## **PHILIPPINE BIDDING DOCUMENTS** (As Harmonized with Development Partners)

# UPGRADING OF MAIN POWERLINE SYSTEM, PORT OF NAVAL, BILIRAN

Government of the Republic of the Philippines

Fifth Edition August 2016

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PORT MANAGEMENT OFFICE OF WESTERN LEYTE/ BILIRAN

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# **INVITATION TO BID**

## UPGRADING OF MAIN POWERLINE SYSTEM, PORT OF NAVAL, BILIRAN

The Philippine Ports Authority, Port Management Office – Western Leyte/Biliran, through the Corporate Budget of the Authority for CY 2021, intends to apply the sum of **P 1,280,868.14** being the Approved Budget for the Contract (ABC) to payment under the contract for the project – *Upgrading of Main Powerline System, Port of Naval, Biliran*(OME-10605990). Bids received in excess of the ABC shall be automatically rejected at bid opening.

The Philippine Ports Authority, Port Management Office – Western Leyte/Biliran now invites bids for the *Upgrading of Main Powerline System, Port of Naval, Biliran.* Completion of Works required for the project is *Sixty (60) Calendar Days*. Bidders should have completed a contract similar to the Project. The description of an eligible bidder is contained in the Bidding Documents, particularly, in Section II. Instruction to Bidders.

Bidding will be conducted through open competitive bidding procedures using nondiscretionary pass/fail criterion as specified in the 2016 Revised Implementing Rules and Regulations (IRR) of Republic Act 9184 (RA 9184), otherwise known as the "Government Procurement Reform Act".

Bidding is restricted to Filipino citizens/sole proprietorships, cooperatives and partnerships, or organizations with at least seventy five percent (75%) interest or outstanding capital stock belonging to citizens of the Philippines.

Interested bidders may obtain further information from *Philippine Ports Authority, Port Management Office – Western Leyte/Biliran* and inspect the Bidding Documents at the address given below from 8:00am – 5:00pm.

A complete set of Bidding Documents may be acquired by interested Bidders on **May 13, 2022** from the address below and upon payment of the applicable fee for the Bidding Documents pursuant to the latest Guidelines issued by GPPB, in the amount of **P 5,000.00**.

It may also be downloadable free of charge from the website of the Philippine Government Electronic Procurement System (PhilGEPS) and the website of Philippine Ports Authority, provided that bidders shall pay the applicable fee for the Bidding Documents not later than the submission of their bids.

The Philippine Ports Authority, Port Management Office – Western Leyte/Biliran will hold a Pre-Bid Conference on May 23, 2022, 10:00 A.M. at Philippine Ports Authority, Port Management Office – Western Leyte/Biliran Port Operation Building

Conference Room, Ebony St., Ormoc City, which shall be open to prospective bidders.

Bids must be duly received by the BAC Secretariat at the address below on or before June 06, 2022, 10:00 A.M. All bids must be accompanied by a Bid Security in any of the acceptable forms and in the amount stated in **ITB** Clause 18.

Bid opening shall be on June 06, 2022, 10:30 A.M at Philippine Ports Authority, Port Management Office – Western Leyte/Biliran, Port Operation Building, Conference Room, Ebony St. Port Area, Ormoc City. Bids will be opened in the presence of the bidders' representatives who choose to attend at the address below. Late bids shall not be accepted.

- Equipment Requirements
  - 1 unit Boomtruck, 2Tonnes cap.
  - Electric Jackhammer, 2000W 1 unit
  - 1 unit Bar Cutter

#### - owned/leased

- owned - owned

Required PCAB Registration : Small B - Specialty in Electrical Works

The *Philippine Ports Authority* reserves the right to accept or reject any and all bids, declare a failure of bidding, or not award the contract at any time prior to contract award in accordance with Section 41 of RA 9184 and its IRR, without thereby incurring any liability to the affected bidder or bidders.

For further information, please refer to:

#### FEBIE P. CAPUYAN

Philippine Ports Authority, Port Management Office - Western Leyte/Biliran Port Operation Building, Ebony St. Port Area, Ormoc City Tel. No. 053-5614662 Fax No. 053-5614663 Email add: pmowlb\_esd@yahoo.com.ph

> **IRVIN PAUL H. CONEJO** Chairman **Bids and Awards Committee**

# Section II. Instructions to Bidders

#### Notes on the Instructions to Bidders

This Section of the Bidding Documents provides the information necessary for Bidders to prepare responsive bids, in accordance with the requirements of the Procuring Entity. It also provides information on the bid submission, eligibility check, opening and evaluation of bids, and on the award of contract.

This Section also contains provisions that are to be used unchanged.

Section III. Bid Data Sheet consists of provisions that supplement, amend, or specify in detail information or requirements included in this Section and which are specific to each procurement.

Matters governing the performance of the Contractor, payments under the contract, or matters affecting the risks, rights, and obligations of the parties under the contract are not normally included in this Section, but rather under

Section IV. General Conditions of Contract (GCC), and/or

Section V. Special Conditions of Contract (SCC). If duplication of a subject is inevitable in the other sections of the document prepared by the Procuring Entity, care must be exercised to avoid contradictions between clauses dealing with the same matter.

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#### A. General

#### 1. Scope of Bid

1.1. The Procuring Entity named in the **<u>BDS</u>**, invites bids for the construction of Works, as described in Section VI.

# **1.2.** Specifications.

- 1.3. The name, identification, and number of lots specific to this bidding are provided in the **<u>BDS</u>**. The contracting strategy and basis of evaluation of lots is described in **ITB** Clause 27.
- 1.4. The successful Bidder will be expected to complete the Works by the intended completion date specified in **SCC** Clause 1.17.

#### 2. Source of Funds

The Procuring Entity has a budget or received funds from the Funding Source named in the <u>BDS</u>, and in the amount indicated in the <u>BDS</u>. It intends to apply part of the funds received for the Project, as defined in the <u>BDS</u>, to cover eligible payments under the Contract for the Works.

#### 3. Corrupt, Fraudulent, Collusive, Coercive, and Obstructive Practices

- 3.1. Unless otherwise specified in the **BDS**, the Procuring Entity, as well as bidders and contractors, shall observe the highest standard of ethics during the procurement and execution of the contract. In pursuance of this policy, the Funding Source:
- (a) defines, for purposes of this provision, the terms set forth below as follows:
  - (i) "corrupt practice" means behavior on the part of officials in the public or private sectors by which they improperly and unlawfully enrich themselves, others, or induce others to do so, by misusing the position in which they are placed, and includes the offering, giving, receiving, or soliciting of anything of value to influence the action of any such official in the procurement process or in contract execution; entering, on behalf of the Procuring Entity, into any contract or transaction manifestly and grossly disadvantageous to the same, whether or not the public officer profited or will profit thereby, and similar acts as provided in Republic Act 3019;
  - (ii) "fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Procuring Entity, and includes

collusive practices among Bidders (prior to or after Bid submission) designed to establish bid prices at artificial, noncompetitive levels and to deprive the Procuring Entity of the benefits of free and open competition;

- (iii) "collusive practices" means a scheme or arrangement between two or more Bidders, with or without the knowledge of the Procuring Entity, designed to establish bid prices at artificial, non-competitive levels; and
- (iv) "coercive practices" means harming or threatening to harm, directly or indirectly, persons, or their property to influence their participation in a procurement process, or affect the execution of a contract;
- (v) "obstructive practice" is
  - destroying, falsifying, (aa) deliberately altering or concealing of evidence material to an administrative proceedings or investigation or making false statements to investigators in order to materially impede an administrative proceedings or investigation of the Procuring Entity or any foreign government/foreign or international financing institution into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the administrative proceedings or investigation or from pursuing such proceedings or investigation; or
  - (bb) acts intended to materially impede the exercise of the inspection and audit rights of the Procuring Entity or any foreign government/foreign or international financing institution herein.
- (b) will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the Contract; and
- (c) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded Contract funded by the Funding Source if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing or, or in executing, a Contract funded by the Funding Source.
- 3.2. Further, the Procuring Entity will seek to impose the maximum civil, administrative, and/or criminal penalties available under the applicable laws on individuals and organizations deemed to be involved in any of the practices mentioned in **ITB** Clause 3.1(a).

3.3. Furthermore, the Funding Source and the Procuring Entity reserve the right to inspect and audit records and accounts of a contractor in the bidding for and performance of a contract themselves or through independent auditors as reflected in the GCC Clause 34.

#### 4. Conflict of Interest

- 4.1. All Bidders found to have conflicting interests shall be disqualified to participate in the procurement at hand, without prejudice to the imposition of appropriate administrative, civil, and criminal sanctions. A Bidder may be considered to have conflicting interests with another Bidder in any of the events described in paragraphs (a) through (c) and a general conflict of interest in any of the circumstances set out in paragraphs (d) through (g) below:
- (a) A Bidder has controlling shareholders in common with another Bidder;
- (b) A Bidder receives or has received any direct or indirect subsidy from any other Bidder;
- (c) A Bidder has the same legal representative as that of another Bidder for purposes of this Bid;
- (d) A Bidder has a relationship, directly or through third parties, that puts them in a position to have access to information about or influence on the bid of another Bidder or influence the decisions of the Procuring Entity regarding this bidding process;
- (e) A Bidder submits more than one bid in this bidding process. However, this does not limit the participation of subcontractors in more than one bid;
- (f) A Bidder who participated as a consultant in the preparation of the design or technical specifications of the goods and related services that are the subject of the bid; or
- (g) A Bidder who lends, or temporarily seconds, its personnel to firms or organizations which are engaged in consulting services for the preparation related to procurement for or implementation of the project, if the personnel would be involved in any capacity on the same project.
- 4.2. In accordance with Section 47 of the IRR of RA 9184, all Bidding Documents shall be accompanied by a sworn affidavit of the Bidder that it is not related to the Head of the Procuring Entity (HoPE), members of the Bids and Awards Committee (BAC), members of the Technical Working Group (TWG), members of the BAC Secretariat, the head of the Project Management Office (PMO) or the end-user unit, and the project consultants, by consanguinity or affinity up to the third civil degree. On the part of the Bidder, this Clause shall apply to the following persons:

- (a) If the Bidder is an individual or a sole proprietorship, to the Bidder himself;
- (b) If the Bidder is a partnership, to all its officers and members;
- (c) If the Bidder is a corporation, to all its officers, directors, and controlling stockholders;
- (d) If the Bidder is a cooperative, to all its officers, directors, and controlling shareholders or members; and
- (e) If the Bidder is a joint venture (JV), the provisions of items (a), (b), (c) or (d) of this Clause shall correspondingly apply to each of the members of the said JV, as may be appropriate.

Relationship of the nature described above or failure to comply with this Clause will result in the automatic disqualification of a Bidder.

#### 5. Eligible Bidders

- 5.1. Unless otherwise indicated in the **BDS**, the following persons shall be eligible to participate in this Bidding:
- (a) Duly licensed Filipino citizens/sole proprietorships;
- (b) Partnerships duly organized under the laws of the Philippines and of which at least seventy five percent (75%) of the interest belongs to citizens of the Philippines;
- (c) Corporations duly organized under the laws of the Philippines, and of which at least seventy five percent (75%) of the outstanding capital stock belongs to citizens of the Philippines;
- (d) Cooperatives duly organized under the laws of the Philippines.
- (e) Persons/entities forming themselves into a JV, i.e., a group of two (2) or more persons/entities that intend to be jointly and severally responsible or liable for a particular contract: Provided, however, that, in accordance with Letter of Instructions No. 630, Filipino ownership or interest of the joint venture concerned shall be at least seventy five percent (75%): Provided, further, that joint ventures in which Filipino ownership or interest is less than seventy five percent (75%) may be eligible where the structures to be built require the application of techniques and/or technologies which are not adequately possessed by a person/entity meeting the seventy five percent (75%) Filipino ownership requirement: Provided, finally, that in the latter case, Filipino ownership or interest shall not be less than twenty five percent (25%). For this purpose, Filipino ownership or interest shall be based on the contributions of each of the members of the joint venture as specified in their JVA.

- 5.2. The Procuring Entity may also invite foreign bidders when provided for under any Treaty or International or Executive Agreement as specified in the **BDS**.
- 5.3. Government owned or controlled corporations (GOCCs) may be eligible to participate only if they can establish that they (a) are legally and financially autonomous, (b) operate under commercial law, and (c) are not attached agencies of the Procuring Entity.
- 5.4. (a) The Bidder must have an experience of having completed a Single Largest Completed Contract (SLCC) that is similar to this Project, equivalent to at least fifty percent (50%) of the ABC adjusted, if necessary, by the Bidder to current prices using the Philippine Statistics Authority (PSA) consumer price index. However, contractors under Small A and Small B categories without similar experience on the contract to be bid may be allowed to bid if the cost of such contract is not more than the Allowable Range of Contract Cost (ARCC) of their registration based on the guidelines as prescribed by the PCAB.

(b) For Foreign-funded Procurement, the Procuring Entity and the foreign government/foreign or international financing institution may agree on another track record requirement, as specified in the **BDS**.

For this purpose, contracts similar to the Project shall be those described in the **BDS**.

5.5. The Bidder must submit a computation of its Net Financial Contracting Capacity (NFCC), which must be at least equal to the ABC to be bid, calculated as follows:

NFCC = [(Current assets minus current liabilities) (15)] minus the value of all outstanding or uncompleted portions of the projects under ongoing contracts, including awarded contracts yet to be started coinciding with the contract for this Project.

The values of the domestic bidder's current assets and current liabilities shall be based on the latest Audited Financial Statements (AFS) submitted to the BIR.

For purposes of computing the foreign bidders' NFCC, the value of the current assets and current liabilities shall be based on their audited financial statements prepared in accordance with international financial reporting standards.

#### 6. Bidder's Responsibilities

6.1. The Bidder or its duly authorized representative shall submit a sworn statement in the form prescribed in Section IX. Bidding Forms as required in **ITB** Clause 12.1(b)(iii).

- 6.2. The Bidder is responsible for the following:
- (a) Having taken steps to carefully examine all of the Bidding Documents;
- (b) Having acknowledged all conditions, local or otherwise, affecting the implementation of the contract;
- (c) Having made an estimate of the facilities available and needed for the contract to be bid, if any;
- (d) Having complied with its responsibility to inquire or secure Supplemental/Bid Bulletin/s as provided under **ITB** Clause 10.4.
- (e) Ensuring that it is not "blacklisted" or barred from bidding by the GoP or any of its agencies, offices, corporations, or LGUs, including foreign government/foreign or international financing institution whose blacklisting rules have been recognized by the GPPB;
- (f) Ensuring that each of the documents submitted in satisfaction of the bidding requirements is an authentic copy of the original, complete, and all statements and information provided therein are true and correct;
- (g) Authorizing the HoPE or its duly authorized representative/s to verify all the documents submitted;
- (h) Ensuring that the signatory is the duly authorized representative of the Bidder, and granted full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract, accompanied by the duly notarized Special Power of Attorney, Board/Partnership Resolution, or Secretary's Certificate, whichever is applicable;
- (i) Complying with the disclosure provision under Section 47 of RA 9184 and its IRR in relation to other provisions of RA 3019;
- (j) Complying with existing labor laws and standards, in the case of procurement of services. Moreover, bidder undertakes to:
  - (i) Ensure the entitlement of workers to wages, hours of work, safety and health and other prevailing conditions of work as established by national laws, rules and regulations; or collective bargaining agreement; or arbitration award, if and when applicable.

In case there is a finding by the Procuring Entity or the DOLE of underpayment or non-payment of workers' wage and wagerelated benefits, bidder agrees that the performance security or portion of the contract amount shall be withheld in favor of the complaining workers pursuant to appropriate provisions of Republic Act No. 9184 without prejudice to the institution of appropriate actions under the Labor Code, as amended, and other social legislations.

(ii) Comply with occupational safety and health standards and to correct deficiencies, if any.

In case of imminent danger, injury or death of the worker, bidder undertakes to suspend contract implementation pending clearance to proceed from the DOLE Regional Office and to comply with Work Stoppage Order; and

- (iii) Inform the workers of their conditions of work, labor clauses under the contract specifying wages, hours of work and other benefits under prevailing national laws, rules and regulations; or collective bargaining agreement; or arbitration award, if and when applicable, through posting in two (2) conspicuous places in the establishment's premises; and
- (k) Ensuring that it did not give or pay, directly or indirectly, any commission, amount, fee, or any form of consideration, pecuniary or otherwise, to any person or official, personnel or representative of the;

Failure to observe any of the above responsibilities shall be at the risk of the Bidder concerned.

- 6.3. The Bidder, by the act of submitting its bid, shall be deemed to have inspected the site, determined the general characteristics of the contract works and the conditions for this Project and examine all instructions, forms, terms, and project requirements in the Bidding Documents.
- 6.4. It shall be the sole responsibility of the prospective bidder to determine and to satisfy itself by such means as it considers necessary or desirable as to all matters pertaining to this Project, including: (a) the location and the nature of the contract, project, or work; (b) climatic conditions; (c) transportation facilities; (c) nature and condition of the terrain, geological conditions at the site communication facilities, requirements, location and availability of construction aggregates and other materials, labor, water, electric power and access roads; and (d) other factors that may affect the cost, duration and execution or implementation of the contract, project, or work.
- 6.5. The Procuring Entity shall not assume any responsibility regarding erroneous interpretations or conclusions by the prospective or eligible bidder out of the data furnished by the procuring entity. However, the Procuring Entity shall ensure that all information in the Bidding Documents, including supplemental/bid bulletins issued are correct and consistent.
- 6.6. Before submitting their bids, the Bidders are deemed to have become familiar with all existing laws, decrees, ordinances, acts and

regulations of the Philippines which may affect the contract in any way.

- 6.7. The Bidder shall bear all costs associated with the preparation and submission of his bid, and the Procuring Entity will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.
- 6.8. The Bidder should note that the Procuring Entity will accept bids only from those that have paid the applicable fee for the Bidding Documents at the office indicated in the Invitation to Bid.

#### 7. Origin of Goods and Services

There is no restriction on the origin of Goods, or Contracting of Works or Services other than those prohibited by a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations.

#### 8. Subcontracts

- 8.1. Unless otherwise specified in the <u>BDS</u>, the Bidder may subcontract portions of the Works to an extent as may be approved by the Procuring Entity and stated in the <u>BDS</u>. However, subcontracting of any portion shall not relieve the Bidder from any liability or obligation that may arise from the contract for this Project.
- 8.2. Subcontractors must submit the documentary requirements under **ITB** Clause 12 and comply with the eligibility criteria specified in the **BDS**. In the event that any subcontractor is found by the Procuring Entity to be ineligible, the subcontracting of such portion of the Works shall be disallowed.
- 8.3. The Bidder may identify the subcontractor to whom a portion of the Works will be subcontracted at any stage of the bidding process or during contract implementation. If the Bidder opts to disclose the name of the subcontractor during bid submission, the Bidder shall include the required documents as part of the technical component of its bid.

#### **B.** Contents of Bidding Documents

#### 9. **Pre-Bid Conference**

9.1. (a) If so specified in the <u>BDS</u>, a pre-bid conference shall be held at the venue and on the date indicated therein, to clarify and address the Bidders' questions on the technical and financial components of this Project.

(b) The pre-bid conference shall be held at least twelve (12) calendar days before the deadline for the submission of and receipt of bids, but not earlier than seven (7) calendar days from the posting of the Invitation to Bid/Bidding

Documents in the PhilGEPS website. If the Procuring Entity determines that, by reason of the method, nature, or complexity of the contract to be bid, or when international participation will be more advantageous to the GoP, a longer period for the preparation of bids is necessary, the pre-bid conference shall be held at least thirty (30) calendar days before the deadline for the submission and receipt of bids, as specified in the **BDS**.

- 9.2. Bidders are encouraged to attend the pre-bid conference to ensure that they fully understand the Procuring Entity's requirements. Nonattendance of the Bidder will in no way prejudice its bid; however, the Bidder is expected to know the changes and/or amendments to the Bidding Documents as recorded in the minutes of the pre-bid conference and the Supplemental/Bid Bulletin. The minutes of the pre-bid conference shall be recorded and prepared not later than five (5) calendar days after the pre-bid conference. The minutes shall be made available to prospective bidders not later than five (5) days upon written request.
- 9.3. Decisions of the BAC amending any provision of the bidding documents shall be issued in writing through a Supplemental/Bid Bulletin at least seven (7) calendar days before the deadline for the submission and receipt of bids.

#### **10.** Clarification and Amendment of Bidding Documents

- 10.1. Prospective bidders may request for clarification(s) on and/or interpretation of any part of the Bidding Documents. Such a request must be in writing and submitted to the Procuring Entity at the address indicated in the **BDS** at least ten (10) calendar days before the deadline set for the submission and receipt of Bids.
- 10.2. The BAC shall respond to the said request by issuing a Supplemental/Bid Bulletin, to be made available to all those who have properly secured the Bidding Documents, at least seven (7) calendar days before the deadline for the submission and receipt of Bids.
- 10.3. Supplemental/Bid Bulletins may also be issued upon the Procuring Entity's initiative for purposes of clarifying or modifying any provision of the Bidding Documents not later than seven (7) calendar days before the deadline for the submission and receipt of Bids. Any modification to the Bidding Documents shall be identified as an amendment.
- 10.4. Any Supplemental/Bid Bulletin issued by the BAC shall also be posted in the PhilGEPS and the website of the Procuring Entity concerned, if available, and at any conspicuous place in the premises of the Procuring Entity concerned. It shall be the responsibility of all Bidders who have properly secured the Bidding Documents to inquire and secure Supplemental/Bid Bulletins that may be issued by the BAC. However, Bidders who have submitted bids before the issuance of the

Supplemental/Bid Bulletin must be informed and allowed to modify or withdraw their bids in accordance with **ITB** Clause 23.

#### C. Preparation of Bids

#### 11. Language of Bids

The eligibility requirements or statements, the bids, and all other documents to be submitted to the BAC must be in English. If the eligibility requirements or statements, the bids, and all other documents submitted to the BAC are in foreign language other than English, it must be accompanied by a translation of the documents in English. The documents shall be translated by the relevant foreign government agency, the foreign government agency authorized to translate documents, or a registered translator in the foreign bidder's country; and shall be authenticated by the appropriate Philippine foreign service establishment/post or the equivalent office having jurisdiction over the foreign bidder's affairs in the Philippines. The English translation shall govern, for purposes of interpretation of the bid.

#### 12. Documents Comprising the Bid: Eligibility and Technical Components

- 12.1. Unless otherwise indicated in the **BDS**, the first envelope shall contain the following eligibility and technical documents:
- (a) Eligibility Documents –

Class "A" Documents

- (i) PhilGEPS Certificate of Registration and Membership in accordance with Section 8.5.2 of the IRR, except for foreign bidders participating in the procurement by a Philippine Foreign Service Office or Post, which shall submit their eligibility documents under Section 23.1 of the IRR, provided, that the winning bidder shall register with the PhilGEPS in accordance with Section 37.1.4 of the IRR;
- (ii) Statement of all its ongoing government and private contracts, including contracts awarded but not yet started, if any, whether similar or not similar in nature and complexity to the contract to be bid; and

Statement of the Bidder's SLCC similar to the contract to be bid, in accordance with ITB Clause 5.4.

The two statements required shall indicate for each contract the following:

(ii.1) name of the contract;

- (ii.2) date of the contract;
- (ii.3) contract duration;
- (ii.4) owner's name and address;
- (ii.5) nature of work;
- (ii.6) contractor's role (whether sole contractor, subcontractor, or partner in a JV) and percentage of participation;
- (ii.7) total contract value at award;
- (ii.8) date of completion or estimated completion time;
- (ii.9) total contract value at completion, if applicable;
- (ii.10) percentages of planned and actual accomplishments, if applicable; and
- (ii.11) value of outstanding works, if applicable.

The statement of the Bidder's SLCC shall be supported by the Notice of Award and/or Notice to Proceed, Project Owner's Certificate of Final Acceptance issued by the Owner other than the Contractor or the Constructors Performance Evaluation System (CPES) Final Rating, which must be at least satisfactory. In case of contracts with the private sector, an equivalent document shall be submitted;

- (iii) Unless otherwise provided in the <u>BDS</u>, a valid special PCAB License in case of joint ventures, and registration for the type and cost of the contract for this Project; and
- (iv) NFCC computation in accordance with ITB Clause 5.5.

Class "B" Documents

- (v) If applicable, Joint Venture Agreement (JVA) in accordance with RA 4566.
- (b) Technical Documents
  - (i) Bid security in accordance with **ITB** Clause 18. If the Bidder opts to submit the bid security in the form of:
    - (i.1) a bank draft/guarantee or an irrevocable letter of credit issued by a foreign bank, it shall be accompanied by a confirmation from a Universal or Commercial Bank; or

- (i.2) a surety bond accompanied by a certification coming from the Insurance Commission that the surety or insurance company is authorized to issue such instruments.
- (ii) Project Requirements, which shall include the following:
  - (ii.1) Organizational chart for the contract to be bid;
  - (ii.2) List of contractor's personnel (*e.g.*, Project Manager, Project Engineers, Materials Engineers, and Foremen), to be assigned to the contract to be bid, with their complete qualification and experience data. These personnel must meet the required minimum years of experience set in the **BDS**; and
  - (ii.3) List of contractor's major equipment units, which are owned, leased, and/or under purchase agreements, supported by proof of ownership, certification of availability of equipment from the equipment lessor/vendor for the duration of the project, as the case may be, which must meet the minimum requirements for the contract set in the **BDS**; and
- Sworn statement in accordance with Section 25.3 of the IRR of RA 9184 and using the form prescribed in Section IX. Bidding Forms.

#### **13.** Documents Comprising the Bid: Financial Component

- 13.1. Unless otherwise stated in the **BDS**, the financial component of the bid shall contain the following:
- (a) Financial Bid Form, which includes bid prices and the bill of quantities, in accordance with **ITB** Clauses 15.1 and 15.3; and
- (b) Any other document related to the financial component of the bid as stated in the **BDS**.
- 13.2. (a) Unless otherwise stated in the **BDS**, all Bids that exceed the ABC shall not be accepted.
  - (b) Unless otherwise indicated in the <u>BDS</u>, for foreign-funded procurement, a ceiling may be applied to bid prices provided the following conditions are met:
    - (i) Bidding Documents are obtainable free of charge on a freely accessible website. If payment of Bidding Documents is required by the procuring entity, payment could be made upon the submission of bids.

- (ii) The procuring entity has procedures in place to ensure that the ABC is based on recent estimates made by the engineer or the responsible unit of the procuring entity and that the estimates are based on adequate detailed engineering (in the case of infrastructure projects) and reflect the quality, supervision and risk and inflationary factors, as well as prevailing market prices, associated with the types of works or goods to be procured.
- (iii) The procuring entity has trained cost estimators on estimating prices and analyzing bid variances. In the case of infrastructure projects, the procuring entity must also have trained quantity surveyors.
- (iv) The procuring entity has established a system to monitor and report bid prices relative to ABC and engineer's/procuring entity's estimate.
- (v) The procuring entity has established a monitoring and evaluation system for contract implementation to provide a feedback on actual total costs of goods and works.

#### 14. Alternative Bids

- 14.1. Alternative Bids shall be rejected. For this purpose, alternative bid is an offer made by a Bidder in addition or as a substitute to its original bid which may be included as part of its original bid or submitted separately therewith for purposes of bidding. A bid with options is considered an alternative bid regardless of whether said bid proposal is contained in a single envelope or submitted in two (2) or more separate bid envelopes.
- 14.2. Bidders shall submit offers that comply with the requirements of the Bidding Documents, including the basic technical design as indicated in the drawings and specifications. Unless there is a value engineering clause in the **BDS**, alternative bids shall not be accepted.
- 14.3. Each Bidder shall submit only one Bid, either individually or as a partner in a JV. A Bidder who submits or participates in more than one bid (other than as a subcontractor if a subcontractor is permitted to participate in more than one bid) will cause all the proposals with the Bidder's participation to be disqualified. This shall be without prejudice to any applicable criminal, civil and administrative penalties that may be imposed upon the persons and entities concerned.

#### 15. Bid Prices

- 15.1. The contract shall be for the whole Works, as described in **ITB** Clause 1.1, based on the priced Bill of Quantities submitted by the Bidder.
- 15.2. The Bidder shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Bids not addressing or providing

all of the required items in the Bidding Documents including, where applicable, Bill of Quantities, shall be considered non-responsive and, thus, automatically disqualified. In this regard, where a required item is provided, but no price is indicated, the same shall be considered as non-responsive, but specifying a zero (0) or a dash (-) for the said item would mean that it is being offered for free to the Government, except those required by law or regulations to be provided for.

- 15.3. All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, prior to the deadline for submission of bids, shall be included in the rates, prices, and total bid price submitted by the Bidder.
- 15.4. All bid prices for the given scope of work in the contract as awarded shall be considered as fixed prices, and therefore not subject to price escalation during contract implementation, except under extraordinary circumstances as specified in GCC Clause 48. Upon the recommendation of the Procuring Entity, price escalation may be allowed in extraordinary circumstances as may be determined by the National Economic and Development Authority in accordance with the Civil Code of the Philippines, and upon approval by the GPPB. Furthermore, in cases where the cost of the awarded contract is affected by any applicable new laws, ordinances, regulations, or other acts of the GoP, promulgated after the date of bid opening, a contract price adjustment shall be made or appropriate relief shall be applied on a no loss-no gain basis.

#### 16. Bid Currencies

- 16.1. All bid prices shall be quoted in Philippine Pesos unless otherwise provided in the <u>BDS</u>. However, for purposes of bid evaluation, bids denominated in foreign currencies shall be converted to Philippine currency based on the exchange rate prevailing on the day of the Bid Opening.
- 16.2. If so allowed in accordance with **ITB** Clause 16.1, the Procuring Entity for purposes of bid evaluation and comparing the bid prices will convert the amounts in various currencies in which the bid price is expressed to Philippine Pesos at the exchange rate as published in the *Bangko Sentral ng Pilipinas* (BSP) reference rate bulletin on the day of the bid opening.
- 16.3. Unless otherwise specified in the **<u>BDS</u>**, payment of the contract price shall be made in Philippine Pesos.

#### 17. Bid Validity

17.1. Bids shall remain valid for the period specified in the **BDS** which shall not exceed one hundred twenty (120) calendar days from the date of the opening of bids.

17.2. In exceptional circumstances, prior to the expiration of the bid validity period, the Procuring Entity may request Bidders to extend the period of validity of their bids. The request and the responses shall be made in writing. The bid security described in **ITB** Clause 18 should also be extended corresponding to the extension of the bid validity period at the least. A Bidder may refuse the request without forfeiting its bid security, but his bid shall no longer be considered for further evaluation and award. A Bidder granting the request shall not be required or permitted to modify its bid.

