

JAPAN INTERNATIONAL COOPERATION AGENCY

THE GOVERNMENT OF
THE HASHEMITE KINGDOM OF JORDAN
THE MINISTRY OF TOURISM AND ANTIQUITIES
THE MINISTRY OF PLANNING

DRAFT
TENDER DOCUMENTS
FOR
CONSTRUCTION
OF
RAGHADAN BUS TERMINAL SUB-PROJECT
THE TOURISM SECTOR DEVELOPMENT PROJECT

VOLUME II
SPECIFICATIONS

August 2000

Pacific Consultants International
Yamashita Sekkei Inc.

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DIVISION 1

GENERAL REQUIREMENTS

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SECTION 01010**SCOPE OF WORK****PART 1: GENERAL****1.01 DESCRIPTION**

- A Work to be performed under these Contract Documents consists of: the construction, servicing, finishing of Tourism Sector Development Project, Raghadan Bus Terminal.

1.02 WORK BY OTHERS

- A The employer reserves the right to let other separate contracts in connection with this work, under similar conditions, in association with the project after signature of the Contract.
- B The Contractor shall afford other Contractors and Suppliers reasonable opportunity for the introduction of their materials and the execution of their work, and shall properly connect and coordinate his work with theirs.
- C The Contractor shall afford other Contractors and Suppliers a separate secure storage area for their equipment and maintain rigid security at all times.

1.03 REFERENCES

- A Abbreviations and Symbols. The following abbreviations as referenced in the Contract Documents are defined to mean the associated names. Both the names and addresses are subject to change, and are believed to be, but are not assured to be, accurate and up-to-date as of the date of the Contract Documents.

| | |
|------------|---|
| AASHTO - | American Assoc. of State Highway and Transportation Officials 444 North Capitol Street, N.W. Washington, D.C. |
| ACI - | American Concrete Institute Box 19150 Redford Station Detroit, Michigan 48219 313/532-2600 |
| ASTM - | American Society for Testing and Materials 1916 Race Street Philadelphia, Pennsylvania 19103 212/644-7722 |
| Fed. Spec- | United States of America Federal Specifications General Services Administration Specification Unit 7th and D Streets, S.W. Washington, DC 20406 202/472-2205 |

| | | |
|-------|---|--|
| IOS | - | International Organization for Standardization 1 Rue de Vermbe, Case Postale 56 Geneva 20, Switzerland |
| NEMA | - | National Electrical Manufacturer's Association (American) 2101 L Street, N.W. Washington, DC 20037 202/457-8400 |
| NFPA- | | National Forest Products Association 1250 Connecticut Avenue, N.W. Washington, DC 20036 202/463-2700 |
| OSHA | - | Occupational Safety and Health Association U.S. Department of Labor Francis Perkins Building 200 Constitution Avenue, N.W. Washington DC 20210 202/523-8165 |
| TCA | - | Tile Council of America, Inc. P.O. Box 326 Princeton, New Jersey 08540 609/921-7050 |
| UL | - | Underwriters Laboratories Inc. 333 Plingisten Road Northbrook, Illinois 60602 |
| JIS | - | Japanese Industrial Standards |

- B Where reference is made in the Contract Documents to one of the above organizations or other associations, comply with the standard or trade association which is in effect at the date of the Contract Documents, except where specifically indicated to comply with a publication of another date.
- C In general, American standard specifications are quoted throughout the Contract Documents, but the use of alternative equivalent standards may be substituted at the discretion of the Engineer upon the written request of the Contractor following award of the Contract. Demonstration to Engineer's satisfaction the suitability and equivalence of the substituted codes and standards is the responsibility of the Contractor.

D The following abbreviations as referenced in the Contract documents are defined to mean the following:

| | | |
|----------------------------------|---|--------------------------------|
| % | - | Percent |
| ac | - | Alternating current |
| AWG | - | American Wire Gauge |
| °C | - | Degrees Centigrade |
| c/c | - | Center to Center |
| CIF | - | Cost, Insurance and Freight |
| cm | - | Centimeter |
| cu | - | Cubic |
| ctrs | - | Centers |
| d | - | Day |
| dia or ϕ | - | Diameter |
| g | - | Gram |
| ga, GA | - | Gauge |
| g/cu cm | - | Grams per cubic centimeter |
| h or hr | - | hour |
| ha | - | Hectare |
| I.L. or Inv. | - | invert (level) |
| IPS | - | Iron pipe size |
| kg | - | Kilogram |
| kg/cm ² | - | Kilogram per square centimeter |
| kg/cm ³ | - | Kilogram per cubic centimeter |
| kj | - | Kilojoule |
| kn | - | Kilonewton |
| kn/m ² | - | Kilonewton per square meter |
| Kpa | - | Kilopascal |
| kw | - | Kilowatt |
| kwh | - | Kilowatt-hour |
| l | - | Litre |
| l/m | - | Litres per minute |
| l/s | - | Litres per second |
| LM | - | Linear Meters |
| m | - | meter |
| m ² or M ² | - | Square meter |
| m ³ or M ³ | - | Cubic meter |
| m ³ /d | - | Cubic meters per day |
| mm | - | Millimeter |
| mm ² | - | Square Millimeter |
| mN | - | Meganewton |
| mpa | - | Megapascals |
| max | - | Maximum |
| min | - | Minute or minimum |
| mg/l | - | Milligrams per litre |
| Ml/d | - | Megaliters per day |
| NPT | - | National Pipe Thread |
| N | - | Newton |
| No. | - | Number |
| RCP | - | Reinforced Concrete Pipe |
| RL | - | Reduced Level |

