

1.8.3 Contractor's Site Office and Facilities

1.8.3.1 General

The Contractor shall provide, maintain and operate the Contractor's Site office and construction facilities which include, among other things, staff quarters, warehouse, workshop, laboratory, labour camp and other temporary buildings and facilities necessary for the execution of the Works, and shall remove them upon the completion of the Works except as otherwise specified in the Contract or directed by the Engineer.

The Contractor shall submit revised layout plans and general particulars of such temporary buildings and facilities to the Engineer for his approval. The construction of any buildings or facility shall not be started until the Contractor's proposals have been finally approved by the Engineer.

1.8.3.2 Construction Camp

a The Contractors shall make his own arrangements for the obtaining a suitable site for the construction by the Contractor, as proposed in his Tender and approved in the Letter of Acceptance, of housing camps and for other facilities and amenities for his employees and for the employees of his subcontractors.

b The Contractor's staff quarters and labour camp shall be provided with all the necessary services for drainage, electricity, lighting, roads, paths, parking spaces, fencing, sanitation including sewage treatment, water supply, cookhouse, fire prevention and fire fighting equipment.

1.8.3.3 Contractor's Site Office

The Contractor shall provide the Site office as soon as the preparatory work at the Site takes place. The Site office shall be constructed in a location approved by the Engineer with all the necessary facilities for drainage, lighting, sanitation, parking spaces, etc.

1.8.3.4 Completion of Site Office and Construction Facilities

The Contractor shall notify the Engineer in writing as soon as the temporary buildings and facilities have been constructed and are ready for operation. The Engineer shall certify that such buildings and facilities have been constructed in accordance with the approved plans.

1.8.4 Engineer's Site Office and Facilities

1.8.4.1 General

The Contractor shall provide, maintain and operate an office facility for the sole use of the Engineer and his staff. The facility shall include desk working areas for the Engineers staff numbering 5 and meeting facilities shall cater for 10 persons.

The office facility may be either an existing building in close proximity to the site, owned or rented by the Contractor, or a new, temporary facility constructed on or in close proximity to the site.

The Contractor shall submit plans and particulars of his proposal for the Engineer's Site office for the Engineer's approval prior to constructing the facility or entering into any agreement for renting a premises for the intended purpose.

The requirements to be fulfilled under this clause are detailed hereunder.

1.8.4.2 Office Building

The building shall be not less than 70 m² in plan area and shall contain rooms for use as office space and for the conduct of meetings, a kitchen and a toilet.

All offices and meeting rooms shall be air conditioned.

Architectural items to be provided shall include blinds, floor coverings and light fittings.

Furniture to be provided shall include filing cabinets, drawing storage units, book shelves, desks and chairs, meeting table and chairs.

Utility services shall include electric power, telephone, water supply and sewerage. The cost of all utility services except telephone usage charges shall be borne by the Contractor.

The Contractor shall provide all other incidental items such as white boards, desk lamps, water cooler, crockery etc. in order that the office environment is functional, secure, complete and to the approval of the Engineer.

1.8.4.3 External works

If the facility is constructed on a green site, external works shall include perimeter fencing, paved car parking for a minimum of 2 vehicles and footpaths.

If the facility is an existing premises parking areas for at least 2 vehicles shall be exclusively available for the Engineer and his staff. Other external works, as specified above, shall be provided to the extent practicable.

1.8.4.4 Manpower

The Contractor shall provide full-time watchmen and a janitor.

1.8.4.5 Maintenance and Operation

The Contractor shall ensure that the Engineer's site office is at all times maintained in good order and provided with the utility services noted above.

1.8.4.6 Removal and Hand-over

At the conclusion of the Contract the Contractor shall, in the event that the facility comprises a new, temporary building on or near the site, remove all of the buildings and facilities provided under this clause and reinstate the area to the satisfaction of the Engineer and all items of furniture and office equipment shall be handed over to the Employer.

In the event that the facility is owned or rented by the Contractor, at the conclusion of the Contract the facility shall cease to be part of the Works and all items of furniture and office equipment shall be handed over to the Employer.

1.8.5 Payment

1.8.5.1 Temporary Construction Road and Bridge

Payment for temporary construction road and bridge will be made at the lump sum price entered therefore in the priced Bill of Quantities which shall include the cost of all labour, equipment and materials for designing, constructing and maintaining the temporary roads and bridges and related protective works, removing or levelling such works, where required, maintaining such work and all other works required by clause 1.8.2 and for other obligations of the contractor where it is written in the specification that payment is included in this item.

Monthly progress payment will be calculated on the basis of paying 70% of the said lump sum in proportion to monthly progress of the whole of the Works.

The final payment, representing 30% of the lump sum, will be paid following the Engineer's approval of the removal of the Contractors site office and facilities as applicable.

1.8.5.2 Contractor's Site Office and Facilities

Payment for Contractor's Site Office and Facilities will be made at the lump sum price entered therefore in the priced Bill of Quantities.

Monthly progress payment will be calculated on the basis of paying 70% of the said lump sum in proportion to monthly progress of the whole of the Works.

The final payment, representing 30% of the lump sum, will be paid following the Engineer's approval of the removal of the Engineer's site office and facilities as applicable.

1.8.5.3 Engineer's Site Office

Payment for Engineer's Site Office and Facilities will be made at the lump sum price tendered therefore in the priced Bill of Quantities.

Progress payments will be made monthly in proportion to the to the monthly progress of the whole of the Works.

1.9 TEMPORARY FACILITIES

1.9.1 General

1.9.1.1 Temporary Facilities

- a For the purposes of this Specification temporary facilities shall include facilities such as crushing plants, concrete batching plants, casting yards, prestressing yards, etc. used for the preparation and storage of materials for the Works.
- b All Temporary Facilities shall be provided, installed, operated, maintained and subsequently removed by the Contractor, except as otherwise provided in the Contract.

1.9.2 Approval of Temporary Facilities

- a The Contractor's proposal for the erection of all temporary facilities shall be in accordance with the proposals submitted in with the Contractor's Bid or with such modifications as approved by the Engineer from time to time.
- b The Contractor shall submit to the Engineer for approval, within thirty (30) days from the receipt of the Letter of Acceptance, the revised general plan of temporary facilities, based on the proposals in the Bid including scale, capacity, layout, dimension, installation programme and schedule, and foundations. The Engineer may direct the Contractor to modify or change the proposals, if in the opinion of the Engineer it is deemed necessary. Such direction of the Engineer shall not relieve the Contractor from any of his obligations and responsibilities under the Contract.
- c Before starting any part of temporary facilities the Contractor shall, at least thirty (30) days before starting construction, submit to the Engineer for the approval the detailed proposal for such part of the temporary facilities including plans, drawings, schedules, and other information as specified in clauses 1.4 and 1.5 of the General Specification which will supplement or modify the general plan of the temporary facilities already submitted by him.

1.9.2.1 Removal of Temporary Facilities

Unless otherwise directed or approved by the Engineer, all temporary facilities constructed by the Contractor shall be removed and the area made safe,

vegetation and natural drainage reinstated prior to the end of the Defects Liability Period.

1.9.2.2 Payment

Separate payment will not be made for temporary facilities and all the costs thereof shall be deemed to be included in the lump sum for Contractors Office and Facilities entered in the priced Bill of Quantities.

