

DIVISION 1 - GENERAL REQUIREMENTS

1.1 INTRODUCTION

The Specifications defines the requirements for the quality of materials and workmanship management for the satisfactory completion of the Works under the Contract.

These Specifications shall be read in conjunction with the other Contract Documents. In case of ambiguities or discrepancies, the Specifications shall have precedence over the Drawings and Bill of Quantities, but be overridden by the Conditions of Contract.

The Contractor shall carefully read and understand the exact meaning of the Specifications and/or Drawings.

In case of ambiguities or discrepancies or omission, in the opinion of the Contractor, he shall inform it to the Engineer for actions to be taken. This information shall be submitted in writing at the time of submission of Detailed Construction Schedule in accordance with appropriate-Clause of Conditions of Contract. The Engineer shall evaluate the related documents and decide the Works to be carried out based on the Contract. If the Contractor find out any discrepancies and carry out the Works without any consultation with the Engineer, all the risks based on these discrepancies shall be borne by the Contractor.

1.1.1 DESCRIPTION OF PROJECT

1. Work under this Contract shall be subject to the terms and conditions stipulated in appropriate Section of the Conditions of Contract.
2. This Section generally defines the Project as a whole and the items of work to be done under this Contract.

1.1.2 BRIEF PROJECT LOCATION

Port of General Santos, Makar Wharf, General Santos City

1.1.3 ITEMS OF WORK AND QUANTITIES

The Contractor, unless otherwise specified, shall furnish all labor, tools, equipment, materials, supplies, superintendence and other incidentals and shall perform all operations and maintenance work necessary to complete the work under the contract.

Refer to appropriate Section on the Bill of Quantities.

1.2 SITE CONDITION

1.2.1 GENERAL

1. Work under this contract shall be subject to the terms and conditions stipulated in the Conditions of Contract.
2. This Section sets forth supplementary and additional information on existing physical condition of the project.

1.3 MATERIALS AND WORKMANSHIP

1.3.1 GENERAL

1. Work under this Contract shall be subject to the terms and conditions stipulated in the Conditions of Contract.
2. This Section sets forth supplementary and additional provisions relating to materials, products, equipment and workmanship required under this Contract.

1.3.2 MATERIALS

1. All materials used in the construction of the Permanent Works required under this Contract shall be of first class quality of their respective kinds as specified herein and or described in the Drawings and Bill of Quantities, obtained from approved sources and suppliers of materials conforming to Specifications and shall comply strictly with the **current issue of the appropriate standards** published by the American Society for Testing and Materials (ASTM), the Japanese Industrial Standards (JIS) or other equivalent national or international standards. Reference to Philippine, American Standards in the Specifications or Bill of Quantities does not imply any bias in favor of equipment, fittings, finishing, etc. The Contractor may relate his offer to other National Standards or Codes of Practice but shall explain the system used and provide the Engineer with all the necessary information and comparisons in English showing that his proposed standards are equivalent to the specified standards. Three (3) copies of such alternative standards in English are to be supplied by the Contractor to the Engineer when required. Any material not fully specified herein shall be the best of their kind and be specifically in accordance to the specified material requirements as indicated in the appropriate Section of the Specifications.
2. Grade of Materials: When reference to a standard is made without indication of a specific grade, the materials shall comply with the suitable grade thereof to be selected in consideration of their purpose and approved by the Engineer.

3. Trade Names of the materials indicated in the Contract Documents are intended only to show the standard of the materials on which the design of the particular work is based and also to avoid ambiguous descriptions of the materials in the Drawings and Specifications.
4. The indication of the trade names, therefore, shall in no way be considered a limit to the acceptability of other products of equal or better functions, performances, reliability and durability.
5. Approval of Manufacturer and/or Materials (including alternative materials, equipment): refer to Section 1.7 "Submittals" for specific requirements.
6. Order of Materials: After obtaining the Engineer's approval of the materials which conform with the requirements specified in the Specifications and as indicated on the Drawings, the Contractor shall place the order for materials in accordance with appropriate Section of Conditions of Contract. The Contractor shall forward copies in duplicate to the Engineer of all orders placed by him for the supply of materials to be used in the Permanent Works.
7. Packaging: All materials shall be delivered to the Site in such packages as are normally used for transporting the same to a tropical country and shall be identifiable in a manner acceptable to the Engineer.