| | | |
|-------|---|------------------------|
| rpm | - | Revolutions per minute |
| req'd | - | Required |
| T | - | Tonne |
| TWL | - | Top Water Level |
| typ | - | Typical |
| VA | - | Volt Ampere |

End of Section

SECTION 01035**CONTROL OF WORK****PART 1: GENERAL****1.01 PLANT**

- A Furnish construction equipment which will be efficient, appropriate and sufficient to secure a satisfactory quality of Work and a rate of progress which will insure the completion of the Work within the time stipulated in the Form of Tender. If, at any time, such equipment appears to the Engineer to be inefficient, inappropriate or insufficient for securing the quality of work required or for producing the rate of progress aforesaid, the Engineer may order the Contractor to increase the equipment, and the Contractor shall conform to such order. Failure of the Engineer to give such order shall in no way relieve the Contractor of his obligations to secure the quality of the Work, and rate of progress required. All equipment component including but not limited to, mufflers, exhausts, lights, signals and warning and safety devices shall be maintained in proper working order.

1.02 PRIVATE AND PUBLIC LAND

- A Private or public lands outside of limits of Working Site shall not be entered or occupied by the Contractor, except by permission of the land Owners.

1.03 LOCATION OF WORKS

- A The Works shall be located substantially as indicated on the drawings, but the Engineer reserves the right to make such modifications in locations as may be found desirable during construction to avoid interference with existing structures or for other valid reasons.

1.04 WORKING SITE

- A The Working Site indicated on the drawings will be provided by the Employer for the Contractor's use.
- B Confine the operations, equipment and stores necessary for execution of the Works to the Working Site indicated on the drawings and any additional working areas secured solely by the Contractor. Provide reasonable facilities for access to the Site and any additional Working Site for any person or vehicle authorized by the Engineer.
- C Acquire all additional working areas in the vicinity of the Works or elsewhere for the Contractor's site compound, offices, offices for the Engineer's Representative, and for any additional lands required for construction purposes and access, apart from access along public streets.
Apart from transport to and from these areas, confine all local operations under the Contract to these areas.

- D Restrict access to the Working Site to public rights of way. Access to the Site shall be obtained only by such routes as are acceptable to the Engineer. Ensure that persons employed by Contractor or any subcontractor on the Site do not trespass beyond the Site and the routes so utilized.
- E Take sufficient precautions to minimize the run-off of polluting substances such as fuels, oils, or other polluting materials harmful to humans, fish, or other life, into the supplies and surface waters and any agricultural land.

1.05 SITE CONDITIONS

- A All levels shown on the Drawings refer to mean sea level and are related to benchmarks in the Project area. A list of the benchmarks has been prepared including their description and reduced levels relative to this datum. Copies of the list will be given to the Contractor following award of the Contract.
- B Before commencing setting out, check all survey stations and benchmarks to be used to determine that each survey station and benchmark is in its original position and condition.
- C Check the accuracy of benchmarks in the vicinity of the Site to ensure that they conform to at least two other listed benchmarks. The leveling loop closing error shall be within 3mm/km before adjustment.
- D Inform the Engineer in writing of the result of these survey checks and whether such benchmarks and survey stations are in agreement or not. Should the benchmarks or survey station coordinates not be in agreement, the Engineer may direct the Contractor to undertake further survey checks and, thereafter which benchmark values and survey station coordinates to adopt. Reset or replace any stations or benchmarks found missing and survey the coordinates and elevations to the standards stated above and adjusted.
- E Provide all survey and measuring instruments and equipment of every kind necessary for the execution of the Works including the requirements specified in the special conditions of contract.