#### **18. Bid Security**

18.1. The Bidder shall submit a Bid Securing Declaration or any form of Bid Security in an amount stated in the **BDS**, which shall be not less than the percentage of the ABC in accordance with the following schedule:

	Form of Bid Security	Amount of Bid Security (Not less than the Percentage of the ABC)
(a)	Cash or cashier's/manager's check issued by a Universal or Commercial Bank. For biddings conducted by LGUs, the cashier's/manager's check may be issued by other banks certified by the BSP as authorized to issue such financial instrument.	
(b)	Bank draft/guarantee or irrevocable letter of credit issued by a Universal or Commercial Bank: Provided, however, that it shall be confirmed or authenticated by a Universal or Commercial Bank, if issued by a foreign bank.	Two percent (2%)
	For biddings conducted by LGUs, the Bank Draft/ Guarantee, or irrevocable letter of credit may be issued by other banks certified by the BSP as authorized to issue such financial instrument.	
(c)	Surety bond callable upon demand issued by a surety or insurance company duly certified	Five percent (5%)

by the Insurance Commission as	
authorized to issue such security;	
and/or	

The Bid Securing Declaration mentioned above is an undertaking which states, among others, that the Bidder shall enter into contract with the procuring entity and furnish the performance security required under ITB Clause 32.2, within ten (10) calendar days from receipt of the Notice of Award, and commits to pay the corresponding amount as fine, and be suspended for a period of time from being qualified to participate in any government procurement activity in the event it violates any of the conditions stated therein as provided in the guidelines issued by the GPPB.

- 18.2. The bid security should be valid for the period specified in the <u>BDS</u>. Any bid not accompanied by an acceptable bid security shall be rejected by the Procuring Entity as non-responsive.
- 18.3. No bid securities shall be returned to Bidders after the opening of bids and before contract signing, except to those that failed or declared as post-disqualified, upon submission of a written waiver of their right to file a request for reconsideration and/or protest, or lapse of the reglementary period without having filed a request for reconsideration or protest. Without prejudice on its forfeiture, Bid Securities shall be returned only after the Bidder with the Lowest Calculated Responsive Bid (LCRB) has signed the contract and furnished the Performance Security, but in no case later than the expiration of the Bid Security validity period indicated in **ITB** Clause 18.2.
- 18.4. Upon signing and execution of the contract, pursuant to ITB Clause 31, and the posting of the performance security, pursuant to ITB Clause 32, the successful Bidder's Bid Security will be discharged, but in no case later than the Bid Security validity period as indicated in ITB Clause 18.2.
- 18.5. The bid security may be forfeited:
- (a) if a Bidder:
  - (i) withdraws its bid during the period of bid validity specified in **ITB** Clause 17;
  - (ii) does not accept the correction of errors pursuant to **ITB** Clause 27.3(b);
  - (iii) has a finding against the veracity of the required documents submitted in accordance with ITB Clause 28.2;
  - (iv) submission of eligibility requirements containing false information or falsified documents;

- (v) submission of bids that contain false information or falsified documents, or the concealment of such information in the bids in order to influence the outcome of eligibility screening or any other stage of the public bidding;
- (vi) allowing the use of one's name, or using the name of another for purposes of public bidding;
- (vii) withdrawal of a bid, or refusal to accept an award, or enter into contract with the Government without justifiable cause, after the Bidder had been adjudged as having submitted the LCRB;
- (viii) refusal or failure to post the required performance security within the prescribed time;
- (ix) refusal to clarify or validate in writing its bid during postqualification within a period of seven (7) calendar days from receipt of the request for clarification;
- (x) any documented attempt by a Bidder to unduly influence the outcome of the bidding in his favor;
- (xi) failure of the potential joint venture partners to enter into the joint venture after the bid is declared successful; or
- (xii) all other acts that tend to defeat the purpose of the competitive bidding, such as habitually withdrawing from bidding, submitting late Bids or patently insufficient bid, for at least three (3) times within a year, except for valid reasons.
- (b) if the successful Bidder:
  - (i) fails to sign the contract in accordance with **ITB** Clause 31;
  - (ii) fails to furnish performance security in accordance with **ITB** Clause 32.

#### **19.** Format and Signing of Bids

- 19.1 Bidders shall submit their bids through their duly authorized representative using the appropriate forms provided in Section IX. Bidding Forms on or before the deadline specified in the **ITB** Clause 21 in two (2) separate sealed bid envelopes, and which shall be submitted simultaneously. The first shall contain the technical component of the bid, including the eligibility requirements under **ITB** Clause 12.1, and the second shall contain the financial component of the bid. This shall also be observed for each lot in the case of lot procurement.
- 19.2 Forms as mentioned in **ITB** Clause 19.1 must be completed without any alterations to their format, and no substitute form shall be accepted. All blank spaces shall be filled in with the information requested.

- 19.3 The Bidder shall prepare and submit an original of the first and second envelopes as described in **ITB** Clauses 12 and 13. In addition, the Bidder shall submit copies of the first and second envelopes. In the event of any discrepancy between the original and the copies, the original shall prevail.
- 19.4 Each and every page of the Bid Form, including the Bill of Quantities, under Section IX hereof, shall be signed by the duly authorized representative/s of the Bidder. Failure to do so shall be a ground for the rejection of the bid.
- 19.5 Any interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the duly authorized representative/s of the Bidder.

#### 20. Sealing and Marking of Bids

- 20.1. Bidders shall enclose their original eligibility and technical documents described in **ITB** Clause 12, in one sealed envelope marked "ORIGINAL TECHNICAL COMPONENT," and the original of their financial component in another sealed envelope marked "ORIGINAL FINANCIAL COMPONENT," sealing them all in an outer envelope marked "ORIGINAL BID."
- 20.2. Each copy of the first and second envelopes shall be similarly sealed duly marking the inner envelopes as "COPY NO. \_\_\_\_\_ TECHNICAL COMPONENT" and "COPY NO. \_\_\_\_\_ FINANCIAL COMPONENT" and the outer envelope as "COPY NO. \_\_\_\_," respectively. These envelopes containing the original and the copies shall then be enclosed in one single envelope.
- 20.3. The original and the number of copies of the bid as indicated in the **<u>BDS</u>** shall be typed or written in ink and shall be signed by the Bidder or its duly authorized representative/s.
- 20.4. All envelopes shall:
- (a) contain the name of the contract to be bid in capital letters;
- (b) bear the name and address of the Bidder in capital letters;
- (c) be addressed to the Procuring Entity's BAC in accordance with **ITB** Clause 20.1;
- (d) bear the specific identification of this bidding process indicated in the **ITB** Clause 1.2; and
- (e) bear a warning "DO NOT OPEN BEFORE..." the date and time for the opening of bids, in accordance with **ITB** Clause 21.

20.5. Bid envelopes that are not properly sealed and marked, as required in the bidding documents, shall not be rejected, but the Bidder or its duly authorized representative shall acknowledge such condition of the bid as submitted. The BAC or the Procuring Entity shall assume no responsibility for the misplacement of the contents of the improperly sealed or marked bid, or for its premature opening.

#### **D.** Submission and Opening of Bids

#### 21. Deadline for Submission of Bids

Bids must be received by the Procuring Entity's BAC at the address and on or before the date and time indicated in the <u>BDS</u>.

#### 22. Late Bids

Any bid submitted after the deadline for submission and receipt of bids prescribed by the Procuring Entity, pursuant to **ITB** Clause 21, shall be declared "Late" and shall not be accepted by the Procuring Entity. The BAC shall record in the minutes of Bid Submission and Opening, the Bidder's name, its representative and the time the late bid was submitted.

#### 23. Modification and Withdrawal of Bids

- 23.1. The Bidder may modify its bid after it has been submitted; provided that the modification is received by the Procuring Entity prior to the deadline prescribed for submission and receipt of bids. The Bidder shall not be allowed to retrieve its original bid, but shall be allowed to submit another bid equally sealed and properly identified in accordance with Clause 20, linked to its original bid marked as "TECHNICAL MODIFICATION" or "FINANCIAL MODIFICATION" and stamped "received" by the BAC. Bid modifications received after the applicable deadline shall not be considered and shall be returned to the Bidder unopened.
- 23.2. A Bidder may, through a Letter of Withdrawal, withdraw its bid after it has been submitted, for valid and justifiable reason; provided that the Letter of Withdrawal is received by the Procuring Entity prior to the deadline prescribed for submission and receipt of bids. The Letter of Withdrawal must be executed by the authorized representative of the Bidder identified in the Omnibus Sworn Statement, a copy of which should be attached to the letter.
- 23.3. Bids requested to be withdrawn in accordance with **ITB** Clause 23.1 shall be returned unopened to the Bidders. A Bidder, who has acquired the bidding documents may also express its intention not to participate in the bidding through a letter which should reach and be stamped by the BAC before the deadline for submission and receipt of bids. A

Bidder that withdraws its bid shall not be permitted to submit another bid, directly or indirectly, for the same contract.

23.4. No bid may be modified after the deadline for submission of bids. No bid may be withdrawn in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder on the Financial Bid Form. Withdrawal of a bid during this interval shall result in the forfeiture of the Bidder's bid security, pursuant to **ITB** Clause 18.5, and the imposition of administrative, civil, and criminal sanctions as prescribed by RA 9184 and its IRR.

#### 24. Opening and Preliminary Examination of Bids

- 24.1. The BAC shall open the Bids in public, immediately after the deadline for the submission and receipt of bids in public, as specified in the **BDS**. In case the Bids cannot be opened as scheduled due to justifiable reasons, the BAC shall take custody of the Bids submitted and reschedule the opening of Bids on the next working day or at the soonest possible time through the issuance of a Notice of Postponement to be posted in the PhilGEPS website and the website of the Procuring Entity concerned.
- 24.2. Unless otherwise specified in the BDS, the BAC shall open the first bid envelopes and determine each Bidder's compliance with the documents prescribed in ITB Clause 12, using a non-discretionary "pass/fail" criterion. If a Bidder submits the required document, it shall be rated "passed" for that particular requirement. In this regard, bids that fail to include any requirement or are incomplete or patently insufficient shall be considered as "failed". Otherwise, the BAC shall rate the said first bid envelope as "passed".
- 24.3. Unless otherwise specified in the **BDS**, immediately after determining compliance with the requirements in the first envelope, the BAC shall forthwith open the second bid envelope of each remaining eligible Bidder whose first bid envelope was rated "passed." The second envelope of each complying Bidder shall be opened within the same day. In case one or more of the requirements in the second envelope of a particular bid is missing, incomplete or patently insufficient, and/or if the submitted total bid price exceeds the ABC unless otherwise provided in **ITB** Clause 13.2, the BAC shall rate the bid concerned as "failed." Only bids that are determined to contain all the bid requirements for both components shall be rated "passed" and shall immediately be considered for evaluation and comparison.
- 24.4. Letters of Withdrawal shall be read out and recorded during bid opening, and the envelope containing the corresponding withdrawn bid shall be returned to the Bidder unopened.

- 24.5. All members of the BAC who are present during bid opening shall initial every page of the original copies of all bids received and opened.
- 24.6. In the case of an eligible foreign bidder as described in **ITB** Clause 5, the following Class "A" Documents may be substituted with the appropriate equivalent documents, if any, issued by the country of the foreign bidder concerned, which shall likewise be uploaded and maintained in the PhilGEPS in accordance with Section 8.5.2 of the IRR.:
- a) Registration certificate from the Securities and Exchange Commission (SEC), Department of Trade and Industry (DTI) for sole proprietorship, or CDA for cooperatives;
- b) Mayor's/Business permit issued by the local government where the principal place of business of the Bidder is located; and
- c) Audited Financial Statements showing, among others, the prospective Bidder's total and current assets and liabilities stamped "received" by the Bureau of Internal Revenue or its duly accredited and authorized institutions, for the preceding calendar year which should not be earlier than two years from the date of bid submission.
- 24.7. Each partner of a joint venture agreement shall likewise submit the document required in **ITB** Clause 12.1(a)(i). Submission of documents required under **ITB** Clauses 12.1(a)(ii) to 12.1(a)(iv) by any of the joint venture partners constitutes compliance.
- 24.8. The Procuring Entity shall prepare the minutes of the proceedings of the bid opening that shall include, as a minimum: (a) names of Bidders, their bid price (per lot, if applicable, and/or including discount, if any), bid security, findings of preliminary examination, and whether there is a withdrawal or modification; and (b) attendance sheet. The BAC members shall sign the abstract of bids as read.
- 24.8. The Bidders or their duly authorized representatives may attend the opening of bids. The BAC shall ensure the integrity, security, and confidentiality of all submitted bids. The Abstract of Bids as read and the minutes of the Bid Opening shall be made available to the public upon written request and payment of a specified fee to recover cost of materials.
- 24.9 To ensure transparency and accurate representation of the bid submission, the BAC Secretariat shall notify in writing all Bidders whose bids it has received through its PhilGEPS-registered physical address or official e-mail address. The notice shall be issued within seven (7) calendar days from the date of the bid opening.

#### E. Evaluation and Comparison of Bids

#### 25. Process to be Confidential

- 25.1. Members of the BAC, including its staff and personnel, as well as its Secretariat and TWG, are prohibited from making or accepting any kind of communication with any Bidder regarding the evaluation of their bids until the issuance of the Notice of Award, unless otherwise allowed in the case of **ITB** Clause 26.
- 25.2. Any effort by a Bidder to influence the Procuring Entity in the Procuring Entity's decision in respect of bid evaluation, bid comparison or contract award will result in the rejection of the Bidder's bid.

#### 26. Clarification of Bids

To assist in the evaluation, comparison and post-qualification of the bids, the Procuring Entity may ask in writing any Bidder for a clarification of its bid. All responses to requests for clarification shall be in writing. Any clarification submitted by a Bidder in respect to its bid and that is not in response to a request by the Procuring Entity shall not be considered

#### 27. Detailed Evaluation and Comparison of Bids

- 27.1. The Procuring Entity will undertake the detailed evaluation and comparison of Bids which have passed the opening and preliminary examination of Bids, pursuant to **ITB** Clause 24, in order to determine the Lowest Calculated Bid.
- 27.2. The Lowest Calculated Bid shall be determined in two steps:
- (a) The detailed evaluation of the financial component of the bids, to establish the correct calculated prices of the bids; and
- (b) The ranking of the total bid prices as so calculated from the lowest to highest. The bid with the lowest price shall be identified as the Lowest Calculated Bid.
- 27.3. The Procuring Entity's BAC shall immediately conduct a detailed evaluation of all bids rated "passed," using non-discretionary "pass/fail" criterion. The BAC shall consider the following in the evaluation of bids:
- (a) <u>Completeness of the bid</u>. Unless the <u>BDS</u> allows partial bids, bids not addressing or providing all of the required items in the Schedule of Requirements including, where applicable, bill of quantities, shall be considered non-responsive and, thus, automatically disqualified. In this regard, where a required item is provided, but no price is indicated, the same shall be considered as non-responsive, but specifying a zero (0) or a dash (-) for the said item would mean that it is being offered for free to the Procuring Entity, except those required by law or regulations to be provided for; and

- (b) <u>Arithmetical corrections</u>. Consider computational errors and omissions to enable proper comparison of all eligible bids. It may also consider bid modifications. Any adjustment shall be calculated in monetary terms to determine the calculated prices.
- 27.4. Based on the detailed evaluation of bids, those that comply with the above-mentioned requirements shall be ranked in the ascending order of their total calculated bid prices, as evaluated and corrected for computational errors, discounts and other modifications, to identify the Lowest Calculated Bid. Total calculated bid prices, as evaluated and corrected for computational errors, discounts and other modifications, which exceed the ABC shall not be considered, unless otherwise indicated in the **BDS**.
- 27.5. The Procuring Entity's evaluation of bids shall be based on the bid price quoted in the Bid Form, which includes the Bill of Quantities.
- 27.6. Bids shall be evaluated on an equal footing to ensure fair competition. For this purpose, all Bidders shall be required to include in their bids the cost of all taxes, such as, but not limited to, value added tax (VAT), income tax, local taxes, and other fiscal levies and duties which shall be itemized in the bid form and reflected in the detailed estimates. Such bids, including said taxes, shall be the basis for bid evaluation and comparison.
- 27.7. If so indicated pursuant to **ITB** Clause 1.2. Bids are being invited for individual lots or for any combination thereof, provided that all Bids and combinations of Bids shall be received by the same deadline and opened and evaluated simultaneously so as to determine the bid or combination of bids offering the lowest calculated cost to the Procuring Entity. Bid prices quoted shall correspond to all of the requirements specified for each lot. Bid Security as required by **ITB** Clause 18 shall be submitted for each contract (lot) separately. The basis for evaluation of lots is specified in **BDS** Clause 27.3.

#### 28. Post Qualification

- 28.1. The BAC shall determine to its satisfaction whether the Bidder that is evaluated as having submitted the Lowest Calculated Bid complies with and is responsive to all the requirements and conditions specified in **ITB** Clauses 5, 12, and 13.
- 28.2. Within a non-extendible period of five (5) calendar days from receipt by the Bidder of the notice from the BAC that it submitted the Lowest Calculated Bid, the Bidder shall submit its latest income and business tax returns filed and paid through the BIR Electronic Filing and Payment System (eFPS) and other appropriate licenses and permits required by law and stated in the **BDS**.

Failure to submit any of the post-qualification requirements on time, or a finding against the veracity thereof, shall disqualify the Bidder for award.

Provided in the event that a finding against the veracity of any of the documents submitted is made, it shall cause the forfeiture of the bid security in accordance with Section 69 of the IRR of RA 9184.

- 28.3. The determination shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted pursuant to **ITB** Clauses 12 and 13, as well as other information as the Procuring Entity deems necessary and appropriate, using a non-discretionary "pass/fail" criterion, which shall be completed within a period of twelve (12) calendar days.
- 28.4. If the BAC determines that the Bidder with the Lowest Calculated Bid passes all the criteria for post-qualification, it shall declare the said bid as the LCRB, and recommend to the HoPE the award of contract to the said Bidder at its submitted price or its calculated bid price, whichever is lower, subject to **ITB** Clause 30.3.
- 28.5. A negative determination shall result in rejection of the Bidder's bid, in which event the Procuring Entity shall proceed to the next Lowest Calculated Bid, with a fresh period to make a similar determination of that Bidder's capabilities to perform satisfactorily. If the second Bidder, however, fails the post qualification, the procedure for post qualification shall be repeated for the Bidder with the next Lowest Calculated Bid, and so on until the LCRB is determined for recommendation of contract award.
- 28.6. Within a period not exceeding fifteen (15) calendar days from the determination by the BAC of the LCRB and the recommendation to award the contract, the HoPE or his duly authorized representative shall approve or disapprove the said recommendation.
- 28.7. In the event of disapproval, which shall be based on valid, reasonable, and justifiable grounds as provided for under Section 41 of the IRR of RA 9184, the HoPE shall notify the BAC and the Bidder in writing of such decision and the grounds for it. When applicable, the BAC shall conduct a post-qualification of the Bidder with the next Lowest Calculated Bid. A request for reconsideration may be filed by the Bidder with the HoPE in accordance with Section 37.1.3 of the IRR of RA 9184.

#### **29.** Reservation Clause

29.1. Notwithstanding the eligibility or post-qualification of a Bidder, the Procuring Entity concerned reserves the right to review its qualifications at any stage of the procurement process if it has reasonable grounds to believe that a misrepresentation has been made by the said Bidder, or that there has been a change in the Bidder's capability to undertake the project from the time it submitted its eligibility requirements. Should such review uncover any misrepresentation made in the eligibility and bidding requirements, statements or documents, or any changes in the situation of the Bidder which will affect its capability to undertake the project so that it fails the preset eligibility or bid evaluation criteria, the Procuring Entity shall consider the said Bidder as ineligible and shall disqualify it from submitting a bid or from obtaining an award or contract.

- 29.2. Based on the following grounds, the Procuring Entity reserves the right to reject any and all Bids, declare a Failure of Bidding at any time prior to the contract award, or not to award the contract, without thereby incurring any liability, and make no assurance that a contract shall be entered into as a result of the bidding:
- (a) If there is *prima facie* evidence of collusion between appropriate public officers or employees of the Procuring Entity, or between the BAC and any of the Bidders, or if the collusion is between or among the Bidders themselves, or between a Bidder and a third party, including any act which restricts, suppresses or nullifies or tends to restrict, suppress or nullify competition;
- (b) If the Procuring Entity's BAC is found to have failed in following the prescribed bidding procedures; or
- (c) For any justifiable and reasonable ground where the award of the contract will not redound to the benefit of the GOP as follows:
  - (i) If the physical and economic conditions have significantly changed so as to render the project no longer economically, financially or technically feasible as determined by the HoPE;
  - (ii) If the project is no longer necessary as determined by the HoPE; and
  - (iii) If the source of funds for the project has been withheld or reduced through no fault of the Procuring Entity.
- 29.3. In addition, the Procuring Entity may likewise declare a failure of bidding when:
- (a) No bids are received;
- (b) All prospective Bidders are declared ineligible;
- (c) All bids fail to comply with all the bid requirements, fail postqualification; or
- (d) The Bidder with the LCRB refuses, without justifiable cause, to accept the award of contract, and no award is made in accordance with Section 40 of the IRR of RA 9184.

#### F. Award of Contract

#### **30.** Contract Award

- 30.1. Subject to **ITB** Clause 28, the HoPE or its duly authorized representative shall award the contract to the Bidder whose bid has been determined to be the LCRB.
- 30.2. Prior to the expiration of the period of bid validity, the Procuring Entity shall notify the successful Bidder in writing that its bid has been accepted, through a Notice of Award duly received by the Bidder or its representative personally or by registered mail or electronically, receipt of which must be confirmed in writing within two (2) days by the Bidder with the LCRB and submitted personally or sent by registered mail or electronically to the Procuring Entity.
- 30.3. Notwithstanding the issuance of the Notice of Award, award of contract shall be subject to the following conditions:
- (a) Submission of the following documents within ten (10) calendar days from receipt of the Notice of Award:
  - (i) In the case of procurement by a Philippine Foreign Service Office or Post, the PhilGEPS Registration Number of the winning foreign Bidder; or
  - (ii) Valid PCAB license and registration for the type and cost of the contract to be bid for foreign bidders when the Treaty or International or Executive Agreement expressly allows submission of the PCAB license and registration for the type and cost of the contract to be bid as a pre-condition to the Award;
- (b) Posting of the performance security in accordance with **ITB** Clause 32;
- (c) Signing of the contract as provided in **ITB** Clause 31; and
- (d) Approval by higher authority, if required, as provided in Section 37.3 of the IRR of RA 9184.

#### **31.** Signing of the Contract

- 31.1. At the same time as the Procuring Entity notifies the successful Bidder that its bid has been accepted, the Procuring Entity shall send the Contract Form to the Bidder, which Contract has been provided in the Bidding Documents, incorporating therein all agreements between the parties.
- 31.2. Within ten (10) calendar days from receipt of the Notice of Award, the successful Bidder shall post the required performance security, sign and date the contract and return it to the Procuring Entity.

- 31.3. The Procuring Entity shall enter into contract with the successful Bidder within the same ten (10) calendar day period provided that all the documentary requirements are complied with.
- 31.4. The following documents shall form part of the contract:
- (a) Contract Agreement;
- (b) Bidding Documents;
- (c) Winning Bidder's bid, including the Technical and Financial Proposals, and all other documents/statements submitted (*e.g.*, Bidder's response to request for clarifications on the bid), including corrections to the bid, if any, resulting from the Procuring Entity's bid evaluation;
- (d) Performance Security;
- (e) Notice of Award of Contract; and
- (f) Other contract documents that may be required by existing laws and/or specified in the **BDS**.

#### **32.** Performance Security

- 32.1. To guarantee the faithful performance by the winning Bidder of its obligations under the contract, it shall post a performance security within a maximum period of ten (10) calendar days from the receipt of the Notice of Award from the Procuring Entity and in no case later than the signing of the contract.
- 32.2. The Performance Security shall be denominated in Philippine Pesos and posted in favor of the Procuring Entity in an amount not less than the percentage of the total contract price in accordance with the following schedule:

Form of Performance Security	Amount of Performance Security (Not less than the Percentage of the Total Contract Price)
<ul> <li>(a) Cash or cashier's/manager's check issued by a Universal or Commercial Bank.</li> <li>For biddings conducted by the LGUs, the Cashier's/Manager's Check may be issued by other banks certified by the BSP as authorized to issue such financial instrument.</li> </ul>	Ten percent (10%)

(b) Bank draft/guarantee or irrevocable letter of credit issued by a Universal or	
Commercial Bank: Provided, however, that it shall be confirmed or authenticated by a Universal or Commercial Bank, if issued by a foreign bank.	
For biddings conducted by the LGUs, Bank Draft/Guarantee, or Irrevocable Letter of Credit may be issued by other banks certified by the BSP as authorized to issue such financial instrument.	
<ul> <li>(c) Surety bond callable upon demand issued by a surety or insurance company duly certified by the Insurance Commission as authorized to issue such security.</li> </ul>	Thirty percent (30%)

32.3. Failure of the successful Bidder to comply with the above-mentioned requirement shall constitute sufficient ground for the annulment of the award and forfeiture of the bid security, in which event the Procuring Entity shall have a fresh period to initiate and complete the post qualification of the second Lowest Calculated Bid. The procedure shall be repeated until LCRB is identified and selected for recommendation of contract award. However if no Bidder passed post-qualification, the BAC shall declare the bidding a failure and conduct a re-bidding with re-advertisement, if necessary.

#### **33.** Notice to Proceed

Within seven (7) calendar days from the date of approval of the Contract by the appropriate government approving authority, the Procuring Entity shall issue the Notice to Proceed (NTP) together with a copy or copies of the approved contract to the successful Bidder. All notices called for by the terms of the contract shall be effective only at the time of receipt thereof by the successful Bidder.

#### 34. Protest Mechanism

Decision of the procuring entity at any stage of the procurement process may be questioned in accordance with Sections 55 of the IRR of RA 9184.

# Section III. Bid Data Sheet
### **Bid Data Sheet**

ITB Clause		
1.1	The Procuring Entity is <i>Philippine Ports Authority</i> , <i>Port Management Office – Western Leyte/Biliran</i> .	
	The name of the Contract is Upgrading of Powerline System, Port of Naval, Biliran	
	The identification number of the Contract is (10605990).	
2	The Funding Source is:	
	The Government of the Philippines (GoP) through Corporate Budget for the contract approved by the governing Board for <b>CY 2022</b> in the amount of $P 1,434,573.28$	
	The name of the Project is <b>Upgrading of Main Powerline System</b> , <b>Port of Naval, Biliran</b>	
3.1	No further instructions.	
5.1	No further instructions.	
5.2	Bidding is restricted to eligible bidders as defined in ITB Clause 5.1.	
5.4(a)	No further instructions.	
5.4(b)	For this purpose, similar contracts shall refer to contracts which have the same major categories of work. Site Works, Port Facilities, Electrical Works	
8.1	Subcontracting is not allowed.	
8.2	Not applicable.	
9.1	The Procuring Entity will hold a pre-bid conference for this Project on May 23, 2022, 10:00 A.M. at Philippine Ports Authority, Port Management Office – Western Leyte/Biliran Port Operation Building, Conference Room, Ebony St., Port Area, Ormoc City.	
10.1	The Procuring Entity's address is:Philippine Ports Authority, Port Management Office – Western	

	Leyte/Biliran, Port Operation Building, Ebony St., Port Area, Ormoc City			
	IRVIN PAUL H. CONEJO			
	BAC Chairperson Tel No. (053) – 561-4664 and Fax No. (053) 561-4663			
	1  ev  1  vo.  (0.55) = 501-4004  unu  1  ux.  1  vo.  (0.55) 501-4005			
10.4	No further instructions.			
12.1	No further instructions.			
12.1(a)(iii)	No further instructions.			
12.1(b)(ii.2)	The minimum work experience requirements for key personnel are the following:			
	Key Personnel         General Experience         Relevant Experience			
12.1(b)(iii.3)	The minimum major equipment requirements are the following			
1211(0)(1110)				
	Equipment Capacity Number of Units			
13.1	No further instructions.			
13.1(b)	This shall include all of the following documents:			
	1) Bid prices in the Bill of Quantities;			
	<ol> <li>Detailed estimates, including a summary sheet indicating the unit prices of construction materials, labor rates, and equipment rentals used in coming up with the Bid; and</li> </ol>			
	3) Cash flow by quarter or payment schedule.			
13.2	The ABC is <b>P</b> 1,280,868.14 Any bid with a financial component exceeding this amount shall not be accepted.			
14.2	No further instructions.			
15.4	No further instruction.			
16.1	The bid prices shall be quoted in Philippine Pesos.			
16.3	No further instructions.			
17.1	Bids will be valid until October 04, 2022.			
18.1	The bid security shall be in the form of a Bid Securing Declaration or any of the following forms and amounts:			

	<ol> <li>The amount of not less than <i>P</i> 25,617.36, if bid security is in cash, cashier's/manager's check, bank draft/guarantee or irrevocable letter of credit;</li> </ol>	
	<ol> <li>The amount of not less than <i>P</i> 64,043.41 if bid security is in Surety Bond.</li> </ol>	
18.2	The bid security shall be valid until <i>October 04, 2022</i> .	
20.3	Each Bidder shall submit One (1) original and Two (2) copies of the first and second components of its bid.	
21	The address for submission of bids is <i>Philippine Ports Authority, Port</i> Managemnet Office – Ormoc, Port Operation Building, Ebony St., Port Area, Ormoc City.	
	The deadline for submission of bids is June 06, 2022 at 10:00 A.M.	
24.1	The place of bid opening is <i>Philippine Ports Authority</i> , <i>Port Management</i> Office – Ormoc Port Operation Building, Conference Room, Ebony St., Ormoc City.	
	The date and time of bid opening is June 06, 2022 at 10:30 A.M.	
24.2	No further instructions.	
24.3	No further instructions.	
27.3	Partial bid is not allowed. The infrastructure project is packaged in a single lot and the lot shall not be divided into sub-lots for the purpose of bidding, evaluation, and contract award.	
	In all cases, the NFCC computation, if applicable, must be sufficient for all the lots or contracts to be awarded to the Bidder.	
27.4	No further instructions.	
28.2	<ul> <li>Licenses and permits relevant to the Project</li> <li>Certified True Copy of DTI Registration/SEC Registration;</li> <li>Certified True Copy of Valid PCAB License;</li> <li>Certified True Copy of Mayor's/Business Permit</li> </ul>	
31.4(f)	Additional contract documents:	
	<ul> <li>1.)Manpower Utilization Schedule</li> <li>2.)Construction Methods</li> <li>3.)Equipment Utilization Schedule</li> <li>4.)Construction Safety and Health Program Approved by the Department of Labor and Employment.</li> <li>5.)PERT/CPM</li> </ul>	

# Section IV. General Conditions of Contract

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### 1. Definitions

For purposes of this Clause, boldface type is used to identify defined terms.

