable of supporting the

(2) A designated member (or members) of the workboat crew on the workboat shall also keep a look-out for any other vessels that may approach the Diving Operation site.

JC1: ダイビングオペレーションは DPIC が主として見ているので不要。他の船を見ているのは別の人材であり、この規定はそれを主眼とした記述にすべき。
"Observe the diving operation" is unnecessary because the DPIC mainly supervises the operation. The personnel who looks out for other vessels must be the other designated member.
This item shall be written for this purpose.

NK: deleted as commented.

They should also observe the water and diving operations particularly in SCUBA dives in case currents carry divers away and they emerge at a distance from the dive boat. They usually work as a team, all helping the others and DPIC. In heavy water such assistance is vital.

As suggested by JICA, I have modified for this purpose.

The designated member(s) shall alert any other vessels related or not related with the Diving Operations with requisite warning blasts from the workboat's siren, loudhailer, flares and/or flags, etc. in order to prevent them from approaching and entering the Diving Operation site.

(3) Measures for the Divers

(a) Prohibit the Dive Team from commencing any Diving Operation without the DPIC and the complete Dive Team present, ready and equipped;

(b) Ensure that the Divers use the ladders for entering and exiting the water for the Diving Operation;

(c) Ensure that Divers use the downline for descending and ascending;

(d) Maintain constant voice or video communication through the provided link; and

JC1: 通話装置必須なら、信号索不要では？(注:通話装置を携行する場合は信号索、水中時計、水深計を携行させないことができる。)和文 10.6.(2)(d)では、「有線又は無線の通話装置、信号索等で、連絡員と常に連絡をとらせること。」となっているけど、信号索はもはや使わない前提で MD さん書き直していて、整合性がとれてないかと
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(2) A designated member (or members) of the workboat crew on the workboat shall also keep a look-out for any other vessels that may approach the Diving Operation site.

The designated member(s) shall alert any other vessels related or not related with the Diving Operations with requisite warning blasts from the workboat's siren, loudhailer, flares and/or flags, etc. in order to prevent them from approaching and entering the Diving Operation site.

(3) Measures for the Divers

(a) Prohibit the Dive Team from commencing any Diving Operation without the DPIC and the complete Dive Team present, ready and equipped;

(b) Ensure that the Divers use the ladders for entering and exiting the water for the Diving Operation;

(c) Ensure that Divers use the downline for descending and ascending;

(d) Maintain constant voice or video communication through the provided link; and

diver (such as an inwater stage or ladder) while entering or exiting the water is required.
If it is a fixed structure, such as a ladder, it must extend below the water sufficiently to allow adequate diver access and support (a minimum of one meter is recommended). Portable ladders should be secured to maintain stability and to prevent pinch points.
The employer also must provide a means for assisting an injured diver from the water to the surface or into a diving bell (such as an inwater stage, stokes basket, or harness)

NK: OSHA は、潮流がある場所では索（line-tended）の使用を規定しています。
OHSA に downline の規定はありませんが、Wikipidia に downline の下降上昇使用、潮流のある場所での潜水の深度のコントロール等に使用できるとの記述があります。

OSHA: 29 CFR 1910.424(b)(3) requires SCUBA divers to be line-tended against currents exceeding one (1) knot (1.689 feet per second, or about 17 feet per 10 seconds).
Wikipedia: https://en.wikipedia.org/wiki/Downline_(diving)
In underwater diving, a downline is a piece of substantial cordage running from a point at the surface to the underwater workplace, and kept under some tension. It can be used as a guideline for divers descending or ascending, for depth control in blue-water diving...
日本の高気圧作業安全衛生規則では、スキューバを区別せず潜水作業者を規定しています。
(さがり綱) 第三十三条　事業者は、潜水業務を行なうときは、潜水作業者が潜降し、及び浮上するためのさがり綱を備え、これを潜水作業者に使用させなければならない。
Japanese Ordinance on Safety and Health of Work under High Pressure
https://www.jniosh.johas.go.jp/icpro/jicosh-old/japanese/country/japan/laws/03_rel/09_highpressure_reg/03c.html
(Life Line) Article 33. When the employer has the said diving workers engage in diving operations, he shall provide a life line and make the said diving workers use it in descending and ascending.

JSSS は、日本の安全規則をベースにしており、(c)の規定は上記規則にもとづき、原文のままとします。
Because JSSS is based on Japanese regulation, (c) is left as it is as stipulated in Japanese Ordinance above.

(e) Ensue that the Divers constantly communicate with each other by hand signals and slate messaging.

(3) Ensure the DPIC or a Dive Team member at the surface, constantly observe the weather and marine conditions and there is any change that meets the work stop criteria, or if the conditions are considered to be otherwise unsafe by the DPIC, immediately stop the diving operation and ensure that the Divers are removed from the water in a safe and controlled manner;

(4) Safety and Health Management of Diving Operations

(a) Manage the Diving Works for each Diver so the Diver takes sufficient and safe surface time between dives so that there is no risk to his health and wellbeing;

29 CFR 1910.422 Procedures during dive
1. 29 CFR 1910.422(b) Water entry and exit. A means capable of supporting the diver (such as an inwater stage or ladder) while entering or exiting the water is required.
If it is a fixed structure, such as a ladder, it must extend below the water sufficiently to allow adequate diver access and support (a minimum of one meter is recommended). Portable ladders should be secured to maintain stability and to prevent pinch points.
The employer also must provide a means for assisting an injured diver from the water to the surface or into a diving bell (such as an inwater stage, stokes basket, or harness)

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Japanese Ordinance on Safety and Health of Work under High Pressure
https://www.jniosh.johas.go.jp/icpro/jicosh-old/japanese/country/japan/laws/03_rel/09_highpressure_reg/03c.html
(Life Line) Article 33. When the employer has the said diving workers engage in diving operations, he shall provide a life line and make the said diving workers use it in descending and ascending.

JSSS は、日本の安全規則をベースにしており、(c)の規定は上記規則にもとづき、原文のままとします。
Because JSSS is based on Japanese regulation, (c) is left as it is as stipulated in Japanese Ordinance above.

OK no problem, this is not for communication it is very useful particularly for SCUBA divers when working in currents or getting through surface currents.

Also note that OSHA "29 CFR 1910.424(b)(3) requires SCUBA divers to be line-tended against currents exceeding one (1) knot (1.689 feet per second, or about 17 feet per 10 seconds)"

(e) Ensure that the Divers constantly communicate with each other by hand signals and slate messaging.

(4) Ensure the DPIC or a Dive Team member at the surface, constantly observe the weather and marine conditions and there is any change that meets the work stop criteria, or if the conditions are considered to be otherwise unsafe by the DPIC, immediately stop the Diving Operation and ensure that the Divers are removed from the water in a safe and controlled manner;

(5) Safety and Health Management of Diving Operations

(a) Manage the Diving Works for each Diver so the Diver takes sufficient and safe surface time between dives so that there is no risk to his health and wellbeing;

(b) Ensure that ~~sufficient~~ suitable numbers of Divers and standby Divers are available to ensure that Divers are not in the water for excessive periods;

JC19: Sufficient は言い過ぎでは？大勢の控えがいる訳がない。
"Sufficient" is too much to say. There shouldn't be many standby divers.