1.06 OPEN EXCAVATIONS

- A Safeguard all open excavations by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons and damage to property. Provide suitable and safe bridges and other crossings for accommodating travel by workmen and public and private vehicles. Remove bridges provided for access during construction when no longer required. The length or size of excavation shall be controlled by the particular surrounding conditions. If the excavation becomes a hazard, or if it excessively restricts traffic at any point, the Engineer may require special construction procedures.
- B Do not open or excavate any street, way or public or private place until all necessary permits have been obtained and existing underground utilities have been located by the Contractor.

1.07 TEST PITS

- A Dig test pits, by hand if necessary, for the purpose of locating underground utilities or structures in advance of the construction. Pits shall be excavated with the knowledge of the Engineer. Backfill test pits immediately after their purpose has been satisfied and restore the surface in a manner satisfactory to the governing authority and Engineer.

1.08 NUISANCE CAUSED BY THE LITTERING OF PUBLIC AREAS

- A Be responsible for, and do not create any nuisance by littering the Site with earth, mud, debris, and the like, falling off vehicles used for the purpose of this Contract. Failure to comply with this requirement will permit the Engineer to employ laborers or take other necessary action to comply with anti-littering requirements, and the cost incurred thereby will be deducted from any moneys due or to become due to the Contractor.

1.09 PROTECTION OF CONSTRUCTION AND EQUIPMENT

- A Provide all watchmen as required for the protection and security of the Work during the period of this Contract.
- B Carefully protect all Work from damage in any way. Reconstruct all damaged Works to the satisfaction of the Engineer.
- C Protect all Works in a manner satisfactory to the Engineer. Should any pipeline, equipment, underground structure, any floors or other parts of structures become heaved, cracked, or otherwise damaged, repair all such damaged portions to the satisfaction of the Engineer.

1.10 CLEAN UP

- A During the course of the Work, keep the Site of operations in as clean and neat a condition as possible. Do not dump unwanted debris on the Site, access roads or open channels and tanks. Remove and dispose of Site, at dumping grounds acceptable to the appropriate authorities, all unwanted debris from the Site. Do not leave empty containers or receptacles in the open that are capable of forming breeding places for insects and attracting rodents. Take all necessary steps to prevent the breeding of insects in the areas of the Work.
- B At the conclusion of the Work, leave the entire Site of the Work in a neat, orderly and clean condition. Protect all finished exterior and interior surfaces, fixtures and equipment from stains, marks, dirt or damage of any kind, from time of their construction, finishing, or installation, until its final completion and acceptance. Perform all necessary cleaning, making good, and touching up that may be required to leave all finished surfaces, fixtures and equipment in acceptable condition in accordance with the full intent and meaning of these Specifications.

1.11 COOPERATION WITH OTHER CONTRACTORS

- A Other construction may be carried on during the same period as construction under this Contract as described under Paragraph 1.02 of the Scope of Work Section. Plan the Work and cooperate with other contractors to prevent any interference and delay. Delays due to a failure to coordinate such work will not constitute valid claims for extension of time or additional compensation.

End of Section

SECTION 01340**SUBMITTALS****PART 1: GENERAL****1.01 DESCRIPTION OF REQUIREMENTS**

A This Section specifies the general methods and requirements for submissions applicable to the following work-related categories:

1. Drawings
2. Shop Drawings, Product Data, and Samples
3. Mock Ups
4. Construction Photographs and

Additional general submission requirements are contained in the Conditions of Contract.

Detailed submittal requirements are specified in the technical specifications sections.

1.02 GENERAL PROCEDURES FOR SUBMITTALS

A Coordination of Submittal Times: Prepare and transmit each submittal sufficiently in advance of performing the related work or other applicable activities, or within the time specified in the individual Work sections, of the Specifications, so that the Work will not be delayed by processing times including revisions and resubmits (if required), coordination with other submittals, testing, purchasing, fabrication, delivery and similarly sequenced activities. No extension of time or additional payments will be authorized because of the Contractor's failure to transmit submittals sufficiently in advance of the Work.

1.03 DRAWINGS

Contract Drawings, shop Drawings and as-built drawings shall be produced and submitted to the Engineer as stipulated in the special conditions of contract.

1.04 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

A Shop Drawings

1. Shop drawings are defined in the Conditions of Contract and requirements are specified in individual work sections and include, but are not necessarily limited to, custom-prepared data such as fabrication and erection/installation drawings, reinforcing steel detail drawings, setting diagrams, actual shopwork manufacturing instructions, custom

templates, special wiring diagrams, coordination drawings, individual system or equipment inspection and test reports including performance curves and certifications, as applicable to the Work.

2. All shop drawings submitted by subcontractors for review shall be sent directly to the Contractor for preliminary checking. The Contractor is responsible for their submission at the proper time so as to prevent delays in delivery of materials.
3. Check all subcontractors' shop drawings regarding measurements, size of members, materials, and details to confirm that they conform to the intent of the Drawings and Specifications. Drawings found to be inaccurate or otherwise in error shall be returned to the subcontractors for correction before submission thereof by the Contractor.
4. All details on shop drawings submitted for review shall show clearly the relation of the various parts to the main members and lines of the structure, and where correct fabrication of the Work depends upon field measurements, such measurements shall be made and noted on the drawings before being submitted for review.