1.3.3 NOTICE OF MANUFACTURES

The Contractor shall give the Engineer a written notice of the articles or materials to be prepared or manufactured off-site, stating the place and time of the preparation or manufacture, in sufficient time for the Engineer to make inspections at all stages of the work and not only when any such article or material is completed.

Any article or material which is prepared or manufactured without giving such prior written notice to the Engineer may be rejected if the Engineer considers that inspection was necessary during the progress of the preparation or manufacture.

1.3.4 WORKMANSHIP

The workmanship employed in all works shall be of first class grade in the light of accepted internationally recognized standards of practice and the whole shall be in accordance with the requirement indicated in the Specifications and the Drawings. During its progress, and upon completion, the Works shall conform to the lines, elevations, and grades as shown on the Drawings. The Contractor shall complete the proposed Works in every detail as specified. However, should there be any detail or details omitted from the Drawings or Specifications which are essential to the intended

completeness of any work, then it shall be the responsibility of the Contractor to furnish and install such details, subject to approval by the Engineer. Any work or workmanship not conforming to the best practices shall be subject to rejection. The whole of Permanent Works shall be subjected to the Engineer for its approval as to its compliance with the requirement indicated in the Specifications and Drawings.

1.3.5 MEASUREMENT AND PAYMENT

The requirements under materials and workmanship are incidental to other items of work and will not be measured for payment unless otherwise specified in the Bill of Quantities.

1.4 TEMPORARY WORKS

1.4.1 GENERAL

Work under this Contract shall be subject to the terms and conditions stipulated in the Conditions of Contract.

1.4.2 SCOPE OF WORK

This Section sets forth supplementary and additional provisions relating to preparatory works, facilities including Contractor's temporary facilities, and safeguards required for execution of works under this Contract.

1.4.3 GENERAL PROVISIONS

1. Temporary works, facilities and safeguards specified or required, including coordination with changes of services and similar activities shall be provided, for proper performance of the work, as necessary, to comply with all statutory regulations, and as necessary to expedite and properly execute the project.
2. Temporary Construction shall be adequate for intended uses and for all loads imposed without excessive settlement, deflection or deformation. All parts and members shall be properly supported, wedged, braced and secured to prevent displacement or failure.
3. Temporary and permanent utilities used for construction shall be adequate for the intended uses and not to be overloaded or otherwise used or arranged in any manner endangering persons, premises or works. Connections shall be properly made, lines and wiring securely anchored in place and protected against accidents.
4. Before or upon completion of work, unless otherwise required or directed, preparatory structures, installations and utility services shall be disconnected and removed from the site

1.4.4 TEMPORARY UTILITIES AND SERVICES

1. Water: The Contractor shall provide the necessary pumps, valves, motors, storage tanks or reservoirs and distribution lines to adequately supply water for the Project including :
 - a. Drinking Water: Providing and maintaining electric water dispensers (with hot and cold water) or connected drinking fountains of sufficient number to reasonable serve the Project.
 - b. Construction Water: Providing and maintaining temporary water service and distribution of adequate capacity for construction/installation/testing purposes. Include portable unit, line extensions, hoses, valves, etc.
2. Electricity: The Contractor shall provide and maintain generators including a stand-by generator of adequate capacity to reasonably serve the Project. The Contractor shall also provide and maintain:
 - a. Temporary electric service and distribution of adequate capacity for power, lighting and other construction needs including wiring, transformers, safety devices, connections, etc., as necessary.
 - b. Temporary lighting as necessary to properly and safely perform work at enclosed spaces or under hazardous conditions. Likewise, provide lights for night protection as necessary.
 - c. Temporary electrical systems shall comply with the local codes and regulations.

The Engineer will assist the Contractor to secure the necessary power source and permit prior to the temporary location of electric services to Site. However, the cost of installation, permits and other related works for this purpose shall be borne by the Contractor.