NK: 節の意味は、長時間の水中作業を避けるために十分な数の潜水士と、必要な予備潜水士をそろえるという意味で、十分な数の予備潜水士という意味ではありませんが、誤解を生む可能性がありますので、コメントに従い修正します。
The meaning is that sufficient numbers of Divers shall be available to avoid excessive in-water period and necessary standby divers shall be provided. To avoid misunderstanding, the sufficient is replaced with suitable.

To MD, please review this wording.

(c) Design shift times and patterns to preserve Divers' health and safety;

(d) Ensure that each Diver ~~keeps~~ takes an accurate record of his dive profile for every dive, showing overall time, bottom time and depth, decompression times and depths and ~~that these are summarised with a record of the number of dives on a daily, weekly and monthly basis by the DPIC, and the Contractor retain the records~~ submit it to DPIC.

JC1: 個々の Diver が記録を保管するのでしょうか。DPIC ではないでしょうか。
Each diver should keep record individually? Isn't it the duty of DPIC?

NK: OSHA では、下記のように具体的に誰が記録をとるかは規定していないが、雇用者が保管することを規定している。各ダイバーが自分の作業記録をとり(keep a record)、それを DPIC がまとめ、請負者が保管することが実際的であると考える。(DPIC は潜水作業期間のみ現場にいることから請負者が保管することが妥当と考えます。)上のように変更する。

(b) Ensure that sufficient ~~suitable~~ numbers of Divers and standby Divers are available to ensure that Divers are not in the water for excessive periods;

JC19: Sufficient は言い過ぎでは？大勢の控えがいる訳がない。
"Sufficient" is too much to say. There shouldn't be many standby divers.

NK: 節の意味は、長時間の水中作業を避けるために十分な数の潜水士と、必要な予備潜水士をそろえるという意味で、十分な数の予備潜水士という意味ではありませんが、誤解を生む可能性がありますので、コメントに従い修正します。
The meaning is that sufficient numbers of Divers shall be available to avoid excessive in-water period and necessary standby divers shall be provided. To avoid misunderstanding, the sufficient is replaced with suitable.

To MD, please review this wording.

"Suitable" is not correct, "sufficient" is correct and necessary for safety purposes.

Balancing the numbers of available divers against work volume and time deadlines and any requirement for repetitive dives in commercial diving needs to be carefully managed otherwise diver safety is very much at risk.

OSHA requires an available standby diver for SCUBA operation shall always be available, for all liveboating operations and other occasions.

The Diving at Work Regulations 1997 (basis of HSE) is clear and under the duties of the diving contractor, requires that contractor's:

"ensure that there are sufficient people with suitable competence to carry out safely and without risk to health … the diving project … " and also HSE under Regulation 6 Duties of diving contractors:

(f) there are sufficient personnel in the dive team to enable the diving project to be carried out safely (see 'Dive teams and associated working practice');

NK: understood.

~~(c) Design shift times and patterns to preserve Divers' health and safety;~~

(c) Arrange the number, times and duration, of every Diving Operation and all shift times and patterns, to preserve the health and safety of each Diver;

I suggest the above rewording of the original clause for greater clarity

I have deleted the following amended clause for clarity and reinstated the original, please see explanation below

~~(e) Ensure that each Diver keeps takes an accurate record of his dive profile for every dive, showing overall time, bottom time and depth, decompression times and depths and that these are summarised with a record of the number of dives on a daily, weekly and monthly basis by the DPIC, and the Contractor retain the records submit it to DPIC.~~

JC1: 個々の Diver が記録を保管するのでしょうか。DPIC ではないでしょうか。
Each diver should keep record individually? Isn't it the duty of DPIC?

NK: OSHA では、下記のように具体的に誰が記録をとるかは規定していないが、雇用者が保管することを規定している。各ダイバーが自分の作業記録をとり(keep a record)、それを DPIC がまとめ、請負者が保管することが実際的であると考える。(DPIC は潜水作業期間のみ現場にいることから請負者が保管することが妥当と考えます。)上のように変更する。

(b) Ensure that sufficient numbers of Divers and standby Divers are available to ensure that Divers are not in the water for excessive periods;

(c) Arrange the number, times and duration, of every Diving Operation and all shift times and patterns, to preserve the health and safety of each Diver;

OSHA 29 Subpart T 1910.440 Recordkeeping requirements.
(3) Records and documents required by this standard shall be retained by the employer for the following period:
The OSHA does not stipulate who prepare records but the Contractor shall retain the records. (d) is modified for practical way at the Site as above.
(DPIC may be assigned at the site during the diving work, so the Contractor shall retain the records.)

JC20: JICA modifies.

(e) ~~Ensure that the DPIC reviews and approves such records and that same are submitted by the DPIC to the HSO for the HSO's review and countersignature and made available for the Engineer's inspection.~~ Ensure that the DPIC summarises such records and submits them to the HSO for review and keep them available for the Engineer's inspection.

JC21: JICA modifies.

OSHA 29 Subpart T 1910.440 Recordkeeping requirements.
(3) Records and documents required by this standard shall be retained by the employer for the following period:
The OSHA does not stipulate who prepare records but the Contractor shall retain the records. (d) is modified for practical way at the Site as above.
(DPIC may be assigned at the site during the diving work, so the Contractor shall retain the records.)

JC20: JICA modifies.

~~(f) Ensure that the DPIC reviews and approves such records and that same are submitted by the DPIC to the HSO for the HSO's review and countersignature and made available for the Engineer's inspection. Ensure that the DPIC summarises such records and submits them to the HSO for review and keep them available for the Engineer's inspection.~~

JC21: JICA modifies.

I suggest that the original text of the above two subclauses is correct and the revision is not recommended.

"Each diver should keep record individually? Isn't it the duty of DPIC?"

Diving is different to normal construction in that each diver will normally keep his own records and summaries usually on a standard sheet before and after each dive to ensure that it is prepared correctly and at the right time. Only the diver can immediately summarise the cumulative allowable bottom time and surface time between repetitive dives to determine for himself if it is safe to dive again on his next dive. Yes, this will be checked by the DPIC but whether he has the time to do this in a timely manner is not certain.

It is important to appreciate that to some extent the individual diver is responsible for his own safety and he can refuse to dive without penalty if he thinks it is unsafe to do so and will of course be immediately required to do so, he must therefore have immediately available information to support this and cannot wait for someone else to do this for him or compute/summarise this perhaps incorrectly. Rather than assuming what a DPIC might be able to do, I suggest that this is a very important consideration for safety.

"keeps" records is the correct wording.

Your point on retention of records is correct and important and whilst covered by OSHA this may vary in different countries. I suggest the use of requisite period or similar.

(d) Ensure that each Diver keeps an accurate record of his dive profile for every dive, showing overall time, bottom time and depth, decompression times and depths and that these are summarised by the Diver with a record of the number of dives on a daily, weekly and monthly basis.

(e) Ensure that the DPIC reviews and approves such records and that same are submitted by the DPIC to the HSO for the HSO's review and countersignature and made available for the Engineer's inspection.

(f) Unless otherwise required by the Law, the Contractor shall retain all dive records for the periods specified in the OSHA 29 Subpart T 1910.440

NK: agreed.

(d) Ensure that each Diver keeps an accurate record of his dive profile for every dive, showing overall time, bottom time and depth, decompression times and depths and that these are summarised by the Diver with a record of the number of dives on a daily, weekly and monthly basis.