1.9.3 Use of Construction Facilities and Work Areas

1.9.3.1 Location of Temporary Works

The Site as shown on the drawings will be the land or space to be provided by the Employer and shall be used by the Contractor free of charge for the execution of the Works. The Contractor shall, as far as practicable, lay out the temporary facilities within the Site.

1.9.3.2 Damage to Crops and Property

The Contractor shall limit the movement of his crew and equipment so as to minimise damage to crops and property. Before acceptance of the Works by the Employer the Contractor shall restore the land occupied by the temporary facilities as nearly as practicable to its original condition.

1.9.3.3 Indemnity against damage or injury

The Contractor shall be directly responsible to the Employer for any damage or injury to crops or land whether in the possession of the Employer or any other person, resulting from his operations and shall indemnify and keep indemnified the Employer against all losses and claims for such damage and injuries which may arise in connection with the risk as provided for in clause 12 of the Conditions of Contract.

1.9.3.4 Rights of Others to Use Construction Facilities

Other contractor employed by the Employer and their workmen and workmen of the Employer and of other Government authorities who will be carrying out work on or near the Site of the Works shall have the right to use, without charge, the access facilities, including bridges and roads, of which the Employer has given possession to the Contractor or which have been constructed or acquired by the Contractor for use in constructing the Works.

1.9.3.5 Facilities to be made available by the Contractor

Reticulated water, drainage systems and any other such facilities, constructed or acquired by the Contractor for use in carrying out the Works, which are available without entailing any appreciable increase in cost to the Contractor as determined by the Engineer shall be made available without charge to the Employer and any other contractors employed by the Employer at mutually convenient times.

1.9.3.6 Temporary Works by Others

- a In the event that other contractors employed by the Employer have constructed temporary works in the vicinity of the Works covered by the Contract, the Contractor shall have free and unrestricted use of all temporary roads constructed by other contractors but shall not cause any obstruction on such roads.
- b Before the completion of other contracts, the Contractor shall notify the Engineer of the temporary roads constructed by other contractors and areas of land utilised by temporary works of other contractors that he proposes to

use for the remaining period of such temporary roads and areas, as approved by the Engineer, and they shall be deemed to form part of Contractor's obligations under this clause as if constructed by him.

- c The Contractor shall maintain such roads and areas from the date of possession in accordance with the requirement for all items provided under Establishment. On the completion of the Works, such roads and areas, unless otherwise approved by the Engineer, shall be removed and the land restored to its original condition prior to commencement of the other contracts to the satisfaction of the Engineer.
- d Separate payment will not be made for maintenance, improvement, removal and reinstatement of these roads and areas, where required, and the cost of all works required by this clause shall be deemed to be included in the item in the priced Bill of Quantities for Temporary Construction Road and Bridge

1.10 TEMPORARY TRAFFIC CONTROL

1.10.1 Scope

To facilitate traffic through or around the Works, or wherever ordered by the Engineer, the Contractor shall install and maintain at prescribed points on the Site and at the approaches to the Site, traffic signs, lights, barricades and other facilities as required by the Engineer for the direction and control of traffic. The wordings on all signs shall be both in the English and Indonesian language. The size, colour, lettering and location of all signs shall be subject to the Engineers approval. Attention shall be paid to the international system of traffic sign or as applicable in Indonesia.

Where required, or on when directed by the Engineer, the Contractor shall furnish and station competent flagmen whose sole duty shall be to direct the movement of the traffic through or around the Site.

In addition to the requirements of the above Subclauses, the Contractor shall furnish and erect, within or in public areas in the vicinity of the Site, such warning and guide signs as may be ordered by the Engineer.

1.10.2 Payment

Separate payment will not be made for complying with the provisions of this Clause 1.10 and the cost of this work shall be deemed to be included in the lump sum prices entered in the priced Bill of Quantities for Temporary Construction Road and Bridge.

1.11 GARBAGE DISPOSAL

1.11.1 Scope

- a The Contractor shall undertake the collection of and disposal of all garbage from within the Site, the Contractor's Site office, the Contractor's temporary facilities, the Engineer's Site office and other areas used in connection with the Works. Garbage collections shall be made at least twice each week and shall continue until completion of the Works.
- b Garbage shall be disposed of in a properly constructed incinerator followed by burial of the residue in an approved location. The Contractor shall submit the proposed design and layout of garbage disposal facilities for approval. Where available, garbage collection by local authorities shall be used in preference to disposal as noted above.

1.11.2 Payment

Separate payment will not be made for the provision for garbage disposal and the cost of this work shall be deemed to be included in the lump sum price entered in the priced Bill of Quantities for Contractor's Site Office and Facilities.

1.12 REMOVAL OF FLOATING RUBBISH

1.12.1 Scope

Removal of all floating rubbish which affects the progress of the Works shall be the responsibility of the Contractor.

All floating rubbish retrieved shall be removed from the Site in a manner for which the Engineer has given his prior approval.

1.12.2 Payment

Separate payment will not be made for the provision for Floating Rubbish Removal and the cost of this work shall be deemed to be included in the rates and lump sum prices entered in the priced Bill of Quantities.

1.13 DIVERSION AND CARE OF WATER

1.13.1 General Requirements

The Contractor shall be responsible for the removal of all water encountered during the execution of the whole of the Works.

The Contractor shall design, construct and maintain all temporary diversion and protective works which are necessary for construction and to prevent surface, drainage and groundwater from entering excavations and shall furnish all materials required therefor.

The Contractor shall furnish, install, maintain and operate all necessary pumping and other equipment for dewatering the various parts of the Works on the surface, in open cut excavation and in the river channel and shall maintain the foundations and other parts of the work free from water as required for constructing each part of the Works and as required, and for a period after any part of the Works is completed for inspection, safety or for any reason determined by the Engineer to be necessary.

The Contractor shall not interrupt or interfere with the natural flow of the West Floodway or Garang River or of other existing drainage channels for any purpose without the written approval of the Engineer.

The Contractor shall remove all water from the Sites of all construction work and shall keep the excavations free of water while excavating, preparing foundations, pile driving and while placing backfill or concrete or as otherwise required for completing the Works. The Contractor shall be responsible for and shall repair, at his expense, any damage to foundations, excavation slopes or any other parts of the Works caused by water, floods or by his failure to protect the Works in accordance with the requirements of this clause. Temporary diversion and protective works, conduits, and sumps shall be readily accessible at all times and the Contractor shall maintain in operating condition an assembly of standby transportable and portable lighting facilities which is adequate, as determined by the Engineer, to provide illumination, at short notice, to any or all of the temporary works.

All temporary cofferdams and protective work shall be removed or levelled as approved by the Engineer to give a neat appearance and so as not to interfere in

any way with the operation or usefulness of the permanent works. Temporary cofferdams constructed within the boundaries of the permanent works shall be removed completely. Temporary cofferdams shall not be constructed on or against any part of the permanent works unless the Contractor can demonstrate that no damage to the permanent works will result and shall not be so constructed without the approval and the presence of the Engineer.

1.13.2 Payment

Payment for Coffering and Dewatering for specific items of work where payment items are included in the Bill of Quantities shall be made in accordance with Clause 1.2, Coffering and Dewatering, of the Technical Specification

For all other cases, no payment shall be made for complying with this general obligation of the Contractor described in this clause and the cost of this work shall be deemed to be included in the rates and lump sum prices entered in the priced Bill of Quantities.