3. Waste and Rubbish
 - a. The Contractor shall provide regular daily clean-up and removal of trash, waste, construction debris, etc. from site and temporary work yard.
 - b. Disposal of waste and rubbish to disposal areas shall be arranged by the Contractor.
4. Submittal

Prior to the provisions of the above facilities, the Contractor shall within ten (10) days after receipt of Notice of Proceed/ Notice to Commence, submit installation plan of the above facilities to the Engineer for

approval.

1.4.5 FIRST AID AND FIRE PROTECTION

1. Emergency Calls: Determine locations of nearest available police, hospital or medical service and maintain their lists at the Contractor's Site Office.
2. Fire Protection
 - a. Establish appropriate emergency routes and procedures and submit plan to the Engineer.
 - b. Maintain fire extinguishers, connected hoses and other facilities necessary for reasonable fire fighting action at the site and temporary work yard.
3. Minor Injuries: Provide and maintain at the Contractor's Site Office medical and first aid equipment i.e. bandages, medicines and sterilized materials for first-aid treatment of minor injuries and shall also provide one (1) registered Nurse on a full time basis.

1.4.6 CONSTRUCTION SAFEGUARD

1. Trenches intersecting thoroughfares shall be provided with bridges or other crossings suitable carrying in the type of traffic involved with railings as necessary.
2. Open shafts, openings in floors, ramps, platforms and other such conditions shall be protected by sturdy barricades or railing.
3. Scaffolds, ladders, ramps, hoist, and other facilities shall be provided, maintained and operated as necessary.
4. Storage and shop areas shall be provided, arranged and maintained at approved locations as necessary to properly store, handle and fabricate the various materials and equipment required.
5. The Contractor shall hire one (1) Safety Engineer on a full time basis and shall also provide all construction workers/ staff with safety gears (i.e. helmets, shoes, belts, gloves, etc.) at Site.

1.4.7 ACCESS

The Contractor shall provide and maintain adequate access to the Project Site and all areas related to the works at no expense to the government. If existing roads are to be used for access to the Site, the Contractor shall maintain such roads for the duration of their use.

1.4.8 NAVIGATION MARKERS, ETC.

The Contractor shall provide all temporary and navigational aids, markers, lights and notices required for the works or required by law, regulations, and all authorities having jurisdiction over the area covered by the work on land or at sea. The Contractor shall replace at his own expense/cost any navigational or other facilities damaged by Contractor or his Sub-contractors.

1.4.9 PROTECTION OF THE PUBLIC

The Contractor shall provide safety devices (i.e. barricades, warning signs and other appropriate tools) as necessary for public protection.

1.4.10 ENVIRONMENTAL PROTECTION

1. Fires

Fires and burning of rubbish on the site are not permitted except when authorized by the Port Fire Marshall and the Engineer.

Where fires or burning is permitted, the Contractor shall prevent the structures, materials or vegetation which is to be preserved from staining and/or smoke damage. When so happen, the Contractor shall restore, clean and return stained or damaged work to fresh conditions.

2. Disposal of Waste

The Contractor shall not bury rubbish and solid waste materials on the Site unless approved by the Engineer.

The Contractor shall not dispose of dredging spoils, waste or volatile materials, such as mineral spirits, oil or paint thinner into the sea, waterways, storm water drainage or sanitary sewers.

3. Drainage

The Contractor shall provide temporary drainage and pumping facilities as necessary to keep the Site free from water.

The Contractor shall pay attention not to cut waterway or drainage from existing reclaimed areas. The Contractor shall provide when required temporary storm water drainage to prevent existing port area from being flooded.

4. Pollution Control

The Contractor shall cover or wet down dry materials and rubbish to prevent blowing dust and debris, and provide dust control for temporary roads and yards.

5. Protection of Corals, Mangroves, Estuaries and Forest

The Contractor shall conserve and protect from injuries the corals, mangroves, estuaries and forest found within the vicinity throughout project implementation.