(e) Ensure that the DPIC reviews and approves such records and that same are submitted by the DPIC to the HSO for the HSO's review and countersignature and made available for the Engineer's inspection.

(f) Unless otherwise required by the Law, the Contractor shall retain all dive records for the periods specified in the OSHA 29 Subpart T 1910.440

10.7 DIVING ACCIDENT ~~CONTROL~~ RESPONSE PLAN

JC22: JICA modifies.

10.7.1 General

The Contractor shall prepare an Accident Response Plan for the Diving Works in accordance with JSSS 1.21 [*Accident Response Plan*].

10.7.2 Provisions by the Contractor

The Contractor shall comply with following requirements prior to Diving Works.

(1) The Contractor shall make decompression chamber available to treat decompression sickness decompression illness (DCI) in accordance with the requirements of HSE Commercial diving projects inland/inshore, Diving at Work Regulations 1997, Availability of decompression chambers, Clauses 114 to 118 by means of:

JC1: HSE の Commercial diving projects inland/inshore-Diving at Work Regulations1997 の 114-118（再圧室関連の条項）を参照して記述願います。
読み間違いかもしれませんが、OSHA の 1910.423(c)(1)を見ると、水深 50m を越えないと再圧室の現場での設置は必要ないように読めます。それは不十分に思えるので、10m を基準として記述されている HSE を参照する必要があると考えています。
要するに水深と必要な搬送時間等を考慮し、現場での設置の要否を定めることにします。
Modify this part referring to Commercial diving projects inland/inshore-Diving at Work Regulations1997 of HSE (re. compression chamber) because the criteria for providing compression chamber of OSHA seems to be read that the compression chamber needs deeper than 50 m.
It is not sufficient, so JC considers HSE shall be applied to JSSS. The necessity of compression chamber shall be determined based on the depth of diving and the time necessary for transporting the patient to nearest chamber available.

NK: OSHA は再圧室の現場での必要性を、1910.424 と 425 に次のように規定して、30m 以上の潜水、又は深度に関係なく NDL（減圧の不要な潜水時間）を越えた潜水の場合に、再圧室の現場の設置を規定しています。（なお、1910.423 は再圧室の能力を規定しています。）

§1910.424 SCUBA diving.
(b) Limits. SCUBA diving shall not be conducted:
(1) At depths deeper than 130 fsw(=40m);.
(2) At depths deeper than 100 fsw(=30m) or outside the no-decompression limits (NDL) unless a decompression chamber is ready for use;
§1910.425 Surface-supplied air diving.
(b) Limits.
(2) A decompression chamber shall be ready for use at the dive location for any dive outside the no-decompression limits (NDL) or deeper than 100 fsw(=30m).

NK: OSHA は潜水深度と NDL での規定しています。一方、HSE は水中の減圧時間と潜水深度で規定しています。コメントのように 10m より浅い潜水も規定しており、HSE の順守と規定します。
Revised as commented to comply with HSE

~~(a) Contract with Identify a medical facility having a suitable and operational decompression chamber and having established a system to transport any affected Divers to immediately receive suitable recompression and decompression treatment with specialist medical support; or~~

~~(b) Provision of a temporary decompression chamber located at the Diving Works location of a type, specification and capacity to suit~~

10.7 DIVING ACCIDENT RESPONSE PLAN

JC22: JICA modifies.

Yes, the change in heading is better for consistency with JSSS 1.24 [Accident Response Plan] to which it relates.

10.7.1 General

The Contractor shall prepare an Accident Response Plan for the Diving Works in accordance with JSSS 1.24 [*Accident Response Plan*].

10.7.2 Provisions by the Contractor

The Contractor shall comply with following requirements prior to Diving Works.

(1) The Contractor shall make decompression chamber available to treat decompression sickness decompression illness (DCI) in accordance with the requirements of HSE Commercial diving projects inland/inshore, Diving at Work Regulations 1997, Availability of decompression chambers, Clauses 114 to 118 by means of:

I suggest that the above change is not necessary and I do not recommend it for the following reasons.

This apparently simple change will have profound effects upon the remainder of this Chapter

I consider that the suggestion to use HSE is not based upon a correct interpretation of OSHA: meaning that the following JICA statement is not correct:

"the criteria for providing compression chamber of OSHA seems to be read that the compression chamber needs deeper than 50 m".

The criteria for providing a decompression chamber is NOT related only to dives in excess of 50m.

In any event the maximum depth of any dive is not the sole or even principle cause of decompression sickness or criteria for providing a chamber, it is any dive outside the no-decompression limits

A chamber must be available for any dive which is outside the no-decompression limits and these start at are 25 fsw.(7.62m).

OSHA actually requires that a "decompression chamber be available at the dive location" for any dive which is outside the no-decompression limits up to 300 fsw quoted as follows:

1910.423(c)(1)

A decompression chamber capable of recompressing the diver at the surface to a minimum of 165 fsw (6 ATA) shall be available at the dive location for:

1910.423(c)(1)(i)

Surface-supplied air diving to depths deeper than 100 fsw and shallower than 220 fsw;

1910.423(c)(1)(ii)

Mixed gas diving shallower than 300 fsw; or

1910.423(c)(1)(iii)

Diving outside the no-decompression limits shallower than 300 fsw.

(underline added by me)

10.7 DIVING ACCIDENT RESPONSE PLAN

10.7.1 General

The Contractor shall prepare an Accident Response Plan for the Diving Works in accordance with JSSS 1.24 [*Accident Response Plan*].

10.7.2 Provisions by the Contractor

The Contractor shall comply with following requirements prior to Diving Works.

(1) In accordance with the requirements of OSHA 1910.423(c) [*Recompression facility*], the Contractor shall make a decompression chamber available at the dive location to treat decompression sickness.

~~the diving operation together with medical support facilities and specialist medical support.~~

JC1: Replaced by JC.
NK: (a) and (b) are replaced with (a) to (c) as right following HSE.

(a) For dives that are shallower than 10 m with planned in-water decompression not exceeding 20 minutes, the Contractor shall identify the nearest suitable operational two-person, two-compartment chamber. Under no circumstances this shall be more than 6 hours travelling distance from the dive site;

(b) for dives between 10 and 50 m with planned in-water decompression not exceeding 20 minutes, the Contractor shall assess the risk of DCI and likelihood of a diver requiring emergency recompression.

This shall be based on the depth and duration of the planned dives. The assessment shall also consider factors which may increase the risk of DCI such as water temperature, type of work, and the number of dives/ascents.

If the assessment demonstrates a significant risk of DCI a suitable, operational, two-person, two-compartment chamber shall be provided for immediate use at the site of the diving work.

If the assessment demonstrates relatively low risk of DCI, the Contractor shall identify the nearest suitable operational two-person, two-compartment chamber. Under no circumstances this shall be more than 6 hours travelling distance from the dive site;

(c) for dives with planned in-water decompression stops greater than 20 minutes the Contractor shall provide a suitable, operational, two-person, two-compartment chamber for immediate use at the site of the diving work.

The diver shall be able to leave the water quickly and easily and be pressurised within the chamber to the appropriate recompression pressure as defined by the time in the decompression schedule being used.

The controls of a decompression chamber shall only be operated by people competent to do so. Such competence will be achieved by a combination of training and experience. The degree of supervision provided shall reflect the experience of the operator.