1.14 MAINTENANCE OF EXISTING PUBLIC ROADS

1.14.1 General

The Contractor shall maintain all roads within the vicinity which he uses for purposes of carrying out the Works required by this Contract

1.14.2 Contractor's Operations

- a If the Contractor's operations obstruct or hinder the passage of traffic on the roads described in this Clause, the Contractor shall provide and maintain for the duration of such disruption an alternative route, approved by the Engineer, of a standard not less than that of the road so affected.
- b Existing roads and bridges have their load limits and the Contractor shall be responsible for determining such load limits. Before moving any heavy construction traffic into highways, roads, and bridges, the Contractor shall make suitable arrangements with the relevant authorities and obtain their approval for the passage of such traffic.
- c The Contractor shall not travel metal-tread vehicles or equipment on any bituminous sealed road surface. Rubber tyred vehicles conforming to applicable load restrictions will be permitted to use bituminous sealed road surfaces.
- d All the work of improvements or modifications on the existing public roads made by the Contractor for his own convenience shall be at the Contractor's own risk and expense.

1.14.3 Maintenance of Roads

- a The Contractor shall be wholly responsible for maintenance of the public roads used by him in the execution of the Works.
- b In maintaining these roads the Contractor shall :
 - i reinforce to pass his traffic, if necessary, and keep in good working condition at all times all road structures, bridges, culverts, drains and other waterways;

- ii patch potholes with approved materials, keep the road surfaces in good repair, and perform all grading and necessary resurfacing;
- iii maintain all fenders, posts, guideposts, guard posts, rails, fencing, signs, signposts and other roadside structures;
- iv keep road surfaces and shoulders free from all earth, mud, stones, timber, rubbish, and other debris and materials removed from the Works;
- v adequately maintain cut-slopes and fill-slopes of the roads and appurtenant drainage ditches; and
- vi keep the road surface watered where dust is likely to be a safety or health problem.

1.14.4 Payment

Separate payment will not be made for complying with the requirements of this Clause, and the cost of this work shall be deemed to be included in the lump sum prices entered in the priced Bill of Quantities for Temporary Construction Road and Bridge.

1.15 PLANT, EQUIPMENT AND MATERIALS TO BE FURNISHED BY THE CONTRACTOR

1.15.1 General

1.15.1.1 Plant, Equipment and Materials to be Furnished by The Contractor

The Contractor shall furnish all items of plant, equipment and materials required for the execution of the Works except as otherwise provided for in the Contract.

1.15.1.2 Trades Names and Catalogue Numbers

Unless specifically stated otherwise, any reference in this Specification or on the Drawings to trade names or catalogue numbers or to a particular manufactured product does not imply that article or product so mentioned is the only one that may be supplied or used. Any reference so made is purely given as to the standard of the quality, class, type and finish of the items specified to be used. Articles or products of similar type and quality produced by other manufactures shall be submitted by the Contractor to the Engineer for approval for use in the Works.

1.15.1.3 Conformity of Plant, Equipment and Materials with Specification.

- a All plant, equipment and materials which form part of the permanent Works shall be new and shall conform to the standards provided in the Specification. Where the requirements for any plant, equipment and materials are not stated in this Specification, the plant, equipment and materials shall conform with the appropriate and most recent Japanese or American Standard or such other standard as the Engineer may approve.
- b The Contractor shall make diligent effort to procure the specified materials but where, because of priorities or other causes, materials required by the Specification are not available, substitutes may be used with the prior approval of the Engineer. The approval will state the amount of price adjustment, if any, to be made. The Engineer's decision as to whether substitution will be permitted and as to what substitute materials may be used will be final, binding and conclusive.

1.15.1.4 Payment

- a) When a separate item, which includes the furnishing of any plant, equipment or materials, is provided in the Bill of Quantities, the cost of furnishing, transporting, storing and handling such plant, equipment or materials shall be deemed to be included in the rate or lump sum price entered for that item in the priced Bill of Quantities.
- b) Where no separate item is provided in the Bill of Quantities for furnishing any plant, equipment or materials required to be furnished by the Contractor, the cost of furnishing, transporting, storing and handling such plant, equipment or materials shall be deemed to be included in the rates or lump sum prices entered in the priced Bill of Quantities for the items for which plant, equipment or materials are required.

1.15.2 Inspection of Plant, Equipment and Materials

- a) Plant, equipment and materials furnished by the Contractor shall be subject to inspection in accordance with the Contract any one or more of the following locations as determined by the Engineer:
 - The place of production or manufacture.
 - The shipping point.
 - The Site.
- b) The Contractor shall furnish without additional charge all facilities, labour and materials reasonably needed for performing the inspections, examinations and tests as may be required by the Engineer.
- c) The Contractor shall submit the Engineer all information covering the plant, equipment and materials required by the Engineer for the purpose of inspection which shall in no way relieve the Contractor from his responsibility for furnishing plant, equipment and materials in compliance with the Specifications.
- d) Separate payment will not be made for complying with the requirements of this Clause and all costs shall be deemed to be included in the rates and lump sums entered in the priced Bill of Quantities.

1.16 SAFETY, HEALTH CONTROL AND SECURITY

1.16.1 General

The Contractor shall be responsible for all safety, health controls and security and shall submit to the Engineer details of the organisations and regulations and regulations for these purposes.

1.16.2 Safety Precautions

1.16.2.1 General

The Contractor shall comply with any safety instruction given by the Engineer. In the performance of the Works, the Contractor shall exercise every reasonable precaution to protect from injury persons or property. The Contractor shall erect and maintain all necessary temporary fencing, barricades, barriers, signs and lights and provide fire alarm, fire extinguishing and fire fighting services at strategic points on the Site and adequate ventilation, lighting and safe working conditions for his workmen engaged in the performance of the Works. The Contractor shall adopt and enforce such rules and regulations as may be

necessary and desirable in the work and in its supervision. Safety measures shall include but shall not be limited to those measures mentioned in this clause.

1.16.2.2 Safety Officer

The Contractor shall constantly employ during the progress of the Works an employee qualified in safety, and familiar with the type of work being performed, whose assignment shall include initiation of measures for the protection of health and the prevention of accidents and who shall see, by personal inspection, that all safety rules and regulations are enforced. The Contractor shall hold regularly scheduled safety meetings at least once each month with his engineers, supervisors and foremen and, when directed, with the Engineer. The Contractor shall keep the Engineer advised as to when these meetings are to be held and shall provide the Engineer with a copy of the proposed agenda.

1.16.2.3 Temporary Fencing

The Contractor shall erect, maintain and remove suitable and approved temporary fencing to enclose such areas of the Permanent Works and areas of land occupied by the Contractor within the Site as may be necessary to implement his obligations under the Contract in approved manner. Where any temporary fence has to be erected alongside a road, footpath, or other public thoroughfare, it shall be of the type required by and shall be erected to the satisfaction of the Government authority concerned.