B The as-built drawings must be fully detailed and accurately dimensioned and must include, but are not limited to the following:

1. Fully indicate diagrammatically each individual services and water system, locating all plant and equipment.
2. Indicate on individual floor plans and sections, all building engineering services.
3. Fully indicate the size and positions of all plant, equipment, pipes, ductwork, trunking cables etc., together with all access points and joints Each service shall be clearly identified

C Product Data

1. Product data as specified in individual sections, includes, but is not necessarily limited to, standard prepared data for manufactured products (sometimes referred to as catalog data), such as the manufacturer's product specification and installation instructions, availability of colors and patterns, manufacturer's printed statements of compliance and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring diagrams, printed performance curves and operational-range diagrams, production or quality control inspection and test reports and certifications, mill reports, product operating and maintenance instructions and recommended spare-parts lists, and printed product warranties, as applicable to the Work. All such data shall be submitted in sufficient detail to enable the Engineer to identify the particular product, its

country of origin and to form an opinion as to its conformity with the specifications.

2. Product operation and maintenance instructions shall be submitted to the Engineer as stipulated in the Special condition of contract.

D Samples

1. Samples specified in individual Sections, include, but are not necessarily limited to, physical examples of the Work such as sections of manufactured or fabricated Work, small cuts or containers of materials, complete units of repetitively-used products, color/texture/pattern swatches and range sets, specimens for coordination of visual effect, graphic symbols, and units of work to be used by the Engineer or Employer for independent inspection and testing, as applicable to the Work.

1.05 CONTRACTOR'S RESPONSIBILITIES

- A Review shop drawings, product data and samples prior to submission to determine and verify the following:
1. Field measurements
 2. Field construction criteria
 3. Catalog numbers and similar data
 4. Conformance with the Specifications
- B Each shop drawing, working drawing, sample and catalog data submitted by the Contractor shall have affixed to it the following Certification Statement, signed by the Contractor: "Certification Statement: this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data and I have checked and coordinated each item with other applicable shop drawings and all Contract requirements".
- C Notify the Engineer in writing, at the time of submittal, of any deviations in the submittals from the requirements of the Contract Documents.
- D The review and acceptance of shop drawings, samples or catalog data by the Engineer shall not relieve the Contractor from his responsibility with regard to the fulfillment of the terms of the Contract. All risks of error and omission shall be the Contractor's responsibility, and the Engineer will have no responsibility thereof.
- E Do not start any portion of the work requiring a shop drawing, working drawing, sample, or catalog data or fabricate or install any materials prior

to the review and acceptance of such item. Fabrication performed, materials purchased, or on-site construction accomplished which does not conform to accepted shop drawings and data shall be at the Contractor's risk. The Employer will not be liable for any expense or delay due to corrections or remedies required to achieve conformity.

- F Project Work, materials, fabrication, and installation shall conform with accepted shop drawings, working drawings, applicable samples, and catalog data.

1.06 SUBMISSION REQUIREMENTS

- A Make submittals promptly in accordance with the accepted schedule, and in such sequence as to cause no delay in the Work.
- B The sequence of submission of all drawings, data and samples shall follow a logical progression, such that all information required for review shall be available. A Letter of Transmittal shall accompany each submittal.
- C The following table summarizes the quantity and type of submission of documents required at various stages of the Contract.

Abbreviation:

P, print - R, reproducible - C, copy - H, hard copy - N, photographic negative

| <u>Submittal Description</u> | <u>Quantity required Review Draft - Final</u> |
|---|---|
| (1) Drawings and data for review | 3P+1R (Review Draft) |
| (2) Letters | Original |
| (3) Manufacturer's and supplier's test certificates | 2C |
| (4) Operation and maintenance manuals | 2C+2H |
| (5) Record drawings | 3P + 1R |
| (6) Samples | As required |
| (7) Photographs | 2P+1N |
| (8) Other submittals as may be required. | |

- D Furnish shop drawings and data submittals as follows:
1. The date of submission and the dates of any previous submissions.
 2. The Project title, Contract title and number.
 3. Contractor identification.
 4. The names of:
 - a. Contractor
 - b. Supplier
 - c. Manufacturer
 5. Identification of the product, with the specification section number.
 6. Field dimensions, clearly identified as such.
 7. Relation to adjacent or critical features of the Work or materials.
 8. Copy of the applicable standards, such as ASTM Specification.
 9. Identification and a listing of deviations from Contract Document requirements.
 10. Identification of revisions on resubmits.
 11. A 200 mm x 75 mm blank space for Contractor and Engineer stamps.