And also refer to https://www.osha.gov/laws-regs/interlinking/standards/1910.423(c)(1)(iii)
Diving outside the NDL is the crucial part of this requirement (not maximum depth) and this is managed by compliance with the Decompression, repetitive, and no-decompression tables (as appropriate) which OSHA requires to be available at the dive location.

The OSHA commercial diving standard provides for the use of either the U.S. Navy Diving Tables or equivalent limits which the divers' employer can demonstrate to be equally effective.

These tables are contained in the OSHA DIRECTIVE NUMBER: CPL 02-00-151 for 29 CFR Part 1910, Subpart T – Commercial Diving Operations, APPENDIX D: No-Decompression Limits and Repetitive-Group Designation Table for No-Decompression Air Dives

"The information in this appendix (including the table on page D-3) was adapted from the U.S. Navy Diving Manual (Revision 6), Volume 2 ("Air Decompression"), Section 9-7 ("No- Decompression Limits and Repetitive Group Designators for No-Decompression Air Dives"). "

The Appendix provides that any dive to 25 fsw or deeper that has a bottom time greater than the no-decompression limits provided in this table is a decompression dive, and must comply with the appropriate air decompression table.

If a dive is outside this limit then OSHA requires that a decompression chamber be available.

Please note that most decompression is achieved in the water with time-controlled ascent.

Also:

"Even though decompression is not required when diving within the no-decompression limits listed in the table, some nitrogen remains in the diver's tissues for up to 12 hours following an air dive. Consideration must be given to this residual nitrogen in the diver's tissues when calculating decompression for subsequent (i.e., repetitive) dives. "

It is not correct to state that OSHA contains no requirements other than for dives over 50m.

The US Navy requirements are used and accepted internationally as safe and they are not inferior to HSE for example.

I do recommend therefore that there is no need to use any additional compliance standard for this part of Chapter 10. OSHA does cover this and if other standards are used here for any parts the this actually complicates the entire structure of Chapter 10 as:

1) *Different definitions will apply for different parts or items (e.g. OSHA - compression sickness, HSE compression illness)*
2) *If HSE rules are applied to the provision and use of a decompression chamber in this item, the OSHA recommended (US Navy) dive tables and decompression tables will somehow need to be substituted by the HSE dive tables. This means effectively that OSHA does not apply.*

This will greatly complicate if not corrupt Chapter 10.

In addition, OSHA is the prevailing standard for this chapter. OSHA defines this as "decompression sickness" not "decompression illness". Use of different definitions in the same document is not really good practice

I suggest that reference to OSHA is therefore sufficient and that no change is necessary or recommended

NK6/21: agreed.

I suggest the clauses should be simply as follows:

NK6/21: agreed.

1) The original draft stipulate “unless otherwise stipulated, …” and User Guide mention the Employer’s requirements. Is it necessary to mention “unless …” in the Clause about decompression chamber?
2) Shall the bidder provide cost for the decompression chamber when the bidder judges there is risk of decompression sickness? If the Bidder does not judge there is risk, is the Bidder not necessary to provide the cost? There is difference between bidding price depending Bidders’ risk analysis whether there is risk of decompression sickness. How do you think this?

(1) In accordance with the requirements of OSHA 1910.423(c) [*Recompression facility*], the Contractor shall make a decompression chamber available at the dive location to treat decompression sickness.

(2) The decompression chamber shall comply with the requirements of OSHA 1910.423(c) [*Recompression facility*].

(3) The Contractor shall also provide such medical support facilities as are necessary to ensure the health and safety of any members of the Dive Team that may require treatment for decompression sickness.

JC1: HSE の Commercial diving projects inland/inshore-Diving at Work Regulations1997 の 114-118（再圧室関連の条項）を参照して記述願います。
読み間違いかもしれませんが、OSHA の 1910.423(c)(1)を見ると、水深 50m を越えないと再圧室の現場での設置は必要ないように読めます。それは不十分に思えるので、10m を基準として記述されている HSE を参照する必要があると考えています。
要するに水深と必要な搬送時間等を考慮し、現場での設置の要否を定めることにします。
Modify this part referring to Commercial diving projects inland/inshore-Diving at Work Regulations1997 of HSE (re. compression chamber) because the criteria for providing compression chamber of OSHA seems to be read that the compression chamber needs deeper than 50 m.
It is not sufficient, so JC considers HSE shall be applied to JSSS. The necessity of compression chamber shall be determined based on the depth of diving and the time necessary for transporting the patient to nearest chamber available.

NK: OSHA は再圧室の現場での必要性を、1910.424 と 425 に次のように規定して、30m 以上の潜水、又は深度に関係なく NDL（減圧の不要な潜水時間）を越えた潜水の場合に、再圧室の現場の設置を規定しています。（なお、1910.423 は再圧室の能力を規定しています。）

§1910.424 SCUBA diving.
(b) Limits. SCUBA diving shall not be conducted:
(1) At depths deeper than 130 fsw(=40m);.
(2) At depths deeper than 100 fsw(=30m) or outside the no-decompression limits (NDL) unless a decompression chamber is ready for use;
§1910.425 Surface-supplied air diving.
(b) Limits.
(2) A decompression chamber shall be ready for use at the dive location for any dive outside the no-decompression limits (NDL) or deeper than 100 fsw(=30m).

NK: OSHA は潜水深度と NDL での規定しています。一方、HSE は水中の減圧時間と潜水深度で規定しています。コメントのように 10m より浅い潜水も規定しており、HSE の順守と規定します。
Revised as commented to comply with HSE

(a) Contract with Identify a medical facility having a suitable and

(2) The decompression chamber shall comply with the requirements of OSHA 1910.423(c) [*Recompression facility*].

(3) The Contractor shall also provide such medical support facilities as are necessary to ensure the health and safety of any members of the Dive Team that may require treatment for decompression sickness.

operational decompression chamber and having established a system to transport any affected Divers to immediately receive suitable recompression and decompression treatment with specialist medical support; or

(b) Provision of a temporary decompression chamber located at the Diving Works location of a type, specification and capacity to suit the Diving Operation together with medical support facilities and specialist medical support.

JC1: Replaced by JC.
NK: (a) and (b) are replaced with (a) to (c) as right following HSE.

I do not suggest HSE be adopted for this part and therefore the addition of the following from HSE is not necessary or recommended as this is in conflict with OSHA.

If however HSE is selected in place of OSHA, please advise and I will review revise Chapter 10 accordingly.
NK6/21: Agreed to adopt OSHA. (We shall explain MD's explanation above to JICA.

(d) ~~For dives that are shallower than 10 m with planned in-water decompression not exceeding 20 minutes, the Contractor shall identify the nearest suitable operational two-person, two-compartment chamber. Under no circumstances this shall be more than 6 hours travelling distance from the dive site;~~

On ODA projects there is not likely to be any locally available chamber.

Should be 6 hours by road, flying is not allowable.

Please note that OSHA criteria is simple and unambiguous.

Depths and time limitations between OSHA (US Navy based Dive Table (see OSHA Appendix D)) and HSE are different. I suggest that these added clauses are incompatible with OSHA and that they will also confuse the criteria of whether a decompression facility is required or not.

(e) for dives between 10 and 50 m with planned in-water decompression not exceeding 20 minutes, the Contractor shall assess the risk of DCI and likelihood of a diver requiring emergency recompression.