- 1.1. The **Arbiter** is the person appointed jointly by the Procuring Entity and the Contractor to resolve disputes in the first instance, as provided for in **GCC** Clause 21.
- 1.2. **Bill of Quantities** refers to a list of the specific items of the Work and their corresponding unit prices, lump sums, and/or provisional sums.
- 1.3. The **Completion Date** is the date of completion of the Works as certified by the Procuring Entity's Representative, in accordance with **GCC** Clause 49.
- 1.4. The **Contract** is the contract between the Procuring Entity and the Contractor to execute, complete, and maintain the Works.
- 1.5 The **Contract Effectivity Date** is the date of signing of the Contract. However, the contractor shall commence execution of the Works on the Start Date as defined in GCC Clause 1.28.
- 1.6 The **Contract Price** is the price stated in the Notice of Award and thereafter to be paid by the Procuring Entity to the Contractor for the execution of the Works in accordance with this Contract
- 1.7 **Contract Time Extension** is the allowable period for the Contractor to complete the Works in addition to the original Completion Date stated in this Contract.
- 1.8 The **Contractor** is the juridical entity whose proposal has been accepted by the Procuring Entity and to whom the Contract to execute the Work was awarded.
- 1.9 The **Contractor's Bid** is the signed offer or proposal submitted by the Contractor to the Procuring Entity in response to the Bidding Documents.
- 1.10 **Days** are calendar days; months are calendar months.
- 1.11 **Dayworks** are varied work inputs subject to payment on a time basis for the Contractor's employees and Equipment, in addition to payments for associated Materials and Plant.
- 1.12 A **Defect** is any part of the Works not completed in accordance with the Contract.
- 1.13 The **Defects Liability Certificate** is the certificate issued by Procuring Entity's Representative upon correction of defects by the Contractor.
- 1.14 The **Defects Liability Period** is the one year period between contract completion and final acceptance within which the Contractor assumes the responsibility to undertake the repair of any damage to the Works at his own expense.

- 1.15 **Drawings** are graphical presentations of the Works. They include all supplementary details, shop drawings, calculations, and other information provided or approved for the execution of this Contract.
- 1.16 **Equipment** refers to all facilities, supplies, appliances, materials or things required for the execution and completion of the Work provided by the Contractor and which shall not form or are not intended to form part of the Permanent Works.
- 1.17 The **Intended Completion Date** refers to the date specified in the <u>SCC</u> when the Contractor is expected to have completed the Works. The Intended Completion Date may be revised only by the Procuring Entity's Representative by issuing an extension of time or an acceleration order.
- 1.18 **Materials** are all supplies, including consumables, used by the Contractor for incorporation in the Works.
- 1.19 The **Notice to Proceed** is a written notice issued by the Procuring Entity or the Procuring Entity's Representative to the Contractor requiring the latter to begin the commencement of the work not later than a specified or determinable date.
- 1.20 **Permanent Works** are all permanent structures and all other project features and facilities required to be constructed and completed in accordance with this Contract which shall be delivered to the Procuring Entity and which shall remain at the Site after the removal of all Temporary Works.
- 1.21 **Plant** refers to the machinery, apparatus, and the like intended to form an integral part of the Permanent Works.
- 1.22 The **Procuring Entity** is the party who employs the Contractor to carry out the Works stated in the <u>SCC</u>.
- 1.23 The **Procuring Entity's Representative** refers to the Head of the Procuring Entity or his duly authorized representative, identified in the <u>SCC</u>, who shall be responsible for supervising the execution of the Works and administering this Contract.
- 1.24 The **Site** is the place provided by the Procuring Entity where the Works shall be executed and any other place or places which may be designated in the <u>SCC</u>, or notified to the Contractor by the Procuring Entity's Representative as forming part of the Site.
- 1.25 **Site Investigation Reports** are those that were included in the Bidding Documents and are factual and interpretative reports about the surface and subsurface conditions at the Site.
- 1.26 **Slippage** is a delay in work execution occurring when actual accomplishment falls below the target as measured by the difference between the scheduled and actual accomplishment of the Work by the Contractor as established from the work schedule. This is actually described as a percentage of the whole Works.

- 1.27 **Specifications** means the description of Works to be done and the qualities of materials to be used, the equipment to be installed and the mode of construction.
- 1.28 The **Start Date**, as specified in the <u>SCC</u>, is the date when the Contractor is obliged to commence execution of the Works. It does not necessarily coincide with any of the Site Possession Dates.
- 1.29 A **Subcontractor** is any person or organization to whom a part of the Works has been subcontracted by the Contractor, as allowed by the Procuring Entity, but not any assignee of such person.
- 1.30 **Temporary Works** are works designed, constructed, installed, and removed by the Contractor that are needed for construction or installation of the Permanent Works.
- 1.31 **Work(s)** refer to the Permanent Works and Temporary Works to be executed by the Contractor in accordance with this Contract, including (i) the furnishing of all labor, materials, equipment and others incidental, necessary or convenient to the complete execution of the Works; (ii) the passing of any tests before acceptance by the Procuring Entity's Representative; (iii) and the carrying out of all duties and obligations of the Contractor imposed by this Contract as described in the <u>SCC.</u>

### 2. Interpretation

- 2.1. In interpreting the Conditions of Contract, singular also means plural, male also means female or neuter, and the other way around. Headings have no significance. Words have their normal meaning under the language of this Contract unless specifically defined. The Procuring Entity's Representative will provide instructions clarifying queries about the Conditions of Contract.
- 2.2. If sectional completion is specified in the <u>SCC</u>, references in the Conditions of Contract to the Works, the Completion Date, and the Intended Completion Date apply to any Section of the Works (other than references to the Completion Date and Intended Completion Date for the whole of the Works).
- 2.3. The documents forming this Contract shall be interpreted in the following order of priority:
- a) Contract Agreement;
- b) Bid Data Sheet;
- c) Instructions to Bidders;
- d) Addenda to the Bidding Documents;
- e) Special Conditions of Contract;

- f) General Conditions of Contract;
- g) Specifications;
- h) Bill of Quantities; and
- i) Drawings.

### **3.** Governing Language and Law

- 3.1. This Contract has been executed in the English language, which shall be the binding and controlling language for all matters relating to the meaning or interpretation of this Contract. All correspondence and other documents pertaining to this Contract which are exchanged by the parties shall be written in English.
- 3.2. This Contract shall be interpreted in accordance with the laws of the Republic of the Philippines.

### 4. Communications

Communications between parties that are referred to in the Conditions shall be effective only when in writing. A notice shall be effective only when it is received by the concerned party.

### 5. **Possession of Site**

- 5.1. On the date specified in the <u>SCC</u>, the Procuring Entity shall grant the Contractor possession of so much of the Site as may be required to enable it to proceed with the execution of the Works. If the Contractor suffers delay or incurs cost from failure on the part of the Procuring Entity to give possession in accordance with the terms of this clause, the Procuring Entity's Representative shall give the Contractor a Contract Time Extension and certify such sum as fair to cover the cost incurred, which sum shall be paid by Procuring Entity.
- 5.2. If possession of a portion is not given by the date stated in the SCC Clause 5.1, the Procuring Entity will be deemed to have delayed the start of the relevant activities. The resulting adjustments in contract time to address such delay shall be in accordance with GCC Clause 47.
- 5.3. The Contractor shall bear all costs and charges for special or temporary right-of-way required by it in connection with access to the Site. The Contractor shall also provide at his own cost any additional facilities outside the Site required by it for purposes of the Works.
- 5.4. The Contractor shall allow the Procuring Entity's Representative and any person authorized by the Procuring Entity's Representative access to the Site and to any place where work in connection with this Contract is being carried out or is intended to be carried out.

### 6. The Contractor's Obligations

- 6.1. The Contractor shall carry out the Works properly and in accordance with this Contract. The Contractor shall provide all supervision, labor, Materials, Plant and Contractor's Equipment, which may be required. All Materials and Plant on Site shall be deemed to be the property of the Procuring Entity.
- 6.2. The Contractor shall commence execution of the Works on the Start Date and shall carry out the Works in accordance with the Program of Work submitted by the Contractor, as updated with the approval of the Procuring Entity's Representative, and complete them by the Intended Completion Date.
- 6.3. The Contractor shall be responsible for the safety of all activities on the Site.
- 6.4. The Contractor shall carry out all instructions of the Procuring Entity's Representative that comply with the applicable laws where the Site is located.
- 6.5. The Contractor shall employ the key personnel named in the Schedule of Key Personnel, as referred to in the <u>SCC</u>, to carry out the supervision of the Works. The Procuring Entity will approve any proposed replacement of key personnel only if their relevant qualifications and abilities are equal to or better than those of the personnel listed in the Schedule.
- 6.6. If the Procuring Entity's Representative asks the Contractor to remove a member of the Contractor's staff or work force, for justifiable cause, the Contractor shall ensure that the person leaves the Site within seven (7) days and has no further connection with the Work in this Contract.
- 6.7. During Contract implementation, the Contractor and his subcontractors shall abide at all times by all labor laws, including child labor related enactments, and other relevant rules.
- 6.8. The Contractor shall submit to the Procuring Entity for consent the name and particulars of the person authorized to receive instructions on behalf of the Contractor.
- 6.9. The Contractor shall cooperate and share the Site with other contractors, public authorities, utilities, and the Procuring Entity between the dates given in the schedule of other contractors particularly when they shall require access to the Site. The Contractor shall also provide facilities and services for them during this period. The Procuring Entity may modify the schedule of other contractors, and shall notify the Contractor of any such modification thereto.
- 6.10. Should anything of historical or other interest or of significant value be unexpectedly discovered on the Site, it shall be the property of the

Procuring Entity. The Contractor shall notify the Procuring Entity's Representative of such discoveries and carry out the Procuring Entity's Representative's instructions in dealing with them.

### 7. **Performance Security**

- 7.1. Within ten (10) calendar days from receipt of the Notice of Award from the Procuring Entity but in no case later than the signing of the contract by both parties, the Contractor shall furnish the performance security in any of the forms prescribed in **ITB** Clause 32.2.
- 7.2. The performance security posted in favor of the Procuring Entity shall be forfeited in the event it is established that the Contractor is in default in any of its obligations under the Contract.
- 7.3. The performance security shall remain valid until issuance by the Procuring Entity of the Certificate of Final Acceptance.
- 7.4. The performance security may be released by the Procuring Entity and returned to the Contractor after the issuance of the Certificate of Final Acceptance subject to the following conditions:
- (a) There are no pending claims against the Contractor or the surety company filed by the Procuring Entity;
- (b) The Contractor has no pending claims for labor and materials filed against it; and
- (c) Other terms specified in the <u>SCC</u>.
- 7.5. The Contractor shall post an additional performance security following the amount and form specified in **ITB** Clause 32.2 to cover any cumulative increase of more than ten percent (10%) over the original value of the contract as a result of amendments to order or change orders, extra work orders and supplemental agreements, as the case may be. The Contractor shall cause the extension of the validity of the performance security to cover approved contract time extensions.
- 7.6. In case of a reduction in the contract value or for partially completed Works under the contract which are usable and accepted by the Procuring Entity the use of which, in the judgment of the implementing agency or the Procuring Entity, will not affect the structural integrity of the entire project, the Procuring Entity shall allow a proportional reduction in the original performance security, provided that any such reduction is more than ten percent (10%) and that the aggregate of such reductions is not more than fifty percent (50%) of the original performance security.

7.7. Unless otherwise indicated in the <u>SCC</u>, the Contractor, by entering into the Contract with the Procuring Entity, acknowledges the right of the Procuring Entity to institute action pursuant to Act 3688 against any subcontractor be they an individual, firm, partnership, corporation, or association supplying the Contractor with labor, materials and/or equipment for the performance of this Contract.

### 8. Subcontracting

- 8.1. Unless otherwise indicated in the <u>SCC</u>, the Contractor cannot subcontract Works more than the percentage specified in **BDS** Clause 8.1.
- 8.2. Subcontracting of any portion of the Works does not relieve the Contractor of any liability or obligation under this Contract. The Contractor will be responsible for the acts, defaults, and negligence of any subcontractor, its agents, servants or workmen as fully as if these were the Contractor's own acts, defaults, or negligence, or those of its agents, servants or workmen.
- 8.3. If subcontracting is allowed. The contractor may identify its subcontractor during contract implementation stage. Subcontractors disclosed and identified during the bidding may be changed during the implementation of this Contract. In either case, subcontractors must submit the documentary requirements under ITB Clause 12 and comply with the eligibility criteria specified in the **BDS**. In the event that any subcontractor is found by any Procuring Entity to be eligible, the subcontracting of such portion of the Works shall be disallowed.

#### 9. Liquidated Damages

- 9.1. The Contractor shall pay liquidated damages to the Procuring Entity for each day that the Completion Date is later than the Intended Completion Date. The applicable liquidated damages is at least one-tenth (1/10) of a percent of the cost of the unperformed portion for every day of delay. The total amount of liquidated damages shall not exceed ten percent (10%) of the amount of the contract. The Procuring Entity may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not affect the Contractor's liabilities. Once the cumulative amount of liquidated damages reaches ten percent (10%) of the amount of this Contract, the Procuring Entity may rescind or terminate this Contract, without prejudice to other courses of action and remedies available under the circumstances.
- 9.2. If the Intended Completion Date is extended after liquidated damages have been paid, the Engineer of the Procuring Entity shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate.

### **10.** Site Investigation Reports

The Contractor, in preparing the Bid, shall rely on any Site Investigation Reports referred to in the <u>SCC</u> supplemented by any information obtained by the Contractor.

### 11. The Procuring Entity, Licenses and Permits

The Procuring Entity shall, if requested by the Contractor, assist him in applying for permits, licenses or approvals, which are required for the Works.

### 12. Contractor's Risk and Warranty Security

- 12.1. The Contractor shall assume full responsibility for the Works from the time project construction commenced up to final acceptance by the Procuring Entity and shall be held responsible for any damage or destruction of the Works except those occasioned by *force majeure*. The Contractor shall be fully responsible for the safety, protection, security, and convenience of his personnel, third parties, and the public at large, as well as the Works, Equipment, installation, and the like to be affected by his construction work.
- 12.2. The defects liability period for infrastructure projects shall be one year from contract completion up to final acceptance by the Procuring Entity. During this period, the Contractor shall undertake the repair works, at his own expense, of any damage to the Works on account of the use of materials of inferior quality within ninety (90) days from the time the HoPE has issued an order to undertake repair. In case of failure or refusal to comply with this mandate, the Procuring Entity shall undertake such repair works and shall be entitled to full reimbursement of expenses incurred therein upon demand.
- 12.3. Unless otherwise indicated in the <u>SCC</u>, in case the Contractor fails to comply with the preceding paragraph, the Procuring Entity shall forfeit its performance security, subject its property(ies) to attachment or garnishment proceedings, and perpetually disqualify it from participating in any public bidding. All payables of the GoP in his favor shall be offset to recover the costs.
- 12.4. After final acceptance of the Works by the Procuring Entity, the Contractor shall be held responsible for "Structural Defects," *i.e.*, major faults/flaws/deficiencies in one or more key structural elements of the project which may lead to structural failure of the completed elements or structure, or "Structural Failures," *i.e.*, where one or more key structural elements in an infrastructure facility fails or collapses, thereby rendering the facility or part thereof incapable of withstanding the design loads, and/or endangering the safety of the users or the general public:

- (a) Contractor Where Structural Defects/Failures arise due to faults attributable to improper construction, use of inferior quality/substandard materials, and any violation of the contract plans and specifications, the contractor shall be held liable;
- (b) Consultants Where Structural Defects/Failures arise due to faulty and/or inadequate design and specifications as well as construction supervision, then the consultant who prepared the design or undertook construction supervision for the project shall be held liable;
- (c) Procuring Entity's Representatives/Project Manager/Construction Managers and Supervisors – The project owner's representative(s), project manager, construction manager, and supervisor(s) shall be held liable in cases where the Structural Defects/Failures are due to his/their willful intervention in altering the designs and other specifications; negligence or omission in not approving or acting on proposed changes to noted defects or deficiencies in the design and/or specifications; and the use of substandard construction materials in the project;
- (d) Third Parties Third Parties shall be held liable in cases where Structural Defects/Failures are caused by work undertaken by them such as leaking pipes, diggings or excavations, underground cables and electrical wires, underground tunnel, mining shaft and the like, in which case the applicable warranty to such structure should be levied to third parties for their construction or restoration works.
- (e) Users In cases where Structural Defects/Failures are due to abuse/misuse by the end user of the constructed facility and/or non-compliance by a user with the technical design limits and/or intended purpose of the same, then the user concerned shall be held liable.
- 12.5. The warranty against Structural Defects/Failures, except those occasioned on force majeure, shall cover the period specified in the <u>SCC</u> reckoned from the date of issuance of the Certificate of Final Acceptance by the Procuring Entity.
- 12.6. The Contractor shall be required to put up a warranty security in the form of cash, bank guarantee, letter of credit, GSIS or surety bond callable on demand, in accordance with the following schedule:

Form of Warranty	Amount of Warranty Security Not less than the Percentage (%) of Total Contract Price
<ul> <li>(a) Cash or letter of credit issued by Universal or Commercial bank: provided, however, that the letter of credit shall be confirmed or authenticated by a Universal or Commercial bank, if issued by a foreign bank</li> </ul>	Five Percent (5%)

(b) Bank guarantee confirmed by Universal or Commercial bank: provided, however, that the letter of credit shall be confirmed or authenticated by a Universal or Commercial bank, if issued by a foreign bank	Ten Percent (10%)
(c) Surety bond callable upon demand issued by GSIS or any surety or insurance company duly certified by the Insurance Commission	Thirty Percent (30%)

- 12.7. The warranty security shall be stated in Philippine Pesos and shall remain effective for one year from the date of issuance of the Certificate of Final Acceptance by the Procuring Entity, and returned only after the lapse of said one year period.
- 12.8. In case of structural defects/failure occurring during the applicable warranty period provided in GCC Clause 12.5, the Procuring Entity shall undertake the necessary restoration or reconstruction works and shall be entitled to full reimbursement by the parties found to be liable for expenses incurred therein upon demand, without prejudice to the filing of appropriate administrative, civil, and/or criminal charges against the responsible persons as well as the forfeiture of the warranty security posted in favor of the Procuring Entity.

### **13.** Liability of the Contractor

Subject to additional provisions, if any, set forth in the <u>SCC</u>, the Contractor's liability under this Contract shall be as provided by the laws of the Republic of the Philippines.

### 14. Procuring Entity's Risk

- 14.1. From the Start Date until the Certificate of Final Acceptance has been issued, the following are risks of the Procuring Entity:
- (a) The risk of personal injury, death, or loss of or damage to property (excluding the Works, Plant, Materials, and Equipment), which are due to:
  - (i) any type of use or occupation of the Site authorized by the Procuring Entity after the official acceptance of the works; or
  - (ii) negligence, breach of statutory duty, or interference with any legal right by the Procuring Entity or by any person employed by or contracted to him except the Contractor.
- (b) The risk of damage to the Works, Plant, Materials, and Equipment to the extent that it is due to a fault of the Procuring Entity or in the

Procuring Entity's design, or due to war or radioactive contamination directly affecting the country where the Works are to be executed.

#### 15. Insurance

- 15.1. The Contractor shall, under his name and at his own expense, obtain and maintain, for the duration of this Contract, the following insurance coverage:
- (a) Contractor's All Risk Insurance;
- (b) Transportation to the project Site of Equipment, Machinery, and Supplies owned by the Contractor;
- (c) Personal injury or death of Contractor's employees; and
- (d) Comprehensive insurance for third party liability to Contractor's direct or indirect act or omission causing damage to third persons.
- 15.2. The Contractor shall provide evidence to the Procuring Entity's Representative that the insurances required under this Contract have been effected and shall, within a reasonable time, provide copies of the insurance policies to the Procuring Entity's Representative. Such evidence and such policies shall be provided to the Procuring Entity's through the Procuring Entity's Representative.
- 15.3. The Contractor shall notify the insurers of changes in the nature, extent, or program for the execution of the Works and ensure the adequacy of the insurances at all times in accordance with the terms of this Contract and shall produce to the Procuring Entity's Representative the insurance policies in force including the receipts for payment of the current premiums.

The above insurance policies shall be obtained from any reputable insurance company approved by the Procuring Entity's Representative.

- 15.4. If the Contractor fails to obtain and keep in force the insurances referred to herein or any other insurance which he may be required to obtain under the terms of this Contract, the Procuring Entity may obtain and keep in force any such insurances and pay such premiums as may be necessary for the purpose. From time to time, the Procuring Entity may deduct the amount it shall pay for said premiums including twenty five percent (25%) therein from any monies due, or which may become due, to the Contractor, without prejudice to the Procuring Entity exercising its right to impose other sanctions against the Contractor pursuant to the provisions of this Contract.
- 15.5. In the event the Contractor fails to observe the above safeguards, the Procuring Entity may, at the Contractor's expense, take whatever measure is deemed necessary for its protection and that of the Contractor's personnel and third parties, and/or order the interruption

of dangerous Works. In addition, the Procuring Entity may refuse to make the payments under GCC Clause 40 until the Contractor complies with this Clause.

- 15.6. The Contractor shall immediately replace the insurance policy obtained as required in this Contract, without need of the Procuring Entity's demand, with a new policy issued by a new insurance company acceptable to the Procuring Entity for any of the following grounds:
- (a) The issuer of the insurance policy to be replaced has:
  - (i) become bankrupt;
  - (ii) been placed under receivership or under a management committee;
  - (iii) been sued for suspension of payment; or
  - (iv) been suspended by the Insurance Commission and its license to engage in business or its authority to issue insurance policies cancelled; or
  - (v) Where reasonable grounds exist that the insurer may not be able, fully and promptly, to fulfill its obligation under the insurance policy.

### **16.** Termination for Default of Contractor

- 16.1. The Procuring Entity shall terminate this Contract for default when any of the following conditions attend its implementation:
- Due to the Contractor's fault and while the project is on-going, it has incurred negative slippage of fifteen percent (15%) or more in accordance with Presidential Decree 1870, regardless of whether or not previous warnings and notices have been issued for the Contractor to improve his performance;
- (ii) Due to its own fault and after this Contract time has expired, the Contractor incurs delay in the completion of the Work after this Contract has expired; or
- (iii) The Contractor:
  - (i) abandons the contract Works, refuses or fails to comply with a valid instruction of the Procuring Entity or fails to proceed expeditiously and without delay despite a written notice by the Procuring Entity;
  - does not actually have on the project Site the minimum essential equipment listed on the bid necessary to prosecute the Works in accordance with the approved Program of Work and equipment deployment schedule as required for the project;

- does not execute the Works in accordance with this Contract or persistently or flagrantly neglects to carry out its obligations under this Contract;
- (iv) neglects or refuses to remove materials or to perform a new Work that has been rejected as defective or unsuitable; or
- (v) sub-lets any part of this Contract without approval by the Procuring Entity.
- 16.2. All materials on the Site, Plant, Works, including Equipment purchased and funded under the Contract shall be deemed to be the property of the Procuring Entity if this Contract is rescinded because of the Contractor's default.

### **17.** Termination for Default of Procuring Entity

The Contractor may terminate this Contract with the Procuring Entity if the works are completely stopped for a continuous period of at least sixty (60) calendar days through no fault of its own, due to any of the following reasons:

- (a) Failure of the Procuring Entity to deliver, within a reasonable time, supplies, materials, right-of-way, or other items it is obligated to furnish under the terms of this Contract; or
- (b) The prosecution of the Work is disrupted by the adverse peace and order situation, as certified by the Armed Forces of the Philippines Provincial Commander and approved by the Secretary of National Defense.

### **18.** Termination for Other Causes

- 18.1. The Procuring Entity may terminate this Contract, in whole or in part, at any time for its convenience. The HoPE may terminate this Contract for the convenience of the Procuring Entity if he has determined the existence of conditions that make Project Implementation economically, financially or technically impractical and/or unnecessary, such as, but not limited to, fortuitous event(s) or changes in law and National Government policies.
- 18.2. The Procuring Entity or the Contractor may terminate this Contract if the other party causes a fundamental breach of this Contract.
- 18.3. Fundamental breaches of Contract shall include, but shall not be limited to, the following:
- (a) The Contractor stops work for twenty eight (28) days when no stoppage of work is shown on the current Program of Work and the stoppage has not been authorized by the Procuring Entity's Representative;

- (b) The Procuring Entity's Representative instructs the Contractor to delay the progress of the Works, and the instruction is not withdrawn within twenty eight (28) days;
- (c) The Procuring Entity shall terminate this Contract if the Contractor is declared bankrupt or insolvent as determined with finality by a court of competent jurisdiction. In this event, termination will be without compensation to the Contractor, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the Procuring Entity and/or the Contractor. In the case of the Contractor's insolvency, any Contractor's Equipment which the Procuring Entity instructs in the notice is to be used until the completion of the Works;
- (d) A payment certified by the Procuring Entity's Representative is not paid by the Procuring Entity to the Contractor within eighty four (84) days from the date of the Procuring Entity's Representative's certificate;
- (e) The Procuring Entity's Representative gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Procuring Entity's Representative;
- (f) The Contractor does not maintain a Security, which is required;
- (g) The Contractor has delayed the completion of the Works by the number of days for which the maximum amount of liquidated damages can be paid, as defined in the **GCC** Clause 9; and
- (h) In case it is determined prima facie by the Procuring Entity that the Contractor has engaged, before or during the implementation of the contract, in unlawful deeds and behaviors relative to contract acquisition and implementation, such as, but not limited to, the following:
  - (i) corrupt, fraudulent, collusive, coercive, and obstructive practices as defined in **ITB** Clause 3.1(a), unless otherwise specified in the SCC;
  - (ii) drawing up or using forged documents;
  - (iii) using adulterated materials, means or methods, or engaging in production contrary to rules of science or the trade; and
  - (iv) any other act analogous to the foregoing.
- 18.4. The Funding Source or the Procuring Entity, as appropriate, will seek to impose the maximum civil, administrative and/or criminal penalties available under the applicable law on individuals and organizations deemed to be involved with corrupt, fraudulent, or coercive practices.

- 18.5. When persons from either party to this Contract gives notice of a fundamental breach to the Procuring Entity's Representative in order to terminate the existing contract for a cause other than those listed under **GCC** Clause 18.3, the Procuring Entity's Representative shall decide whether the breach is fundamental or not.
- 18.6. If this Contract is terminated, the Contractor shall stop work immediately, make the Site safe and secure, and leave the Site as soon as reasonably possible.

### **19.** Procedures for Termination of Contracts

- 19.1. The following provisions shall govern the procedures for the termination of this Contract:
- Upon receipt of a written report of acts or causes which may constitute ground(s) for termination as aforementioned, or upon its own initiative, the Procuring Entity shall, within a period of seven (7) calendar days, verify the existence of such ground(s) and cause the execution of a Verified Report, with all relevant evidence attached;
- (b) Upon recommendation by the Procuring Entity, the HoPE shall terminate this Contract only by a written notice to the Contractor conveying the termination of this Contract. The notice shall state:
  - that this Contract is being terminated for any of the ground(s) afore-mentioned, and a statement of the acts that constitute the ground(s) constituting the same;
  - (ii) the extent of termination, whether in whole or in part;
  - (iii) an instruction to the Contractor to show cause as to why this Contract should not be terminated; and
  - (iv) special instructions of the Procuring Entity, if any.

The Notice to Terminate shall be accompanied by a copy of the Verified Report;

- (c) Within a period of seven (7) calendar days from receipt of the Notice of Termination, the Contractor shall submit to the HoPE a verified position paper stating why the contract should not be terminated. If the Contractor fails to show cause after the lapse of the seven (7) day period, either by inaction or by default, the HoPE shall issue an order terminating the contract;
- (d) The Procuring Entity may, at anytime before receipt of the Contractor's verified position paper described in item (c) above withdraw the Notice to Terminate if it is determined that certain items or works subject of the notice had been completed, delivered, or performed before the Contractor's receipt of the notice;

- (e) Within a non-extendible period of ten (10) calendar days from receipt of the verified position paper, the HoPE shall decide whether or not to terminate this Contract. It shall serve a written notice to the Contractor of its decision and, unless otherwise provided in the said notice, this Contract is deemed terminated from receipt of the Contractor of the notice of decision. The termination shall only be based on the ground(s) stated in the Notice to Terminate; and
- (f) The HoPE may create a Contract Termination Review Committee (CTRC) to assist him in the discharge of this function. All decisions recommended by the CTRC shall be subject to the approval of the HoPE.
- 19.2. Pursuant to Section 69(f) of RA 9184 and without prejudice to the imposition of additional administrative sanctions as the internal rules of the agency may provide and/or further criminal prosecution as provided by applicable laws, the procuring entity shall impose on contractors after the termination of the contract the penalty of suspension for one (1) year for the first offense, suspension for two (2) years for the second offense from participating in the public bidding process, for violations committed during the contract implementation stage, which include but not limited to the following:
- (a) Failure of the contractor, due solely to his fault or negligence, to mobilize and start work or performance within the specified period in the Notice to Proceed ("NTP");
- (b) Failure by the contractor to fully and faithfully comply with its contractual obligations without valid cause, or failure by the contractor to comply with any written lawful instruction of the procuring entity or its representative(s) pursuant to the implementation of the contract. For the procurement of infrastructure projects or consultancy contracts, lawful instructions include but are not limited *to* the following:
  - (i) Employment of competent technical personnel, competent engineers and/or work supervisors;
  - (ii) Provision of warning signs and barricades in accordance with approved plans and specifications and contract provisions;
  - Stockpiling in proper places of all materials and removal from the project site of waste and excess materials, including broken pavement and excavated debris in accordance with approved plans and specifications and contract provisions;
  - (iv) Deployment of committed equipment, facilities, support staff and manpower; and
  - (v) Renewal of the effectivity dates of the performance security after its expiration during the course of contract implementation.

- (c) Assignment and subcontracting of the contract or any part thereof or substitution of key personnel named in the proposal without prior written approval by the procuring entity.
- (d) Poor performance by the contractor or unsatisfactory quality and/or progress of work arising from his fault or negligence as reflected in the Constructor's Performance Evaluation System ("CPES") rating sheet. In the absence of the CPES rating sheet, the existing performance monitoring system of the procuring entity shall be applied. Any of the following acts by the Contractor shall be construed as poor performance:
  - (i) Negative slippage of 15% and above within the critical path of the project due entirely to the fault or negligence of the contractor; and
  - (ii) Quality of materials and workmanship not complying with the approved specifications arising from the contractor's fault or negligence.
- (e) Willful or deliberate abandonment or non-performance of the project or contract by the contractor resulting to substantial breach thereof without lawful and/or just cause.

In addition to the penalty of suspension, the performance security posted by the contractor shall also be forfeited.

### 20. Force Majeure, Release From Performance

- 20.1. For purposes of this Contract the terms "*force majeure*" and "fortuitous event" may be used interchangeably. In this regard, a fortuitous event or *force majeure* shall be interpreted to mean an event which the Contractor could not have foreseen, or which though foreseen, was inevitable. It shall not include ordinary unfavorable weather conditions; and any other cause the effects of which could have been avoided with the exercise of reasonable diligence by the Contractor.
- 20.2. If this Contract is discontinued by an outbreak of war or by any other event entirely outside the control of either the Procuring Entity or the Contractor, the Procuring Entity's Representative shall certify that this Contract has been discontinued. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all works carried out before receiving it and for any Work carried out afterwards to which a commitment was made.
- 20.3. If the event continues for a period of eighty four (84) days, either party may then give notice of termination, which shall take effect twenty eight (28) days after the giving of the notice.