1.16.2.4 Lighting

- a In the event of night work being carried out, the Contractor shall provide sufficient lighting to ensure that in all places where work is in progress :
- i safe working conditions are provided for the Contractor's personnel and the Engineer;
 - ii the Works can be constructed in complete compliance with the Contract; and
 - iii a complete inspection of all Works in progress can be made by the Engineer.
- b Unless otherwise directed by the Engineer, the minimum service illuminance on ground or working surfaces to be provided for the various operations or work areas shall be as tabulated below :

OPERATION OR AREA	ILLUMINANCE	
	Design Value (Lux)	Measured Minimum Value (Lux)
Earthworks and excavation	50	20
Temporary Bridge	20	10
Access and haul roads where hazardous conditions exist cross traffic or other	20	10
Concrete placing	100	50
Maintenance shops and Auxiliary buildings	300	200

- c All moving equipment or plant used during night operations or in tunnels shall be equipped with sufficient lights and reflectors.
- d Not less than fourteen (15) days before the start of any underground or night operations, the Contractor shall submit to the Engineer his proposals for lighting in the areas in which he proposes to work at night. The Contractor shall modify the proposals if directed and shall not begin operations at night, until the proposals for lighting have been approved.
- e The submission to or approval by the Engineer of the Contractor's proposals for lighting shall not relieve the Contractor of any of his liabilities or obligations under the Contract.

1.16.2.5 Signs

- a The Contractor shall provide all necessary signs for the Works. These shall include, but not be limited to
 - i standard road signs;
 - ii warning signs;
 - iii danger signs;
 - iv control signs;
 - v safety signs; and
 - vi direction signs.
- b Wording on all signs shall be in the Indonesian language. The size, colour, lettering and location of all signs will be subject to approval, and attention shall be paid to international system of signs.
- c The Contractor shall maintain all signs placed by himself as well as those placed by the Employer.
- d If the Engineer considers that the system of signs provided by the Contractor is inadequate to ensure safety, or unsatisfactory in other respects, the Contractor shall add to, amend, or otherwise change the system to the satisfaction of the Engineer.

1.16.2.6 Other Safety Measures

- a When working in the vicinity of electrical equipment and in the interest of safety and security, the Contractor shall complete the erection of any safety fencing around electrical and mechanical equipment by the time that the said apparatus is connected to any electrical supply.
- b Explosives - in the use, handling and storage of explosives, the Contractor shall comply with the guidelines given in Clause 1.16.4 and with all statutory regulations of Indonesia, and the 'Safety Regulations for Sensitised Ammonium Nitrate Blasting Agents' (United States Department of the Interior, Bureau of Mines). The handling or use of explosives shall be discontinued during the approach and progress of a thunderstorm. All persons shall be removed from danger areas to a place of safety during such periods. The Contractor shall supply and install a suitable approved instrument to continuously measure atmospheric electric activity during blasting operation and to sound an alarm when such activity reaches danger levels.
- c Use of Lasers – The use of lasers on the Site shall be done with due regard to eye hazard and all personnel on the Site shall be warned accordingly.

- d Safety instructions - Within sixty (60) days of receipt of the Letter of Acceptance the Contractor shall, at his own cost, supply and issue to his employees, those of his subcontractors and the Engineer, in English, Bahasa Indonesia and in other languages used by his employees at the Site, a booklet containing safety regulations based on good practice. The booklet shall be pocket size and issued to each person employed at the Site. Proof copies of the booklet shall be submitted to the Engineer for approval before printing and amendments shall be made to the booklet to his entire satisfaction. The Contractor shall issue the booklet immediately after printing as required by this clause and ensure that all employees are fully conversant with the instructions. Safety instructions shall deal with all safety including but not limited to the following items where relevant to the Works :

- i protective clothing, headgear and footwear;
- ii use of lifting equipment;
- iii use and storage of explosives;
- iv earthmoving;
- v formwork and reinforcement erection;
- vi concreting;
- vii structural steelwork;
- viii compressed air;
- ix welding and painting;
- x routine for accidents or fires; and
- xi watchman, warning notices and barriers.
- xii electrical safety

The Contractors shall allow for ten (10) booklets in the English language for the use of the Engineer.

- e Accident Report - The Contractor shall promptly report to the Engineer, in a form to be prescribed, all accidents involving death or serious injury to staff or workmen, and shall furnish monthly reports of all accidents to staff or workmen involving loss of time, giving such information as may be directed.

1.16.2.7 Provision of Safety Equipment

All persons employed on the Works are to be provided with safety equipment appropriate to the tasks upon which they are engaged such as helmets and safety equipment shall be compulsory as deemed necessary by the Engineer.

1.16.2.8 Payment

Separate payment will not be made for complying with the provisions of this Clause and all costs shall be deemed to be included in the rates and lump sum prices entered in the priced Bill of Quantities.

1.16.3 Sanitary Arrangements

1.16.3.1 Scope of Work

- a The Contractor shall keep the Site in a clean and hygienic condition, and shall provide and maintain sanitary conveniences for use of the persons employed in the Works to the extent, in the manner and at such places as approved by the Engineer and by any Government health authority concerned. All persons connected with the Works shall be enjoined to use these conveniences.

- b The Contractor shall install, operate and maintain an adequate treatment process for disposal of sewage from all temporary buildings including houses, offices, camps, etc., to be constructed by the Contractor, and from all temporary toilet facilities at the Site. Sewage shall be disposed of in a hygienic manner. The Contractor shall post notices and take such other necessary precautions as may be necessary to keep the Site clean. The sewage treatment plant shall be subsequently removed upon completion of the Contract.

1.16.3.2 Payment

Separate payment will not be made for complying with the requirements of this Clause and all costs shall be deemed to be included in the item in the priced Bill of Quantities for Contractor's Site Office and Facilities.

1.16.4 Explosives and Fuels

1.16.4.1 General

- a The Contractor shall make arrangement for the transportation, storage and handling of explosives and fuels in a safe manner to protect the public in accordance with the laws and security regulations of Republic of Indonesia.
- b The Contractor shall obtain all necessary licences and shall pay all fees and charges as may be necessary for moving explosives and fuels from place to place and storing at the same. The Contractor shall prepare and file all applications and obtain the approvals from the authorities of the Government of Indonesia concerned.
- c The Contractor shall furnish and install an efficient warning system, such as, but not limited to sirens and signs, so that adequate warning may be given to all workers and the public endangered by the charging or firing the explosives. The Contractor shall ensure, prior the discharging an explosive, that the area to be blasted is clear of all residents, pedestrians, and vehicular traffic. In addition, he shall post all flagmen on each of the roads leading to the areas so as to stop and prevent any traffic and person from entering the area until the "all clear" notice is given.
- d Explosives shall be stored at a safe distance from the public areas, work areas and living quarters. The location of explosives magazines compound shall be as approved by the Engineer. The compound shall be surrounded with barbed wire and the magazine shall be protected by safety locks, shall be well-ventilated, and shall be fitted with lightning arresters. The explosive magazine shall be surrounded by earth dikes, if so required by safety regulations or directed by the Engineer, according to the location of the Site of the magazine. Adequate air space shall be provided between the ceiling and the roof to prevent internal room temperatures rising to dangerous levels. The Contractor shall not make use of any explosive without the approval of the Engineer. Approval by the Engineer shall not relieve the Contractor from any of his obligations and responsibilities for all blasting operations.
- e The Contractor shall keep a record of use of each kind of explosive, detonator and lead wire by preparing a daily record of warehousing, delivery and in-stock quantities, and shall report periodically to the Engineer as directed.
- f If electrical blasting is used, possible electric discharge in the ground due to thunderstorm, electric lines, electric motors, etc., shall be carefully observed. As soon as a discharge which could affect the safety level of detonators is noted or anticipated, electrical blasting operation shall be interrupted.

- g Above-ground gasoline and liquefied petroleum gas storage tanks shall not be located within the limits of the camp Site or closer than 1,000 meters to any building in the Site.