1.4.11 DEMOLITION OF EXISTING STRUCTURES

1. Temporary Works shall include demolition or removal of existing structures to ground level, legal disposal of debris and materials, including the following requirements:
 - a. During the time of work, the Contractor shall not interfere with shipping and navigation or other traffic activities.
 - b. Keeping all pavements and areas leading to and from the site, clean and free of mud, dirt, and debris at all times and sufficiently passable to vehicles and pedestrians.
2. Temporary Works, however, do not include removal of shanties or relocation of squatter's dwellings as this matter is under the responsibility of the Government.
3. Refer to Section 2.2, "Demolition Works" for the detailed provision on demolition of existing major structures as indicated on the Drawings.

1.4.12 MEASUREMENT AND PAYMENT

1.4.12.1 TEMPORARY WORKS

The requirements under Temporary Works as indicated under Section 1.4 are incidental to other items of work and will not be measured for payment unless otherwise specified in the Bill of Quantities.

1.6 TESTS AND INSPECTIONS

1.6.1 GENERAL

1. Work under this Contract shall be subject to the terms and conditions stipulated in the Conditions of Contract.
2. This Section set forth general provisions regarding tests and inspections required under this Contract.

1.6.2 TEST

1. The Contractor shall carry out all tests required under the various

sections of the Specifications in the presence and under the supervision of the Engineer.

2. All materials delivered to the site shall be subject to examinations and tests, should such test be desired by the Engineer, the Contractor will be given sufficient time to test said materials.

All tests required shall be performed at any accredited regional Laboratory of the Bureau of Research and Standard (BRS) of the DPWH or Department of Science and Technology (DOST). PPA must accept results of materials test(s) coming only from DOST/BRS Accredited Laboratories.

The service(s) of accredited private testing laboratories shall be engage only upon a certification from BRS or the concerned DPWH Regional or District Testing Laboratory stating that it does not have the capability to undertake the desired tests. All testing shall be witnessed both by the authorized representatives of the Contractor and the Engineer.

3. The provisions of testing shall be closely-knit with the Construction Schedule so that all specified/required tests can be completed within the normal working hours on a one-shift basis, except for those that would require longer time to be carried out.
4. All tests shall generally be carried out in accordance with the requirements and procedures of accepted/established standards or as instructed by the Engineer.

As for the testing methods, other accepted/approved equivalent standards may be applied; in such case the Contractor shall submit the copies of such standards for the Engineer approval beforehand.

5. Unless otherwise expressly stated, all tests and the works in connection therewith shall be considered as incidental to the Permanent Works which require such tests and all costs thereof shall be deemed to be included in and covered by the Scheduled Rates of the "Pay Items".
6. The Engineer shall have the right to reject all materials which do not comply with the requirements of the Contract notwithstanding any previous approval thereof.
7. On account of the rejection of materials due to their non-compliance with the requirements of the Contract or due to the waiting time reasonably required for carrying out the examinations and tests, the Contractor shall not be entitled to any extra payment or extension of time for completion of the Works.

8. The Contractor shall furnish test samples as requested and shall provide reasonable assistance and cooperation as deemed necessary to permit the tests to be performed on materials or work in place including reasonable stoppage of work during testing.

1.6.4 MEASUREMENT AND PAYMENT

Unless otherwise expressly stated, all tests and the works in connection therewith shall be considered as incidentals to the Permanent Works which require such tests and all costs thereof shall be deemed to be included in and covered by the scheduled rates of the Pay Items.

1.7 SUBMITTALS

1.7.1 GENERAL

1. Work under this Contract shall be subject to the terms and conditions stipulated in the Conditions of Contract.
2. This Section sets forth general provisions regarding submittals required of the Contractor.
3. Related submittals other than sureties and insurances:
 - a. Contractor-furnished drawings, data and samples
 - b. Temporary access and haul roads
 - c. Monthly Progress Report with Photographs
 - d. Construction schedule
 - e. Tests and Inspection - Section 1.6
 - f. As-built drawings
 - g. Final construction report
4. Until submittal is reviewed by the Engineer and approved and released for distribution, work involving the relevant product data shall not proceed.
5. The Engineer's review will be signified by comments as required, identifying items for resubmission and by the Engineer's stamp when work is released for distribution.