1.07 RESUBMISSION REQUIREMENTS

- A Make any clarifications or corrections in the submittals noted by the Engineer or as otherwise required and resubmit all data until acceptable.
- B Shop Drawings and Product Data:
1. Revise initial drawings or data, and resubmit as specified for the initial submittal.
 2. Indicate any changes which have been made other than those requested by the Engineer.
- C Samples: Submit new samples as required for initial submittal.

1.08 MOCK-UPS

- A Mock-up units, as specified in individual sections, include, but are not necessarily limited to, complete units of the standard proposed for that type of work on the project. Remove such mock-ups at the completion of the Work or when directed by the Engineer.

1.09 CONSTRUCTION PHOTOGRAPHS

- A construction photographs shall be submitted to the Employer as stipulated in the special conditions of contract.
- B Take a series of color photographs each calendar month commencing at the start of mobilization that illustrate the progress of construction. Take views before commencement, during progress and when the Work is complete. For structures and equipment, the number of photographs to be taken each month shall be not less than six.

The photographs shall be of such views and taken at such times as Engineer directs.

- C The film negatives shall be retained in the files of the photographer until the completion of the project at which time, the negatives shall be turned over to the Employer.
- D Each photograph shall have attached to the cloth backing a paper label, approximately 60mm wide by 45mm high, containing thereon in neat lettering in English and Arabic languages:
1. Contractor's name
 2. Short description and identification of view
 3. Photo no. (number consecutively)
 4. Date taken
 5. Photographer's firm name
 6. Employer's contract title and number
- E Costs in connection with photographs shall be at the Contractor's expense. No separate payment will be made thereof.

End of Section

SECTION 01400**QUALITY CONTROL****PART 1: GENERAL****1.01 DESCRIPTION**

- A Establish and maintain procedures for quality control during the prosecution of Work under this Contract which will ensure that all aspects of the Work will comply with the requirements of the Contract.

1.02 QUALITY ASSURANCE

- A Provide at all times a suitably qualified individual to be responsible for all aspects of quality control and to maintain liaison with the Engineer.

1.03 TESTING LABORATORY SERVICES

- A Whenever the services of an independent testing laboratory are required by these specifications, employ, at the Contractor's expense, the services of an independent laboratory acceptable to the Engineer and the Employer. Where such independent test laboratories are unavailable or are unacceptable, set up and provide a site testing facility, acceptable to the Engineer and Employer, suitable for performing all required tests. All tests required to be performed by such a testing laboratory shall be conducted to determine compliance with the requirements of the specifications.
- B The proposed testing laboratory shall meet the "Recommended Requirements for Independent Laboratory Qualification" published by American Council of Independent Laboratories and meet the basic requirements of ASTM E329, "Standards of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as Used in Construction".
- C Assure the prompt services of the testing laboratory to perform the specified inspections, sampling and testing of materials. Promptly notify the Engineer of all irregularities or deficiencies in the Work, which are observed during the performance of the specified testing. The Engineer shall have the option to witness all testing. Submit to the Engineer, five copies of all certified test reports prepared by the independent testing laboratory. Include in each report:

Date issued.

Contract title and number.

Testing laboratory name and address.

Name and signature of Inspector.

Date of inspection or sampling.

Record of temperature and weather.

Date of test.

Identification of product and specification section.

Location in project.

Type of inspection or test.

Observations regarding compliance with Contract Documents.

- D The laboratory shall not release, revoke, alter or enlarge on the requirements of the Contract Documents. The laboratory shall not approve or accept any portion of the Work or perform any duties of the Contractor.

1.04 INSPECTION

- A Inspection of all materials and plant incorporated into the Work will be required. Any delay in the Work or additional cost occasioned by the failure of such material or equipment to meet the specifications shall be the Contractor's responsibility.
- B Authorized representatives of the Agency for International Development and of the Employer shall have access to the Work wherever it is in preparation or progress. Provide proper facilities for such access and inspection.
- C A final inspection of the Work and the Engineer's report to the Employer as to the acceptability and completeness of the Work will be made as set forth in the Conditions of Contract.

End of Section

SECTION 01500**CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS****PART 1: GENERAL****1.01 SECTION INCLUDES**

- A. Temporary Utilities: Electricity, lighting, heat, ventilation, telephone service, water, and sanitary facilities.
- B. Temporary Controls: Barriers, enclosures and fencing, protection of the work and water control.
- C. Construction Facilities: Lifts, hoists, cranes, parking, progress cleaning and project signage.

1.02 RELATED SECTIONS

- A. Section 01590-Field Offices and Sheds.