- 20.4. After termination, the Contractor shall be entitled to payment of the unpaid balance of the value of the Works executed and of the materials and Plant reasonably delivered to the Site, adjusted by the following:
- (a) any sum to which the Contractor is entitled under GCC Clause 28;
- (b) the cost of his suspension and demobilization;
- (c) any sum to which the Procuring Entity is entitled.
- 20.5. The net balance due shall be paid or repaid within a reasonable time period from the time of the notice of termination.

### 21. Resolution of Disputes

- 21.1. If any dispute or difference of any kind whatsoever shall arise between the parties in connection with the implementation of the contract covered by the Act and this IRR, the parties shall make every effort to resolve amicably such dispute or difference by mutual consultation.
- 21.2. If the Contractor believes that a decision taken by the Procuring Entity's Representative was either outside the authority given to the Procuring Entity's Representative by this Contract or that the decision was wrongly taken, the decision shall be referred to the Arbiter indicated in the <u>SCC</u> within fourteen (14) days of the notification of the Procuring Entity's Representative's decision.
- 21.3. Any and all disputes arising from the implementation of this Contract covered by the R.A. 9184 and its IRR shall be submitted to arbitration in the Philippines according to the provisions of Republic Act No. 876, otherwise known as the "Arbitration Law" and Republic Act 9285, otherwise known as the "Alternative Dispute Resolution Act of 2004": *Provided, however*, That, disputes that are within the competence of the Construction Industry Arbitration Commission to resolve shall be referred thereto. The process of arbitration shall be incorporated as a provision in this Contract that will be executed pursuant to the provisions of the Act and its IRR: *Provided, further*, That, by mutual agreement, the parties may agree in writing to resort to other alternative modes of dispute resolution.

### 22. Suspension of Loan, Credit, Grant, or Appropriation

In the event that the Funding Source suspends the Loan, Credit, Grant, or Appropriation to the Procuring Entity, from which part of the payments to the Contractor are being made:

- (a) The Procuring Entity is obligated to notify the Contractor of such suspension within seven (7) days of having received the suspension notice.
- (b) If the Contractor has not received sums due it for work already done within forty five (45) days from the time the Contractor's claim for payment has been

certified by the Procuring Entity's Representative, the Contractor may immediately issue a suspension of work notice in accordance with GCC Clause 45.2.

### 23. Procuring Entity's Representative's Decisions

- 23.1. Except where otherwise specifically stated, the Procuring Entity's Representative will decide contractual matters between the Procuring Entity and the Contractor in the role representing the Procuring Entity.
- 23.2. The Procuring Entity's Representative may delegate any of his duties and responsibilities to other people, except to the Arbiter, after notifying the Contractor, and may cancel any delegation after notifying the Contractor.

## 24. Approval of Drawings and Temporary Works by the Procuring Entity's Representative

- 24.1. All Drawings prepared by the Contractor for the execution of the Temporary Works, are subject to prior approval by the Procuring Entity's Representative before its use.
- 24.2. The Contractor shall be responsible for design of Temporary Works.
- 24.3. The Procuring Entity's Representative's approval shall not alter the Contractor's responsibility for design of the Temporary Works.
- 24.4. The Contractor shall obtain approval of third parties to the design of the Temporary Works, when required by the Procuring Entity.

## 25. Acceleration and Delays Ordered by the Procuring Entity's Representative

- 25.1. When the Procuring Entity wants the Contractor to finish before the Intended Completion Date, the Procuring Entity's Representative will obtain priced proposals for achieving the necessary acceleration from the Contractor. If the Procuring Entity accepts these proposals, the Intended Completion Date will be adjusted accordingly and confirmed by both the Procuring Entity and the Contractor.
- 25.2. If the Contractor's Financial Proposals for an acceleration are accepted by the Procuring Entity, they are incorporated in the Contract Price and treated as a Variation.

### 26. Extension of the Intended Completion Date

26.1. The Procuring Entity's Representative shall extend the Intended Completion Date if a Variation is issued which makes it impossible for the Intended Completion Date to be achieved by the Contractor without taking steps to accelerate the remaining work, which would cause the Contractor to incur additional costs. No payment shall be made for any event which may warrant the extension of the Intended Completion Date.

26.2. The Procuring Entity's Representative shall decide whether and by how much to extend the Intended Completion Date within twenty one (21) days of the Contractor asking the Procuring Entity's Representative for a decision thereto after fully submitting all supporting information. If the Contractor has failed to give early warning of a delay or has failed to cooperate in dealing with a delay, the delay by this failure shall not be considered in assessing the new Intended Completion Date.

### 27. Right to Vary

- 27.1. The Procuring Entity's Representative with the prior approval of the Procuring Entity may instruct Variations, up to a maximum cumulative amount of ten percent (10%) of the original contract cost.
- 27.2. Variations shall be valued as follows:
- (a) At a lump sum price agreed between the parties;
- (b) where appropriate, at rates in this Contract;
- (c) in the absence of appropriate rates, the rates in this Contract shall be used as the basis for valuation; or failing which
- (d) at appropriate new rates, equal to or lower than current industry rates and to be agreed upon by both parties and approved by the HoPE.

### 28. Contractor's Right to Claim

If the Contractor incurs cost as a result of any of the events under **GCC** Clause 13, the Contractor shall be entitled to the amount of such cost. If as a result of any of the said events, it is necessary to change the Works, this shall be dealt with as a Variation.

### 29. Dayworks

- 29.1. Subject to GCC Clause 43 on Variation Order, and if applicable as indicated in the <u>SCC</u>, the Dayworks rates in the Contractor's bid shall be used for small additional amounts of work only when the Procuring Entity's Representative has given written instructions in advance for additional work to be paid for in that way.
- 29.2. All work to be paid for as Dayworks shall be recorded by the Contractor on forms approved by the Procuring Entity's Representative. Each completed form shall be verified and signed by the Procuring Entity's Representative within two days of the work being done.

29.3. The Contractor shall be paid for Dayworks subject to obtaining signed Dayworks forms.

### **30.** Early Warning

- 30.1. The Contractor shall warn the Procuring Entity's Representative at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the work, increase the Contract Price, or delay the execution of the Works. The Procuring Entity's Representative may require the Contractor to provide an estimate of the expected effect of the future event or circumstance on the Contract Price and Completion Date. The estimate shall be provided by the Contractor as soon as reasonably possible.
- 30.2. The Contractor shall cooperate with the Procuring Entity's Representative in making and considering proposals for how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the work and in carrying out any resulting instruction of the Procuring Entity's Representative.

### 31. Program of Work

- 31.1. Within the time stated in the <u>SCC</u>, the Contractor shall submit to the Procuring Entity's Representative for approval a Program of Work showing the general methods, arrangements, order, and timing for all the activities in the Works.
- 31.2. An update of the Program of Work shall show the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining work, including any changes to the sequence of the activities.
- 31.3. The Contractor shall submit to the Procuring Entity's Representative for approval an updated Program of Work at intervals no longer than the period stated in the <u>SCC</u>. If the Contractor does not submit an updated Program of Work within this period, the Procuring Entity's Representative may withhold the amount stated in the <u>SCC</u> from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue Program of Work has been submitted.
- 31.4. The Procuring Entity's Representative's approval of the Program of Work shall not alter the Contractor's obligations. The Contractor may revise the Program of Work and submit it to the Procuring Entity's Representative again at any time. A revised Program of Work shall show the effect of any approved Variations.
- 31.5. When the Program of Work is updated, the Contractor shall provide the Procuring Entity's Representative with an updated cash flow forecast. The cash flow forecast shall include different currencies, as

defined in the Contract, converted as necessary using the Contract exchange rates.

31.6. All Variations shall be included in updated Program of Work produced by the Contractor.

### **32.** Management Conferences

- 32.1. Either the Procuring Entity's Representative or the Contractor may require the other to attend a Management Conference. The Management Conference shall review the plans for remaining work and deal with matters raised in accordance with the early warning procedure.
- 32.2. The Procuring Entity's Representative shall record the business of Management Conferences and provide copies of the record to those attending the Conference and to the Procuring Entity. The responsibility of the parties for actions to be taken shall be decided by the Procuring Entity's Representative either at the Management Conference or after the Management Conference and stated in writing to all who attended the Conference.

### **33.** Bill of Quantities

- 33.1. The Bill of Quantities shall contain items of work for the construction, installation, testing, and commissioning of work to be done by the Contractor.
- 33.2. The Bill of Quantities is used to calculate the Contract Price. The Contractor is paid for the quantity of the work done at the rate in the Bill of Quantities for each item.
- 33.3. If the final quantity of any work done differs from the quantity in the Bill of Quantities for the particular item and is not more than twenty five percent (25%) of the original quantity, provided the aggregate changes for all items do not exceed ten percent (10%) of the Contract price, the Procuring Entity's Representative shall make the necessary adjustments to allow for the changes subject to applicable laws, rules, and regulations.
- 33.4. If requested by the Procuring Entity's Representative, the Contractor shall provide the Procuring Entity's Representative with a detailed cost breakdown of any rate in the Bill of Quantities.

### 34. Instructions, Inspections and Audits

34.1. The Procuring Entity's personnel shall at all reasonable times during construction of the Work be entitled to examine, inspect, measure and test the materials and workmanship, and to check the progress of the construction.

- 34.2. If the Procuring Entity's Representative instructs the Contractor to carry out a test not specified in the Specification to check whether any work has a defect and the test shows that it does, the Contractor shall pay for the test and any samples. If there is no defect, the test shall be a Compensation Event.
- 34.3. The Contractor shall permit the Funding Source named in the <u>SCC</u> to inspect the Contractor's accounts and records relating to the performance of the Contractor and to have them audited by auditors appointed by the Funding Source, if so required by the Funding Source.

### **35.** Identifying Defects

The Procuring Entity's Representative shall check the Contractor's work and notify the Contractor of any defects that are found. Such checking shall not affect the Contractor's responsibilities. The Procuring Entity's Representative may instruct the Contractor to search uncover defects and test any work that the Procuring Entity's Representative considers below standards and defective.

### 36. Cost of Repairs

Loss or damage to the Works or Materials to be incorporated in the Works between the Start Date and the end of the Defects Liability Periods shall be remedied by the Contractor at the Contractor's cost if the loss or damage arises from the Contractor's acts or omissions.

### **37.** Correction of Defects

- 37.1. The Procuring Entity's Representative shall give notice to the Contractor of any defects before the end of the Defects Liability Period, which is One (1) year from project completion up to final acceptance by the Procuring Entity's Representative.
- 37.2. Every time notice of a defect is given, the Contractor shall correct the notified defect within the length of time specified in the Procuring Entity's Representative's notice.
- 37.3. The Contractor shall correct the defects which he notices himself before the end of the Defects Liability Period.
- 37.4. The Procuring Entity shall certify that all defects have been corrected. If the Procuring Entity considers that correction of a defect is not essential, he can request the Contractor to submit a quotation for the corresponding reduction in the Contract Price. If the Procuring Entity accepts the quotation, the corresponding change in the SCC is a Variation.

### **38.** Uncorrected Defects

- 38.1. The Procuring Entity shall give the Contractor at least fourteen (14) days notice of his intention to use a third party to correct a Defect. If the Contractor does not correct the Defect himself within the period, the Procuring Entity may have the Defect corrected by the third party. The cost of the correction will be deducted from the Contract Price.
- 38.2. The use of a third party to correct defects that are uncorrected by the Contractor will in no way relieve the Contractor of its liabilities and warranties under the Contract.

### **39.** Advance Payment

- 39.1. The Procuring Entity shall, upon a written request of the contractor which shall be submitted as a contract document, make an advance payment to the contractor in an amount not exceeding fifteen percent (15%) of the total contract price, to be made in lump sum or, at the most two, installments according to a schedule specified in the <u>SCC</u>.
- 39.2. The advance payment shall be made only upon the submission to and acceptance by the Procuring Entity of an irrevocable standby letter of credit of equivalent value from a commercial bank, a bank guarantee or a surety bond callable upon demand, issued by a surety or insurance company duly licensed by the Insurance Commission and confirmed by the Procuring Entity.
- 39.3. The advance payment shall be repaid by the Contractor by an amount equal to the percentage of the total contract price used for the advance payment.
- 39.4. The contractor may reduce his standby letter of credit or guarantee instrument by the amounts refunded by the Monthly Certificates in the advance payment.
- 39.5. The Procuring Entity will provide an Advance Payment on the Contract Price as stipulated in the Conditions of Contract, subject to the maximum amount stated in **SCC** Clause 39.1

### 40. Progress Payments

- 40.1. The Contractor may submit a request for payment for Work accomplished. Such request for payment shall be verified and certified by the Procuring Entity's Representative/Project Engineer. Except as otherwise stipulated in the <u>SCC</u>, materials and equipment delivered on the site but not completely put in place shall not be included for payment.
- 40.2. The Procuring Entity shall deduct the following from the certified gross amounts to be paid to the contractor as progress payment:
- (a) Cumulative value of the work previously certified and paid for.
- (b) Portion of the advance payment to be recouped for the month.
- (c) Retention money in accordance with the condition of contract.

- (d) Amount to cover third party liabilities.
- (e) Amount to cover uncorrected discovered defects in the works.
- 40.3. Payments shall be adjusted by deducting there from the amounts for advance payments and retention. The Procuring Entity shall pay the Contractor the amounts certified by the Procuring Entity's Representative within twenty eight (28) days from the date each certificate was issued. No payment of interest for delayed payments and adjustments shall be made by the Procuring Entity.
- 40.4. The first progress payment may be paid by the Procuring Entity to the Contractor provided that at least twenty percent (20%) of the work has been accomplished as certified by the Procuring Entity's Representative.
- 40.5. Items of the Works for which a price of "0" (zero) has been entered will not be paid for by the Procuring Entity and shall be deemed covered by other rates and prices in the Contract.

### 41. Payment Certificates

- 41.1. The Contractor shall submit to the Procuring Entity's Representative monthly statements of the estimated value of the work executed less the cumulative amount certified previously.
- 41.2. The Procuring Entity's Representative shall check the Contractor's monthly statement and certify the amount to be paid to the Contractor.
- 41.3. The value of Work executed shall:
- (a) be determined by the Procuring Entity's Representative;
- (b) comprise the value of the quantities of the items in the Bill of Quantities completed; and
- (c) include the valuations of approved variations.
- 41.4. The Procuring Entity's Representative may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information.

#### 42. Retention

- 42.1. The Procuring Entity shall retain from each payment due to the Contractor an amount equal to a percentage thereof using the rate as specified in GCC Sub-Clause 42.2.
- 42.2. Progress payments are subject to retention of ten percent (10%), referred to as the "retention money." Such retention shall be based on the total amount due to the Contractor prior to any deduction and shall be retained from every progress payment until fifty percent (50%) of

the value of Works, as determined by the Procuring Entity, are completed. If, after fifty percent (50%) completion, the Work is satisfactorily done and on schedule, no additional retention shall be made; otherwise, the ten percent (10%) retention shall again be imposed using the rate specified therefor.

- 42.3. The total "retention money" shall be due for release upon final acceptance of the Works. The Contractor may, however, request the substitution of the retention money for each progress billing with irrevocable standby letters of credit from a commercial bank, bank guarantees or surety bonds callable on demand, of amounts equivalent to the retention money substituted for and acceptable to the Procuring Entity, provided that the project is on schedule and is satisfactorily undertaken. Otherwise, the ten (10%) percent retention shall be made. Said irrevocable standby letters of credit, bank guarantees and/or surety bonds, to be posted in favor of the Government shall be valid for a duration to be determined by the concerned implementing office/agency or Procuring Entity and will answer for the purpose for which the ten (10%) percent retention is intended, *i.e.*, to cover uncorrected discovered defects and third party liabilities.
- 42.4. On completion of the whole Works, the Contractor may substitute retention money with an "on demand" Bank guarantee in a form acceptable to the Procuring Entity.

### 43. Variation Orders

- 43.1. Variation Orders may be issued by the Procuring Entity to cover any increase/decrease in quantities, including the introduction of new work items that are not included in the original contract or reclassification of work items that are either due to change of plans, design or alignment to suit actual field conditions resulting in disparity between the preconstruction plans used for purposes of bidding and the "as staked plans" or construction drawings prepared after a joint survey by the Contractor and the Procuring Entity after award of the contract, provided that the cumulative amount of the Variation Order does not exceed ten percent (10%) of the original project cost. The addition/deletion of Works should be within the general scope of the project as bid and awarded. The scope of works shall not be reduced so as to accommodate a positive Variation Order. A Variation Order may either be in the form of a Change Order or Extra Work Order.
- 43.2. A Change Order may be issued by the Procuring Entity to cover any increase/decrease in quantities of original Work items in the contract.
- 43.3. An Extra Work Order may be issued by the Procuring Entity to cover the introduction of new work necessary for the completion, improvement or protection of the project which were not included as items of Work in the original contract, such as, where there are subsurface or latent physical conditions at the site differing materially from those indicated in the contract, or where there are duly unknown

physical conditions at the site of an unusual nature differing materially from those ordinarily encountered and generally recognized as inherent in the Work or character provided for in the contract.

- 43.4. Any cumulative Variation Order beyond ten percent (10%) shall be subject of another contract to be bid out if the works are separable from the original contract. In exceptional cases where it is urgently necessary to complete the original scope of work, the HoPE may authorize a positive Variation Order go beyond ten percent (10%) but not more than twenty percent (20%) of the original contract price, subject to the guidelines to be determined by the GPPB: *Provided, however,* That appropriate sanctions shall be imposed on the designer, consultant or official responsible for the original detailed engineering design which failed to consider the Variation Order beyond ten percent (10%).
- 43.5. In claiming for any Variation Order, the Contractor shall, within seven (7) calendar days after such work has been commenced or after the circumstances leading to such condition(s) leading to the extra cost, and within twenty-eight (28) calendar days deliver a written communication giving full and detailed particulars of any extra cost in order that it may be investigated at that time. Failure to provide either of such notices in the time stipulated shall constitute a waiver by the contractor for any claim. The preparation and submission of Variation Orders are as follows:
- (a) If the Procuring Entity's representative/Project Engineer believes that a Change Order or Extra Work Order should be issued, he shall prepare the proposed Order accompanied with the notices submitted by the Contractor, the plans therefore, his computations as to the quantities of the additional works involved per item indicating the specific stations where such works are needed, the date of his inspections and investigations thereon, and the log book thereof, and a detailed estimate of the unit cost of such items of work, together with his justifications for the need of such Change Order or Extra Work Order, and shall submit the same to the HoPE for approval.
- (b) The HoPE or his duly authorized representative, upon receipt of the proposed Change Order or Extra Work Order shall immediately instruct the appropriate technical staff or office of the Procuring Entity to conduct an on-the-spot investigation to verify the need for the Work to be prosecuted and to review the proposed plan, and prices of the work involved.
- (c) The technical staff or appropriate office of the Procuring Entity shall submit a report of their findings and recommendations, together with the supporting documents, to the Head of Procuring Entity or his duly authorized representative for consideration.
- (d) The HoPE or his duly authorized representative, acting upon the recommendation of the technical staff or appropriate office, shall

approve the Change Order or Extra Work Order after being satisfied that the same is justified, necessary, and in order.

(e) The timeframe for the processing of Variation Orders from the preparation up to the approval by the Procuring Entity concerned shall not exceed thirty (30) calendar days.

### 44. Contract Completion

Once the project reaches an accomplishment of ninety five (95%) of the total contract amount, the Procuring Entity may create an inspectorate team to make preliminary inspection and submit a punch-list to the Contractor in preparation for the final turnover of the project. Said punch-list will contain, among others, the remaining Works, Work deficiencies for necessary corrections, and the specific duration/time to fully complete the project considering the approved remaining contract time. This, however, shall not preclude the claim of the Procuring Entity for liquidated damages.

### 45. Suspension of Work

- 45.1. The Procuring Entity shall have the authority to suspend the work wholly or partly by written order for such period as may be deemed necessary, due to *force majeure* or any fortuitous events or for failure on the part of the Contractor to correct bad conditions which are unsafe for workers or for the general public, to carry out valid orders given by the Procuring Entity or to perform any provisions of the contract, or due to adjustment of plans to suit field conditions as found necessary during construction. The Contractor shall immediately comply with such order to suspend the work wholly or partly.
- 45.2. The Contractor or its duly authorized representative shall have the right to suspend work operation on any or all projects/activities along the critical path of activities after fifteen (15) calendar days from date of receipt of written notice from the Contractor to the district engineer/regional director/consultant or equivalent official, as the case may be, due to the following:
- (a) There exist right-of-way problems which prohibit the Contractor from performing work in accordance with the approved construction schedule.
- (b) Requisite construction plans which must be owner-furnished are not issued to the contractor precluding any work called for by such plans.
- (c) Peace and order conditions make it extremely dangerous, if not possible, to work. However, this condition must be certified in writing by the Philippine National Police (PNP) station which has responsibility over the affected area and confirmed by the Department of Interior and Local Government (DILG) Regional Director.

- (d) There is failure on the part of the Procuring Entity to deliver government-furnished materials and equipment as stipulated in the contract.
- (e) Delay in the payment of Contractor's claim for progress billing beyond forty-five (45) calendar days from the time the Contractor's claim has been certified to by the procuring entity's authorized representative that the documents are complete unless there are justifiable reasons thereof which shall be communicated in writing to the Contractor.
- 45.3. In case of total suspension, or suspension of activities along the critical path, which is not due to any fault of the Contractor, the elapsed time between the effectivity of the order suspending operation and the order to resume work shall be allowed the Contractor by adjusting the contract time accordingly.

### 46. Payment on Termination

- 46.1. If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Procuring Entity's Representative shall issue a certificate for the value of the work done and Materials ordered less advance payments received up to the date of the issue of the certificate and less the percentage to apply to the value of the work not completed, as indicated in the SCC. Additional Liquidated Damages shall not apply. If the total amount due to the Procuring Entity exceeds any payment due to the Contractor, the difference shall be a debt payable to the Procuring Entity.
- 46.2. If the Contract is terminated for the Procuring Entity's convenience or because of a fundamental breach of Contract by the Procuring Entity, the Procuring Entity's Representative shall issue a certificate for the value of the work done, Materials ordered, the reasonable cost of removal of Equipment, repatriation of the Contractor's personnel employed solely on the Works, and the Contractor's costs of protecting and securing the Works, and less advance payments received up to the date of the certificate.
- 46.3. The net balance due shall be paid or repaid within twenty eight (28) days from the notice of termination.
- 46.4. If the Contractor has terminated the Contract under GCC Clauses 17 or 18, the Procuring Entity shall promptly return the Performance Security to the Contractor.

### 47. Extension of Contract Time

47.1. Should the amount of additional work of any kind or other special circumstances of any kind whatsoever occur such as to fairly entitle the contractor to an extension of contract time, the Procuring Entity shall determine the amount of such extension; provided that the Procuring Entity is not bound to take into account any claim for an extension of
time unless the Contractor has, prior to the expiration of the contract time and within thirty (30) calendar days after such work has been commenced or after the circumstances leading to such claim have arisen, delivered to the Procuring Entity notices in order that it could have investigated them at that time. Failure to provide such notice shall constitute a waiver by the Contractor of any claim. Upon receipt of full and detailed particulars, the Procuring Entity shall examine the facts and extent of the delay and shall extend the contract time completing the contract work when, in the Procuring Entity's opinion, the findings of facts justify an extension.

- 47.2. No extension of contract time shall be granted the Contractor due to (a) ordinary unfavorable weather conditions and (b) inexcusable failure or negligence of Contractor to provide the required equipment, supplies or materials.
- 47.3. Extension of contract time may be granted only when the affected activities fall within the critical path of the PERT/CPM network.
- 47.4. No extension of contract time shall be granted when the reason given to support the request for extension was already considered in the determination of the original contract time during the conduct of detailed engineering and in the preparation of the contract documents as agreed upon by the parties before contract perfection.
- 47.5. Extension of contract time shall be granted for rainy/unworkable days considered unfavorable for the prosecution of the works at the site, based on the actual conditions obtained at the site, in excess of the number of rainy/unworkable days pre-determined by the Procuring Entity in relation to the original contract time during the conduct of detailed engineering and in the preparation of the contract documents as agreed upon by the parties before contract perfection, and/or for equivalent period of delay due to major calamities such as exceptionally destructive typhoons, floods and earthquakes, and epidemics, and for causes such as non-delivery on time of materials, working drawings, or written information to be furnished by the Procuring Entity, non-acquisition of permit to enter private properties or non-execution of deed of sale or donation within the right-of-way resulting in complete paralyzation of construction activities, and other meritorious causes as determined by the Procuring Entity's Representative and approved by the HoPE. Shortage of construction materials, general labor strikes, and peace and order problems that disrupt construction operations through no fault of the Contractor may be considered as additional grounds for extension of contract time provided they are publicly felt and certified by appropriate government agencies such as DTI, DOLE, DILG, and DND, among others. The written consent of bondsmen must be attached to any request of the Contractor for extension of contract time and submitted to the Procuring Entity for consideration and the validity of the Performance Security shall be correspondingly extended.

#### 48. Price Adjustment

Except for extraordinary circumstances as determined by NEDA and approved by the GPPB, no price escalation shall be allowed. Nevertheless, in cases where the cost of the awarded contract is affected by any applicable new laws, ordinances, regulations, or other acts of the GoP, promulgated after the date of bid opening, a contract price adjustment shall be made or appropriate relief shall be applied on a no loss-no gain basis.

#### 49. Completion

The Contractor shall request the Procuring Entity's Representative to issue a certificate of Completion of the Works, and the Procuring Entity's Representative will do so upon deciding that the work is completed.

#### 50. Taking Over

The Procuring Entity shall take over the Site and the Works within seven (7) days from the date the Procuring Entity's Representative issues a certificate of Completion.

#### 51. Operating and Maintenance Manuals

- 51.1. If "as built" Drawings and/or operating and maintenance manuals are required, the Contractor shall supply them by the dates stated in the <u>SCC</u>.
- 51.2. If the Contractor does not supply the Drawings and/or manuals by the dates stated in the <u>SCC</u>, or they do not receive the Procuring Entity's Representative's approval, the Procuring Entity's Representative shall withhold the amount stated in the <u>SCC</u> from payments due to the Contractor.

## Section V. Special Conditions of Contract

### **Special Conditions of Contract**

GCC Clause	
1.17	The Intended Completion Date is 60 Calendar Days after the effectivity of the Notice to Proceed.
1.22	<b>The Procuring Entity</b> is <i>Philippine Ports Authority, Port Management</i> Office – Western Leyte/ Biliran, Port Operation Building, Ebony St., Port Area, Ormoc City.
1.23	The <b>Procuring Entity's Representative</b> is BAC of <i>Philippine Ports</i> <i>Authority, Port Management Office – Western Leyte/ Biliran, Port</i> <i>Operation Building, Ebony St., Port Area, Ormoc City.</i>
1.24	The <b>Site</b> is located at <i>Port of Naval, Biliran</i> and is defined in drawings No. 1.
1.28	The <b>Start Date</b> is 10 day after the signing of the Notice to Proceed.
1.31	The Works consist of :
	<ol> <li>General Expenses</li> <li>Upgrading of Powerline System</li> </ol>
2.2	No sectional completion
5.1	The <b>Procuring Entity</b> shall give possession of all parts of the Site to the Contractor <i>ten</i> (10) <i>days after the signing of the Notice to Proceed.</i>
6.5	The Contractor shall employ the following <b>Key Personnel:</b>
	<ol> <li>Project Manager</li> <li>Project Engineer must be a licensed Electrical Engineer</li> <li>Materials Engineer</li> <li>Safety Officer</li> <li>Foreman</li> </ol>
7.4(c)	No further instructions.
7.7	No further instructions.
8.1	No further instructions.
10	None.
12.3	No further instructions.
12.5	In case of permanent structures, such as buildings of types 4 and 5 as classified under the National Building Code of the Philippines and other structures made of steel, iron, or concrete which comply with relevant structural codes (e.g., DPWH Standard Specifications), such as, but not

	limited to, steel/concrete bridges, flyovers, aircraft movement areas, ports, dams, tunnels, filtration and treatment plants, sewerage systems, power plants, transmission and communication towers, railway system, and other similar permanent structures: Fifteen (15) years.
13	All partners to the joint venture shall be jointly and severally liable to the Procuring Entity.
18.3(h)(i)	No further instructions.
21.2	The Arbiter is: <i>The Port Manager, PMO-Westen Leyte Biliran</i> , Port Operation Building, Ebony St., Port Area, Ormoc City
29.1	No dayworks are applicable to the contract.
31.1	The Contractor shall submit the Program of Work to the Procuring Entity's Representative within <i>Ten (10) Calendar Days</i> of delivery of the Notice of Award.
31.3	The period between Program of Work updates is <i>Thirty (30) Calendar Days</i> .
34.3	The Funding Source is the Government of the Philippines.
39.1	For further instructions.
40.1	No further instructions.
51.1	The date by which "as built" drawings are required is <i>during final inspection of the project and final billing</i> .
51.2	The amount to be withheld for failing to produce "as built" drawings and/or operating and maintenance manuals by the date required is <i>equivalent to the amount payable to the contractor</i> .

# Section VI. Specifications

#### ITEM 01 : 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 override 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 Naval, Biliran

#### 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.

#### **1.2SITE CONDITIONS**

#### 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.

#### 1.2.2 INDIVIDUAL PORT CONDITIONS

[Indicate climate, type of tides, mean tidal range, significant wave height, maximum tidal variation, prevailing wind, the annual mean temperature, warmest and coldest month, existing facilities, etc.]

#### 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

All materials used in the construction of the Permanent Works required 1 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 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.

#### **1.4TEMPORARY 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 Sit

#### 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. River Diversion

The Contractor shall provide and maintain along temporary river diversion whenever a present river is closed or affected by his works. Such diversion works shall be well protected and enough size to prevent the upstream area from being flooded. 5. 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.

6. Shore Protection

The Contractor shall construct riprap and embankments along the periphery/shoreline of the port site to serve as a buffer zone, and to prevent erosion/siltation.

7. 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.

8. The Contractor shall allocate an Environmental Monitoring Fund (EMF)

during the construction period in coordination with PENRO.

9. The Contractor shall comply with all the conditions stipulated in the

Environmental Compliance Certificate (ECC).

#### 1.8 MOBILIZATION/DEMOBILIZATION AND CLEANING

#### 1.8.1 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.

#### 1.8.2 SCOPE OF WORK

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

#### 1.8.3 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.

#### 1.8.4 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 clean up of the Site and the removal of materials, debris, waste, etc., and making good damages or temporary alteration

#### 1.8.5 MEASUREMENT AND PAYMENT

Payment for this item includes the expenses incurred by the Contractor for movingin 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

#### ITEM 02 : DEMOLITION AND REMOVAL WORKS

#### DESCRIPTION

The work includes the furnishing of all labor, materials and equipment required to carry out the demolition and removal of old structures, reusable materials, port accessories and obstructions including demolition of miscellaneous concrete curbs etc., as required for the execution of the Contract.

The Contractor shall submit the proposed methodology or procedure of demolition work with detailed drawings and calculations if necessary, to the Engineer for approval, before the execution of the Works.