1.7.2 CONTRACTOR-SUPPLIED DOCUMENTS

1. The Contractor shall supply the following documents as required by the Specifications or as requested by the Engineer.
 - a. Surveying and sounding drawings, and reports on sub-soil investigations when required.

- b. Structural calculations for temporary construction and erection stages of the permanent structures, inclusive of the determination of the strength and stability of the already completed structural members, as well as the stability of excavations, embankments, retaining walls and dikes, insofar as concerns additional loads that occur in the course of the execution of the construction work.
- c. Drawing and calculations in connection with any alternative proposal for design and execution of the special construction method or sequence for construction or erection of the permanent structures or parts thereof.
- d. Reports and records of all tests on materials carried out by the Contractor or by his Suppliers.
- e. Construction Schedules, monthly progress reports, final construction reports, shop drawings, as-built drawings, product data, samples and construction photographs.

1.7.3 CONSTRUCTION SCHEDULES AND SHOP DRAWINGS

1. Construction schedules, field drawings and shop drawings shall be originally prepared by Contractor, Sub-Contractor, Supplier or Distributor to illustrate the appropriate portion of work. The work item shall be described in relation to responsibility, fabrication, layout, setting or erection details as specified in appropriate Sections.
2. Submittal drawings to be reproducible transparency with one opaque print.
3. Maximum sheet size is 610 mm x 810 mm (24" x 32").

1.7.4 PRODUCT DATA

1. Certain sections of the Specifications state that manufacturer's standard schematic drawings, catalogue sheets, diagrams, schedules, performance charts, illustrations and other standard descriptive data will be accepted in lieu of shop drawings.
2. From the above and when necessary:
 - a. Delete information which is not applicable to the project;
 - b. Supplement standard information to provide additional information applicable to the project;
 - c. Show dimensions and clearances required;
 - d. Show performance characteristics and capacities; and
 - e. Show wiring diagrams and controls.

1.7.5 SAMPLES

1. Submit samples in sizes and quantities specified.
2. Where color is a criterion, submit full range of colors.
3. Construct field samples and mock-ups at locations acceptable to the Engineer.
4. Construct each sample or mock-up complete, including work of all trades required to finish work.
5. Reviewed and approved samples or mock-ups will become standards of workmanship and material against which, installed work will be checked on the project.

1.7.6 CONTRACTOR'S RESPONSIBILITIES

1. Review shop drawings, product data and samples prior to submission.
2. Verify:
 - Field measurements
 - Field construction criteria
 - Catalogue numbers and similar data
3. Coordinate each submittal with the Project requirements and Contract Documents.
4. Contractor's responsibility for errors and omissions on submittals is not relieved by the Engineer 's review and approval of submittals.
5. Contractor's responsibility for deviations on submittals from requirements of Contract Documents is not relieved by the Engineer's review of submittals, unless the Engineer give written acceptance of specified deviations.
6. Notify the Engineer, in writing at time of submission, of deviation on submittals from requirements of Contract Documents.

After the Engineer 's review, distribute copies.

1.7.7 SUBMISSION REQUIREMENTS

1. Schedule submissions at least five (5) working days before dates reviewed submittals will be needed.
2. Submit one reproducible transparency and one opaque print of schedules, survey data and shop drawings, and the number of copies of product data which Contractor requires for distribution plus three (3) copies which will be retained by the Engineer.
3. Accompany submittals with transmittal letters, in duplicate copies, containing:

- a. Date
 - b. Project title and number
 - c. Contractor's name and address
 - d. Number of each shop drawing, product data and sample submitted
 - e. Other pertinent data
4. Submittals shall include:
- a. Date and revision dates
 - b. Project title and number
 - c. Name of - Contractor
 - Sub-Contractor
 - Supplier
 - Manufacturer
 - Separate retailer when pertinent
 - d. Identification of product or material
 - e. Relation to adjacent structure or materials
 - f. Field dimensions, clearly identified as such
 - g. Specifications Section Number
 - h. Applicable standards, such as ASTM numbers
 - i. Contractor's stamp, initialed or signed, certifying review of submittal, verification of field measurements and compliance with Contract Documents.
5. Test reports shall be submitted in seven (7) copies at Contractor's expense within five (5) working days of the completion of respective tests or within such times as may be specifically directed by the Engineer.
6. Additional copies of any information if and when found to be necessary shall be furnished by Contractor at his own expense upon request by the Engineer.