1.03 TEMPORARY ELECTRICITY

- A. Cost: By Contractor; provide and pay for temporary electric power service.
- B. Provide power outlets for construction operations, with branch wiring and distribution boxes located as required. Provide flexible power cords as required.
- C. Provide main service disconnect and over-current protection at convenient location.
- D. Permanent convenience receptacles may not be utilized during construction.

1.04 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

- A. Provide and maintain lighting for construction operations to achieve a minimum lighting level of 25 watt/sq m.
- B. Provide and maintain 15 watt/sq m lighting to exterior staging and storage areas after dark for security purposes.
- C. Provide and maintain 3 watt/sq m H.I.D. lighting to interior work areas after dark for security purposes.
- D. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.
- E. Maintain lighting and provide routine repairs.
- F. Permanent building lighting may not be utilized during construction.

1.05 TEMPORARY HEATING

- A. Provide and pay for heating devices and heat as needed to maintain specified conditions for construction operations.
- B. Maintain minimum ambient temperature of 8 degrees C in areas where construction is in progress, unless indicated otherwise in product sections.

1.06 TEMPORARY COOLING

- A. Provide and pay for cooling devices and cooling as needed to maintain specified conditions for construction operations.
- B. Maintain maximum ambient temperature of 30 degrees C in areas where construction is in progress, unless indicated otherwise in specifications.

1.07 TEMPORARY VENTILATION

- A. Ventilate enclosed areas to achieve curing of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- B. Utilize temporary fan units as required to maintain clean air for construction operations.

1.08 TELEPHONE SERVICE

- A. Provide, maintain and pay for telephone service to field office and Employer's field office at time of project mobilization.

1.09 TEMPORARY WATER SERVICE

- A. Provide, maintain and pay for suitable quality water service required for construction operations at time of project mobilization.
- B. Extend branch piping with outlets located so water is available by hoses with threaded connections.

1.10 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.

1.11 LIFTS, HOISTS AND CRANES

- A. If required to provide and to maintain sufficient numbers of lifts, hoists and cranes for the satisfactory execution and inspection of the Works.

1.12 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas to allow for Employer's use of site, and to protect existing facilities and adjacent properties from damage from construction operations.

- B. Provide barricades and covered walkways required by governing authorities for public rights-of-way.
- C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.13 FENCING

- A. Construction: 0.6 mm thick galvanized steel sheet with steel tube supports and structure, painted.
- B. Provide 1.8 m high fence around construction site; equip with vehicular and pedestrian gates with locks.

1.14 WATER CONTROL

- A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- B. Protect site from paddling or running water.

1.15 EXTERIOR ENCLOSURES

- A. Provide temporary weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

1.16 PROTECTION OF INSTALLED WORK

- A. Protect installed Work and provide special protection where specified in individual specification sections.
- B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to prevent damage.
- C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- E. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- F. Prohibit traffic from landscaped areas.

1.17 SECURITY

- A. Provide security and facilities to protect work, from unauthorized entry, vandalism, or theft.

1.18 PARKING

- A. Provide temporary surface parking areas to accommodate construction personnel.
- B. When site space is not adequate, provide additional off-site parking.
- C. Designate Three shaded parking spaces for the Employer & Engineer.

1.19 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and rubbish from site periodically and dispose off-site.
- E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.20 PROJECT IDENTIFICATION

- A. Provide two 1.80 m wide x 2.40 m high project signs of exterior grade plywood and wood frame construction, painted, with project perspective, exhibit lettering by professional sign painter and self-adhesive corporate logo. The layout of the sign shall be subject to the Employer's approval.
- B. List title of Project, names of Employer, Consultant, Contractor, and major Subcontractors.
- C. Erect on site at location established by Employer.
- D. No other signs are allowed without Employer permission except those required by law.

1.21 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials, prior to Substantial Completion inspection.
- B. Clean and repair damage caused by installation or use of temporary work.

- C. Restore existing facilities used during construction to original condition.
Restore permanent facilities used during construction to specified condition.

PART 2: PRODUCTS

Not Used.

PART 3: EXECUTION

Not Used.

End of Section

SECTION 01570
TRAFFIC REGULATIONS

PART 1: GENERAL

1.01 SECTION INCLUDES

- A. Construction parking controls.
- B. Flag persons.
- C. Flares and lights.
- D. Haul routes.
- E. Traffic signs and signals.
- F. Removal.

1.02 RELATED SECTIONS

- A. Section 01010-Scope of Work.
- B. Section 01500-Construction Facilities and Temporary Controls.

PART 2: PRODUCTS

2.01 SIGNS, SIGNALS, AND DEVICES

- A. Post Mounted and Wall Mounted Traffic Control and Informational Signs: As approved by local jurisdictions.
- B. Traffic Control Signals: As approved by local jurisdictions.
- C. Traffic Cones and Drums, Flares and Lights: As approved by local jurisdictions.
- D. Flagperson Equipment: As required by local jurisdictions.