1.16.4.2 Payment

Separate payment will not be made for complying with the requirements of this Clause and all costs shall be deemed to be included in the item in the priced Bill of Quantities for Contractor's Site Office and Facilities.

1.16.5 Fire Prevention

1.16.5.1 General

The Contractor shall take every precaution to prevent fire occurring on or about the Site. The Contractor shall comply with the laws and regulations of the appropriate Government authority relating to fires and shall provide fire fighting equipment, which the Engineer considers to be suitable and adequate, ready to use in all structures, buildings or the works under construction, including his, labour camps and ancillary buildings. The Contractor shall maintain such equipment and such additional fire fighting equipment as may be required, in good working condition until the Works are accepted by the Employer.

The Contractor shall extinguish promptly any fire which may occur on the Site wherever the fire may originate. In this regard, he shall employ all requisite equipment and manpower for fire fighting up to the limits of his equipment and manpower employed at the Site including the equipment and manpower of his subcontractors.

1.16.5.2 Payment

Separate payment will not be made for complying with the requirements of this Clause and all costs shall be deemed to be included in the various rates and lump sums entered in the priced Bill of Quantities.

1.16.6 Earthing

1.16.6.1 General

All appliance and facilities which are possibly subject to lightning strikes shall be electrically grounded and the effectiveness of such grounding shall be periodically checked by the Contractor.

1.16.6.2 Payment

Separate payment will not be made for complying with the requirements of this Clause and all costs shall be deemed to be included in the various lump sums and rates entered in the priced Bill of Quantities.

1.16.7 Medical and Health Services

1.16.7.1 General

- a The Contractor shall make his own arrangement on the Site for treatment of casualties in a first aid unit in conformity with the requirement of all duly constituted medical and health authorities. The Contractor shall provide such first aid units and shall be responsible for and bear all costs in connection with

the first aid services including removal by ambulance of injured or sick employees to hospital in Semarang or other places.

- b Except as provided for in paragraph c. of this Subclause the Contractor shall, in cases of emergency, also make the services in paragraph a. of this Subclause available to the Employer's and Engineer's staff working on the Site of the Works at no cost.
- c The Contractor shall provide first aid services for the Employer's and Engineer's staff working on the Site.

1.16.7.2 Payment

Separate payment will not be made for medical and health facilities provided by the Contractor for his employees, for his subcontractors and the Employer's and Engineer's staff, as required by this clause, and all costs shall be deemed to be included in the various rates and lump sums entered in the priced Bill of Quantities.

1.16.8 Security

1.16.8.1 Responsibility of the Contractor

- a The Employer will specify overall security requirements for the project and the Contractor shall perform to such requirements and be responsible for such action of his personnel in respect of such requirements.
- b The Contractor shall be responsible for the security of the Works and the Employer's Quarters at Site and shall provide and maintain continuously and adequate security force to fulfil these obligations. The duties of the Contractor's security force shall include, but not be limited to, maintenance of order on the Site, provision of all lighting, fencing, guards, flagmen, all other measures necessary for the protection of the Works within the Site, all material delivered to the Site, the public, and all persons employed in connection with the Works, continuously throughout working and non-working periods, including nights, Sundays and holiday, for the duration of the Contract.

1.16.8.2 Payment

- a. Separate payment will not be made for the provisions of security services and all costs shall be deemed to be included in the various rates and lump sum prices entered in the priced Bill of Quantities.

1.17 SURVEY AND MEASUREMENT OF THE WORKS

1.17.1 Bench Mark and Reference Point

Bench mark and reference points have been established on the Site by the Employer as shown on the drawing or as advised by the Engineer. The Contractor shall use the co-ordinates and elevations of such bench marks and reference points in setting out the Work. Any bench marks or reference points damaged as the result of action by the Contractor shall be replaced by the Contractor at his own expense.

The Contractor may establish temporary bench marks and reference points for his own convenience but each point shall be of a design and at a location approved by the Engineer. Each point shall be accurately related to the points established by the Employer.

1.17.2 Responsibility for Setting Out

The Contractor shall be solely responsible for the correct setting out of the Works and shall employ experienced and qualified surveyors approved by the Engineer.

The Contractor shall furnish all materials, labour and equipment including stakes, templates, patterns, platforms and special labour that may be required by the Contractor in setting out any part of the Works. The Contractor shall use survey equipment of the type and accuracy to permit correct setting out and control of the Works.

The Contractor's obligations for surveying shall include the surveying of the original surface levels where works are to be performed. The method used and spacing of cross-sections shall be agreed by the Engineer prior to commencement of the survey.

Before surveying the original surface levels to be plotted in the working drawings as described in Clause 1.4.4, the Contractor shall give the Engineer at least 7 days notice before commencing such survey in order that the Engineer or his representative can witness and verify levels so determined. The original surface level determined shall be subject to the Engineer's approval.

The Contractor shall co-operate with the Engineer in checking the setting-out and in performing the measurement surveys for record and payment purposes. The Contractor shall render all necessary assistance to the Engineer and shall provide, as required for the use of the Engineer, sufficient quantities of pegs, poles, straight edges, stagings, mounds, templates, profiles, survey assistants, labourers and transport for checking the Contractor's setting-out and measurement of the Works.

1.17.3 Survey Data and Calculations

The Contractor shall submit all survey data, information, calculations, results and records to the Engineer as soon as they are available.

1.17.4 Specific Survey Requirements

Further to the general requirements for survey and setting out as specified above the Contractor shall carry out the following surveying work and produce the Drawings as detailed below:

- A plan of the Site covering all of the area in which the Works are to be performed, including the river channels at a scale of 1:500.
- Cross-sections of the river at intervals of 50 m including the river banks, riverside roads and the river channel.

1.17.5 Payment

Payment for surveying shall be made at the lump sum entered in the priced Bill of Quantities. Monthly progress payments shall be made in proportion to the progress of the Work.

1.18 RELOCATION OF EXISTING FACILITIES

1.18.1 Scope

Where existing facilities such as electric power lines, water pipelines or other public facilities are required to be relocated, the Engineer shall direct the Contractor regarding how such facilities shall be relocated.

1.18.2 Payment

Payment for Relocation of Existing Facilities will be made by the variation in accordance with the Conditions of Contract.

1.19 SOIL INVESTIGATION

1.19.1 General

This work includes the conducting of soil investigation in locations and to the depths and extents directed by the Engineer as more specifically described hereunder.

1.19.2 Auger Boring

The scope of work shall include the following:

- Execute auger boring to depths and in locations determined by the Engineer
- Collect soil samples
- Conduct mechanical tests on samples
- Interpret the characteristics of samples from visual inspection and from the results of mechanical testing
- Prepare a report in a format acceptable to the Engineer of the results of the boring

Boring, interpretation and reporting shall be performed by a specialist soil investigation subcontractor engaged by the Contractor and approved by the Engineer.

1.19.3 Rotary Boring

The scope of work shall include the following:

- Execute rotary boring to depths and in locations determined by the Engineer
- Collect core samples
- Conduct mechanical tests on samples
- Interpret the characteristics of samples from visual inspection and from the results of mechanical testing
- Prepare a report in a format acceptable to the Engineer of the results of the boring

Boring, interpretation and reporting shall be performed by a specialist soil investigation subcontractor engaged by the Contractor and approved by the Engineer.

1.19.4 Payment

1.19.4.1 Auger Boring

Measurement shall be made of the sum of the depths of auger boring performed and documented in a report to the approval of the Engineer.