The Contractor shall keep all pavements and landing areas to and from the site of the disposal area clean and free of mud, dirt and debris during and after the execution of disposal. Disposal of debris and materials shall be as directed by the Engineer. *GENERAL PROVISIONS* 

- 1. The Contractor shall be deemed to have satisfied himself of the site conditions, and to have included in his unit prices provision for all risks that may arise during or in connection with the work.
- 2. The demolition shall be carried out by approved methods and equipment such as concrete breakers, gas-cutters, hydraulic jacks, compressed air disintegrators, etc., however, no blasting shall be used unless approved in writing by the Engineer and after obtaining the written permission of the concerned authorities.
- 3. The Contractor shall provide suitable equipment, skilled labor and appropriate temporary works such as scaffoldings to ensure safety in his demolition works as well as in the adjacent area.
- 4. Contractor shall demolish all the structural members above the level on which the subsequent and permanent works under this Contract will begin. To this end, the temporary construction works such as excavation shall be conducted by the Contractor.

- 5. Materials coming from the demolition/removal works, except general earth, shall remain the property of the Procuring Entity, the designated part of which shall be stored by the Contractor at places specified by the Engineer.
- 6. In case of demolition of wharf deck and platform, the contractor shall ensure that no debris will be remained/deposited at seabed.
- 7. In case of removal of obstructions other than properties of PPA (ie; ship wreckages), the contractor shall coordinate with PMO and PPA engineers regarding the methodology to be used and its legal matters.

#### INTERFERENCE WITH PORT OPERATIONS

During the execution of the work, the Contractor shall not interfere with the shipping, navigation and other traffic in the port.

The Contractor shall make arrangements with the operations people on the schedule of demolition and related works to keep port operation activities undisturbed at all times.

Prior to commencement of the demolition works, the Contractor shall inform/announce to port users the schedule of disconnection of utilities.

#### STORAGE AND DUMPING

Prior to the commencement of the demolition work, the Engineer shall submit to the Contractor a list in which all the materials to be salvaged and overhauled, as property of PPA, and the description of the location of their storage. Materials embedded in concrete units shall not be salvaged.

The Contractor shall separate materials to be salvaged from debris. Salvaged materials shall be loaded, transported and unloaded by the Contractor at the specified locations.

The Contractor may dump debris or extracted rocks on land areas but out of the site, which areas shall be procured and prepared at his own expense. In this case, safety measures shall be undertaken in the transporting, unloading, covering and others as requested by the Engineer.

The approximate distance of the disposal site from the project site is about five (5) kms., as designated by the PMO thru the implementing office.

#### **EXECUTION**

- 1. Prior to the commencement of demolition works, the alignments of the new construction works to existing structure shall be checked.
- 2. The width and alignment of portion of existing structure to be demolished shall be marked by paint.
- 3. With these lines as guides, concrete shall be broken and reinforcing bars cut, such that panels or portions of the structure can be lifted out for disposal elsewhere outside of the operational work area.
- 4. Rocks removed from existing slope protection shall be stored for re-use in new construction.
- 5. Demolish pavements, curbs, fences, utilities, services, navigation aids and the likes as determined in the field for each project and as shown on the drawings or as directed by the Engineer.
- 6. Materials coming from the demolition/removal works shall be properly disposed by the Contractor.

#### SAFETY

During the course of survey and clearing, any obstacles which are recognized and seemed to be explosive or hazardous to workers shall be removed from the site by the proper Authority.

At the end of each day's work, the Contractor shall keep the workplace in safe condition and clean so that no part is in danger of falling or creating hazard to personnel or equipment.

#### **ITEM 3 ELECTRICAL WORKS**

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#### 3.1 ELECTRICAL GENERAL REQUIREMENTS

#### 3.1.1 GENERAL

#### 3.1.1.1 APPLICATION

This section applies to all sections of "Electrical Division" of this project except as specified otherwise in each individual section.

#### 3.1.1.2 WORK INCLUDED

The work to be done under this division shall include the furnishing of alltools, labor, supervision, equipment, fixtures and all necessary materials, each complete and in proper working condition unless one or other is specifically excluded or stated otherwise in this specifications but not limited to the following items of works.

[Shown below are the standard scope of electrical works. Indicate the scope of work applicable to the subject Project]

1. All works and material for a complete lighting and power systems including cables and conduits, circuit breakers, panelboard and connection to all lighting fixtures and power outlets, motor appliances, switches, supports and accessories.

2. All excavation works, backfilling, dewatering, removal of surplus earth, preparation of formworks and pouring of concrete envelopes as indicated on the drawings or as required to complete the installation.

3. All steel support for conduits, wires, panelboard, boxes, lighting fixtures, etc. as indicated or as required to complete the installation.

4. A complete grounding system as required by the governing codes.

5. A complete testing of all electrical systems.

6. Where material are furnished and supplied by the Engineer, the Contractor shall receive, unload, handle and transport to the site, assemble and install completely. This Contractor shall be responsible for safekeeping and warehousing of such materials/equipment from the time of his acceptance.

7. All items incidentals to and or required for the proper completion such as painting of boxes, conduits and the likes.

8. Coordination with other trade Contractors.

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9. Coordination with other companies/offices including handling of all material related to material testing and application of electrical permits.

10. Preparation of necessary shop drawings required for the proper execution of the works subject to the approval of the Engineer.

11. Preparation of "As-Built" drawings.

#### 3.1.1.3 WORK NOT INCLUDED UNDER ELECTRICAL WORKS

The work excludes the furnishing of the following:

1. Supply and installation of all motors, pumps and their associated control equipment.

- a. All electrical system installation beyond the motor branch circuit breakers.
- b. All motor controllers as indicated to be supplied with equipment.

c. Structural foundation of the above.

#### 3.1.1.4 SUBMITTALS

Obtain approval before procurement, fabrication or delivery of items to the job site. Partial submittals will not be entertained and will be returned without review. Submittals shall include the manufacturer's name, trade name, place of manufacturer, catalogue model of number, nameplate data, size, layout dimensions, capacity, project specification and paragraph reference and technical society publication references, and other information necessary to establish contract compliance of each item to be furnished.

1. Shop Drawings

In addition to the requirements of the contract clauses, shop drawings shall meet the following requirements:

a. Drawings shall be a minimum of 210 mm x 297 mm in size or in A3 size, except as specified otherwise.

b. Drawings shall include wiring diagrams and installation details indicating the proposed location layout and arrangement, control panels, accessories, and other items that must be shown to assure a coordinated installation.

c. Wiring diagrams shall identify circuit termination and the internal wiring for each item of equipment and its interconnection.

d. Drawings shall indicate adequate clearances for operation, maintenance and replacement of equipment devices. If the layout is disapproved, revise the layout and resubmit.

2. Manufacturer's Data Submittal for each manufactured item shall be current descriptive literature of cataloged products.

3. Publication Compliance

Where equipment or materials are specified to conform to industry and technical society publications of organizations such as American National Standard Institute (ANSI), American Society for Testing and Materials (ASTM) and Underwriters Laboratories, Inc. (UL), submit proof of such compliance. The label or listing by the specified organization will be acceptable evidence of compliance. In each of the publications referred to herein, consider the advisory provisions to be mandatory as though the word "shall" had been substituted for "should" wherever it appears. Interpret reference in these publications to the authority having jurisdiction, or words of similar meaning, to mean the Engineer. In lieu of the label or testing, submit a certificate from an approved independent testing organization, adequately equipped and component to perform such services, organization's test methods and not the item conforms to the specified organizations.

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.

#### 3.1.1.5 CERTIFICATES OF COMPLIANCE

Submit manufacturer's certifications as required on products, materials, finish and equipment indicated in the Technical Sections. Certifications shall be documents prepared specially for the contract. Preprinted certifications and copies of previously submitted documents are not acceptable. The manufacturer's certification shall name the appropriate products, equipment or materials and the publication specified as controlling the quality of the item. Certification shall not contain statement to imply that the item does not meet requirements specified such as "Good As", "Achieves the same end use and results as materials formulated in accordance with referenced publications" or "Equal or exceeds the service and performance of the specified materials". Certifications shall simply state that the item conforms to the requirements specified; and shall be printed on the manufacturer's letterhead and shall be signed by the manufacturer's official, authorized to sign certificates of compliance.

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#### 3.1.1.6 OPERATION AND MAINTENANCE MANUALS

Submit as required for systems and equipment indicated in the Technical Sections. Furnish three (3) copies, bound in hardback binders or an approved equivalent. Furnish one complete manual prior to performance of system or equipment tests, and furnish the remaining manual prior to contract completion. Inscribe the following identification on the cover: the word "Operation and Maintenance Manual", the name and location of the system equipment, building, name of Contractor and contract number.

Include in the manual the names, addresses and telephone numbers of each sub-Contractor installing the system or equivalent and the local representatives for the system or equipment. Include a table of contents and assemble the manual to conform to the table of contents with the tab sheets placed before instruction covering the subject. The instructions shall be legible and easily read with large sheets of drawings folded in the manual shall include the following:

1. Internal and interconnecting wiring and control diagrams with data to explain detailed operation and control of the system or equipment.

- 2. A control sequence describing start-up, operation and shut-down.
- 3. Description of the function of each principal item of equipment.
- 4. Installation and maintenance manual.
- 5. Safety precaution
- 6. Diagrams and illustrations
- 7. Testing methods
- 8. Performance data
- 9. Lubrication schedule including type, grade, temperature range and frequency
- 10. Part list
- 11. Appendix

List qualified permanent servicing organization for support of the equipment, including addresses and certified qualifications.

#### 3.1.1.7 POSTED OPERATING INSTRUCTIONS

Furnish approved operating instructions for systems and equipment indicated in the technical sections for use by operation and maintenance personnel. The operating instructions shall include diagrams, control diagrams and control sequence for each principal system and equipment.

Print or engrave operating instructions and frame under glass or in

430 approved laminated plastic. Attach or post the operating instructions adjacent to each principal system and equipment including start-up, proper adjustment, operating, lubrication, shutdown, safety precautions, procedure in the event of equipment failure, and other items of instruction recommended by the manufacturer of each system for operating instruction exposed to the weather. Operating instructions shall not fade when exposed to the weather and shall be secured to prevent easy removal or peeling.

#### 3.1.1.8 INSTRUCTIONS TO PERSONNEL

Where indicated in the technical sections, furnish the services of competent instructors to give full instructions to personnel in the adjustment, operation and maintenance of systems and equipment, including safety precautionary measures. Each Contractor shall be thoroughly familiar with all parts of the installation and shall be trained in operating theory as well as practical operation and maintenance work, instructions shall be given during the first regular work week after the equipment or system has been accepted and turned over to the Engineer for regular operation. The number of mandays

(8 hours) of instruction shall be as specified in each individual section.

#### 3.1.1.9 DELIVERY AND STORAGE

Handle, store, and protect equipment and materials in accordance with the manufacturer's recommendations and with the requirements of NFPA 70B,

Appendix 1, titled "Equipment Storage and Maintenance during Construction". Replace damaged or defective items with new one.

#### 3.1.1.10 CATALOGUE PRODUCTS/SERVICE AVAILABILITY

Materials and equipment shall be current products by manufacturers regularly engaged in the production of such products. Products shall have been in satisfactory commercial or industrial use for two (2) years prior to bid opening. The two (2) year period shall include applications of equipment and materials under similar circumstances and of similar size.

The two (2) year period shall be satisfactory completed by a manufacturer's catalog or brochures. Products having less than two (2) year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6,000 hours, exclusive of the manufacturer's factory or laboratory tests is furnished. The equipment item shall be supported by service organization, which are reasonably convenient to the equipment on a regular and emergency basis during the warranty period of the contract.

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#### 3.1.1.11 MANUFACTURER'S RECOMMENDATIONS

Where installation procedures or any parts thereof are required to be in accordance with manufacturer's recommendations, furnish printed copies of the recommendation prior to installation. Installation of the items shall not proceed until recommendations are received. Failure to furnish recommendations shall be cause for rejection of the equipment or materials.

#### 3.1.1.12 "AS-BUILT" DRAWINGS

The cost of as-built drawings shall be borne by the Contractor. Submittal of such drawings shall be a condition to final payment.

#### 3.1.1.13 MATERIALS/SUBSTITUTION/TESTS

All materials to be installed shall be brand new and shall conform with specifications except as otherwise noted on the drawings. All materials where not specified shall be of the best of their respective kind. Samples of said material including its manufacturer's data shall be submitted for approval. Necessary tests on the installations shall be made by the Contractor in the presence of the Engineer. These tests shall include but not limited to ground test, performance test, phase sequence test, etc.

Records of approved tests result shall be relayed to the Engineer in writing.

This Contractor shall within ten (10) days after the award of the contract, submit a list of materials he proposes to use. All materials installed without prior approval shall be at the risk of the Contractor.

#### 3.1.1.14 COORDINATION/GUARANTEES/SUSPENSION OR DELAY

The Contractor shall be familiar with the specifications of the other trades and coordinate with them thoroughly so that he can arrange his work and dispose his materials without interfering the work of other Contractors. The

Contractor shall guarantee that the electrical systems shall be free from all defects of workmanship and of materials, and that it will remain so for a period of one year from the date of acceptance by the Engineer. Any remedy to correct defects deemed to be caused by such shall be made at the expense of the Contractor.

The Contractor shall not suspend or delay the work without justifiable cause. Subsequent delays shall be deemed as a sufficient cause for penalties or termination of contract in which the Engineer shall have the right to take-over the work and all materials on the site and make arrangements necessary to complete the work. It shall be the sole responsibility of the Contractor to ensure that the Electrical sub-contractor conducts coordination of his activities to other trades.

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3.1.1.15 SLEEVES/INSERTS/CUTTING/PATCHING/BACKFILL

The Contractor shall provide all openings, sleeves, also inserts in walls, floors, and beams as required for his work. All unused openings shall be grouted in. the Contractor shall do all patching requirements necessary and these shall be done so as to exactly match the surrounding area without the evidence of alteration or patching. The Contractor shall provide all necessary backfill on all excavation works of his doing.

#### 3.1.1.16 TEMPORARY LIGHT AND POWER

The Contractor shall make all arrangements and pay for the provisions of the necessary electrical power of the type and capacity required for the performance of the work of all trades engaged in the construction of the building.

#### 3.1.1.17 CLEANING UP

The Contractor shall remove all dirt, debris, and rubbish and waste materials caused by him in the process of his work. He shall also remove all tools, temporary power installation, scaffolding and surplus materials after completion and acceptance of work.

#### 3.1.1.18 ELECTRICAL CHARACTERISTICS

The electrical characteristics for this project shall be 230V, 3 wire, single phase and 60Hz or as per system requirements.

#### 3.1.2 MATERIAL REQUIREMENTS

3.1.2.1 NAMEPLATES

Provide laminated plastic nameplates for each panelboard, equipment enclosure, relay, switch, and device. Each nameplate inscription shall identify the function and when applicable, the position. Nameplate shall be melamine plastic, 3.2mm thick, white with black center core. Surface shall be matte finish. Corners shall be square. Accurately align lettering and engrave into the black core. Minimum size of nameplates shall be 25mm x

38mm. Lettering shall be a minimum of 6mm, high normal block style.

#### 3.1.3 EXECUTION

#### 4.1.3.1 NAMEPLATE MOUNTING

Provide number, location, and letter designation of nameplates as indicated. Fasten nameplates to the device with a minimum of two sheetmetal screws or two rivets.

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#### 3.1.3.2 PAINTING OF EQUIPMENT

1. Factory Applied: Electrical equipment shall have factory-applied painting systems which shall, as a minimum, meet the requirements of

NEMA ICS 6 corrosion-resistance test, except equipment specified to meet requirements of ANSI C37.20 shall have a finish as specified in ANSI C37.30.

2. Field Applied: Paint electrical equipment as required to match finish or to meet safety criteria.

#### 3.1.4 MEASUREMENT AND PAYMENT

The work under this section shall be incidental to other items of work and shall not be measured for payment unless otherwise specified in the Bill of Quantities.

#### 3.2 DIESEL ENGINE GENERATOR SET

#### 3.2.1 GENERAL

Work under this Contract shall be in accordance with Section 7.1 "Electrical General Requirements" of these Specifications and shall be applicable to this Section, whether herein referred to or not.

#### 3.2.1.1 SCOPE OF WORK

The Work covered shall include but not be limited to all labor, materials, tools,

equipment and incidentals necessary for the Contractor to furnish/provide diesel electric generating unit with accessories, auxiliary equipment, and associated work as specified and indicated.

#### 3.2.1.2 APPLICABLE PUBLICATIONS

The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only. 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. American National Standards Institute, Inc. (ANSI) B15.1-72 Safety Standard for Mechanical Power Transmission Apparatus.

C50.10-77 General Requirements for Synchronous Machines

2. American Society of Mechanical Engineers (ASME) Publication: PTC 26-62 Speed Governing Systems for Internal Combustion Engine-Generator Units.

3. Diesel Engine Manufacturers Association (DEMA) Publications: (Sixth Edition 1972) Standard Practices for Stationary Diesel and Gas Engines

4. Institute of Electrical and Electronics Engineers (IEEE) Publication: 126-59 Recommended specification for Speed Governing of Internal Combustion Engine Generator Units PEC (2000) Philippine Electrical Code

5. Underwriter's Laboratories, Inc. (UL) Publications: 142-1981 Steel Above ground Tanks for flammable and (AM 85) Combustible Liquids 1236-1978 Electric Battery Charges (1994; R 1999)

6. Bureau of Product Standard (BPS) PNS (2000) Philippine National Standard

#### 3.2.1.3 QUALITY ASSURANCE

Engines installed shall meet all of the operating experience requirements listed below:

1. Only electrical generation service is considered as equivalent experience. Engine driving pumps or compressors, or those in marine

propulsion or railroad service, are not acceptable.

2. Only experience on the same engine model is acceptable. Engine model is considered to be a given series or class of identical bore and stroke and of the same type of engine, such as in-line or Vee. In-line and Vee engines with identical bore and stroke are considered as two separate models of engines.

3. Only experience at the identical rotative speed as that which is offered is acceptable. <sup>435</sup>

4. Only experience at the identical or higher brake mean effective

pressure as that which is offered is acceptable.

5. Only experience with fuel oil is acceptable.

#### 3.2.1.4 SUBMITTAL

The Contractor shall furnish certificate(s) within twenty eight (28) days after commencement of works certifying that no less than two engines of identical number of cylinder size, identical rotative speed, and identical or higher Brake Mean Effective Pressure (BMEP), and of the same basic configuration (in-line or Vee) as the engine to be furnished, shall have driven generators which have produced in satisfactory operation not less than 500 KWH of electricity for each KW of generator nameplate capability within a two (2) year period. Certificate(s) shall include:

1. A list of at least two engine installation meeting the experience requirements set forth in Sub-section 7.2.1.3 entitled "Quality assurance".

2. Owner and location of each such installation.

3. Date of initial operation of each such installation.

4. Number of KW hours produced per KW of generator rated capability of each installation.

5. Horsepower rating, KW rating, and rotative speed of each unit.

6. Brake Mean Effective Pressure (BMEP) rating of each engine.

7. Design characteristics of each unit, such as bore and stroke, number of cylinders, and configuration (in-line or Vee).

#### 3.2.1.5 SHOP DRAWINGS AND CALCULATIONS

The Contractor shall submit shop drawings and calculation for diesel engine generating unit and auxiliary equipment, including the following:

1. Certified outline, general arrangement (setting plan), and anchor bolt details. Drawings shall show the total weight and center of gravity of the assembled equipment of the mounting skid.

2. General arrangement drawings showing location of all auxiliary equipment in relation to the diesel generating unit.

3. Piping schematic for compressed air starting, fuel oil, lubricating oil, jacket water, and cooling water integral with diesel engine.

4. BMEP calculations.

5. Air Starting and Cranking time calculations.

6. Battery sizes.

7. Critical speed calculations.

8. Electrical elements, schematics and writing diagrams, including details of the safety shutdown systems and main generator circuit breaker trip system.

#### 3.2.1.6 CERTIFIED TEST REPORTS

- 1. Diesel engine shop tests
- 2. Generator shop tests
- 3. Diesel engine driven electric generator set shop test tests
- 4. Radio-interference suppression.

#### 3.2.1.7 MANUALS

The Contractor shall provide three (3) sets of operation and maintenance manuals for equipment. Identification symbols for all replaceable parts and assemblies shall be included. Information in manuals shall be comprehensive and specific.

#### 3.2.1.8 SAFETY REQUIREMENTS

Safety requirements shall comply with ANSI B15.1 or with the manufactured recommendation.

#### 3.2.2 MATERIALS REQUIREMENTS

#### 3.2.2.1 MATERIALS

1. Standard Commercial Product

Generator set shall, as a minimum, be in accordance with the requirements of this specification and shall be the manufacturer's standard commercial product with any added features needed to comply with the requirements. Additional or better features which are not specifically prohibited by this specification, but which are apart of the manufacturer's "standard commercial product " is defines as a product which has been or will be sold on the commercial market through advertisement or manufacturer's catalogs, or brochures, and represents the latest production mode(s).

#### 2. Materials and Equipment

The Contractor shall furnish new materials of high quality which will give long life and reliable operation. Equipment shall not have been in prior service except as required by factory tests. Workmanship shall be of highest quality in every detail.

3.2.2.2 DIESEL-ELECTRIC GENERATOR SET AND AUXILIARY EQUIPMENT

Each generator set shall consist of a diesel engine connected to an alternating current generator with brushless excitation system mounted on a steel subbase and provide with all necessary accessories, auxiliaries, and control equipment resulting in a complete self-contained unit people capable of operation.

Set shall be arranged for manual starting. Generator set must be capable of providing full rated power within 10 seconds after starting.

1. Equipment Rating and Capability

Diesel-electric generating set shall have a net continuous rating as indicated at 0.8 power factor for 3-phase unit. Both the engine and generator of the generator set shall be capable of satisfactorily carrying a load 10% in express of the net continuous rated generating capacity at 0.8 power factor for a period of 2 continuous hours out of any 24 consecutive hours.

Gross kW rating of each diesel generating set shall be not more than the figure obtained by multiplying the delivered shaft horse power rating of the engine by 0.746 and by the overall efficiency of the generator at the corresponding load. Overall efficiency of the generator shall allow for power required to operate the exciter, including power consumed in losses and in windage and friction for generator and rotating exciter.

Rated net capacity of each generating set is defined as gross electrical power output of generator minus total electrical power requirements of "engine assemble," as defined in NEMA publication "Standard Practices for Stationary Diesel and Gas Engine". All auxiliary equipment furnished shall be designed for continuous duty at 110% of rated net capacity of generating set. The generating set shall be rated for [\_\_] kW, 0.8 power factor [\_\_] [2],

[\_\_\_], [\_\_] volts.

2. Critical Speeds

Each complete diesel-electric generating set shall be free of electrical speeds of either a major or minor order that will endanger satisfactory operation will be considered endangered if torsional vibration stresses exceed 390 kg/cm<sup>2</sup> with 10% above or below rated engine speed. The Contractor shall submit three (3) copies of a summary of computations of critical speeds to the Engineer.

#### 3.2.2.3 DESIGN AND CONSTRUCTION

Rotating or reciprocating parts, or other parts that may present a hazard to operating personnel shall be isolated or shielded to minimize danger. Design characteristics shall limit operating temperatures at critical points of maximum wear at full-load operating conditions.

#### 3.2.2.4 DIESEL ENGINE AND ACCESSORIES

1. Type and Requirements

The diesel engine to be furnished shall drive the A/C generator and shall be base mounted.

The diesel engine shall be of vertical, single acting, solid injection, 4- stroke cycle, cold starting, water cooled diesel engine.

Main parts shall possess excellent properties against heat, pressure,

erosion and wear. All parts shall be manufactured to ensure the

highest accuracy and precision by means of limit gages, special jigs,

fixtures, etc., so that they are entirely interchangeable with each other.

The diesel engine shall be furnished with a cooling water pump to

circulate the cooling water for the diesel engine. The pump shall be

driven by the main diesel engine. The requirements of the cooling

water pump shall be of the engine manufacturer's standard.

The design conditions for the main diesel engines shall be as follows:

#### Type and Requirements Power Plant

1. Continuous rating output: (Approx,) PS

#### [\_\_\_\_] x [\_\_\_\_] RPM

2. 1 Hour rating output 110% load for continuous rating: (Approx.) PS

3. Continuous operating speed: rpm

4. Bore of Cylinders: mm

5. Number of Cylinders [\_\_\_] - [\_\_\_]

6. Specific fuel Consumption: g/ps.hr [\_\_\_] - [\_\_\_]

7. Starting System Compressed air starting

8. Location of Operation: At Site and operation room

9. Engine cooling system Forced water cooling by

cooling water pump

10. Engine Lubrication System: Forced lubrication by use of gear pump mounted on

engine

11. Fuel Oil Recommended Diesel light oil ASTM D 975

2. Manufacturing and Materials

a. Cylinder Block Head and Crankcase

The cylinder block, head and crankcase shall be made of cast iron. Replaceable wet type cylinder liners shall be made of high grade cast iron.

b. Crankshaft

The crankshaft shall be of the forged, one piece-type, made of carbon steel. Bearing surfaces shall be of sufficient size to safely sustain all bearing loads imposed, and shall be heat-treated to provide resistance against shocks and wear.

c. Camshaft

The camshaft shall be made of carbon steel, driven by gears from the crankshaft. The hard-wearing surfaces shall be treated by high frequency induction hardening.

d. Piston and Piston-Pin

Pistons shall be of trunk type and made of special cast iron or high grade heat treated light alloy, and shall have sufficient resistance against heat and pressure. Piston rings shall consist of two or <sup>440</sup>

three compression rings and one or two oil scraping rings. The piston-pins shall be of full floating type and completely carbonized. e. Connecting Rods

Connecting rods shall be made of forged steel and designed for using replaceable and precision insert type crank pin bearings. A drilled passage for piston-pin lubrication shall be incorporated. f. Bearings

The bearings for both main and crank pin journals shall be of precision insert bearings and readily replaceable. The piston-pin metals shall be of the special phosphorous bronze.

g. Fuel Injection Nozzle

Each one set of fuel pump with plunger, for adjusting injection volume and timing, shall be provided for each cylinder.

The injection nozzle shall be pin hole type and designed to adjust the needed injection pressure automatically and to meet with any load conditions immediately.

#### h. Governor

The governor is of mechanical and/or hydraulic type and so sensitive in operation that it is able to adjust the fuel injection volume at any sudden change of loads automatically and immediately. Engine speed variation is calculated not more than 10% (instantaneous) and 5% (steady).

i. Exhaust System

The diesel engine exhaust gas shall be released to atmosphere outside the house through exhaust pipe works and silencers. All exhaust pipe work inside the house shall be lagged by thermal insulation materials with aluminum sheet.

Each silencer shall be positioned as shown on the Drawings. The exhaust system shall be complete with expansion below, support structures and brackets where necessary.

3. Accessories

The accessories of the diesel engine to be furnished shall be as follows:

a. Gauges

Tachometer, lubrication oil pressure, cooling water pressure,

suction air pressure, fuel oil pressure, etc.

b. Thermometer

Lubrication oil, cooling water, exhaust gas, etc.

c. Auxiliary Priming Pump

Wing type lubrication oil pump.

d. Strainer and Cooler

Fuel oil strainer, lubrication oil strainer, lubrication oil cooler,

suction air cooler, etc.

e. Safety Devices

Lubrication oil pressure relay, cooling water high temperature relay, over and under speed relay, cooling water flowsight glass, etc.

f. Miscellaneous

Exhaust system has turbo-supercharger, pressure indicator cock for each cylinder, flywheel and dual air reservoir tanks, flexible pipe joints, installation bolts, etc.

4. Fuel Oil System

Conform to NFPA 30 and NFPA 37 and the requirements herein. Provide motors and flange connections in accordance with paragraphs entitled "Motors" and "Flange Connections."

a. Tanks

Tanks may be standard design as recommended or used by the engine manufacturer or shall be constructed as specified in paragraph entitled "Tank Construction."

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(i) Fuel Oil Day Tanks

Provide tanks with a minimum capacity of 8 hours of engine generator unit operation at full rated load for the engine generator unit. Provide tanks with a level gage and makeup

control valve. Include connections of the indicated size for inlet, outlet, overflow, drain, vent, and level controller, and a high and low level alarm switches.

(ii) Fuel Oil Drip Tank

Provide tank to receive dirty fuel oil drips from the engine. Working capacity of tank shall be not less than 38 L per engine.

Include connections of the indicated size for inlet, outlet, overflow, drain, vent, and level gage, and high level alarm switch. Locate high level alarm switch 150 mm below the top of the tank.

(iii) Level Alarm Switches

Provide tank-top mounted or external float cage, single-pole, single-throw type designed for use on fuel oil tanks. Arrange high level alarm switches to close on rise of liquid level, and low level alarm switches to close on fall of liquid level. Mount float cage units with isolating and drain valves. Contacts shall be suitable for the station battery voltage. Contact ratings shall be A150 in accordance with NEMA ICS 2.

#### (iv) Tank Gages

Provide tank gages conforming to CID A-A-50568. Gages for fuel oil day tanks shall be buoyant force type, with dial indicator not less than 100 mm in size and arranged for side mounting. Each reading dial or scale shall be calibrated for its specific tank to read from empty to full, with intermediate points of 1/4, 1/2, and 3/4.

#### b. Fuel Oil Pumps

Each pump unit shall consist of a horizontal, positive displacement, rotary pump driven by a three-phase electric motor.

Direct connect each pump to its driving motor through a flexible coupling. Mount pump and motor on a common steel or cast-iron base plate and provide a coupling guard. Equip each pump with a bypass relief valve. Each pump shall conform to CID A-A-50561. Pumps shall be capable of pumping the following quantities of fuel oil at a temperature of 32°C.

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#### c. Duplex Fuel Oil Strainer

Provide the type having two straining chambers and arranged to divert the flow from one chamber to the other without interruption at any point of the changeover. Design shall allow for cleaning, by permitting removal of the strainer basket not in use while the other strainer basket is in use. Construct strainer baskets of corrosion resistant metal. Strainer mesh, type, and size shall be as

recommended by the engine manufacturer. Construct body of cast iron suitable for 861 kPa (gage) working pressure. Provide a remote differential pressure gage between inlet and outlet of duplex-strainer to indicate the pressure drop of strainer chamber on line.

#### d. Fuel Oil Meters

Provide positive displacement type. Maximum variation from absolute accuracy measurement over entire range of meter shall be not greater than plus or minus five-tenths of one percent. Provide meters with horizontal setback registers calibrated to read in liters and tenths of liters. Construct meters with cast-iron bodies, with working parts made of material to resist wear, friction, and corrosion and can handle oil containing a small percentage of sulphur.

#### e. Day Tank Makeup Control Valve

Provide one control switch and solenoid type control valve for each fuel oil day tank as indicated. Valve body shall have a minimum working pressure rating of 1033.5 kPa (gage) at 93°C. The level control switch shall energize to open the solenoid control valve and start the fuel oil transfer pump at low level conditions and close the valve and stop the transfer pump at high level conditions. For multiple day tank installations, the level control switches shall actuate their respective solenoid valves and the selected fuel pump through the necessary relays and control switches. The day tank system control shall be controlled by an "OFF-AUTO" switch on the engine control panel with a contact rating of not less than A150 in accordance with NEMA ICS 2.