PART 3: EXECUTION

3.01 CONSTRUCTION PARKING CONTROL

- A. Control vehicular parking to prevent interference with public traffic & parking, access by emergency vehicles, and Employer's operations.
- B. Monitor parking of construction personnel's vehicles. Maintain vehicular access to and through parking areas.
- C. Prevent parking on or adjacent to access roads or in non-designated areas.

3.02 FLAG PERSONS

- A. Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.

3.03 FLARES AND LIGHTS

- A. Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

3.03 HAUL ROUTES

- A. Consult with authority having jurisdiction, establish public thoroughfares to be used for haul routes and site access.
- B. Confine construction traffic to designated haul routes.
- C. Provide traffic control at critical areas of haul routes to regulate traffic, to minimize interference with public traffic.

3.04 TRAFFIC SIGNS AND SIGNALS

- A. At approaches to site and on site, install at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
- B. Install and operate traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control, and areas affected by Contractor's operations.
- C. Relocate as Work progresses, to maintain effective traffic control.

3.05 REMOVAL

- A. Remove equipment and devices when no longer required.
- B. Repair damage caused by installation.
- C. Remove post settings to a depth of 600 mm.

End of Section

SECTION 01590

FIELD OFFICES AND SHEDS

PART 1: GENERAL

1.01 SECTION INCLUDES

- A. Temporary field offices and sheds.
- B. Maintenance and cleaning.
- C. Removal.

1.02 RELATED SECTIONS

- A. Section 01010 - Scope of Work.
- B. Section 01500 - Construction Facilities and Temporary Controls:
- C. Section 01601 - Material and Equipment: Storage and protection.

1.03 USE OF PERMANENT FACILITIES

- A. Permanent facilities shall not be used for field offices or for storage.

PART 2: PRODUCTS

2.01 MATERIALS, EQUIPMENT, FURNISHINGS

- A. Materials, Equipment, Furnishings: All items to be new.

2.02 CONSTRUCTION

- A. Portable or mobile buildings, or buildings constructed with floors raised above ground, securely fixed to foundations, with steps and landings at entrance doors.
- B. Construction: Structurally sound, secure, weather tight enclosures for office and storage spaces. Maintain during progress of Work; remove when no longer needed.
- C. Temperature Transmission Resistance of Floors, Walls, and Ceilings: Compatible with occupancy and storage requirements.
- D. Exterior Materials: Weather resistant, finished in one color acceptable to Employer.
- E. Interior Materials in Offices: Sheet type materials for walls and ceilings, pre-finished or painted; resilient floors and bases.

- F. Lighting for Offices: 600 lux at desk top height, exterior lighting at entrance doors.
- G. Interior Materials in Storage Sheds: As required to provide specified conditions for storage of products.

2.03 ENVIRONMENTAL CONTROL

- A. Heating, Cooling, and Ventilating for Offices: Automatic equipment to maintain 20 degree C heating and 23 degrees C cooling.
- B. Storage Spaces: Heating and ventilation as needed to maintain Products in accordance with Contract Documents; adequate lighting for maintenance and inspection of Products.

2.04 CONTRACTOR OFFICE AND FACILITIES

- A. Size: For Contractor's needs.

2.05 EMPLOYER'S AND ENGINEER'S OFFICE

- A. Separate space for sole use of Employer and Engineer with separate entrance door with new lock and two keys.
- B. The offices area shall be (88 sm) divided into different work areas which shall include:

- Entrance Lobby / Waiting Area
- Private Office (Employer)
- Private Office (Engineer) - 2 Nos
- Meeting Room for eight people
- General Open plan office for four people
- Sample and Store Rooms
- Kitchen
- Toilets

- C. The offices shall be fully air-conditioned, carpeted and furnished with chairs, tables, drawing boards and equipment, plan chest, filing cabinets, shelving, photocopier, telephones, electronic calculators and kitchen equipment all as scheduled herein.
- D. The facilities shall be fully maintained and cleaned and attendance provided at all times. The Contractor shall provide suitably qualified labour to clean and maintain the offices, maintain all equipment, provide, prepare and serve refreshments and provide general attendance to the Employer and Engineer.
- E. All utilities shall be provided continuously and maintained at the contractor's expense. The telephone shall be installed & maintained by the Contractor including service charges and local call charges but not international call charges.
- F. The maintenance of all the facilities listed above shall include the cost of all consumables required.

G. The Contractor shall submit his layout plan of the office facilities to the Employer for approval. The completion of the office facilities shall not be later than 30 days from the commencement of the mobilization period.