Payment for Auger Boring shall be made at the rate per metre entered in the priced Bill of Quantities which shall include allowance for the complete cost of performing the boring, sampling, laboratory testing, interpreting and preparing reports and all labour, equipment and incidentals necessary to do the work

1.19.4.2 Rotary Boring

Measurement shall be made of the sum of the depths of rotary boring performed and documented in a report to the approval of the Engineer.

Payment for Rotary Boring shall be made at the rate per metre entered in the priced Bill of Quantities which shall include allowance for the complete cost of performing the boring, sampling, laboratory testing, interpreting and preparing reports and all labour, equipment and incidentals necessary to do the work.

1.20 OTHER ITEMS

1.20.1 Securities and Insurance

1.20.1.1 Performance Security and Advance Payment Security

The Contractor shall furnish an Advance Payment Security and a Performance Security and in accordance with Clause 52 of the Conditions of Contract to ensure the refund of the Advance Payment and for the due performance of the Contract respectively.

1.20.1.2 Insurance

The Contractor shall effect certain insurances relating to the Contract in accordance with Clause 13 of the Conditions of Contract. In handling compensation to workmen under the above Clauses, the Contractor shall arrange that any compensation amount determined shall be paid without delay by the Contractor to the workmen entitled to such compensation irrespective of the time for payment of insured amount from the Insurance company to the Contractor.

1.20.1.3 Payment

Separate payment will not be made for complying with this Clause and the Conditions of Contract and all costs shall be deemed to be included in the rates and lump sums for the various items entered in the priced Bill of Quantities.

1.20.2 Audits by the Employer

1.20.2.1 General

The Employer shall be entitled at his discretion to conduct audits as necessary for his own investigation in connection with :

- a Cost incurred in relation to any compensation event as provided in clause 44 of the Conditions of Contract;
- b Cost incurred in the event of termination of the contract as provided in Clause 59 or 63 of the Conditions of Contract; and
- c Any other costs that the Contractor may claim to the Employer, which are not specifically covered by the terms of the Contract.

1.20.2.2 Records

The Contractor is obligated to keep accurate and up-to-date accounts and records concerning the above items.

1.20.2.3 Payment

Separate payment will not be made for complying with the requirements of this Clause and all costs shall be deemed to be included in the rates and lump sums entered in the priced Bill of Quantities.

1.20.3 Liquidated Damages

1.20.3.1 Amount of Liquidated Damages

If the Contractor should fail to complete the Works by the Intended Completion Date as defined in Clause 1.1 of the Conditions of Contract, the Contractor shall pay to the Employer liquidated damages pursuant to clause 49 of the Conditions of Contract.

1.20.3.2 Maximum Damages

The maximum amount of liquidated damages payable or allowable to the Employer will be limited to the percentage of the final Contract Price stated in the Contract Data.

1.20.3.3 Other Rights of the Employer

Nothing contained in this Clause shall prejudice or affect any other rights of the Employer under the Contract.

1.20.4 Monthly Statement

1.20.4.1 General

The Contractor shall submit a monthly statement in accordance with the requirements of Clause 42 of the Conditions of Contract. The monthly statement shall be accompanied by copies of all survey notes, records of measurements and calculation which the Engineer has directed to be prepared by the Contractor in support of the amounts claimed for the work executed.

1.20.4.2 Payment

All costs associated with the submission of the monthly statement shall be deemed to be included in the rates and lump sum prices entered in the priced Bill of Quantities.

1.20.5 Hours and Days of Working

Before commencement of work on the Contract, the Contractor shall notify the Engineer, in writing, of the hours and of the number of shifts that he proposes to work and shall give at least 48 hours notice to the Engineer of any changes to such hours of working and/or number of shifts that may be necessary during the currency of the Contract.

1.20.6 Prevention of Water Pollution

1.20.6.1 Scope

The Contractor's construction activities shall be performed by methods that prevent entrance or accidental spillage of solid matter, contaminants, debris and other objectionable pollutants and wastes into streams, flowing or dry water courses and underground water sources. Such pollutants and wastes include but

not restricted to refuse, garbage, cement, concrete, sewage effluent, industrial waste, oil and other petroleum products. The Contractor shall submit his plan showing the location and design of the water pollution prevention systems and facilities to the Engineer for approval.

1.20.6.2 Payment

Separate payment will not be made for complying with the provisions of this Clause, and the costs shall be deemed to be included in the rates and lump sum prices entered in the priced Bill of Quantities.

1.21 MEASUREMENT AND PAYMENT (GENERAL)

The method of measurement shall be in accordance with the methods and procedures stipulated in the particular clauses and as set forth herein.

The various unit rates and lump sums for each work item entered in the priced Bill of Quantities shall be deemed to have included full compensation for supplying all materials, labour, equipment consisting of owning, operation and repair costs, and other expenses necessary to complete the work in accordance with the Drawings, the Specifications, the instructions of the Engineer and compliance with all other obligations, including rectification of defects, as required under the Contract.

1.21.1 Tolerance for Measurement

This clause explains the tolerance for measuring the dimensions of the work and the method of calculation of the quantity of the work completed in following categories :

(1) Category - 1 (linear metres, m)

The work item shall be measured to the second decimal place of a metre and be approved by the Engineer at every work stage on an inspection sheet.

The amount of payment will be determined by multiplying the measured length by the unit rate and then rounding the result to the nearest integer.

The following items are to be included in this category :

- Auger Boring
- Rotary Boring
- PC Pile for Test Piling (various diameters)
- Furnishing and Driving PC Piles (various diameters)
- Furnishing and Driving Steel Sheet Pile, type 11
- Furnishing and Driving PC Sheet Pile
- Waterstop
- Drain Pipe
- Expansion Joint

(2) Category - 2 (square metres, m²)

The work item shall be measured to the second decimal place of a square metre by multiplying the two dimensions, measured to two decimal places, and rounded off, and approved by the Engineer at every work stage on an inspection sheet.

The amount of payment will be determined by multiplying the measured area by the unit rate and then rounding the result to the nearest integer.

The following items are to be included in this category :

- Clearing and Grubbing

- Sodding
- Joint Filler
- Geotextile Sheet/Mat
- Palm Fibre Cloth
- Cement Mortar Pointing

(3) Category - 3 (cubic metres, m³)

The work item shall be measured to the second decimal place of a cubic metre by multiplying the three dimensions, measured to two decimal places of a metre, and rounded off and approved by the Engineer at every work stage on an Inspection Sheet.

The amount of payment will be determined by multiplying the measured volume by the unit rate and then rounding the result to the nearest integer.

The following items are to be included in this category :

- Demolition and Removal (All applications).
- Restoration of Floodwall
- Excavation (all classes and materials)
- Embankment
- Earth Fill (all classes)
- Soil Filling
- Backfill (all classes)
- Concrete (all classes)
- Filling Pile Holes with Sand
- Chipping Existing Concrete
- Wet Stone Masonry (All applications)
- Sub-Base Course (Class B)
- Base Course (Class A)
- Rubble Stone Bedding
- Rubble Stone Filling
- Cutting Pile Head
- Cutting and Dismantling Part of the Existing Wet Masonry-Made Weir into blocks and Transportation to Preservation Site
- Assembling Blocks into Original Shape with Mortar and Anchor Bars including Lifting Scaffolding.
- Gravel Bedding
- Gravel Backfill
- Gabions

(4) Category - 4 (Number (No.))