This shall be based on the depth and duration of the planned dives. The assessment shall also consider factors which may increase the risk of DCI such as water temperature, type of work, and the number of dives/ascents.

If the assessment demonstrates a significant risk of DCI a suitable, operational, two-person, two-compartment chamber shall be provided for immediate use at the site of the diving work.

If the assessment demonstrates relatively low risk of DCI, the Contractor shall identify the nearest suitable operational two-person, two-compartment chamber. Under no circumstances this shall be more than 6 hours travelling distance from the dive site;

(f) for dives with planned in-water decompression stops greater than 20 minutes the Contractor shall provide a suitable, operational, two-person, two-compartment chamber for immediate use at the site of the diving work.

The diver shall be able to leave the water quickly and easily and

	be pressurised within the chamber to the appropriate recompression pressure as defined by the time in the decompression schedule being used. The controls of a decompression chamber shall only be operated by people competent to do so. Such competence will be achieved by a combination of training and experience. The degree of supervision provided shall reflect the experience of the operator.	
	JC1: OSHA1910.421 (c)だと first aid kit という記載ですが、これは薬物の使用のことでしょうか？高圧下での使用が薬物の使用に影響を与えるからこのような書き方になっているのでしょうか。OSHA のままの記述に戻した方が良いのではないでしょうか。 OSHA 1910.421 (c) is titled as “first aid supplies”. Does “medication” above means usage of medicines? Is “medication” used because of specifying use of medicines under hyperbaric conditions which affects their use? Isn’t it better to stipulate as “first aid kit” as mentioned in OSHA?	
(2) In accordance with OSHA requirements the Contractor shall provide an emergency aid contact list, rescue and safety equipment (including decompression facilities), a first -aid kit and supplies. The rescue and safety equipment and first-aid kit and supplies provided at the Diving Works location shall be appropriate for the diving operations, approved by a physician. When used in a decompression chamber or bell, the first aid kit shall be suitable for use under hyperbaric conditions.	NK: Medication は治療との意味で考える。OSHA では高圧の条件下では適切な救急用具を使用することのみ規定あり。 “first aid kit”に変更する。 It is guessed that “medication” is used for treating someone with a medicine. The term is replaced with “first aid kit”.	(4) In accordance with OSHA requirements the Contractor shall provide an emergency aid contact list, rescue and safety equipment (including decompression facilities), a first-aid kit and supplies. The rescue and safety equipment and first-aid kit and supplies provided at the dive location shall be appropriate for the diving works and approved by a physician. When used in a decompression chamber or bell, the first-aid kit and any medication shall be suitable for use under hyperbaric conditions.
JC1: OSHA1910.421 (c)だと first aid kit という記載ですが、これは薬物の使用のことでしょうか？高圧下での使用が薬物の使用に影響を与えるからこのような書き方になっているのでしょうか。OSHA のままの記述に戻した方が良いのではないでしょうか。 OSHA 1910.421 (c) is titled as “first aid supplies”. Does “medication” above means usage of medicines? Is “medication” used because of specifying use of medicines under hyperbaric conditions which affects their use? Isn’t it better to stipulate as “first aid kit” as mentioned in OSHA?	*The following is edited to include NK/JICA requirements*	
NK: Medication は治療との意味で考える。OSHA では高圧の条件下では適切な救急用具を使用することのみ規定あり。 “first aid kit”に変更する。 It is guessed that “medication” is used for treating someone with a medicine. The term is replaced with “first aid kit”.	(4) In accordance with OSHA requirements the Contractor shall provide an emergency aid contact list, rescue and safety equipment (including decompression facilities), a first-aid kit and supplies. The rescue and safety equipment and first-aid kit and supplies provided at the dive location shall be appropriate for the diving works and approved by a physician. When used in a decompression chamber or bell, the first-aid kit and any medication shall be suitable for use under hyperbaric conditions.	
(3) The HSO and DPIC shall determine whether the emergency aid list is complete and is available to all Dive Team members and also determine whether the rescue and safety equipment (including decompression facilities) and first-aid kit are complete and available at the Diving Works location.	(5) The HSO and DPIC shall determine whether the emergency aid list is complete and is available to all Dive Team members and also determine whether the rescue and safety equipment (including decompression facilities) and first-aid kit are complete and available at the dive location.	(5) The HSO and DPIC shall determine whether the emergency aid list is complete and is available to all Dive Team members and also determine whether the rescue and safety equipment (including decompression facilities) and first-aid kit are complete and available at the dive location.

NK6/21: comment and revision on 20200621

JICA STANDARD SAFETY SPECIFICATION FOR PROJECT IMPLEMENTATION UNDER JAPANESE ODA

CHAPTER 10: DIVING WORKS

Japan International Cooperation Agency (JICA)

JICA STANDARD SAFETY SPECIFICATION (JSSS)
CHAPTER 10: DIVING WORKS

Table of Contents

10.1 GENERAL

10.1.1 Scope

This Chapter specifies the safety requirements for Diving Operations which shall include surface-supplied air diving and SCUBA diving and which are hereinafter collectively referred to as "Diving Works".

Saturation diving and mixed-gas diving are not included.

10.1.2 Definitions

(1) The definition of terms for the purpose of this Chapter are as follows:

(a) "**Designated Person-in-Charge**" or "**DPIC**" means a senior person who, through qualification, experience and capability is deemed by the HSO to be qualified to be in charge of all aspects of the diving operation including those affecting the safety and health of members of the Dive Team;

(b) "**Dive Team**" means Divers, support assistants and dive boat crew who are involved in any Diving Operation, including the Designated Person-in-Charge;

(c) "**Diver**" means a worker working in water using underwater breathing apparatus which supplies compressed breathing gas at the ambient pressure;

(f) "**Diving Operation**" means one single diving activity for one Diver or a team of Divers commencing from the time when the first Diver enters the water and extending until the last Diver has left the water, chamber or other environment in which the dive, or any part of the dive, took place and has completed any requisite decompression procedures, including, where it may be reasonably anticipated that this will be needed, any therapeutic recompression.

The nature and size of any Diving Operation shall be such that it can be safely supervised by one person;

(g) **"Diving Project' =>** **"Diving Works"** means any activity, made up of one or more Diving Operations, commencing from the first Diving Operation and extending until the latest Diver in the last Diving Operation has left the water, chamber or other environment in which the dive, or any part of the dive, took place and has completed any requisite decompression procedures, including, where it may be reasonably anticipated that this will be needed, any therapeutic recompression; "Diving Project' => "Diving Works" is the term used for the overall diving job – whether it lasts two hours or two months, and it can be made up of one or more Diving Operation;

NK6/21: Chapter 1 defines the Project in Annex as follows:

(10) "Project" means the particular Works and services to be implemented by the Borrower and described in the loan agreement, utilising the funds provided by JICA under the terms mutually agreed for that purpose.

I considered the Diving Project in the original draft implies that a Project to execute diving works by the Borrower.

The Works include diving works as a part of construction works which may consist of machine excavation, dumping rocks by ships, concrete placing by machine, etc., and diving works by divers such as levelling of dumped rocks, placing of concrete blocks, welding works by hands of divers, etc.

I proposed "diving operations" instead of "project" in last draft to avoid JICA's comment which I assumed JICA will have same opinion.