#### f. Fuel Oil Filters

Provide two filters of the throwaway filter element type, consisting of shell, filter elements, drains, and necessary connections and

fittings. Equipment and component parts shall be the standard product of the filter manufacturer to ensure prompt and continuing service and delivery of repair or maintenance parts and shall be standard with the engine manufacturer. Component parts of the 444

unit need not be the product of the same manufacturer. Each filter shall be capable of removing not less than 95 percent of all particles larger than 5 microns. Filter elements shall be factory assembled type, with compression type end seal gaskets at top and bottom and with suitable pullout device. Filter material shall be cellulose, laminated fiber discs, or acid resistant textile material. Elements shall be designed for an initial pressure drop not in excess of 35 kPa at a flow rate of 0.0972 L/s per element. Construct filters with sides having double walls. Install insulating material between the inner and outer walls. Inner shell shall be pressed steel or welded steel construction enclosing, supporting, and protecting all elements. Filters shall have flanged, removable bolted top cover for access to all components without disconnecting any connections or fittings. Provide compartments for clean and dirty oil. Provide supports for base mounting. There shall be tie-bolts, or equivalent means, for holding down the filter elements and cover, and recesses or other means for receiving and locating the elements. Design and construction shall conform to the ASME BPVC SEC VIII D1. Filter cover shall be steel and secured to the shell by swing-type bolts with hex nuts. Use lifting devices with integral supports for covers weighing over 14 kg. Arrange connections so that filter elements may be removed without breaking outside connections. Mount pressure gages on filter shell to indicate pressure before and after the filter elements. Provide a tapped drain and exterior valved pipe connection. A duplex gage may be provided. Gages shall conform to ANSI/ASME B40.1 and shall be pressure detecting class, 108 mm size, and 0 to 689 kPa range. Provide a needle valve and fittings for mounting each gage and differential pressure switch. Equip each unit with instruction plates and diagrams, suitably located, describing special or important procedures to be followed in operating and servicing the equipment. Plates shall be copper or zinc base alloy, adequately secured to the unit. Provide an adjustable pressure switch with contacts suitable for the starting battery voltage to indicate high differential fuel-oil filter pressure. g. Fuel Oil Centrifuges

Provide two identical fuel oil centrifuges. Centrifuges shall be capable of removing and discharging water and sludge from incoming fuel oil. Each centrifuge shall be of the unit type, including inlet and outlet oil transfer pumps with integral bypass relief valves, interconnecting piping, sight flow indicators, thermometer, sampling cocks, and three-phase electric motor all mounted on a common steel or cast-iron base plate. Bowls shall be corrosion-resistant construction and arranged for self draining. Provide each centrifuge with an air-tight cover hinged to the frame of the unit, locking it in either the open or closed position. Arrange 445

check valve to automatically shut off the oil when cover is raised. Provide each unit with a friction clutch to ensure that the machine will be properly and automatically brought up to speed without danger of overloading either motor or gears. Provide safety shutdown interlocks for dangerous vibration, open bowl, low-flow operation, low-water pressure, and bowl completely stopped before cover can be opened.

#### 3.2.2.5 GENERATORS AND EXCITATION SYSTEMS

1. Generators

The generator for the unit shall be as indicated, 60 Hertz, 0.8 power factor, 3-phase, alternating-current type with revolving field. The speed of the generator shall be that of the engine. The generator shall be capable of carrying continuously a 0.80 power factor load equal to the gross kilowatt rating of the diesel generating unit and to carry a 0.80 power factor load 10% in excess of the gross kilowatt rating of the diesel generating unit for 2 continuous hours out of any period of 24 consecutive hours at normal voltage and with a temperature rise of not more than 80°C as measured by resistance based on 40°C ambient temperature. Enclosures shall be the general-purpose open type with ventilating openings covered with removable screens having a mesh not larger than 12 mm.

The generator shall conform to ANSI C50.10 and to NEMA MG-1. The generator shall have form-wound coils and Class H sufficient flywheel effect to meet the requirements of regulation and operation as specified. The rotor shall be mounted on an extended shaft which shall be coupled rigidly to the engine. Crankshaft. Impellers shall be mounted on the rotor for cooling the generator. The rotor shall be capable of safe operation at a speed 25% in excess of its rated synchronous speed. The generator armature, field, and ground leads shall clamp or crimp-type lugs or connectors for electrical connections. Terminal markings shall conform to NEMA MG-1.

2. Excitation and Voltage Regulation System

The excitation system shall be integral brushless-type consisting of a rotating AC exciter and rectifier diode assembly together with a statictype voltage regulating system and including surge protection and the required accessories. The system shall serve as an individual excitation and regulation system for the generator specified herein, and there is no requirement for parallel operation with other exciters.

The excitation system shall have a continuous current rating of not less than the generator excitation current required when the generator operates at 105% rated voltage under the condition of continuous <sup>446</sup>

rating requiring maximum field current. The voltage rating of the system shall be as required to match the generator field requirements. The excitation system response ration shall not be less than 0.5 and the ceiling voltage shall not be less than 120% of rated voltage. 3. Exciter

The exciter shall be a rotating AC generator having a rotating armature on the rotor spider and a stationary field on the stator frame. The exciter insulation shall be Class B and the temperature rise shall not exceed 70°C when measured by resistance based on a 40 °C ambient temperature.

#### 4. Rectifiers

Rectifiers shall be full-wave silicon diode type, with each diode protected by individual fuses. The rectifiers shall be mounted on the rotating part of the exciter to convert AC exciter output to DC for the main generator excitation. Connection shall be provided between, the exciter, rectifier, and generator field without uses of brushes or slip rings.

#### 5. Voltage Regulator

The voltage regulator shall be completely solid-state type for control of

generator voltage by control of the exciter field. The regulator shall be suitable for mounting in the generator control panel. The regulator shall control the generator exciter field as required to maintain a constant and stable generator output voltage within plus or minus 1/4 of 1% of nominal for all steady-state loads from no load to full lead including a 5% variation in frequency and the effects of field heating. The regulator shall be designed for single-phase voltage sensing. Electromagnetic interference suppression shall be an integral part of the regulator. Thermal protection for power semi-conductors, inherent overvoltage protection, and fuse protection shall be provided internally in the regulator. No electrolytic capacitors, vacuum tubes, or electromechanical relays shall be used in the voltage regulator. The regulator shall have provisions for switching to manual control to allow the generator voltage to be controlled either manually or automatically. The following regulator components shall be mounted on the front of the generator control panel.

a. Voltage adjusting rheostat

b. Manual voltage control with adjusting rheostat

6. Engine Generator Instruments and Controls

NEMA ICS 1,2,3,4, and 6 shall be applied.

7. Engine Instrument

Engine instruments shall include the following as minimum components:

a. Lubricating Oil Pressure Gauge

Lubricating oil pressure gauge shall be indicating dial type utilizing a Bourdon tube for confining the pressure medium. The Bourdon tube shall be seamless and made of phosphor bronze. Gauge shall be accurate to within 2 percent of full scale reading. Gauge subject to rapid pressure surges shall be properly suppressed b. Coolant temperature Indicators

Coolant temperature indicators shall be indicating dial type. Capillary tubing shall be covered with a protective casing throughout its entire length and reinforced with an additional casing at the connection to the bulb or socket. The temperature indicator shall be accurate to within 2 percent of full scale reading.

c. Generator Controls and Instruments

NEMA ICS 1,2,3, and 4 shall include the components listed below. Instruments shall comply with ANSI C39.1.

1) Voltmeter and Ammeter:

Semi-flush mounted direct indicating type, not less than 110 mm inch nominal round or square, 180° arc, with accuracy of 2% of full scale.

2) Frequency Controls and Instruments

3) Control Switches:

Voltage and ampere ratings suitable for the intended use. Contacts shall be rated in accordance with NEMA Standards ICS 2-125.

4) Generator Output Circuit Breaker:

Molded case type, trip-free, and shall be mounted to allow operation from outside the control panel. Frame size shall be 448

adequate for generator amperage when operating at standby rating, and an adjustable trip shall be provided. Lugs shall be provided for electrical connections.

5) Voltage adjustment rheostat

6) Panel lights and control switch

#### 7) Alarm indicating panel

#### 3.2.2.6 BASE ASSEMBLY AND ENCLOSURE: NEMA ICS 6

1. Engine Generator

Engine Generator shall be mounted on a fabricated steel skid base suitable for supporting, transportation, and skidding engine and generator without damage to equipment or alignment.

2. Vibration Isolators

Vibration isolators shall be provided to isolate the engine-generator set from the building floor, at least four isolators, as recommended by the isolator manufacturer, are required. The isolators shall be manufactured by a firm specializing in this product, and the unit shall be specifically listed for this application and have a maximum deflection of 25 mm.

#### 3.2.2.7 TREATMENT AND PAINTING

All parts, including engine subject to high temperature, shall be treated and painted in accordance with manufacturer's standards. The generator and all associated electrical equipment shall be thoroughly cleaned and treated prior to painting. Color shall be manufacturer's standard.

#### 3.2.3 EXECUTION

3.2.3.1 INSTALLATION Installation shall conform to the requirements of NFPA 70.

#### 3.2.3.2 DIESEL ENGINE GENERATOR

Diesel generating unit shall be installed on a concrete foundation as indicated. Vibration isolators shall be provided to isolated vibrations from the diesel generating unit to the foundations.

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3.2.3.3 TESTING

The following tests shall be performed on the generator set system provided. The Engineer shall be given seven (7) working days notice prior to each test. The Contractor shall provide all test equipment and personnel and submit three (3) copies of all test results.

1. Factory Tests

The engine-generator shall be subject to the manufacturer's standard run-in and conditioning tests.

Following the run-in tests, the engine-generator set shall be tested at rated speed and voltage for 8 hours of continuous operations with 2 hours each at 50, 74, 100 and 110 percent of rated load, consecutively, 0.8 power factor. The Contractor shall determine generator frequency, phase current, and voltage and record at 15 minute intervals. The Contractor shall tests run on the voltage regulator to determine the variation in terminal voltage under conditions of constant load, and under conditions of abrupt load changes to determine the maximum voltage change during the surging period and the time required. 2. Speed Governing Test

Engine speed governing system shall be tested in accordance with ASME PTC26.

3. Field Tests and Inspections

The Contractor shall perform all field tests and trial operations, and conduct all field inspections (except final field inspection). The Contractor shall provide all labor, equipment, and incidentals requirements, including water, fuel, and lubricants required for tests. The Contractor shall give ample notice of the dates and times scheduled for tests, trial operations, and inspections which require the presence of the Engineer. All deficiencies found shall be rectified and work affected by such deficiencies shall be completely retested at the Contractor's expense. Field tests shall include the following:

a. Demonstrate proper operation of all system

b. Conduct three (3) hour run utilizing Contractor-furnished portable load bank or dummy load as follows:

1/2 load - one hour

Full load - two hours

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#### 3.2.4 MEASUREMENT AND PAYMENT

The quantity of standby diesel engine generating set shall be measured and paid for by the number of sets supplied, installed and certified by the Engineer to have passed the quality and operation test and for full payment. The set shall include accessories and other complimentary equipment and parts necessary for satisfactory performance of the above mentioned set.

The quantity of above ground fuel tank shall be measured and paid for by the number of set of fuel tank supplied, installed and accepted by the Engineer. Payment shall include cost of concrete work, fuel tank, plumbing work and all valves and gauge necessary including the supply of fuel transfer pump and all the necessary plumbing and electrical works. Payment above shall include the cost of furnishing materials, supplies, labor, equipment, tools including accessories and complimentary electrical equipment and other incidentals and subsidiary work necessary to complete the installation, and certified by the Engineer for full payment

## 3.3 OVERHEAD ELECTRICAL WORKS 3.3.1 GENERAL

#### 3.3.1.1 GENERAL REQUIREMENTS

Section 7.1 "Electrical General Requirements" applies to this section with additions and modifications specified herein.

7.3.1.2 SUBMITTALS

Submit the following information for approval.

- 1. Catalog Information
- a. Conductor (list each size and type)
- b. Insulator (list each size and type)

#### 3.3.2 MATERIAL REQUIREMENTS

#### 3.3.2.1 MATERIALS

All materials shall be new and shall conform with the standard of Underwriter's Laboratory (UL), the latest edition of Philippine Electrical Code, the local utility company and other local enforcing authority. Samples of any material shall be submitted to the Engineer for approval prior to installation.

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#### 3.3.2.2 POLES

Unless otherwise indicated on the Drawings, creosoted wood poles shall be used. Provide at least two (2) secondary rack insulators on each new poles and one (1) on the existing wherein termination of wires are to be made. Provide messenger wire if necessary. Install the racks at least one

(1) meter from the top of the poles or as required to site conditions.

3.3.2.3 CONDUCTORS

Overhead secondary conductors shall be of recent manufacture and no case shall be more than six (6) months old. Any conductor that shows sign of deterioration within one (1) year from final acceptance of work shall be replaced by the Contractor at his own expense.

#### 3.3.3 EXECUTION

3.3.3.1 INSTALLATION

Provide overhead pole line installation conforming to the requirements of Philippine Electrical Code (PEC), and the local enforcing authority. 1. Pole Setting

Pole holes shall be at least as large at the top as at the bottom and shall be large enough to provide 100 mm clearance between the pole and the side of the hole.

a. Unless otherwise indicated on the Drawings, pole setting depths all be as follows:

#### Length of Pole Setting in Soil Setting in Solid Rock (m) (m) (m)

10 1.7 (5.5 ft) 1.04 (3.5 ft)

b. Setting in soil depths shall apply where pole holes are in soil, and or gravel or any combination of these; where the soil layer over solid rock is more than 600 mm deep; where the hole in solid rock is not substantially vertical; or where the diameter of the hole at the surface of the rock exceeds twice the diameter of the pole at the same level. At corners, dead ends and other points of extra strain, poles 10 meters or more shall be set 150 mm deeper.

c. Setting in solid rock shall apply where poles are to be set in solid rock and where the hole is substantially vertical of an

approximately uniform diameter and large enough to permit the use of tamping bars the full depth of the hole.

d. Where there is a layer of soil 600 mm or less in depth over solid rock, the depth of the hole shall be the depth of the soil in addition to the depth specified under "Setting in solid rock" provided, however, that such depth shall not exceed the depth specified under "Setting in soil."

e. On sloping ground, always measure the depth of the hole from the low side of the hole.

f. Thoroughly tamp pole backfill for the full depth of the hole and mound the excess fill around the pole.

g. Provide plastic pole caps with 6.4 mm sealing rings and four screwing tabs. Fill sealing area with sealing compound to the level of the sealing ring, place on pole top and screw each tab down with a 32 mm long screw.

2. Conductors

Conductors shall be handled with all necessary care to prevent nicking, kinking, ganging, flattening or otherwise deforming or weakening the conductor or impairing its conductivity and insulation resistivity. Remove all damaged sections of conductor and splice the conductor. a. Conductor splices, as installed shall exceed the ultimate rated strength of the conductor and shall be of the type recommended by the conductor manufacturer. No splice shall be permitted within

3 meters of any support.

b. Ties on insulators shall be tight against the conductor and insulator and end shall be turned down flat against the conductor so that no wire ends project.

c. Existing conductors to be reinstalled or re sagged shall be strung to "Final" sag table values for the particular conductor type and size

involved.

d. String new conductors to "Initial" sag table values recommended by the manufacturer for the conductor type and size of conductor and ruling span indicated.

e. Dead end fittings, clamp, or compression type shall conform to the written recommendations of the conductor manufacturer and shall develop the full ultimate strength of the conductor.

f. Make copper connections to any other materials using only splices, connectors, lugs, or fittings designed for that specific purposes. Submit the manufacturer's directions for applying these fittings for reference and one additional copy maintained at the job site for the use of the inspector.

g. All conductors shall be cleaned thoroughly by wire busing before splicing.

3. Taps and Jumpers

a. Jumpers and other leads connected to the line conductors shall have sufficient slack to allow free movement of the conductors. Where slack is not shown on the drawings it will be provided by at least two bends in a vertical plane, or one in a horizontal plane, or the equivalent.

#### 3.3.4 MEASUREMENT AND PAYMENT

The work under this Section shall be measured either by lengths, pieces, set and linear meters actually placed and installed as shown on the approved drawings.

Measurement and payment for poles shall be by the number of set of poles including the necessary accessories shown on the drawings for each type of pole supplied, delivered to site, installed, tested, commissioned, and accepted by the Engineer.

All works performed and measured and as provided for in the Bill of Quantities shall be paid or at the Contract Unit Price which payment shall constitute full compensation including labor, material, tools, equipment and incidentals necessary whether shown on the drawings or not but necessary for the successful completion and operation of the system.

## 3.4 UNDERGROUND ELECTRICAL WORKS 3.4.1 GENERAL

#### 3.4.1.1 GENERAL REQUIREMENTS

Section 7.1, "Electrical General Requirements" applies to this section with additions and modifications specified herein.

#### 3.4.1.2 SUBMITTALS

Submit the following information for approval: 454

- 1. Manufacturer's Data and Shop Drawings:
- a. Conduit
- b. Handholes
- c. Electrical Cables
- 2. Certificates:
- a. Materials and Equipment:
- 1. Cables
- 2. Conduit

#### 3.4.2 MATERIAL REQUIREMENTS

3.4.2.1 MATERIALS AND EQUIPMENT

Materials and equipment shall conform to the respective specifications and standards and to the specifications herein. Electrical ratings shall be as indicated.

1. Conduit:

a. Rigid Plastic Conduit: UL 651, Schedule 40 PVC.

b. Rigid Steel Conduit (RSC): Hot dip galvanized.

c. Intermediate Metal Conduit: UL 1242.

2. Fittings and Outlet Boxes:

a. PVC Fittings: UL 651.

b. Fittings for Metal Conduit: UL 514B. Ferrous fittings shall be

hot dip galvanized in accordance

with UL 514.

Fittings for RSC: shall be threaded type.

Split couplings are not acceptable.

3. Tape:

UL 510. Plastic insulating tape shall be capable of performing in a continuous temperature environment of 80°C.

4. Power Wire and Cable:

a. Wire and Cable Conductor Sizes:

Wire and cable conductor sizes are designated by square millimeters. Conductors shall be copper. Insulated conductors shall bear the date of manufacture imprinted on the wire insulation with other identification. Wire and cable manufactured more than 6 months before delivery to the job site shall not be used. Provide conductor identification within each enclosure where a tap, a splice or a termination is made.

5. Wire Conformation:

Provide wires conforming to UL 83. Only wires with "W" in the type designation shall be used in wet or damp locations.

a. 600 Volt Wires and Cables:

Conductor sizes are indicated by square millimeters (mm<sub>2</sub>) for copper conductors. Insulated wires and cables manufactured more than six months prior to delivery shall not be used.

6. Connector and Terminals:

a. Wire Connectors and Terminals for use with Copper Conductors: UL-486A.

7. Pull Wire:

Pull wire shall be 2.0 mm hot-dip galvanized steel or plastic having a minimum tensile strength of 90 kg in each empty duct. A minimum of 300 mm of slack shall be left at each extremity of pull wires.

8. Grounding and Bonding Equipment:

Shall conform to UL 467.

9. Underground Structures:

Handholes shall have a smooth trowel finish for floors and horizontal surfaces. Top and bottom shall consist of reinforced concrete. Walls shall consist of concrete hollow blocks. Bottom shall be monolithic concrete construction. Duct entrances and windows shall be located near the corners of structures to facilitate cable racking. Covers shall fit the frames without undue play. Steel and iron shall be formed to shape and size with sharp lines and angles. Castings shall be free from warp and blow holes that may impair their strength or <sup>456</sup>

appearance. Exposed metal shall have a smooth finish and sharp lines and arises. Provide all necessary brackets. Set pulling-in irons and other built-in items in place before depositing concrete. A pullingin iron shall be installed in the wall opposite each duct line entrance. The words "Electric" shall be cast in the top face of all handhole covers.

a) Drainage Pipe and Fittings:

Cast-iron, extra strength. Drains shall be cast-iron, coated or uncoated, plain pattern, bottom outlet with perforated or slotted hinged cover.

#### 3.4.3 EXECUTION

3.4.3.1 INSTALLATION

Underground cable installation shall conform to PEC, NFPA 70 and ANSI C2.

1. Concrete:

Concrete for electrical requirements shall be at least [21 MPa (3000 psi)] concrete with 19 mm maximum aggregate.

2. Earthworks:

Excavation, backfilling, and pavement repairs for electrical requirements shall conform to the requirements of Section 4.2, "Excavation and Backfilling for Buildings."

3. Concrete Hollow Block Handholes:

Provide concrete hollow block handholes as indicated. Masonry works shall conform to the requirements of Section 4.5, "Masonry." a. Ground Rods:

In each electrical handhole, at a convenient point close to the wall, a 20 mm by 3.0 meter copper-clad steel ground rod shall be driven into the earth before the floor is cast so that approximately 100 mm of the ground rod will extend above the handhole floor.

b. Handhole Grounding:

Ground rods installed in electrical distribution system handholes shall be properly connected to the cable shielding, metallic sheaths, and armor at each cable joint or splice by means of 8.0 <sup>457</sup>

mm<sub>2</sub> or equivalent braided tinned copper wire. Connections to metallic cable sheaths shall be by means of tinned terminals soldered to ground wires and to cable sheaths. Care shall be taken in soldering not to damage metallic cable sheaths or shields. Ground rods shall be protected with a double wrapping of

pressure-sensitive plastic tape for a distance of 50 mm above and 150 mm below concrete penetrations. Ground wires shall be neatly and firmly attached to handhole walls and the amount of exposed bare wire shall be held to a minimum.

4. Underground Ducts with Concrete Encasement:

Construct underground duct lines of individual conduits encased in concrete. Except where rigid galvanized steel conduit is indicated or specified, the conduit shall be of Schedule 40 PVC. Do not mix the kinds of conduit used in any one duct bank. Ducts shall be as indicated on the drawings. The concrete encasement surrounding the bank shall be rectangular in cross section and shall provide at least 76 mm of concrete cover for ducts.

a. The top of the concrete envelope shall not be less than 600 mm below grade.

b. Duct lines shall have a continuous slope downward toward handholes and away from buildings with a pitch of not less than 76 mm in 30 meters. Except at conduit risers, accomplish changes in direction of runs exceeding a total of 10 degrees, either vertical or horizontal, by long sweep bends having a minimum radius of curvature of 7.6 meters. Sweep bends may be made up of one or more curved or Straight sections or combinations thereof. Manufactured bends shall have a minimum radius of 457 mm for use with conduits of less than 80 mm in diameter and a minimum radius of 900 mm for ducts of 80 mm in diameter and larger.

c. Terminate conduits in end-bells where duct lines enter handholes. Separators shall be of precast concrete, high impart polystyrene, steel, or any combination of these. Stagger the joints of the conduits by rows and layers so as to provide a duct line having a maximum strength. During construction, protect partially completed duct lines from the entrance of debris such as mud, sand and dirt by means of suitable conduit plugs. As each section of a duct line is completed from handhole, draw a brush through having the diameter of the duct and having stiff bristles until the conduit is clear of all particles of earth, sand, and gravel then immediately install conduit plugs.

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5. Cable Pulling:

Test duct lines with a handhole and thoroughly swab out to remove foreign materials before the pulling of cables.

Pull cables down grade with feed-in points at the handholes or buildings at the highest elevation. Use flexible cable feeds to convey cables through the handhole openings and into the duct runs. Cable slack shall be accumulated at each handhole where space permits by training the cable around the interior to form one complete loop. Minimum allowable bending radii shall be maintained in forming such loops.

a. Lubricants for assisting in the pulling of jacketed cables shall be those specifically recommended by the cable manufacturer. Cable lubricants shall be soapstone, graphite, or talc for rubber or plastic jacketed cables. The lubricant shall not be deleterious to the cable sheath, jacket, or outer coverings.

b. Cable pulling tensions shall not exceed the maximum pulling tension recommended by the cable manufacturer.

c. Secondary cable runs, 600 volts and less, in non-metallic duct conduit shall, although not indicated, include and insulated copper equipment grounding conductor sized as required by the rating of the overcurrent device supplying the phase conductors.

d. Installation of Cables in Handholes:

Do not install cables utilizing the shortest route, but route along those walls providing the longest route and the maximum spare cable lengths. All cables shall form to closely parallel walls, not to interfere with duct entrances, and support on brackets and cable insulators at a maximum of 457 mm. Support cable splices in underground structures by racks on each side of the splice. Locate splices to prevent cyclic bending in the spliced sheath. 6. Grounding:

Non-current carrying metallic parts associated with electrical equipment shall have a maximum resistance to solid "earth" ground not exceeding the following values:

Grounds in handholes

Grounded secondary distribution system neutral and non-current carrying metal parts associated with

distribution systems and grounds not otherwise covered.

10 ohms

25 ohms

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a. Grounding electrodes shall be cone pointed driven ground rods driven full depth plus 150 mm, installed when indicated to provide
an earth ground of the value stated for the particular equipment being grounded.

b. Make grounding connections which are buried or otherwise normally inaccessible, and excepting specifically those connections for which access for periodic testing is required by exothermite type process. Make thermit welds strictly in accordance with the weld manufacturer's written recommendations. Welds which have "puffed up" of which show convex surfaces indicating improper cleaning are not acceptable. No mechanical connector is required at thermit weldments.
c. In lieu of an exothermic type process, a compression ground grid connector of a type which uses hydraulic compression tool to provide the correct circumferential pressure may be used. Tools and dies shall be as recommended by the manufacturer. An embossing die code or other standard method shall provide visible

indication that a connector has been adequately compressed on the ground wire.

d. Grounding conductors shall be bare soft-drawn copper wire minimum unless otherwise indicated or specified.

e. Connect copper-clad steel ground rods only to insulated TW copper ground conductor and weld the connection. Insulate the entire area of the rod in the vicinity of the weld and the connecting wire and seal against moisture penetration.

#### 3.4.3.2 FIELD TESTS

As an exception to requirements that may be stated elsewhere in the contract, the Engineer shall be given a five (5) working day notice prior to each tests.

1. Distribution Conductors 600 Volt Class:

Test all 600 volt class conductors to verify that no short circuits or accidental grounds exist. Make tests using an instrument which applies a voltage of approximately 500 volts to provide a direct reading in resistance.

2. Test Report

Grounding electrodes and systems (identify electrodes and systems, each test)

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#### 3.4.4 MEASUREMENT AND PAYMENT

3.4.4.1 GENERAL

Payment for all items stated and described in this Section shall be full compensation for all labor, materials, tools and equipment, test and all incidentals necessary whether shown on the Drawings or not but necessary for the proper operation of the system.

#### 3.4.4.2 HANDHOLES

The quantity of handholes with cover shall be measured and paid for by the number of units constructed/installed complete and certified by the Engineer for full payment. Excavation and backfilling shall be deemed included in the cost of each unit of handhole.

#### 3.4.4.3 DUCT BANK

The quantity of duct bank to be measured and paid for shall be in linear meters of each type of duct bank installed and completed including earthworks, conduits, concrete and reinforcing steel bars, if reinforced.

3.4.4.4 SERVICE ENTRANCE

Lump sum price will be allocated for providing service entrance as shown on the Drawings. Payment shall be full compensation for all earthworks, concrete, rebars, conduits and other incidental and necessary fixtures needed for the complete installation of the service entrance except conductor wire which will be measured and paid for separately.

#### 3.4.4.5 CONDUCTOR WIRE

The quantity of conductor wire installed to be measured and paid for shall be in linear meters installed complete including splicing and other appurtenant items and incidentals and certified by the Engineer for full payment.

#### 3.4.4.6 CONDUITS

The quantity of conduits shall be measured and paid for in linear meter of each size and type of conduit materials installed complete including joints, bends, fittings, locknut bushing, supports, adaptor, coupling and all other incidentals and appurtenances. It shall be certified by the Engineer for full payment.

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# 3.4.4.7 CONCRETE ENCASEMENT

The quantity of concrete encasement for conduits shall be measured and paid for in cubic meter of concrete placed and accepted by the Engineer. Payment shall be full compensation for all labor, material, and equipment and other incidental necessary to complete the work. Earthwork shall be included in the unit cost of concrete encasement.

#### 3.4.4.8 GROUNDING SYSTEM

The quantity of ground electrode shall be measured and paid for in number of electrodes supplied, installed, tested and accepted by the Engineer for payment.

The quantity of counter poise wire shall be measured and paid for in meter of counter poise wire supplied, installed and accepted by the Engineer for payment.

#### 3.5 INTERIOR WIRING SYSTEMS

#### 3.5.1 GENERAL

Section 4.1, "Electrical General Requirements," applies to this section with additions and modifications specified herein.

- 3.5.1.1 SUBMITTALS
- 1. Shop Drawings: Submit for the following:
- a. Panelboards
- 2. Manufacturer's data:
- Submit for the following:
- a. Circuit breakers
- b. Switches
- c. Conduit and fittings (each type)
- d. Ground rods
- e. Device plates
- f. Insulated conductors
- g. Outlet and junction boxes

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3. Test Reports: Submit test results for approval in report form.

- a. 600Volt wiring test
- b. grounding system test
- 4. Quality Assurance

In each standard referred to herein, consider the advisory provisions to be mandatory, as though the word "shall" has been substituted for "should" wherever it appears. Interpret reference in these standards to "authority having jurisdiction," or words of similar meaning, to mean Engineer.

# 3.5.2 MATERIALS AND EQUIPMENT REQUIREMENTS

Materials, equipment, and devices shall, as minimum, meet requirements of UL, where UL standards are established for those items, and requirements of NFPA 70. All items shall be new.

3.5.2.1 CONDUIT AND FITTINGS

1. Rigid Steel Conduit (RSC): Hot dip galvanized: ANSI C80.1.

2. Flexible Metal Conduit: UL 1.

a. Liquid Tight Flexible Metal Conduit (Steel): UL 360.

3. Rigid Plastic Conduit: PVC schedule 40 in accordance with UL 651.

4. Fittings for Metal Conduit, and Flexible Metal Conduit: UL 514B.

Ferrous fittings shall be hot dip galvanized in accordance with UL 514. a. Fittings for RSC: Shall be threaded-type. Split couplings are not acceptable.

b. Fittings for Rigid Nonmetallic Conduit: NEMA TC3.

3.5.2.2 OUTLET BOXES AND COVERS

UL 514, hot dip galvanized for ferrous metal.

3.5.2.3 CABINETS, JUNCTION BOXES, AND PULL BOXES (WITH VOLUME GREATER THAN 100 CUBIC INCHES)

UL 50, hot dip. 463

3.5.2.4 WIRES AND CABLES

Wires and cables shall meet applicable requirements of PEC, NFPA 70 and UL for types of insulation, jackets, and conductors specified or indicated. Wires and cables manufactured more than 6 months prior to date of delivery to site shall not be used.