The work item shall be measured to the exact number installed and approved by the Engineer at every work stage on an Inspection Sheet.

The amount of payment will be determined by multiplying the number by the unit rate and then rounding the result to the nearest integer.

The following items are to be included in this category :

- Cast-in-Place Concrete Blocks and their Installation
- Elastomeric Bearing Pad (all sizes)
- Weep Hole
- Tree Planting

(5) Category - 5 (kilogram)

The work item shall be measured to the second decimal place and multiplied by the approved mass per unit at every work stage on an inspection sheet.

The amount of payment will be determined by multiplying the measured quantity by the unit rate and then rounding the result to the nearest integer.

The following items are to be included in this category :

- Steel Anchor Bars (All types)
- Dowel Bar
- Deformed Reinforcing Bars (for all applications)
- Steel Handrail (all applications)
- Steel Spiral Stairs
- Security Fence

(6) Category - 6 (Item)

The method of measurement and payment shall be as set out in the respective payment clause for each of the following items for which payment is by lump sum.

- Mobilisation and Demobilisation
- Temporary Construction Road and Bridge
- Contractor's Site Office and Facilities
- Engineer's Site Office
- Drawings
- Surveying
- Coffering and Dewatering (various categories)
- Channel Diversion for Semarang River and Left Irrigation Channel
- Water Supply for Semarang River and Left Irrigation Channel by Pump
- Temporary Drainage Channel on Left Bank
- Temporary Earth Retaining Wall
- Precast Prestressed Concrete Beam including Tensioning and Erection
- Precast Prestressed Concrete Diaphragm
- Furnishing and installing Shell Type Steel Roller Gate
- Furnishing and installing Hoist and Operating and Electrical Equipment for Flood Discharge Gates
- Furnishing and installing Girder Type Steel Roller Gate (Sediment Flush Gates)
- Furnishing and installing Hoist and Operating and Electrical Equipment for Sediment Flush Gates
- Furnishing and installing Steel Slide Gate (Right Intake Gate)
- Furnishing and installing Hoist and Operating and Electrical Equipment for Right Intake Gates
- Furnishing and installing Steel slide Gate (Left Intake Gate)
- Furnishing and installing Hoist and Operating and Electrical Equipment for Left Intake Gates
- Furnishing Steel Stop Logs for Temporary Gate
- Furnishing and Installing Steel Guide Frame for Flood Discharge Gate
- Furnishing and Installing Steel Guide Frame for Sediment Flush Gate
- Furnishing and Installing Steel Guide Frame for Right Intake Gate
- Furnishing and Installing Steel Guide Frame for Left Intake Gate
- Furnishing and Installing Steel Guide Frame for Temporary Gate
- Car Barrier
- Steel Ladder
- Information Board
- Name Plate for Weir and Bridge

- Guard Fence
- Furnishing and Installing Lighting Equipment for Maintenance Bridge
- Demolition and Removal of Existing Storage Houses
- Operation/Management Building
- Storage House 1
- Storage House 2
- Electrical Building
- Guard House
- External Works (at Simongan Weir Complex)
- Gate Control Houses 1 to 4
- Intake Gate Shed on Right Bank
- Intake Gate Shed on Left Bank
- Removal of Steel Gates, Hoist, Guide Frames, Columns and Roofs of Operation Shed etc and transportation to Preservation Site
- Setting Steel Gates, Hoist, Guide Frames, Columns and Roofs of Operation Hut

DIVISION B

TECHNICAL SPECIFICATION, CIVIL WORKS

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SECTION TS 1. PREPARATORY AND TEMPORARY WORKS

1.1 GENERAL

This section of the Technical Specification covers the preparatory and temporary works to be carried out by the Contractor .

The work shall include, but not be limited to,

1. Clearing and Grubbing
2. Demolition works
3. Temporary Works for the reconstruction of the Simongan Weir and Intake Structures
4. Coffering and Dewatering for the construction of revetments
5. Re-routing of Water Pipeline

1.2 CLEARING AND GRUBBING

1.2.1 Scope

Clearing and grubbing shall consist of the removal and disposal of all stumps, veins, brush, grass, roots, vegetation, fences, rocks, masonry, trash and debris within the area to be occupied by the permanent works.

The extent of the area for clearing and grubbing shall be agreed by the Engineer prior to commencement by the Contractor.

Where directed by the Engineer, the holes resulting from grubbing operations shall be filled with approved materials which shall be placed and compacted to the same density as the adjoining soil.

All non-combustible materials shall be transported to a dumping site approved by the Engineer then spread and buried to the approval of the Engineer.

Any combustible material shall be removed from the site and burnt. Burning on site shall only be permitted with the approval of the Engineer.

All salvageable materials shall remain the property of the Employer and shall be transported and stacked at locations as directed by the Engineer.

1.3 TEMPORARY WORKS

1.3.1 Coffering and Dewatering

1.3.1.1 General

The Contractor shall provide coffering and dewatering wherever it is required in accordance with his general obligations for diversion and care of water as described in clause 1.13 of the General Specification.

The work shall include the provision of all labour, material and equipment for the construction of coffer dams and other equipment required for dewatering the areas to be protected from water during the course of their construction.

The Contractor shall submit to the Engineer for his approval three copies of Drawings , showing his proposed method of cofferdam construction and of the type and number of units of dewatering equipment to be used. Construction shall not commence until the Engineer's approval has been given. Such approval shall not

relieve the Contractor of his obligations for the adequacy of the cofferdam or of the sufficiency of the dewatering equipment.

The Drawings showing the Contractor's proposals for cofferdams shall be consistent with the Construction Plan described in Clause 1.5.3 of the General Specification and in particular, shall comply with the mandatory requirements described in clause 1.5.3.2 regarding not carrying out major works on the weir which constrict the river channel during the wet season.

1.3.1.2 Method of Construction

Cofferdams shall be constructed in accordance with the design approved by the Engineer. Where sheeting is used it shall be carried well below the bottom of footings and shall be well braced and shall be as water-tight as practicable. The clearance between the inner face of coffer dams and the outer face of permanent works to be constructed shall be 600 mm in order to allow sufficient space for formwork, access and pumping equipment.

Cofferdams which move out of position due to any cause during the course of the work so as to endanger the permanent works or to reduce the clearance specified above shall be corrected at the sole expense of the Contractor.

Cofferdams shall be constructed so as to protect green concrete against damage from the effects of rising river level and to prevent damage to foundations of the permanent works caused by erosion. Struts or braces shall not extend to any part of the permanent works without the approval of the Engineer. Following completion of the portions of the permanent works under the protection of the coffering works, the cofferdams shall be removed in such a manner as not to disturb or damage the finished work.

The removal of cofferdams shall include the excavation and disposal of all temporary earth fill used as part of cofferdams and the complete reinstatement of the area to the approval of the Engineer.

1.3.1.3 Dewatering

Pumping for the inside of any coffered area shall be done in such a manner as to preclude the possibility of damage to the permanent works and, in particular, the carrying away of concrete materials.

No pumping shall be carried out during the placing of concrete or for a period of 24 hours thereafter unless it is done from a suitable sump, separated from the concrete work by a water-tight wall.

1.3.2 Temporary Works for Reconstruction of Simongan Weir and Intake Structures

1.3.2.1 General

The Contractor shall divert waterways in accordance with the mandatory requirements detailed in Clause 1.5.3.2 of the General Specification and construct, maintain, and subsequently remove all of the temporary works necessary for the reconstruction of the Simongan Weir and Intake Structures.