Now I want to propose "Diving Project" defined in 10.1.2 (g) to change to "Diving Works" used in 10.1.1. This change will be understandable for me to avoid confusion between "the Project" and "the Diving Project". Please review the above.

(h) "**Dive Safety Plan**" means the Safety Plan prepared for Diving Works in accordance with JSSS 10.2 [*Dive Safety Plans*];

(i) "**SCUBA diving**" means a diving mode independent of surface supply in which the Diver uses open circuit self-contained underwater breathing apparatus; and

(j) "**Surface-supplied air diving**" means a diving mode in which the Diver is supplied at the dive location with a piped supply of compressed air for breathing.

10.1.3 Compliance Standards

By reference to JSSS 1.4 [*Compliance with JSSS and Other Regulations*], for any items in this Chapter or relevant to the subject of this Chapter and which are not fully covered by JSSS, the Contractor shall take necessary measures for Diving Works complying with the technical requirements specified in OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations for surface-supplied air diving and SCUBA diving (excluding saturation and mixed-gas diving).

10.2 DIVE SAFETY PLANS

10.2.1 General Requirements for the Dive Safety Plans

(1) The Contractor shall prepare Dive Safety Plans as part of the Safety Plan for the Works in compliance with the requirements of with JSSS 1.7 [*Contractor's Safety Plans*].

(2) The submission requirements in accordance with JSSS 1.7.3 shall be as follows:

(a) The Bid Stage Safety Plan shall include the Outline Dive Safety Plan;

(b) The Commencement Stage Safety Plan shall include the Updated Dive Safety Plan; and

(c) The Particular Safety Plans shall include the individual Particular Dive Safety Plans to be submitted for and in advance of each Diving Operation.

10.2.2 Bid Stage Dive Safety Plan

(1) In compliance with JSSS 1.7.6 [*Bid Stage Safety Plan*], the Bid Stage Dive Safety Plan shall include an outline plan indicating the Contractor's operational procedures for each diving mode to be used in the Works (referred to in OSHA as the "safe practices manual"). This shall be in sufficient detail to give an understanding of the Contractor's intentions regarding the diving safety procedures that the Contractor intends to implement.

(2) The Bid Stage Dive Safety Plan shall contain a copy of the OSHA standard and the Contractor's policies for implementing the requirements of this standard.

10.2.3 Commencement Stage Dive Safety Plan

(1) In compliance with JSSS 1.7.7 [*Commencement Stage Safety Plan*], the Commencement Stage Dive Safety Plan shall be a development of the Bid Stage Dive Safety Plan and shall include detailed safety procedures and standard checklists to apply to all Diving Operations, equipment procedures, and emergency procedures (at a minimum covering fire, equipment malfunction or failure, adverse environmental conditions and medical illness and injury).

(2) The HSO shall review the Commencement Stage Dive Safety Plan to determine if it is correct and compliant with the requirements of OSHA and JSSS.

(3) A copy of the Commencement Stage Dive Safety Plan together with a copy of the OSHA standard and the Contractor's policies for implementing the requirements of OSHA (from the Bid Stage Dive Plan) shall be made available at the dive location to each Dive Team member and explained to the Dive Team by the HSO and DPIC.

NK6/21: JSSS specify some safety measures shall be taken in accordance with OSHA however does not always specify to attach copy of OSHA in Safety Plan. Now this Chapter specifies that Dive

Safety Plan shall include the copy of OSHA. It seems inconsistent. I understand provisions for diving is important. What is your opinion?

10.2.4 Particular Dive Safety Plans

(1) In compliance with JSSS 1.7.8 [*Particular Safety Plans*], the Particular Dive Safety Plans shall contain all further information specific to each Diving Operation not covered by the foregoing Bid Stage and Commencement Stage Dive Plans together with all supplemental information obtained during pre-dive planning and assessment, to collectively demonstrate the Contractor's compliance with the requirements OSHA and JSSS for each Diving Operation, including for example:

(a) Safety procedures and checklists for each Diving Operation;

(b) Name of each Dive Team member, buddy diver assignments, individual work assignment and responsibility and confirmation from the DPIC that they each comply with all diving health and safety requirements and are therefore approved to work on the Diving Operation;

(c) The planned dive profile for each Diver showing their maximum bottom time and ascent rate with decompression stages and times and taking account of repetitive dives;

(d) Description of all diving equipment, diving gases and consumables, PPE, procedures for their use and signed checklists to confirm compliance;

(e) Description of the workboat and workboat facilities, together with information on the location of the workboat in relation to the dive site, and procedures for the use and operation of the dive boat during Diving Operations, any surface hazards and any restriction in operation due to surface traffic conditions;

(f) Description of all other Contractor's Equipment, tools and consumables for the assigned work tasks, procedures for their use and checklists;

(g) The climatic, marine, natural and physical conditions that are likely to be encountered during any Diving Operation and the procedures for commencement, continuation or stopping of any Diving Operation following any change in these conditions in accordance with JSSS 10.3 [*Climatic, Marine, Natural and Physical Conditions*];

(h) Communication systems and procedures for communications:

(i) between Divers;

(ii) between Divers and the workboat; and

(iii) Between the work boat and the relevant marine authorities.

(i) Any further information and instructions to be given to the Divers, support assistants and other workers related with the Diving Operations and the working methods and safety measures;

(j) The Particular Dive Safety Plan shall be prepared by the DPIC or another Diver that that has the qualification, experience and capability deemed sufficient by the HSO;

(k) The Particular Dive Safety Plan shall be reviewed and approved by the HSO;

(l) The content of the Particular Dive Safety Plan shall be explained to all Dive Team members during the employee briefing by the HSO or DPIC in accordance with OSHA 29 CFR 1910.421(f));

(m) If considered necessary by either the HSO or DPIC, individual Dive Team

members shall be given additional training and testing; and

(n) A copy of the Particular Dive Safety Plan shall be made available at the dive location to each Dive Team member.

10.3 CLIMATIC, MARINE, NATURAL AND PHYSICAL CONDITIONS

10.3.1 General

(1) The Contractor shall compile relevant information from statistical records, recent and current forecasts of conditions which may be encountered in support of the Particular Dive Safety Plan and shall establish criteria and controls for commencement, continuation or stopping of any Diving Operation due to such conditions.

(2) The Commencement Stage Dive Safety Plan shall describe how such criteria shall be applied and how such controls shall be implemented.

10.3.2 Information on Conditions for Particular Dive Safety Plans

(1) Where necessary, the Contractor shall make exploratory dives to survey and establish all relevant conditions at the dive site such that all Particular Dive Safety Plans are based upon the best and most timely available information.

(2) Relevant information shall also be obtained by the Contractor from all available sources and shall include for example the following:

(a) Climatic information and forecasting at the diving location:

(i) Wind speed and direction;

(ii) Air temperature;

(iii) Surface visibility, fog, sea mist;

(iv) Likelihood and intensity of electrical storm; and

(v) Weather forecasting.

(b) Water/Marine Conditions

(i) Sea state; wave height and direction;

(ii) Height and time of tides;

(iii) Water depths;

(iv) Water Temperatures;

(v) Water currents, direction and speed;

(vi) Visibility at depths; and

(vii) Water level variation in rivers or lakes during flood periods.