1. Conductors: Conductor 3.5mm<sup>2</sup> and smaller shall be solid, 5.5 mm<sup>2</sup> and larger shall be stranded. All conductors indicated shall be copper.

a. Equipment Manufacturer Requirements:

If manufacturer's equipment requires copper conductors at the terminations or requires copper conductors to be provided

between components of equipment, provide copper conductors or

splices, splice boxes, and other work required to satisfy

manufacturer's requirements.

b. Minimum Conductor Sizes:

Minimum size for branch circuits shall be 3.5 mm<sub>2</sub>.

2. Color Coding

For 240V, 60Hz, 12, 2 wire

Phase A - Black

Phase B - Red

Grounding - Green

For 480/277 volt, 3 phase

Phase A - brown

Phase B - orange

Phase C - yellow

Grounding - Green

3. Insulation:

Unless specified for indicated otherwise or required by PEC and NFPA 70, power and lighting wires shall be 600volt, Type THHN or THW.

4. Bonding Conductors:

ASTM B1, solid bare copper wire for sizes 8.0 mm2 and smaller diameter; ASTM B8, Class B, stranded bare copper wire for sizes 14 mm2 and larger diameter.

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3.5.2.5 SPLICES AND TERMINATION COMPONENTS

UL 486A as applicable, for wire connectors and UL 510 for insulating tapes. Connectors for 5.5 mm<sub>2</sub> and smaller diameter wires shall be insulated, pressure-type in accordance with UL 486A or UL 486C (twist-on splicing connector).

a) Provide solderless terminal lugs on stranded conductors.

#### 3.5.2.6 DEVICE PLATES

Provide UL listed, one-piece device plates for outlets and fittings to suit the devices installed. For metal outlets and fittings, plates on unfinished walls and on fittings shall be of zinc-coated sheet steel or cast metal having round or bevelled edges. Plates on finished walls shall be urea or phenolic, minimum 2.5mm wall thickness. Plates shall be same color as receptacle or toggle switch with which they are mounted. Screws shall be machine type with countersunk heads in color to match finish of plate. Use of sectional-type device plates will not be permitted. Plates installed in wet locations shall be gasketed and UL listed for "wet locations."

#### 3.5.2.7 SWITCHES

1. Toggle Switches:

Totally enclosed with bodies of thermosetting plastic and mounting strap. Wiring terminal shall be screw-type, side-wired. Switches shall be rated quiet-type AC only, 250 volts, with current rating and number of poles indicated.

2. Receptacles

UL 498 and NEMA WD 1, heavy duty, grounding type. Ratings and configurations shall be as indicated. Wiring terminals shall be screwtype, side-wired. Connect grounding pole to mounting strap.

#### 3.5.2.8 SPECIAL PURPOSE RECEPTACLES:

Receptacles serving as indicated are special purpose. Provide ratings as indicated. Furnish one matching plug with each receptacle.

#### 3.5.2.9 PANELBOARDS

UL 67 and UL 50. Panelboards for use as service disconnecting means shall additionally conform to UL 869. Panelboards shall be circuit breaker equipped. Design shall be such that individual breakers can be removed without disturbing adjacent units or without loosening or removing supplemental insulation supplied as means of obtaining clearances as  $\frac{465}{100}$ 

required by UL. Where "space only" is indicated, make provisions for future installation of breaker sized as indicated. Panelboard locks shall be keyed same. Directories shall be typed to indicate load served by each circuit and mounted in holder behind transparent protective covering.

1. Panelboard Buses:

All buses shall be copper support bus bars on bases independent of circuit breakers. Main buses and back pans shall be designed so that breakers may be changed without machining, drilling, or lapping. Provide separate ground bus per UL 67 for connecting grounding conductors; bond to steel cabinet.

2. Circuit Breakers:

Ambient-compensated thermal magnetic-type solid state-type with interrupting capacity of 10,000 amperes symmetrical minimum. Breaker terminal shall be UL listed as suitable for type of conductor provided. Plug-in circuit breakers are unacceptable.

a. Multi-pole Breakers

Provide common trip-type multi-pole breakers with single operating handle. Breaker design shall be such that an overload in one pole automatically causes all poles to open.

# 3.5.2.10 ENCLOSED CIRCUIT BREAKERS

UL 489. Individual moulded case circuit breakers with voltage and continuous current ratings, number of poles, overload trip setting, and short circuit interrupting rating as indicated. Enclosure type as indicated.

#### 3.5.2.11 REEFER VAN OUTLET

1. The refrigerated van power center shall be to service various container van of different origin or countries including Japan, USA, Australia and other European countries.

2. Socket outlet for 250 volts shall be capable of handling current up to 60 amperes, 3 phase. Socket outlet shall be R-24604B-60 or R6-W0602B-60 series I or approved equal.

3. Connectors shall be capable of servicing van socket and plug with ease and simple operation. If, required, socket adaptor shall be type P-24604 P-4 and C-W4332B-3h and C-W4501B-A or approved equal.

4. Plug shall be capable of insertion with the socket outlet in smooth operation. Mechanical interlock, switch and circuit breaker shall be provided for safety operation of reefer van outlets. Plug shall be type P-W4604 P-A or approved equal.

5. The socket outlet for 250 volts, 3 phase shall be Series 1 and shall meet the requirements of ISO for the container industry for both 250V and 460 volts, 3 phase.

6. For 460 volts, socket outlet shall be Series II, 32 amperes, 3 phase (C.E.E., ISO). This device shall be in accordance with C.E.E.

standards, IEC as well as ISO. Voltage configuration shall be capable for 380 to 440 VAC.

7. The socket outlet shall have circuit breaker or switch and C.E.E. 3h contact position. This device shall be non-interchangeable type and keyway shall have 3 o'clock position. The socket outlet type shall be R-W4332B-3h and R7-W0302B-3h and P-W4333p-3h or approved equal.

8. Connector shall be of smooth operation with type no. C-24332B-3h, C-W4315B-A and P-208295 or approved equal.

9. Plug shall be of type, P-W4333p-3h, P-W4392P-A and P-207627-P.
10. All the above devices shall be mechanical interlocked that could not be closed unless the plug is fully inserted.

#### 3.5.2.12 GROUNDING AND BONDING EQUIPMENT

UL 467. Ground rods shall be copper-clad steel, with minimum diameter of 20mm and minimum length of 3 meters.

3.5.2.13 NAMEPLATES

Provide as specified in Section 7.1 "Electrical General Requirements."

# 3.5.3 EXECUTION

3.5.3.1 INSTALLATION

Electrical installation shall conform to requirements of PEC, NFPA 70 and to requirements specified herein.

1. Underground Service:

Underground service conductors and associated conduit shall be continuous from service entrance equipment to outdoor power system connection. 467

2. Wiring Methods:

Provide insulated conductors installed in conduits, except where specifically indicated or specified otherwise or required by PEC and NFPA 70 to be installed otherwise. Provide insulated, green equipment grounding conductor in feeder and branch circuits, including lighting circuits. Provide insulated, green colored conductor for grounding conductors installed in conduits or raceways.

a. Service Entrance Conduit: Rigid Steel Conduit (RSC), conduit underground: PVC schedule 40. The underground portion shall be encased as indicated.

b. Underground Conduit (other than service entrance) PVC where non-metallic conduit is used, shall be converted to plastic – coated rigid steel conduit before rising through floor slab; plastic coating shall extended at least 152mm above floor.

c. Conduit in Floor Slabs: RSC

3. Conduit Installation:

Unless indicated otherwise, conceal conduit within finished walls, ceilings, and floors. Keep conduit a minimum of 150mm away from parallel runs of flues and steam or hot water pipes. Install conduit parallel with or at right angles to ceilings, walls, and structural members where located above accessible ceilings and where conduit will be visible after completion of project. Run conduits in crawl space under slab as if exposed.

a. Where conduits rise through floor slabs, curved portion of bends shall not be visible above finish slab.

b. Conduit Support:

Support conduit by pipe straps, wall brackets, hangers, or ceiling trapeze. Fasten by wood screws to wood; by toggle bolts on hollow masonry units; by concrete inserts or expansion bolts on concrete or brick; and by machine screws, welded studs, or spring tension clamps on steelwork. Threaded C-clamps may be used on rigid steel conduit only. Do not weld conduits or pipe straps to steel structures. Load applied to fasteners shall not exceed one fourth proof test load. Fasteners attached to concrete ceilings shall be vibration resistant and shock resistant. Holes cut to depth of more than 40mm in reinforced concrete beams or to depth of more than 20mm in concrete joints shall not cut main reinforcing bars. Fill unused holes. In partitions of light steel construction, use sheet metal screws. In suspended-ceiling construction, run 468

conduit above ceiling. Do not support conduit by ceiling support system. Spring-steel fasteners may be used for lighting branch circuit conduit supports in suspended ceilings in dry locations. c. Make changes in direction of runs with symmetrical bends or cast metal fittings. Make field-made bends and offsets with hickey or conduit-bending machine. Do not install crushed or deformed conduits. Avoid trapped conduits. Prevent plaster, dirt or trash from lodging in conduits, boxes, fittings, and equipment during construction. Free clogged conduits of obstructions.

d. Install pull wires in empty conduits in which wire is to be installed by others. Pull wire shall be plastic having minimum 91 kgs. tensile strength. Leave minimum 300mm of slack at each end of pull wire.

e. Conduit Installed in Concrete Floor Slabs:

Locate so as not to adversely affect structural strength of slabs. Install conduit within middle one-third of concrete slab. Do not stack conduits. Space conduits horizontally at a minimum of three diameters, except at cabinet locations. Curved portions of bends shall not be visible above the finish slab. Increase slab thickness as necessary to provide minimum 25 mm cover over conduits. Where embedded conduits cross expansion joints, provide suitable watertight expansion fittings and bonding jumpers. Conduit larger than 25mm trade size shall be parallel with or at right angles to main reinforcement; when at right angles to the reinforcements, the conduit shall be closed to one of the supports of the slab. f. Fasten conduits to sheet metal boxes and cabinets with two locknuts where required by PEC and NFPA 70, where insulated bushings are used, and where bushing cannot be brought into firm contact with the box; otherwise, use minimum single locknut and bushing. Locknuts shall have sharp edges for digging into wall of metal enclosures. Install bushings on ends of conduits, and provide insulating type where required by PEC and NFPA 70. g. Flexible Connection:

Provide flexible connection of short length, 1.8 meters maximum for recessed and semi-recessed lighting fixtures.

4. Boxes, Outlets, and Supports:

Provide boxes in wiring or raceway systems wherever required for pulling of wires, making connections, and mounting of devices or fixtures. Boxes for metallic raceways shall be cast-metal, hub-type <sup>469</sup>

when located in wet locations, when surface mounted on outside of exterior surfaces, when installed exposed up to 2.1 meters above interior floors and walkways, or when installed in hazardous areas. Boxes in other locations shall be sheet steel, except that aluminum boxes may be used with aluminum conduit. Each box shall have the volume required by PEC and NFPA 70 for the number of conductors enclosed in the box. Boxes for mounting lighting fixtures shall not be less than 100 mm<sub>2</sub> or octagonal, except that smaller boxes may be installed as required for fixture configurations as approved. Boxes for use in masonry-block or tile walls shall be square-cornered, tile-type, or standard boxes having square-cornered, tile-type covers. Provide gaskets for cast-metal boxes installed flush with outside of exterior surfaces. Provide separate boxes for flush or recessed fixtures when required by fixture terminal operating temperature. Fixtures shall be readily removable for access to boxes unless ceiling access panels are provided. Support boxes and pendants for surface-mounted fixtures on suspended ceilings independently of ceiling supports, or make adequate provisions for distributing load over ceiling support members. Fasten boxes and supports with wood screws on wood, with bolts and expansion shields on concrete or brick, with toggle bolts on hollow masonry units, and with machine screws or welded studs on steel. In open overhead spaces, cast boxes threaded to raceways need not separately supported except where used for fixture support; support sheet metal boxes directly from building structure or by bar hangers. Where bar hangers are used, attach bar to raceways on opposite sides of box, and support raceway with approved type fastener maximum 600mm from the box. When penetrating reinforced concrete members, avoid cutting reinforcing steel.

a. Boxes for use with raceway systems shall be minimum 40mm deep, except where shallower boxes required by structural conditions are approved. Boxes for other than lighting fixture outlets shall be minimum 100mm<sub>2</sub>, except that 100 by 50mm boxes may be used where only one raceway enters outlet.

b. Pull Boxes:

Construct of at least minimum size required by PEC and NFPA 70 of code-gauge aluminum sheet steel except where cast-metal boxes are required in locations specified herein. Furnish boxes with screw-fastened covers. Where several feeders pass through common pull box, tag feeders to indicate clearly electrical characteristics, circuit number, and panel designation. 5. Mounting Heights:

Mount panelboards, and circuit breakers, so height of operating handle at its highest position is maximum 1.8 meters above floor. Mount 470

lighting switches 1.4 meters above finished floor, receptacles 300mm above finished floor and other devices. Measure mounting heights of wiring devices and outlets to center of device or outlet.

6. Conductor Identification;

Provide conductor identification within each enclosure where tap, splice, or termination is made.

7. Splices:

Make splices in accessible locations. Make splices in conductors 5.5 mm2 and smaller diameter with insulated, pressure-type connector. Make splices in conductors 8.0 mm<sub>2</sub> and larger diameter with solderless connector, and cover with insulation material equivalent to conductor insulation.

8. Covers and Device Plates:

Install with edges in continuous contact with finished wall surfaces without use of mats or similar devices. Plaster fillings are not permitted. Plates shall be installed with alignment tolerance of 3mm. Use of sectional-type device plates are not permitted. Plates installed in wet locations shall be gasketed.

9. Electrical Penetrations:

Openings around electrical penetrations through fire resistance-rated walls, partitions, floors, or ceilings shall be sealed to maintain fire resistive integrity as tested per ASTM E 814.

10. Reefer Van Outlets

Installation of the reefer van outlets and other related accessories shall be in accordance with the approved Drawings accepted by the Engineer.

11. Grounding and Bonding:

In accordance with PEC and NFPA 70. Ground all exposed, noncurrentcarrying metallic parts of electrical equipment, metallic raceway systems, grounding conductor in metallic and non-metallic raceways, and conductor of wiring systems. Make ground connection to driven ground rods on exterior of building. Where ground fault protection is employed, ensure that connection of ground does not interfere with correct operation of fault protection.

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a. Grounding Conductor:

Provide insulated, green equipment grounding conductor in feeder and branch circuits, including lighting circuits. Grounding conductor shall be separate from electrical system neutral conductor. Provide insulated, green conductor for grounding conductors installed in conduit or raceways.

b. Resistance:

Maximum resistance-to-ground of grounding system shall not exceed 25 ohms, contact the Engineer for further instructions.

3.5.3.2 FIELD QUALITY CONTROL:

Furnish test equipment and personnel and submit written copies of test results. Give the Engineer five (5) working days notice prior to each test.

1. Devices Subject to Manual Operation:

Each device subject to manual operation shall be operated at least five times, demonstrating satisfactory operation each time.

2. Test on 600Volt Wiring:

Test 600Volt wiring to verify that no short circuits or accidental grounds exist. Perform insulation resistance tests on wiring No. 6 AWG and larger diameter using instrument which applies voltage of approximately 500 volts to provide direct reading of resistance. Minimum resistance shall be 25,000 ohms.

3. Grounding System Test:

The Grounding system shall be tested to ensure continuity and resistance to ground is not excessive. Test each ground rod for resistance to ground before making connections to rod; tie grounding system together and test for resistance to ground. Make resistance measurements in dry weather, not earlier than 48 hours after rainfall. Submit written results of each test to the Engineer and indicate location of rods as well as resistance and soil conditions at the time measurements were made.

# 3.5.4 MEASUREMENT AND PAYMENT

1. The work under this Section shall be measured either by lengths, pieces, pairs, set and linear meters actually placed and installed as shown on the approved Drawings.

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2. All works performed and measured and as provided for in the Bill of Quantities shall be paid or at the Contract Unit Price which payment shall constitute full compensation including labor, material, tools, equipment and incidentals necessary to complete this Section.

#### 3.6 INTERIOR LIGHTING 3.6.1 GENERAL

#### 3.6.1.1 GENERAL REQUIREMENTS

Section 7.1, "Electrical General Requirements," applies to this section, with the additions and modifications specified herein.

3.6.1.2 DESCRIPTION OF WORK

The work includes providing lighting fixtures for interior use, including accessories mounted on the exterior surfaces of buildings. Materials not normally furnished by manufacturers of these devices are specified in Section 7.5, "Interior Wiring Systems."

3.6.1.3 SUBMITTALS

Data, shop drawings showing mounting heights, and reports shall employ the terminology, classifications, and methods prescribed by the IES Lighting Handbook, as applicable, for the lighting system specified.

1. Manufacturer's Data:

a. Lighting fixtures, including lamps and ballasts

# 3.6.2 MATERIAL REQUIREMENTS

3.6.2.1 FLUORESCENT LIGHTING FIXTURES

UL 1570 except lighting fixtures for damp and wet locations shall conform to UL 57.

1. Fluorescent Lamps:

Provide the number, type and wattage indicated.

2. Fluorescent Ballasts:

UL 935, ANSI C82.1, and shall be labeled Certified Ballast

Manufacturers (CBM) certified by Electrical Testing Laboratories (ETL). Ballasts shall be high power factor type and shall be designed to 473

operate on the voltage system to which they are connected. Ballasts shall be Class P and shall have sound rating "A". Fixtures and ballasts shall be designed and constructed to limit the ballast case temperature to 90 degrees Celsius (C) when installed in an ambient temperature of 40 degrees C.

#### 3.6.2.2 COMPACT FLUORESCENT FIXTURES

Compact fluorescent fixtures shall be manufactured specifically for compact fluorescent lamps with ballasts integral to the fixture. Providing assemblies designed to retrofit incandescent fixtures is prohibited except when specifically indicated for renovation of existing fixtures. Fixtures shall use lamps as indicated.

#### 3.6.2.3 RECESS AND FLUSH-MOUNTED FIXTURES

Provide types that can be relamped from the bottom. Trim for the exposed surface of flush-mounted fixtures shall be as indicated.

#### 3.6.2.4 SUSPENDED FIXTURES

Provide hangers capable of supporting twice the combined weight of the adjoining fixtures. Provide with swivel hangers to ensure a plumb installation. Hangers shall be cadmium-plated steel with swivel-ball tapped for the conduit size indicated. Hangers shall allow fixtures to swing within an angle of 20 degrees. Brace pendants 1.2 meters or longer to limit swinging. Single-unit suspended fluorescent fixtures shall have twin-stem hangers. Multiple-unit or continuous row fluorescent fixtures shall have a tubing or stem for wiring at one point and a tubing or rod suspension provided for each unit length of chassis, including one at each end. Rods shall be a minimum 5mm diameter.

#### 3.6.2.5 POWER HOOK FIXTURE HANGERS

Provide UL listed assembly including through-wired power hook housing, interlocking plug and receptacle, power cord, and fixture support loop. Power hook housing shall be cast aluminum having two 20mm threaded hubs. Fixture support loop shall be cast aluminum with provisions for accepting 20mm threaded fixture stems. Power cord shall include 400mm of 3-conductor No. 16 Type SO cord.

#### 3.6.3 EXECUTION

#### 3.6.3.1 INSTALLATION

Set lighting fixtures plumb, square, and level with ceiling and walls, in alignment with adjacent lighting fixtures, and secure in accordance with manufacturer's directions and approved shop drawings. The installation <sup>474</sup>

shall meet with the requirements of PEC and NFPA 70. Mounting heights specified or indicated shall be to bottom of fixture for ceiling-mounted fixtures and to center of fixture for wall-mounted fixtures. Obtain approval of the exact mounting for lighting fixtures on the job before installation commence and, where applicable, after coordinating with the type, style, and pattern of the ceiling being installed. Recessed and semi-recessed fixtures may be supported from suspended ceiling support system ceiling tees if the ceiling system support rods or wires are provided at a minimum of four rods or wires per fixture. Do not support fixtures by ceiling acoustical panels. Where fixtures of size less than the ceiling grid are indicated to be

centered in the acoustical panel, support such fixtures independently or with at least two 20mm metal channels spanning, and secured to, the ceiling tees. Provide rods or wires for lighting fixture supports under this section of the specifications. Additionally, for recessed fixtures, provide support clips securely fastened to ceiling grid members, a minimum of one at or near each corner of each fixture.

#### 3.6.3.2 GROUNDING

Ground non-current-carrying parts of equipment as specified in Section 7.5, "Interior Wiring Systems." Where the copper grounding conductor is connected to a metal other than copper, provide specially treated or lined connectors suitable for this purpose.

#### 3.6.3.3 FIELD TESTS

The Contractor will provide electric power required for field tests. 1. Operating Test:

Upon completion of the installation, conduct an operating test to show that the equipment operate in accordance with the requirements of this section.

2. Insulation Resistance Test:

Perform as specified in Section 7.5, "Interior Wiring Systems", both before and after connection of fixtures and equipment.

3. Ground Resistance Tests:

Perform as specified in Section 7.5, "Interior Wiring System." 475

# 3.6.4 MEASUREMENT AND PAYMENT

1. The quantity of interior lighting system to be measured and paid for shall be the number of sets of each lighting fixtures installed including supports and accessories complete as a system and certified by the Engineer for full payment.

2. Payment shall constitute full compensation for all labor, materials, tools and equipment and all necessary test and incidental work needed for the successful operation of all lighting fixtures.

# **3.7 EXTERIOR LIGHTING**

#### 3.7.1 GENERAL

Section 7.1, "Electrical General Requirements," applies to this section, with the additions and modifications specified herein.

#### 3.7.1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1. American Association of State Highway and Transportation Officials (AASHTO)

AASHTO LTS-3 (2006) Structural Supports for Highway Signs, Luminaires and Traffic Signals

2. American National Standards Institute (ANSI)

ANSI C82.4 (1992) Ballasts for High-Intensity-

Discharge and Low-Pressure Sodium

Lamps (Multiple-Supply Type)

ANSI C136.14 (2004) Roadway Lighting Equipment -

Enclosed Side-Mounted Luminaires for

Horizontal-Burning High-Intensity-

Discharge Lamps

3. American Society for Testing and Materials (ASTM)

ASTM A123/A123M (2002) Zinc (Hot-Dip Galvanized)

Coatings on Iron and Steel Products 476 ASTM A153/A153M (2005) Zinc Coating (Hot-Dip) on Iron and Steel Hardware - AASHTO No .: M232 4. Illuminating Engineering Society of North America (IES) IES LHBK (1993) Lighting Handbook, Reference and Application 5. Institute of Electrical and Electronics Engineers. Inc. (IEEE) IEEE C2 (2007; Errata 2007) National Electrical Safety Code (ANSI/IEEE) IEEE C136.3 (2005) Roadway Lighting Equipment -Luminaire Attachments IEEE c136.10 (1996) Roadway Lighting Equipment -Locking-Type Photocontrol Devices and Mating Receptacles - Physical and Electrical Interchangeability and Testing 6. National Electrical Manufacturers Association (NEMA) NEMA C78.41 (2001) Guidelines for Low-Pressure Sodium Lamps NEMA C78.42 (2007) Electric Lamps - Guidelines for **High-Pressure Sodium Lamps** NEMA ICS 2 (2000; Errata 2002; R2005; Errata 2006) Industrial Control and Systems Controllers, Contactors and Overload Relays, Rated Not More Than 2000 Volts AC or 750 Volts DC NEMA ICS 6 (1993; R2006) Industrial Control and Systems Enclosures 7. National Fire Protection Association (NFPA) NFPA 70 (2007) National Electrical Code 8.1.1.8 Underwriters Laboratories Inc. (UL) UL 773 (1995; R 2002) Plug-In, Locking Type Photocontrols for Use with Area Lighting 477 UL 773A (1995; R 2003) Non-industrial Photoelectric Switches for Lighting Control UL 1029 (1994; R 2001) High-Intensity-Discharge Lamp Ballasts 8. Institute of Integrated Electrical Engineer (IIEE) PEC (2002) Philippine Electrical Code 9. Philippine National Standard (PNS) BS (2002) Bureau of Standard

3.7.1.2 DEFINITIONS **3.7.1.2.1** AVERAGE LIFE Time after which 50 percent will have failed and 50 percent will have survived under normal conditions.

**3.7.1.2.2** GROUNDLINE SECTION That portion between 300 mm above and 600 mm below the groundline.

3.7.1.3 SUBMITTALSSubmit the following.1. Shop Drawingsa. Luminaire drawings

- b. Poles
- 2. Product Data
- a. Luminaires
- b. Lamps
- c. Ballasts
- d. Lighting contactor
- e. Photocell switch
- f. Steel poles
- g. Brackets

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- 3. Samples
- a. Luminaires

Submit one sample of each luminaire type, complete with lamp and ballast.

- 4. Test Reports
- a. Test Data for luminaires

3.7.1.4 QUALITY ASSURANCE

3.7.1.4.1 DRAWING REQUIREMENTS

1. Luminaire Drawings

Include dimensions, effective projected area (EPA), accessories, and installation and construction details. Photometric data, including zonal lumen data, average and minimum ratio, aiming diagram, and computerized candlepower distribution data shall accompany shop drawings.

2. Poles

Include dimensions, wind load determined in accordance with AASHTO LTS-3, pole deflection, pole class, and other applicable information.

# 3.7.1.4.2 TEST DATA FOR LUMINAIRES

1. Distribution data according to IES classification type as defined in IES LHBK.

2. Computerized horizontal illumination levels in lux at ground level, taken every 3000 mm. Include average maintained lux level and maximum and minimum ratio.

# 3.7.1.5 DELIVERY, STORAGE, AND HANDLING

3.7.1.5.1 STEEL POLES

Do not store poles on ground. Support poles so they are at least 305 mm above ground level and growing vegetation. Do not remove factory-applied pole wrappings until just before installing pole.

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# 3.7.2 MATERIAL REQUIREMENTS

3.7.2.1 PRODUCT COORDINATION

Products and materials not considered to be lighting equipment or lighting fixture accessories are specified in Section 7.4, "Underground Electrical Works".

# 3.7.2.2 LUMINAIRES

ANSI C136.14 or UL 1572. Provide luminaires as indicated. Provide luminaires complete with lamps of number, type, and wattage indicated. Details, shapes, and dimensions are indicative of the general type desired, but are not intended to restrict selection to luminaires of a particular manufacturer. Luminaires of similar designs, light distribution and brightness characteristics, and of equal finish and quality will be acceptable as approved. 3.7.2.2.1 LAMPS: PROVIDE THE TYPE AND WATTAGE AS INDICATED.

1. Ballasts for High Intensity Discharge (HID) Luminaires UL 1029 and ANSI C82.4, and shall be constant wattage autotransformer (CWA) or regulator, high power-factor type. Provide single-lamp ballasts which shall have a minimum starting temperature of minus 30°C. Ballasts shall be:

a. Designed to operate on voltage system to which they are connected.

b. Constructed so that open circuit operation will not reduce the average life.

HPS ballasts shall have a solid-state igniter/starter with an average life in the pulsing mode of 3500 hours at the intended ambient temperature. Igniter case temperature shall not exceed 90°C.

2. Floodlight Fixtures

Floodlight fixture is in heavy duty weather resistant, a die cast aluminum housing with hinged, removable and gasketed front housing and captive screws for relamping access, integral ballast, optical assembly with provisions for vertically or horizontally mounted lamp, an adjustable aiming stops and built -in rifle sight for daytime aiming, ballast shall be mounted on the back housing and shall be prewired to the lamp socket, terminal board and ignitor or equivalent. 480

HPI-T 1000W lamp are single ended metal halide lamps consisting of a quartz discharge tube , containing high pressure mercury and a mixture of metal halides, which is housed in a hard glass outer envelope , fitted with a standard screw base. They offer a unique combination of a natural white colour appearance, and high luminous efficacy both initially and through their long lives, giving many years of reliable operation, and making them an ideal lamp choice for many applications. The high luminous efficacy reduces the number of luminaries needed, minimizing installation and energy cost, while excellent lumen maintenance and lamp life ensures high maintained illuminance levels and minimal maintenance costs. The colour points is on the black body locus giving a natural white light colour appearance. This combined with good colour rendering makes it easy to distinguish colours and ensures a pleasant ambience and user comfort.

#### 3.7.2.3 LIGHTING CONTACTOR

NEMA ICS 2, electrically held contactor. Contacts shall be rated 240 volts, 20 amperes, and 2 poles. Coils shall be rated 240 volts. Provide in NEMA 3R enclosure conforming to NEMA ICS 6. Contactor shall have silver alloy double-break contacts and shall require no arcing contacts. Provide contactor with hand-off-automatic selector switch. Contactor shall be hermetically sealed.

#### 3.7.2.4 PHOTOCELL SWITCH

UL 773 or UL 773A, hermetically sealed cadmium-sulfide or silicon diode type cell rated 240 volts ac, 60 Hz with single pole double-throw (spdt) contacts for mechanically held contactors rated 1000 watts. Switch shall turn on at or below 30 lux and off at 30 to 100 lux. A time delay shall prevent accidental switching from transient light sources. Provide a directional lens in front of the cell to prevent fixed light sources from creating a turnoff condition.

#### 3.7.2.5 POLES

Provide poles designed for wind loading of [175] km/hr determined in

accordance with AASHTO LTS-3 while supporting luminaires having effective projected areas indicated. Poles shall be anchor-base type designed for use with underground supply conductors. Poles, shall have oval-shaped handhole having a minimum clear opening of 65 by 130 mm. Handhole cover shall be secured by stainless steel captive screws.

# 3.7.2.5.1 STEEL POLES

AASHTO LTS-3. Provide steel poles having minimum 11-gage steel with minimum yield/strength of 331 MPa and hot-dipped galvanized in accordance with ASTM A123/A123M factory finish. Provide a pole 481

grounding connection designed to prevent electrolysis when used with copper ground wire. Base covers for steel poles shall be structural quality hot-rolled carbon steel plate having a minimum yield of 248 MPa.

#### 3.7.2.6 POLE FOUNDATIONS

Anchor bolts shall be steel rod having a minimum yield strength of 344.5 MPa; the top 305 mm of the rod shall be galvanized in accordance with ASTM A153/A153M.

#### 3.7.2.7 HIGH MAST TOWER

The high mast tower shall be transported by the contractor to the erection sites at his expenses and responsibility and shall be handled with care to avoid bending or damaged to the galvanizing. Materials on which galvanizing have been damage shall be re-dipped unless in the opinion of the Engineer the damage is local and can be repaired by painting with at least two (2) coats of zinc paint. The repair shall be made by and at the expense of the contractor. The number of floodlight fixtures pre-required as shown in the plan.

Detail connection of high mast tower as shown in the plan. Anchor bolts to be stainless steel or galvanized steel and designed and provided by the high mast tower manufacturer to ensure that the high mast tower and anchor bolts assembly capacity meets all the stresses composed of wind, luminaires weight and live load of maintenance personnel.

Protective coating for the high mast tower as be as follows:

#### 1. Galvanizing Preparation

All mild steel parts exposed to weather shall be hot-dipped galvanized after fabrication as shown in the approved plan or directed by the Engineer in accordance with the requirements if JIS H88641. Prior to galvanizing, the surface shall be cleaned of dirt, weld splatter, grease, slag, oil, paint or other deleterious matters. The steel surfaces shall be chemically descaled and cleaned with abrasive blast or other suitable method as approved by the Engineer.