H. Provide the following items of furniture, fittings, and equipment :

1. Meeting Room (12m²)
 - 1 No. Table (sized to seat eight people)
 - 8 No. Swivel Chairs
 - 1 No. Whiteboard (2.5m x 1m high) with markers fixed to wall
 - 1 No. Telephone extensions with handsets
2. Private Offices for each (12 m²)- 2 No.
 - 1 No. Telephone extension with handset
 - 1 No. Desk (1.8 m x 1.0 m) with task lighting
 - 2 No. Swivel Chairs
 - 1 No. Table (2.0 m x 1.0 m)
 - 4 No. Stackable Chairs
 - 1 No. Bookcase
 - 1 No. Filing Cabinet
 - Shelving as required
 - 1 No. Wastepaper Basket
3. Reception Area (6 m²)
 - 1 No. Telephone switchboard with one incoming line & twenty extensions
 - 1 No. Tables (1 m x 0.75 m)
 - 1 No. First Aid Kit
 - 1 No. Wastepaper Basket
4. Open Plan Office (16 m²)
 - 4 No. Telephone extensions with handset
 - 4 No. Swivel Chairs
 - 4 No. Tables (2.0 m x 1 m) with underbench storage units and task lighting
 - 1 No. 6 drawer plan chest (A0)
 - 1 No. Vertical hanging drawing system capable of holding 300 drawings
 - 4 No. Electronic Calculators
 - 1 No. photocopier with automatic document feeder and sorter for maximum A3 original size documents with magnification and reduction facilities
 - 1 Wastepaper Basket per desk and table
5. Sample Room (10 m²)

Secure room with compartmented wooden racks of appropriate design to store the samples submitted.

6. Washroom (12m²)
 - 2 No. WC suites
 - 2 No. Wash Basins
 - 2 No. Mirrors
 - 1 No. Paper Towel Dispenser
7. Kitchen for preparing teas and snacks (8m)
 - 1 No. Sink and draining board
 - 1 No. Cooker with minimum four heating rings
 - 1 No. large upright refrigerator with separate freezing compartment
 - 1 No. chilled water dispenser
 - Cupboards for utensils
 - Worktops

2.06 STORAGE AREAS AND SHEDS

- A. Size to storage requirements for products of individual Sections, allowing for access and orderly provision for maintenance and for inspection of products to requirements of Section 01601.

PART 3: EXECUTION

3.01 PREPARATION

- A. Fill and grade sites for temporary structures to provide drainage away from buildings.

3.02 INSTALLATION

- A. Install office spaces ready for occupancy 30 days from commencement of the mobilization period.
- B. Parking: Eight hard surfaced shaded parking spaces for use by the Employer connected to office by hard surfaced walk.
- C. Employee Residential Occupancy: Not allowed on Employer's property.

3.03 MAINTENANCE AND CLEANING

- A. Daily janitorial services for offices: periodic cleaning & maintenance for office and storage areas.
- B. Maintain approach walks free of mud and water.

3.04 REMOVAL

- A. At completion of Work remove buildings, foundations, utility services, and debris. Restore areas.

End of Section

SECTION 01601**CONTROL OF MATERIALS****PART 1: GENERAL****1.01 APPROVAL OF MATERIALS**

- A Unless otherwise specified, incorporate only new materials and plant in the work. All materials and equipment furnished by the Contractor shall be subject to the inspection and acceptance of the Engineer. Deliver no material to the Work without prior acceptance by the Engineer.
- B In order to demonstrate the proficiency of workmen or to facilitate the choice among several textures, types, finishes, and surfaces, provide such samples of workmanship or finish as may be required.
- C The materials and plant used on the Work shall correspond to the accepted samples or other data.

1.02 HANDLING AND STORAGE OF MATERIALS

- A All materials and plant to be incorporated in the work shall be handled and stored by the manufacturer, fabricator, supplier and Contractor before, during, and after shipment in a manner to prevent warping, twisting, bending, breaking, chipping, rusting, and any injury, theft or damage of any kind whatsoever to the material or plant.
- B Store cement and lime off the ground and cover with a canvas or polyethylene sheet secured to prevent displacement by wind action. Keep materials completely dry at all times. Store all structural, miscellaneous, and reinforcing steel off the ground or otherwise to prevent accumulations of dirt or grease, and in a position to prevent accumulations of standing water and to minimize rusting. Store beams with the webs vertical. Handle store and precast concrete in a manner to prevent accumulations of dirt or standing water, staining, chipping or cracking. Handle and store brick, block and similar masonry products in a manner to reduce breakage, chipping, cracking, and spilling to a minimum.
- C Promptly remove from the Site of the Work all materials which, in the opinion of the Engineer, have become so damaged as to be unfit for the intended use. No compensation for the damaged material or its removal will be made.

End of Section