(c) Physical Conditions

(i) Underwater cables and pipes;

(ii) Wreckage and other artificial obstacles;

(iii) Geotechnical conditions affecting the work; and

(iv) UXO, Dangerous Goods and Hazardous Substances.

(d) Natural Conditions

(i) Natural obstructions;

(ii) Coral reef or other marine life to be protected; and

(iii) Danger from wildlife and precautions to be taken.

(e) Surface Traffic

(i) Surface traffic details, timings and restrictions, and

(ii) Danger, precautions and control of surface traffic.

(f) Diving Works Area

(i) Demarcation of diving location; and

(ii) Limits of working area.

10.4 PERSONNEL FOR DIVING OPERATIONS

10.4.1 Qualification of Diving Personnel

Qualification of the Dive Team members shall be in accordance with the specified OSHA requirements and shall for example include the following:

(1) Each Diver shall possess a valid commercial diving certification for the appropriate training level issued by an internationally recognised Diver competence assessment organisation which shall be approved by the HSO and Engineer.

(2) Each Dive Team member shall have the experience and training necessary to perform assigned tasks in a safe and healthful manner.

(3) Each Dive Team member shall have experience and training in the following:

(a) The use of tools, equipment and systems relevant to assigned tasks;

(b) Techniques of the assigned diving mode; and

(c) Diving Operations and emergency procedures.

(4) All Dive Team members shall be trained in cardiopulmonary resuscitation and first aid to a minimum standard of that recommended by the International Federation of Red Cross and Red Crescent Societies standard course or equivalent.

(5) Dive Team members who are exposed to or control the exposure of others to hyperbaric conditions shall be trained in diving-related physics and physiology.

(6) The qualifications of all Divers shall be checked and verified in accordance with the specified OSHA requirements.

10.4.2 Designated Person-in-Charge (DPIC).

(1) The Contractor shall assign a DPIC to each Diving Operation.

(2) The DPIC shall have experience in, and knowledge of all phases of the Diving Operation for which he is responsible.

(3) The DPIC shall be immediately responsible for the health and safety of the Dive Team.

(4) The DPIC shall be stationed at the dive location, and shall not be stationed at another dive location (i.e., the DPIC must be stationed at one dive location and be responsible only for the Diving Operation at that location).

(5) The DPIC can be a Diver when qualified as a Diver, and when another Dive Team member is available at the dive location who is trained and capable of performing the necessary functions of the DPIC's duties when the DPIC is a Diver in the water.

(6) The qualifications of the DPIC shall be checked and verified in accordance with the specified OSHA requirements.

10.4.3 Duties of DPIC

The DPIC shall have the duties and responsibilities required by the content of this Chapter and the specified OSHA requirements, including the following:

(1) Manage the health and safety of the Dive Team;

(2) Manage and supervise the Diving Operation;

(3) Assign tasks to Dive Team members;

(4) Issue instructions for the Diving Operation to the Dive Team;

(5) Issue instructions to temporarily stop work when the DPIC considers that it is not safe to continue;

(6) Support the HSO with the health and safety management of the Diving Operations;

(7) Ensure that all members of the Dive Team keep records; and

(8) Collect records, check, approve and submit to HSO.

10.4.4 Diver Assignments.

(1) Each Dive Team member shall be assigned tasks commensurate to the persons experience and training, except that limited additional tasks may be assigned to a Diver undergoing training provided that these tasks are performed under the direct supervision of an experienced Dive Team member.

(2) The Contractor shall not require a Dive Team member to be exposed to hyperbaric conditions against the member's will, except when necessary to complete decompression or treatment procedures.

(3) The Contractor shall not permit a Dive Team member to dive or be otherwise exposed to hyperbaric conditions for the duration of any temporary physical impairment or condition which is known to the ~~employer~~ Contractor and is likely to affect adversely the safety or health of a Dive Team member.

(4) No Diver shall dive in any Diving Operation unless the DPIC and the complete Dive Team are present.

10.4.5 Assistants and Duties of Dive Team

The Contractor shall appoint such Divers and support assistants within each Dive Team as are considered necessary by the DPIC for the Dive Team to discharge its duties in a safe and competent manner.

All Dive Team support assistants shall have the duties and responsibilities required by the content of this Chapter and the specified OSHA requirements, including the following:

(1) Operate the air compressors.

(2) Control the valve for the surface supply of breathing air.

(3) Communicate with the Diver so that the Diver descends and ascends properly.

(4) Communicate to supply the air to the Diver properly between the assistants in charge to control the valve and to communicate with the Diver.

(5) Inform the Diver immediately when there is any risk due to a failure of air supply, weather change, sea condition changes, operations of other vessels and potential hazards.

(6) Inspect the connection between the helmet and the breastplate of the Diver before the start of Diving Operations when using a diving helmet.

(7) Coordinate the position of the workboat and avoid any conflict with the Diver.

(8) Ensure the safety of the Diver by maintaining communication with voice or video communication device.

(9) Ensure the safety of the Diver by observing the air bubble of breathing of the Diver.

10.4.6 Health Checks

(1) In addition to the requirements of JSSS 1.18 [*Proper Placement of Contractor's Personnel*] and in compliance with the OSHA requirement for the Contractor to make himself fully aware, the Contractor shall carry out particular health checks on all Divers to ascertain that they are medically and physically fit to perform their duties.

(2) Such checks shall include for example checks for the existence of any illness or any deficiency in:

(a) The respiratory system, cardiovascular system, nervous system, musculoskeletal system, ear, nose and throat, and endocrine system;

(b) Vision;

(c) Dental health; and

(d) Any other health conditions and disease which may affect the Diving Operation.

(3) Any Diver that does not pass the above checks shall not be allowed to dive until the condition has improved and after further checks are successful.

(4) Additionally, and in accordance with the OSHA standard:

(a) The DPIC shall inquire into each Diver's health prior to each Diving Operation; and

(b) The Contractor shall advise all Divers of the procedures for reporting physical problems or adverse physiological effects during and after diving.

(5) Consistent with the above and the OSHA provisions, the Contractor shall not require any Diver to dive or otherwise work under hyperbaric conditions when the Diver:

(a) Has any ailment that is likely to adversely affect the safety or health of any member of the Dive Team;

(b) Lacks the necessary training or education; or

(c) Refuses to work under such hyperbaric conditions.

(6) Should a Diver request termination during a dive, it may be necessary to prolong the Diver's exposure to hyperbaric conditions to complete decompression or medical recompression treatment to avoid serious physical harm or death to the Diver.

10.5 DIVING EQUIPMENT, TOOLS, FACILITIES AND WORKBOATS,

10.5.1 Diving Equipment

(1) The Contractor shall provide workboats, diving equipment, work tools and other facilities fully in compliance with OSHA 29 CFR Part 1910, Subpart T – Commercial Diving Operations, §1910.430 Equipment.

(2) Workboats, diving equipment, work tools and other facilities are defined as Contractor's Equipment and shall therefore comply with JSSS 1.35 [*Contractor's Equipment, Temporary Works, Safety Equipment and PPE*].

10.5.2 Diving Workboats

(1) Workboats shall be:

(a) Robust and seaworthy;

(b) Stable in operation;

(c) Suitable size, draft and shape to suit the Diving Operations;

(d) Equipped with marine band radio and with a shore station that is attended at all time that the Workboat is in operation and can provide emergency support if

required;

(e) Equipped with marine lighting;

(f) Equipped with life jackets, first aid sets, distress flares and other necessary emergency equipment;

(g) Provided with secure and robust ladders or platforms for Divers to easily enter or exit the water; and

(h) Provided with a roof and cabin to protect the crew and Dive Team from heat, cold and rain.