1.7.8 DISTRIBUTION OF SUBMITTALS AFTER REVIEW

1. Distribute copies of shop drawings and product data which carry the Engineer 's stamp, to:
 - a. Job-site file
 - b. Record documents file
 - c. Sub-contractors
 - d. Suppliers
 - e. Fabricators

As appropriate in each case.

1.7.9 CONSTRUCTION PHOTOGRAPHS

1. Provide record progress photographs taken at a fixed point and angle as, when and where directed by the Engineer at intervals of not more than ten (10) days. The photographs shall be sufficient in number and location to record the exact progress of works. Provide one (1) proof print of each photograph taken and the negative and five (5) colored copies, 254 mm x 203 mm of any of the photographs selected by the Engineer. Two (2) copies are to be signed by the Contractor and the Engineer's Representatives. Albums to accommodate the selected photographs shall be supplied by Contractor.

1.7.10 MONTHLY PROGRESS REPORT

1. The Contractor shall maintain a daily log describing the important events pertaining to the Works, the working hours, the number of laborers employed, effective operation time of equipment, overtime hours, delays due to meteorological and maritime conditions, lack of labor, materials or equipment, progress made including those for dredging and reclamation works, and instructions, notifications and recommendations made by the Engineer.
2. The Contractor shall furnish the Engineer with eight (8) copies of the monthly progress reports within seven (7) days after the end of every month, indicating progress made, construction activities, inventories of material used and stored on job site, number of laborers, equipment available and hours utilized, number of working days, the summary of the daily log of the month and all important events in relation to the Works.

1.7.11 AS-BUILT DRAWINGS AND FINAL CONSTRUCTION REPORT

Within thirty (30) calendar days after the issuance of the Taking Over Certificate, the Contractor shall prepare and submit two (2) sets of as-built drawings and a final construction report as draft. And within thirty (30) calendar days after the issuance of the Taking Over Certificate, the Contractor shall submit five (5) sets of the Final Construction Report and ten (10) Final As-Built drawings. As-built drawings of the works consists of one (1) set of original size reproducible (mylar), two (2) sets of copies of original size (white print), one (1) set of reproducible (acetate) reduced to A3 size (420 mm x 297 mm) and six (6) sets of bound copies reduced to A3 size.

1.7.12 MEASUREMENT AND PAYMENT

Items of this section are incidental to the Works and will not be measured

for payment.

1.8 STANDARDS AND ABBREVIATIONS

1.8.1 GENERAL

1. Work under this Contract shall be subject to the terms and conditions stipulated in the Condition of Contract.
2. This Section sets forth standards and abbreviations referred to in the various Sections of the Technical Specifications.

1.8.2 STANDARDS

1. In the Specifications, reference are made to the standards issued by the following organizations and referred to by the abbreviations shown:

<u>Organization</u>	<u>Abbreviation</u>
a. Philippine National Standard (Product Standard Agency)	PNS
b. Japanese Industrial Standards	JIS
c. Standard Specifications, by DPWH (1995 edition Volume I & III) (2004 edition Volume II)	SS (DPWH)
d. Design Guidelines Criteria and Standards, Volume II (DPWH)	DGC