#### 2. Coating

The zinc coating shall consist of uniform layer of commercially pure zinc free from abrasions, cracks, blisters, chemical spots or other imperfections, and shall adhere firmly to the surface of the steel. *The weight of the zinc coating per square meter of actual surface shall not be less than 550 grams.* Any surface damaged subsequent to galvanizing shall be given two coats of approved zinc paint. 482

#### 3. Painting of Galvanize Steel Work

Hot-dipped galvanized high mast tower are to be treated at the works with an appropriate zinc chromate two packs etch primer followed by one coat of non-etch zinc chromate primer and one coat of micaceous iron oxide paint before shipment. On site damage to the coating is to be repaired and a final coat of micaceous iron oxide is to be applied after erection, generally in accordance with the specifications for shot blasted steel.

Manufacturer must submit a warranty for the corrosion resistant cladding material against manufacturing defects for a period of one (1) year from the date of original purchase.

# 3.7.3 EXECUTION

3.7.3.1 INSTALLATION OF POLES IEEE C2, NFPA 70, PEC and to the requirements specified herein.

#### 3.7.3.1.1 STEEL

Provide pole foundations with galvanized steel anchor bolts, threaded at the top end and bent 1.57 rad at the bottom end. Provide galvanized nuts, washers, and ornamental covers for anchor bolts. Concrete for anchor bases, polyvinyl chloride (PVC) conduit ells, and ground rods shall be as specified in Section 7.4, "Underground Electrical Works." Thoroughly compact backfill with compacting arranged to prevent pressure between conductor, jacket, or sheath and the end of conduit ell. Adjust poles as necessary to provide a permanent vertical position with the bracket arm in proper position for luminaire location.

3.7.3.1.2 POLE SETTINGDepth shall be as indicated.3.7.3.1.3 PHOTOCELL SWITCH AIMINGAim switch according to manufacturer's recommendations.

3.7.3.2 INSTALLATION OF HIGH MAST TOWER (METHOD OF ERECTION) The Contractor shall use standard and accepted practice and methods of erecting the high mast tower depending upon their location. The high mast tower shall be erected by the Contractor in accordance with the structure list and the erection diagrams prepared by the high mast tower manufacturer.

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The high mast tower may be erected by assembling in sections on the ground and hoisting successive sections in place, or they may be build-up in place individual members at the option of the Contractor. If erected by assembling in sections, not less than fifty percent (50%) of all bolting in place shall be done on each section before starting another section. All bolts shall be drawn up tight but not to such a degree as to endanger the strength of the bolt. All nuts shall be locked in place. All bolts ends below three (3) meters above ground should be flattened to prevent the nut from being taken out from the bolt. Only wrenches approved by the Engineer shall be used on the work, and the use of any wrench that may deform the nut or cut or flake the galvanizing shall not be permitted.

A reasonable amount of drifting shall be allowed in assembling but reaming for correction of mismatched holes due to shop errors shall be permitted. If any shop error in the steel is discovered, the Contractor shall notify the Engineer, who will decide whether the errors may be corrected in the field or the members returned to the manufacturer for correction or replacement. Galvanized damaged during the corrections of shop errors shall be repaired in accordance with the plans/ specifications.

Final inspection of the high mast tower shall be made by the Engineer who shall make and report all loose bolts and other errors in erection, and shall make sure all bolts are in place and are tightened properly and that all nuts are locked properly.

The high mast tower shall be erected so that any portion of the high mast tower shall be in correct position relative to the high mast tower vertical center line, which shall not deviate from any plumb by more than 0.2% of height in either the transverse or longitudinal direction. Construction of reinforced concrete high mast tower foundation and

handhole shall be in accordance with all the details in the plan. Excavations / backfilling required before /after installation of high mast tower and concrete pedestal post shall conform to the provisions of Earthwork and Concrete Construction.

Concrete Pedestal Post shall be reinforced concrete with appropriate weatherproof fittings as constructed as shown in the approved plan. Reinforced concrete materials shall conform to the requirements of concrete. Concrete shall be of 210kg/cm<sub>2</sub> compressive strength. Metering: the local utility company shall be responsible for the supply and installation of metering equipment, and its accessories, but it is part of the contractor responsibility and expense to coordinate with them on this regard.

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#### 3.7.3.3 GROUNDING

Ground noncurrent-carrying parts of equipment including metal poles, luminaires, mounting arms, brackets, and metallic enclosures as specified in Section 7.4, "Underground Electrical Works." Where copper grounding conductor is connected to a metal other than copper, provide specially treated or lined connectors suitable for this purpose.

# 3.7.3.4 FIELD QUALITY CONTROL

Upon completion of installation, conduct an operating test to show that the equipment operates in accordance with the requirements

# 3.7.4 MEASUREMENT AND PAYMENT

#### 3.7.4.1 CONDUCTOR WIRE

The quantity of conductor wire installed to be measured and paid for shall be in linear meters installed complete including splicing and other appurtenant items and incidentals and certified by the Engineer for full payment.

#### 3.7.4.2 CONDUITS

The quantity of conduits shall be measured and paid in linear meter of each size and type of conduit materials installed complete including jointing, bends, fittings, locknut bushing, supports, adaptor, coupling and all other incidentals and appurtenances. It shall be certified by the Engineer for full payment.

#### 3.7.4.3 CONCRETE ENCASEMENT

The quantity of concrete encasement for conduits shall be measured and paid in cubic meter of concrete placed and accepted by the Engineer. Payment shall be full compensation for all labor, material and equipment and other incidental necessary to complete the work. Earthwork shall be included in the unit cost of concrete encasement.

#### 3.7.4.4 POLES

The quantity to be measured and paid for poles in the perimeter, parking area and roadway floodlight shall be by the number of sets of poles which include the steel mast, reinforced concrete foundation and accessories installed complete and certified by the Engineer for full payment.

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3.7.4.5 LIGHTING FIXTURES FOR AREA, ROADWAY AND FLOOD LIGHTING

The quantity of lighting fixtures to be measured and paid for shall be in the number of sets of each type of lighting fixtures, panels and accessories supplied and installed complete, operational and certified for full payment by the Engineer.

#### 3.7.4.6 PERIMETER AND PARKING AREA LIGHTING

The perimeter lighting shall be measured and paid for by the number of sets of lighting fixtures supplied and installed which include the pipe extension, and accessories installed complete, operational and certified by the Engineer for full payment.

#### **3.8 GROUNDING SYSTEM AND LIGHTNING PROTECTION 3.8.1 PART 1 – GENERAL**

#### 3.8.1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. 1. American National Standards Institute (ANSI) ANSI C135.30 (1988) Zinc-Coated Ferrous Ground Rods for Overhead or Underground Line Construction 2. Institute Of Electrical And Electronics Engineers (IEEE) IEEE Std 81 (1983) Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Potentials of a Ground System 3. National Fire Protection Association (NFPA) NFPA 70 (2007) National Electrical Code NFPA 780 (2007) Lightning Protection Code 4. Underwriters Laboratories (UL) UL Elec Const Dir (2007) Electrical Construction Materials Directory 486 UL 96 (2005) Lightning Protection Components UL 96A (2007) Installation Requirements for Lightning Protection Systems UL 467 (2007) Grounding and Bonding Equipment 5. Institute of Integrated Electrical Engineer (IIEE) PEC (2002) Philippine Electrical Code 6. Philippine National Standard (PNS)

BS (2002) Bureau of Standard

#### 3.8.1.2 RELATED REQUIREMENTS

Section 7.1, "Electrical General Requirements," applies to this section with additions and modifications specified herein.1. System RequirementsMaterials shall consist of standard products of a manufacturer regularly

engaged in production of lightning protection systems and shall be manufacturer's latest UL approved design. Lightning protection system shall conform to PEC, NFPA 70, NFPA 780, UL 96 and UL 96A.

3.8.1.3 SUBMITTALS
1. Shop Drawings
Overall lightning protection system
Each *major* component
2. Test Reports *Grounding* system test

*Lightning* protection system inspection 3. Certificates UL listing or label

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3.8.1.4 QUALITY ASSURANCE

In each standard referred to herein, consider the advisory provisions to be mandatory, as though the word "shall" has been substituted for "should" wherever it appears.

1. Installation Drawings

a. Submit installation shop drawing for the overall lightning protection system. Drawings shall include physical layout of the equipment, mounting details, relationship to other parts of the work, and wiring diagram.

b. Submit detail drawings for each major component to include manufacturer's descriptive and technical literature, catalog cuts, and installation instructions.

2. UL Listing or Label

Submit proof of compliance. Label of or listing in UL Elec Const Dir is acceptable evidence. In lieu of label or listing, submit written certificate from an approved, nationally recognized testing organization equipped to perform such services, stating that items have been tested and conform to requirements and testing methods of Underwriters Laboratories.

#### **3.8.1.5 SITE CONDITIONS**

Contractor will become familiar with details of the work, verify dimensions in the field, and advise the Engineer of discrepancies before performing work. Deviations from contract drawings will not be made without prior approval of the Engineer.

#### **3.8.2 MATERIAL REQUIREMENTS**

#### 3.8.2.1 MATERIALS

Do not use a combination of materials that forms an electrolytic couple of such nature that corrosion is accelerated in presence of moisture unless moisture is permanently excluded from the junction of such metals. Where unusual conditions exist which would cause corrosion of conductors, provide conductors with protective coatings or oversize conductors. Where mechanical hazard is involved, increase conductor size to compensate for hazard or protect conductors by covering them with or tubing made of nonmagnetic material.

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1. Main and Bonding Conductors NFPA 780 and UL 96

#### 2. Copper

Provide copper conductors on nonmetallic stacks that do not weigh less than 144.83 kg per 300 meters, and provide cable such that the size of any strand in the cable is not less than 2 mm2.

#### 3.8.2.2 COMPONENTS

#### 1. Air Terminals

Provide terminals in accordance with UL 96. Support air terminals by suitable brace, with guides, not less than one-half the height of the terminal.

#### 2. Ground Rods

Provide ground rods made of copper-clad steel conforming UL 467. Provide ground rods that are not less than 20 mm in diameter and 3000 mm in length. Do not mix ground rods of copper-clad steel, stainless steel, galvanized ferrous, or solid copper on the job.

3. Connections and Terminations

Provide connectors for splicing conductors that conform to UL 96, class as applicable. Conductor connections can be made by clamps or welds (including exothermic). Provide style and size connectors required for the installation.

4. Connector Fittings

Provide connector fittings for "end-to-end", "Tee", or "Y" splices that conform to NFPA 780.

5. Lightning Protection Components

Provide bonding plates, air terminal supports, clips, and fasteners that conform to UL 96 classes as applicable.

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#### 3.8.3 EXECUTION

#### 3.8.3.1 INTEGRAL SYSTEM

Lightning protection system consists of air terminals, down conductors, ground connections, grounding electrodes and ground loop conductor. Electrically interconnect lightning protection system to form the shortest distance to ground. Do not use non-conducting parts of the structure as part of the building's lightning protection system. Conductors are required to be in protective sleeves.

#### 1. Air Terminals

Air terminal design and support conforming to NFPA 780. Rigidly connect terminals to, and make electrically continuous with, down conductors by means of pressure connectors or crimped joints of Tshaped malleable metal. Provide pressure connector or crimped joint with a dowel or threaded fitting to connect ground rod conductor with air terminal. Set air terminals at ends of structures not more than 610 mm from ends of ridges. Where nonmetallic spires, is present, mount air terminals to the side. In addition, where spires project more than 3050 mm above the building, continue conductor from air terminal to nearest down conductor securely connect thereto.

#### 2. Down Conductors

Make down conductors electrically continuous from air terminals to grounding electrodes. Equally and symmetrically spaced down conductors about the perimeter of the structure. Protect conductors where necessary, to prevent physical damage or displacement to the conductor.

#### a. Ground Connections

Securely connect conductor forming continuations of down conductors from structure to grounding electrode in a manner to ensure electrical continuity between the two. Provide clamp type connections or welds (including exothermic) for continuation. Attach down conductor to ground rods by welding including exothermic, brazing, or clamping. Provide clamps suitable for direct burial. Protect ground connection from mechanical injury. In making ground connections, take advantage of all permanently moist places where practicable, although avoid such places when area is wet with waste water that contains chemical substances, especially those corrosive to metal.

#### b. Grounding Electrodes

Provide grounding electrode for down conductor. Extend driven ground rods into the existing undisturbed earth for a distance of not less 3050 mm. Set ground rods less than 610 mm nor more

than 3050 mm, from the structure. After the completed installation, measure the total resistance to ground using the fall-of-potential method described in IEEE Std 81. Maximum resistance of a driven ground rod shall be 10 ohms, under normally dry conditions. Make connections between ground conductors and grounds or electrically continuous.

# 3.8.3.2 FIELD QUALITY CONTROL

# 1. Grounding System Test

Test the grounding system to ensure continuity and that resistance to ground is not in excess of 10 ohms. Test the ground rod for resistance to ground before making connections to the rod. Tie the grounding system together and test for resistance to ground. Make resistance measurements in dry weather, not earlier than 48 hours after rainfall. Include in the written report: locations of ground rods, resistance, and soil conditions at the time that measurements were made. Submit results of each test to the Engineer.

2. Lightning Protection System Inspection

Make visual inspections to verify that there are no loose connections which may result in high resistance joints, and that conductors and system components are securely fastened to their mounting surfaces and are protected against accidental mechanical displacement.

# 3.8.4 MEASUREMENT AND PAYMENT

Quantity for grounding rod to be measured and paid shall be in number of ground rod supplied, installed, tested and certified for full payment by the Engineer.

Quantity for grounding wire to be measured and paid for shall be in linear meter of wire supplied, installed, tested and certified for dull payment by the Engineer.

Payment stated above shall be full compensation for all labor, materials, equipment, tests and reports and all incidental works and accessories

necessary to make the system operation.

#### ITEM 04 : POWERLINE SYSTEM

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

2. Powerline System shall include the installation at the job-sites of all equipment, transformers, primary and secondary wirings, Transformer poles, 3 phase meters, including incidentals and all items necessary to complete the works until rendered operable, subject to the confirmation of the Engineer and in accordance to plans, exact lines and grades.

3. Testing and Commissioning is compulsory and CERTIFICATION from LEYECO V and manufacturers certificate that delivered materials and installation are compliant to local and international electrical safety standards and approved code of practice, no acceptance shall be made unless and until complete energization of the transformers, primary and secondary power lines are fully operational.

4. This Section includes supply, delivery, assembly and disassembly of Transformers, Tapping Pole, Concrete Pedestals, primary and secondary power lines including incidentals necessary to complete the work.

#### ITEM 05 : PROJECT BILLBOARD

#### **SPECIFICATION**

The Project Billboard shall be installed at location(s) designated by the Engineer.

The size and specifications of materials for the standard billboard shall be 8ft. x 8ft. (2,400mm x 2,400mm) using  $\frac{1}{2}$  inch (12mm) marine plywood or tarpaulin poster on 3/16 inch (5mm) marine plywood.

Project billboards shall not contain Name(s) and/or picture(s) of any personages.

See details below:

		Lot 2,	Block 13, Doña D. Veloso St.,	Feliza Mejia Ormoc City	Subd.,		
Project	:				Cost		
					Fund Source		
Location	:						
Implementing A	gency/ies			ORITY, POR	T MANAGEMEN	T OFFICE - WI	ESTERN
		LEY I E/BILIF	<b>XAN</b>				
Development Pa Contractor/Supp	artner/s blier						
Development Pa Contractor/Supp Brief Description	artner/s blier n of Project						
Development Pa Contractor/Supp Brief Description	artner/s blier n of Project						
Development Pa Contractor/Supp Brief Description Project Details	artner/s blier n of Project Project Date			Proje	ct Status		Remarks
Development Pa Contractor/Supp Brief Description Project Details	artner/s blier n of Project Project Date Started	Target Date of Completion	Percentage Completion	Projec As of	ct Status Cost Incurred to Date	Date Completed	Remarks
Development Pa Contractor/Supp Brief Description Project Details Duration	artner/s olier n of Project Project Date Started	Target Date of Completion	Percentage Completion	Projec As of	ct Status Cost Incurred to Date	Date Completed	Remarks
Development Pa Contractor/Supp Brief Description Project Details Duration	artner/s olier n of Project Project Date Started	Target Date of Completion	Percentage Completion	Projec As of	ct Status Cost Incurred to Date	Date Completed	Remarks
Development Pa Contractor/Supp Brief Description Project Details Duration	artner/s olier n of Project Project Date Started	Target Date of Completion	Percentage Completion	Projec As of	ct Status Cost Incurred to Date	Date Completed	Remarks

COA Regional Office No./Cluster	
Address	:
Contact No.:	or Text COA Citizen's Desk at 0915-5391957

NOTE :

Resolution : 70dpi Font : Helvetica Font Size : Main Information - 3" Sub-Information - 1" Font Color : Black

#### ITEM 06 : SAFETY SIGNAGES AND BARRICADES

#### DESCRIPTION

This work includes the furnishing and installing of safety signages and barricades in accordance with the specifications and to the details shown below in the drawings, or as directed by the Engineer.

#### SPECIFICATION

The Signage's and Barricades shall be installed at location(s) designated by the Engineer.

The sizes of the standard signages shall be 2-2/3ft x 4ft (800mm X 1,200mm) for fixed type and 2ft x 2–2/3ft (600mm x 800mm) for mobile type. For barricade standard 2ft x 2–2/3ft (600mm x 800mm) shall be provided.

The materials to be used for signages and barricades are  $\frac{1}{2}$  inch (12mm) marine plywood or tarpaulin poster on 2" x 2" (50mm x 50mm) good lumber frame (see drawing below).

The printing or painting shall be the discretion of the Engineer.



# Section VII. Drawings







# Section VIII. Bill of Quantities

# **Bill of Quantities**

UPGRADING OF MAIN POWERLINE SYSTEM, PORT OF NAVAL, BILIRAN					
Item No.	Description	Quantity	Unit	Unit Price (Pesos)	Amount (Pesos)
I.	GENERAL EXPENSES				
I.1	Mobilization, Demobilization         and Clean-up of Site         (Pesos	1.00	lot		
II.	UPGRADING OF POWERLINE SYSTEM				
II.1	Upgrading of Power Line         System incl. 75 KVA         Transformer         (Pesos	1.00	lot		
II.2	Testing and Commissioning of 75 KVA Transformer (Pesos	1.00	lot		
TOTAL:					

Submitted by:

*Name of the Representative of the Bidder*\_\_\_\_\_Date: \_\_\_\_\_ <u>Position</u> <u>Name of the Bidder</u>

Project Title :

Location

SUMMARY OF CONSTRUCTION MATERIALS				
Name & specification of Materials	Unit	Unit Prices		

:\_\_\_\_\_

(Continue on separate sheet, if necessary)

:

\_\_\_\_\_

Project Title	:	
	_	
Location	:	

Location

Project Title

SUMMARY OF EQUIPMENT	RATES
Name, Capacity &	Rate
Rating of Equipment	per Day/Hour

(Continue on separate sheet, if necessary)

Location

SUMMARY OF LABOR RATES				
	Daily			
Designation of Personnel	Rate			

:\_\_\_\_\_

(Continue on separate sheet, if necessary)

# Section IX. Bidding Forms

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Date: \_\_\_\_\_\_ IB<sup>1</sup> N<sup>o</sup>:

#### To: BERNARD C. CALLEDO – Port Manager Address: Philippine Ports Authority, Port Management Office – Western Leyte/Biliran, Port Operation Building, Ebony St., Port Area, Ormoc City

We, the undersigned, declare that:

- (a) We have examined and have no reservation to the Bidding Documents, including Addenda, for the Contract *Upgrading of Main Powerline System, Port of Naval, Biliran* (*OME-10605990*);
- (b) We offer to execute the Works for this Contract in accordance with the Bid and Bid Data Sheet, General and Special Conditions of Contract accompanying this Bid;

The total price of our Bid, excluding any discounts offered below is: *[insert information]*;

The discounts offered and the methodology for their application are: *[insert information]*;

- (c) Our Bid shall be valid for a period of *[insert number]* days from the date fixed for the Bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (d) If our Bid is accepted, we commit to obtain a Performance Security in the amount of *[insert percentage amount]* percent of the Contract Price for the due performance of the Contract;
- (e) Our firm, including any subcontractors or suppliers for any part of the Contract, have nationalities from the following eligible countries: *[insert information]*;
- (f) We are not participating, as Bidders, in more than one Bid in this bidding process, other than alternative offers in accordance with the Bidding Documents;
- (g) Our firm, its affiliates or subsidiaries, including any subcontractors or suppliers for any part of the Contract, has not been declared ineligible by the Funding Source;

<sup>&</sup>lt;sup>1</sup> If ADB, JICA and WB funded projects, use IFB.

- (h) We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal Contract is prepared and executed; and
- (i) We understand that you are not bound to accept the Lowest Calculated Bid or any other Bid that you may receive.
- (j) We likewise certify/confirm that the undersigned, is the duly authorized representative of the bidder, and granted full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for the <u>Upgrading of Main Powerline System, Port</u> <u>of Naval, Biliran (OME-10605990)</u> of the <u>Philippine Ports Authority, Port</u> <u>Management Office – Western Leyte/ Biliran</u>.
- (k) We acknowledge that failure to sign each and every page of this Bid Form, including the Bill of Quantities, shall be a ground for the rejection of our bid.

Name:		
In the capacity of:		
Signed:		

Duly authorized to sign the Bid for and on behalf of:

Date: \_\_\_\_\_

THIS AGREEMENT, made this [insert date] day of [insert month], [insert year] between [name and address of PROCURING ENTITY]\_(hereinafter called the "Entity") and [name and address of Contractor] (hereinafter called the "Contractor").

WHEREAS, the Entity is desirous that the Contractor execute [name and identification number of contract] (hereinafter called "the Works") and the Entity has accepted the Bid for [insert the amount in specified currency in numbers and words] by the Contractor for the execution and completion of such Works and the remedying of any defects therein.

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

- 1. In this Agreement, words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.
- 2. The following documents shall be attached, deemed to form, and be read and construed as integral part of this Agreement, to wit:
  - (a) General and Special Conditions of Contract;
  - (b) Drawings/Plans;
  - (c) Specifications;
  - (d) Invitation to Bid;
  - (e) Instructions to Bidders;
  - (f) Bid Data Sheet;
  - (g) Addenda and/or Supplemental/Bid Bulletins, if any;
  - (h) Bid form, including all the documents/statements contained in the Bidder's bidding envelopes, as annexes, and all other documents submitted (e.g., Bidder's response to request for clarifications on the bid), including corrections to the bid, if any, resulting from the Procuring Entity's bid evaluation;
  - (i) Eligibility requirements, documents and/or statements;
  - (j) Performance Security;
  - (k) Notice of Award of Contract and the Bidder's conforme thereto;
  - (l) Other contract documents that may be required by existing laws and/or the Entity.
- 3. In consideration of the payments to be made by the Entity to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Entity to execute and complete the Works and remedy any defects therein in conformity with the provisions of this Contract in all respects.
4. The Entity hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects wherein, the Contract Price or such other sum as may become payable under the provisions of this Contract at the times and in the manner prescribed by this Contract.

IN WITNESS whereof the parties thereto have caused this Agreement to be executed the day and year first before written.

Signed, sealed, delivered by \_\_\_\_\_\_ (for the Entity)

Signed, sealed, delivered by \_\_\_\_\_\_ the \_\_\_\_\_(for the Contractor).

Binding Signature of Procuring Entity

Binding Signature of Contractor

[Addendum showing the corrections, if any, made during the Bid evaluation should be attached with this agreement]

## REPUBLIC OF THE PHILIPPINES ) CITY/MUNICIPALITY OF \_\_\_\_\_ ) S.S.

## AFFIDAVIT

I, [Name of Affiant], of legal age, [Civil Status], [Nationality], and residing at [Address of Affiant], after having been duly sworn in accordance with law, do hereby depose and state that:

1. [Select one, delete the other:]

[*If a sole proprietorship:*] I am the sole proprietor or authorized representative of [Name of Bidder] with office address at [address of Bidder];

[If a partnership, corporation, cooperative, or joint venture:] I am the duly authorized and designated representative of [Name of Bidder] with office address at [address of Bidder];

2. [Select one, delete the other:]

[*If a sole proprietorship:*] As the owner and sole proprietor, or authorized representative of [Name of Bidder], I have full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for [Name of the Project] of the [Name of the Procuring Entity], as shown in the attached duly notarized Special Power of Attorney;

[If a partnership, corporation, cooperative, or joint venture:] I am granted full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for [Name of the Project] of the [Name of the Procuring Entity], as shown in the attached [state title of attached document showing proof of authorization (e.g., duly notarized Secretary's Certificate, Board/Partnership Resolution, or Special Power of Attorney, whichever is applicable;)];

- 3. [Name of Bidder] is not "blacklisted" or barred from bidding by the Government of the Philippines or any of its agencies, offices, corporations, or Local Government Units, foreign government/foreign or international financing institution whose blacklisting rules have been recognized by the Government Procurement Policy Board, <u>by itself or by relation, membership, association, affiliation, or controlling interest with another blacklisted person or entity as defined and provided for in the Uniform Guidelines on Blacklisting;</u>
- 4. Each of the documents submitted in satisfaction of the bidding requirements is an authentic copy of the original, complete, and all statements and information provided therein are true and correct;
- 5. [Name of Bidder] is authorizing the Head of the Procuring Entity or its duly authorized representative(s) to verify all the documents submitted;

6. [Select one, delete the rest:]

[*If a sole proprietorship:*] The owner or sole proprietor is not related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

[If a partnership or cooperative:] None of the officers and members of [Name of Bidder] is related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

[*If a corporation or joint venture:*] None of the officers, directors, and controlling stockholders of [*Name of Bidder*] is related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

- 7. [Name of Bidder] complies with existing labor laws and standards; and
- 8. *[Name of Bidder]* is aware of and has undertaken the responsibilities as a Bidder in compliance with the Philippine Bidding Documents, which includes:
  - a. Carefully examining all of the Bidding Documents;
  - b. Acknowledging all conditions, local or otherwise, affecting the implementation of the Contract;
  - c. Making an estimate of the facilities available and needed for the contract to be bid, if any; and
  - d. Inquiring or securing Supplemental/Bid Bulletin(s) issued for the [Name of the Project].
- 9. *[Name of Bidder]* did not give or pay directly or indirectly, any commission, amount, fee, or any form of consideration, pecuniary or otherwise, to any person or official, personnel or representative of the government in relation to any procurement project or activity.
- 10. In case advance payment was made or given, failure to perform or deliver any of the obligations and undertakings in the contract shall be sufficient grounds to constitute criminal liability for Swindling (Estafa) or the commission of fraud with unfaithfulness or abuse of confidence through misappropriating or converting any payment received by a person or entity under an obligation involving the duty to deliver certain goods or services, to the prejudice of the public and the government of the Philippines pursuant to Article 315 of Act No. 3815 s. 1930, as amended, or the Revised Penal Code.
- **IN WITNESS WHEREOF**, I have hereunto set my hand this \_\_\_\_ day of \_\_\_\_, 20\_\_\_ at \_\_\_\_, Philippines.

## [Insert NAME OF BIDDER OR ITS AUTHORIZED REPRESENTATIVE]

[Insert signatory's legal capacity]

Affiant

**SUBSCRIBED AND SWORN** to before me this \_\_\_\_ day of [month] [year] at [place of execution], Philippines. Affiant/s is/are personally known to me and was/were identified by me through competent evidence of identity as defined in the 2004 Rules on Notarial Practice (A.M. No. 02-8-13-SC). Affiant/s exhibited to me his/her [insert type of government identification card used], with his/her photograph and signature appearing thereon, with no. \_\_\_\_\_ and his/her Community Tax Certificate No. \_\_\_\_\_ issued on \_\_\_\_\_ at \_\_\_\_.

Witness my hand and seal this \_\_\_\_ day of [month] [year].

#### NAME OF NOTARY PUBLIC

Serial No. of Commission	on
Notary Public for	until
Roll of Attorneys No.	
PTR No [date i	ssued], [place issued]
IBP No [date i	ssued], [place issued]

Doc. No. \_\_\_\_\_ Page No. \_\_\_\_\_ Book No. \_\_\_\_\_ Series of \_\_\_\_\_

\* This form will not apply for WB funded projects.

# (REPUBLIC OF THE PHILIPPINES) CITY OF \_\_\_\_\_\_) S.S.

**Invitation to Bid** [Insert reference number]

To: [Insert name and address of the Procuring Entity]

I/We, the undersigned, declare that:

- 1. I/We understand that, according to your conditions, bids must be supported by a Bid Security, which may be in the form of a Bid-Securing Declaration.
- 2. I/We accept that: (a) I/we will be automatically disqualified from bidding for any contract with any procuring entity for a period of two (2) years upon receipt of your Blacklisting Order; and, (b) I/we will pay the applicable fine provided under Section 6 of the Guidelines on the Use of Bid Securing Declaration, within fifteen (15) days from receipt of written demand by the procuring entity for the commission of acts resulting to the enforcement of the bid securing declaration under Sections 23.1(b), 34.2, 40.1 and 69.1, except 69.1 (f), of the IRR of RA 9184; without prejudice to other legal action the government may undertake.
- 3. I/We understand that this Bid-Securing Declaration shall cease to be valid on the following circumstances:
  - a. Upon expiration of the bid validity period, or any extension thereof pursuant to your request;
  - b. I am/we are declared ineligible or post-disqualified upon receipt of your notice to such effect, and (i) I/we failed to timely file a request for reconsideration or (ii) I/we filed a waiver to avail of said right;
  - c. I am/we are declared as the bidder with the Lowest Calculated Responsive Bid, and I/we have furnished the performance security and signed the Contract.

**IN WITNESS WHEREOF**, I/We have hereunto set my/our hand/s this \_\_\_\_\_ day of [month] [year] at [place of execution].

## [Insert NAME OF BIDDER'S AUTHORIZED REPRESENTATIVE] [Insert signatory's legal capacity]

Affiant

**SUBSCRIBED AND SWORN** to before me this \_\_\_\_\_ day of [month] [year] at [place of execution], Philippines. Affiant/s is/are personally known to me and was/were identified by me through competent evidence of identity as defined in the 2004 Rules on Notarial Practice (A.M. No. 02-8-13-SC). Affiant/s exhibited to me his/her [insert type of government identification card used], with his/her photograph and signature appearing thereon, with no.

Witness my hand and seal this \_\_\_\_ day of [month] [year].

## NAME OF NOTARY PUBLIC

Serial No. of Commission \_\_\_\_\_\_ Notary Public for \_\_\_\_\_ until \_\_\_\_\_ Roll of Attorneys No. \_\_\_\_ PTR No. \_\_, [date issued], [place issued] IBP No. \_\_, [date issued], [place issued] Doc. No. \_\_\_\_ Page No. \_\_\_\_ Book No. \_\_\_\_ Series of \_\_\_\_.

# Section X. ANNEXES



Republic of the Philippines Government Procurement Policy Board