(2) Workboats shall be provided with the means to assist an injured Diver from the water (such as an in-water platform, small boat or basket stretcher) or into a diving bell. The Contractor shall ensure that there are sufficient Dive Team members or additional Contractor's Personnel to assist.

(3) Unless otherwise specified the Contractor shall provide a separate small boat for rescue at the workboat, suitable for assisting and recovering Divers who are in difficulty or have drifted away from position.

10.5.3 Inspections and Maintenance

The Contractor shall comply with all requirements of JSSS 4.2 [*Inspection, Maintenance and Repair*] and ensure that workboats, equipment, tools and facilities are inspected, fully maintained and operational when mobilised to the Site and thereafter are inspected, maintained and repaired before the commencement of the first and of all subsequent days of operation.

The Contractor shall keep the inspection and working records and make them available for the inspection of the Engineer upon request.

The Contractor shall prohibit use of workboats, equipment, tools and facilities until the requirements of JSSS 4.2 [*Inspection, Maintenance and Repair*] are fully complied with.

10.6 PARTICULAR SAFETY MEASURES

10.6.1 Measures before Diving Operations

The Contractor shall take the following measures before commencement of any Diving Operation:

(1) Dive Teams

(a) Discuss the diving methods and safety procedures,

(b) Discuss the work methods and procedures and the assignment and placing of the Divers and work task sharing;

(c) Advise of the diving timetable and required compliance;

(d) Inform of the climatic, marine, natural and physical conditions;

(e) Conduct the health check; and

(f) Check that support assistants and crew on the workboat are wearing life jackets.

(2) Equipment, work tools and other facilities

Inspect the equipment, work tools and other facilities, prohibit use when any defect or non-compliance is found, reinspect when a repair or replacement is completed.

(3) Diving workboats

(a) Inspect workboats and rescue boats;

(b) Display the international maritime diving signal flag and display signs and lights as necessary on the workboat;

(c) Securely anchor the workboat to the seabed; and

(d) Stop the engine during Diving Operation.

(4) Diving Operation site

(a) Provide signs including red flags, buoys and notices to demarcate the Diving Operation site; and

(b) Install a downline with depth indication marks at 3m intervals from the workboat to the sea bed at the Diving Operation site to act as a guideline for descending or ascending and as a guide for transfer of tools and equipment.

(5) Diving Equipment

(a) Check the diving equipment to be carried by the Divers;

(i) For surface-supplied air diving, check for example: air connections, compressed air supply, weight belt, voice or video, communication device, torch, watch, water depth gauge, knife and the like.

(ii) For SCUBA diving, check for example: first stage, second stage and spare regulators, available air volume, secondary air supply, buoyancy control device, weight belt, tank straps, air valve, communication device, watch, water depth gauge, knife and the like.

(b) Check that the downline is secure and tight;

(c) Ensure as a minimum, that a two-way voice or video communication link is set up and working between at least between a single selected working Diver and the DPIC at the surface control point; and

If any defect is identified by the above checks, prohibit the Diving Operation from commencing.

10.6.2 Measures during Diving Operations

The Contractor shall take the following safety measures during each Diving Operation:

(1) A designated member (or members) of the workboat crew shall assist the DPIC by observing the Diving Operation during SCUBA diving and inform the DPIC when divers are carried away by currents and their location when they surface after their dive ascent.

(2) A designated member (or members) of the workboat crew on the workboat shall also keep a look-out for any other vessels that may approach the Diving Operation site.

The designated member(s) shall alert any other vessels related or not related with the Diving Operations with requisite warning blasts from the workboat's siren, loudhailer, flares and/or flags, etc. in order to prevent them from approaching and entering the Diving Operation site.

(3) Measures for the Divers

(a) Prohibit the Dive Team from commencing any Diving Operation without the DPIC and the complete Dive Team present, ready and equipped;

(b) Ensure that the Divers use the ladders for entering and exiting the water for the Diving Operation;

(c) Ensure that Divers use the downline for descending and ascending;

(d) Maintain constant voice or video communication through the provided link; and

(e) Ensure that the Divers constantly communicate with each other by hand signals and slate messaging.

(4) Ensure the DPIC or a Dive Team member at the surface, constantly observe the weather and marine conditions and there is any change that meets the work stop criteria, or if the conditions are considered to be otherwise unsafe by the DPIC, immediately stop the Diving Operation and ensure that the Divers are removed from the water in a safe and controlled manner.

(5) Safety and Health Management of Diving Operations

(a) Manage the Diving Works for each Diver so the Diver takes sufficient and safe surface time between dives so that there is no risk to his health and wellbeing;

(b) Ensure that sufficient numbers of Divers and standby Divers are available to ensure that Divers are not in the water for excessive periods;

(c) Ensure that each Diver keeps an accurate record of his dive profile for every dive, showing overall time, bottom time and depth, decompression times and depths and that these are summarised by the Diver with a record of the number of dives on a daily, weekly and monthly basis;

(d) Ensure that the DPIC reviews and approves such records and that same are submitted by the DPIC to the HSO for the HSO's review and countersignature and made available for the Engineer's inspection; and

(e) Unless otherwise required by the Law, the Contractor shall retain all dive records for the periods specified in the OSHA 29 Subpart T 1910.440

10.7 DIVING ACCIDENT RESPONSE PLAN

10.7.1 General

The Contractor shall prepare an Accident Response Plan for the Diving Works in accordance with JSSS 1.24 [*Accident Response Plan*].

10.7.2 Provisions by the Contractor

The Contractor shall comply with following requirements prior to Diving Works.

(1) In accordance with the requirements of OSHA 1910.423(c) [*Recompression facility*], the Contractor shall make a decompression chamber available at the dive location to treat decompression sickness.

NK6/21: agreed to the above change. Can you reply to the following comments:
1) The original draft stipulate "unless otherwise stipulated, …" and User Guide mention the Employer's requirements. Is it necessary to mention "unless …" in the Clause about decompression chamber?
2) Shall the bidder provide cost for the decompression chamber when the bidder judges there is risk of decompression sickness? If the Bidder does not judge there is risk, is the Bidder not necessary to provide the cost? There is difference between bidding price depending Bidders' risk analysis whether there is risk of decompression sickness. How do you think this?

(2) The decompression chamber shall comply with the requirements of OSHA 1910.423(c) [*Recompression facility*].

(3) The Contractor shall also provide such medical support facilities as are necessary to ensure the health and safety of any members of the Dive Team that may require treatment for decompression sickness.

(4) In accordance with OSHA requirements the Contractor shall provide an emergency aid contact list, rescue and safety equipment (including decompression facilities), a first-aid kit and supplies. The rescue and safety equipment and first-aid kit and supplies provided at the dive location shall be appropriate for the diving works and approved by a physician. When used in a decompression chamber or bell, the first-aid kit and any medication shall

be suitable for use under hyperbaric conditions.

(5) The HSO and DPIC shall determine whether the emergency aid list is complete and is available to all Dive Team members and also determine whether the rescue and safety equipment (including decompression facilities) and first-aid kit are complete and available at the dive location.