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| e. Technical Standards for Ports and Harbor Facilities (DPWH) | TS |
| f. Design Manual for Port and Harbor Facilities in Japan, the Ministry of Transport, Japan 1989 | DN |
| g. Technical Standards and Commentaries for Port and Harbour Facilities in Japan (2002) | TSCPHFJ |
| h. Philippine Institute of Civil Engineers | PICE |
| i. Association of Structural Engineers of the Philippines | ASEP |
| j. American Association of State Highway and Transportation Officials | AASHTO |
| k. American Concrete Institute | ACI |
| l. American Institute of Steel Construction | AISC |
| m. American National Standards Institute | ANSI |
| n. American Petroleum Institute | API |
| o. American Society for Testing and Materials | ASTM |
| p. American Welding Society | AWS |
| q. American Water Works Association | AWWA |
| r. Steel Structures Painting Council | SSPC |
2. Standards listed above, may be considered to be equally applicable/acceptable, provided that performance and functions of materials or workmanship or methods of tests, etc. are equal to or better than those specified in the above-listed standards and provided that the quantity of the Works will not be increased/adjusted just to comply with the proposed standard.
3. The Contractor shall submit proof that, when a standard other than that specified is proposed, it is in fact equal to or better than the specified standard. Such reference shall in every case be considered to be made in accordance with the latest edition of the said reference.
4. The edition or the revised version of such codes and standards current at the date twenty eight (28) days prior to date of bid submission shall apply. During Contract execution, any changes in such codes and standards shall be applied after approval by the Owner.

1.8.3 ABBREVIATIONS

In the Technical Specifications, the following abbreviations are used:

<u>Items</u>	<u>Abbreviations</u>
1. Millimeter (s)	mm (s)
2. centimeter (s)	cm (s)
3. meter (s)	m (s)
4. kilogram (s)	kg (s)
5. metric tonne (s)	t (s)
6. maximum	max.
7. minimum	min.
8. typical	Typ.
9. Drawing (s)	Dwgs.
10. Elevation	Elev.
11. diameter	dia.
12. Division	Div.
13. Approximately	approx.
14. Kilometer (s)	km (s)
15. Quantity	Q'ty
16. Linear meter (s)	l.m.
17. Length	L
18. Pascal	Pa
19. Megapascal	MPa
20. Kilopascal	Kpa
21. Newton	N
22. Liter	L
23. Knot	Kn

1.9 MOBILIZATION/DEMOBILIZATION AND CLEANING

1.9.1 GENERAL

Work under this Contract shall be in accordance with the terms and conditions stipulated in the Conditions of Contract and Section 1 "General Requirements" of these Specifications and shall apply to this Section whether herein referred to or not.

1.9.2 SCOPE OF WORK

This Section includes mobilization, demobilization, assembly and disassembly of equipment/plants including incidentals necessary to complete the work.

1.9.3 MOBILIZATION

1. The Contractor shall mobilize and put into operation all equipment and plants required to undertake the Contract.

2. Mobilization shall include the transferring to the job-sites of all equipment, plants, supplies and materials, personnel, and all items necessary for the execution and completion of the work, and shall also include the setting up of all equipment, instruments and all other plants until rendered operable, subject to the confirmation of the Engineer.
3. Sufficient supply of spares for the equipment and plants shall be carried on-board the towing/carrying vessels. Equipment/plants encountering breakdowns must be repaired on site by the most expeditious method possible at no cost to PPA. In the event that the equipment/plants call for major repair works that cannot be undertaken at the site, the Contractor shall replace such equipment/plants with equal or better performance capacity at no additional mobilization costs to PPA and the Contractor shall not be entitled to any time extension.

1.9.4 DEMOBILIZATION

Demobilization upon request of the Contractor and approved by the Engineer, shall include the following:

1. The dismantling, preparation and loading for removal and shipment of all Contractor's plant, equipment and personnel at each site after completion of the works.
2. Transportation of all the above plant, equipment and materials from each site to the Contractor's home station or somewhere else outside the sites.
3. Removal of all supplementary markers furnished and installed by the Contractor, provided that the Engineer has not taken the option to retain the markers.
4. The cleanup of the Site and the removal of materials, debris, waste, etc., and making good damages or temporary alterations.

1.9.5 MEASUREMENT AND PAYMENT

Payment for this item includes the expenses incurred by the Contractor for moving-in of minimum major equipment and/or plant required for the project and moving out of the same after final acceptance of the work including cleaning-up. Fifty percent (50%) of the total amount shall be payable after mobilization activity while the remaining fifty percent (50%) payable after acceptance of the completed project. A list of equipment showing the detailed cost for its mobilization and demobilization works shall be included in the bid amount for this item.