1.3.2.2 Diversion Works

a) Diversion Channel to the Semarang River

The existing off-take channel to the Semarang River will be disrupted by the Works.

The Contractor shall construct and maintain a temporary diversion channel to ensure continuous, uninterrupted flow to the Semarang River.

b) Diversion Works for Irrigation Channel

The existing irrigation channel on the left bank in the vicinity of the Simongan Weir will be disrupted by the Works.

The Contractor shall construct and maintain a temporary diversion channel to ensure continuous, uninterrupted flow to the irrigation channel. In the event that site conditions prevent the maintenance of a channel which will ensure continuous inflow to the channel the Contractor shall provide inflow to the channel at a rate not less than the normal gravity flow in the channel by means of pipelines and pumping.

c) Diversion of Existing Drainage Channel

The existing drainage channel on the left bank in the vicinity of the Simongan Weir will be disrupted by the Works.

The Contractor shall construct and maintain a temporary diversion channel to ensure continuous, uninterrupted flow through the Site to the West Floodway clear of the Works.

1.3.2.3 Coffering and Dewatering

All coffering and dewatering required for the reconstruction of the Simongan Weir, the intake structures and other associated works shall be provided by the Contractor in accordance with the provisions of clause 1.3.1 of the Technical specification, above.

1.3.2.4 Other Temporary Works

The contractor shall provide all other temporary works necessary for the reconstruction of the Simongan Weir, the intake structures and other associated works. Such temporary works shall include, but not be limited to the construction of retaining walls for retaining the bank and adjacent roadway.

1.3.2.5 Construction Plan for Temporary Works

The temporary works described in this clause 13.2 of the Technical Specification shall be carried out in accordance with the approved construction plan referred to in Clause 1.5.3 of the General Specification. All temporary works, including diversion works shall be maintained until their functions are taken over by the permanent works or are no longer required.

1.4 DEMOLITION WORKS

1.4.1 Scope

The work consists of the complete demolition and removal of existing concrete and masonry structures which are required to be removed for the purposes of constructing the permanent Works.

1.4.2 Method of Execution

Structures to be demolished shall be broken into units of sufficiently small size so as to be safely handled and removed from the site.

All non-combustible materials shall be transported to a dumping site approved by the Engineer then spread and buried to the approval of the Engineer.

Any combustible material shall be removed from the site and burnt. Burning on site shall only be permitted with the approval of the Engineer.

The Engineer shall direct the contractor which, if any, material shall be regarded as salvageable. Following such directive, all salvageable materials shall remain the property of the Employer and shall be transported and stacked at locations as directed by the Engineer.

1.5 RE-ROUTING OF WATER PIPELINE

1.5.1 General

An 500 mm dia steel water pipeline passes through the Site and will be affected by the works.

1.5.2 Scope of Work

The work to be performed includes the following:

- Construction of a new pipeline around the Works
- Tying the new pipeline into the existing pipeline
- Performing the work with minimal disruption to the continuity of water supply and in accordance with the standards and requirements of the water authority.

1.5.3 Design, Specification and Payment

The design and specification will be determined during the course of the implementation of the Contract.

The price for performing the work shall be determined during negotiations with the Engineer and approval of the Employer. Payment shall be made under a variation order in accordance with the Conditions of Contract.

1.6 MEASUREMENT AND PAYMENT

1.6.1 Clearing and Grubbing

Measurement for payment will be made in square metres (m²) of the area actually cleared and grubbed and approved by the Engineer.

Payment will be made at the rate entered in the priced Bill of Quantities and include the entire cost of completing the work including materials, labour, equipment, transportation and disposal of non-combustible and combustible material and all associated costs. Clearing in excess of the approved area shall not be paid for.

Items to be paid under this clause are as follows:

Pay Item No.	Description	Unit of Measurement
B.1.	Clearing and Grubbing	m ²

1.6.2 Demolition Works

For items B.2 and K.1.1 measurement shall be made of volume of existing structure concrete or masonry demolished and removed in accordance with the specification and to the approval of the Engineer. No measurement shall be made of the volume of steel structures or building components.

Payment shall be made in the amount of the rate entered in the Bill of Quantities which shall include the entire cost of completing the work including materials, labour, equipment, transportation and disposal of non-combustible and combustible material and all associated costs.

No additional payment shall be made for the demolition and removal of metal and other building components not measured in accordance with the above. Costs associated with such items shall be deemed to be incidental to and included in the rates for the portion of the works measured.

For item K.2 payment shall be made at the lump sum entered in the priced Bill of Quantities which shall include the entire cost of completing the work including materials, labour, equipment, transportation and disposal of non-combustible and combustible material and all associated costs.

Pay Item No.	Description	Unit of Measurement
B.2	Demolition and Removal of Existing Weir, Intake Structures and Others	m ³
K.1.1	Demolition and Removal of Existing Concrete and Wet Masonry Structures	m ³
K.2	Demolition and Removal of Existing Storage Houses	L.S.

1.6.3 Temporary Works

This item refers to the temporary works described in clause 1.3.2 of the Technical Specification.

The lump sum for temporary works entered in the priced Bill of Quantities shall in accordance with the breakdown of the lump sum provided by the Contractor with his bid.

Payment of each of the components of the lump sum for temporary works shall be as follows:

- 60 % on completion of the temporary structure of facility (eg. a channel diversion, cofferdam, retaining wall etc.)
- 40 % when the facility has been removed and is no longer required as a result of its function being taken over by the permanent works.

Payment for temporary works shall include the entire cost of completing the work including materials, labour, equipment, transportation, provision of pumps, pipelines where necessary, sheet piling and all other associated costs.

Items to be paid under this clause are as follows:

Pay Item No.	Description	Unit of Measurement
B.3	Temporary Works for Construction of Weir and Intake Structures (including Coffering, Dewatering, Channel Diversion for Semarang River and Left Bank Irrigation Channel, Channel Diversion for Drainage on Left Bank, Earth Retaining Walls and Others)	L.S.

1.6.4 Coffering and Dewatering

Payment shall be made for the complete system of cofferdams and for the dewatering of the enclosed area within, and the subsequent removal of the cofferdams and all associated equipment to the approval of the Engineer.

The lump sum for coffering and dewatering entered in the priced Bill of Quantities shall be divided into components for each of the major cofferdams to be provided in accordance with the breakdown submitted by the Contractor with his bid. (For

simplicity of administration the Contractor's breakdown should not exceed four components).

Payment of each of the components of the lump sum for coffering and dewatering shall be as follows:

- 40 % on completion of the cofferdam
- 30 % on completion of all dewatering following completion of the permanent works protected by the cofferdam
- 30 % on the complete removal of the cofferdam to the approval of the Engineer

Payment for coffering and dewatering shall include the entire cost of completing the work including materials, labour, equipment, transportation and all other associated costs.

Items to be paid under this clause are as follows:

Pay Item No.	Description	Unit of Measurement
B.4.	Coffering and Dewatering for Construction of Revetments in upstream and downstream channels.	L.S.

Items to be paid under this clause are as follows:

Pay Item No.	Description	Unit of Measurement
B.2	Demolition and Removal of Existing Weir, Intake Structures and others	m ³

1.6.5 Re-routing of Water Pipeline

Payment for this item will be by variation in accordance with the Conditions of Contract.