Republic of the Philippines
DEPARTMENT OF AGRICULTURE
PHILIPPINE FISHERIES DEVELOPMENT AUTHORITY
PCA Annex Building, Elliptical Road, Diliman, Quezon City
Telefax No. 8925-61-41

BIDDING DOCUMENTS

PROPOSED REHABILITATION & IMPROVEMENT OF CAMALIGAN FISH PORT

Brgy. Dugcal, Camaligan, Camarines Sur

JUNE 2021

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Glossary of
Terms, Abbreviations, and Acronyms

ABC – Approved Budget for the Contract.

ARCC – Allowable Range of Contract Cost.

BAC – Bids and Awards Committee.

Bid – A signed offer or proposal to undertake a contract submitted by a bidder in response to and in consonance with the requirements of the bidding documents. Also referred to as *Proposal* and *Tender.* (2016 revised IRR, Section 5[c])

Bidder – Refers to a contractor, manufacturer, supplier, distributor and/or consultant who submits a bid in response to the requirements of the Bidding Documents. (2016 revised IRR, Section 5[d])

Bidding Documents – The documents issued by the Procuring Entity as the bases for bids, furnishing all information necessary for a prospective bidder to prepare a bid for the Goods, Infrastructure Projects, and/or Consulting Services required by the Procuring Entity. (2016 revised IRR, Section 5[e])

BIR – Bureau of Internal Revenue.

BSP – Bangko Sentral ng Pilipinas.

CDA – Cooperative Development Authority.

Consulting Services – Refer to services for Infrastructure Projects and other types of projects or activities of the GOP requiring adequate external technical and professional expertise that are beyond the capability and/or capacity of the GOP to undertake such as, but not limited to: (i) advisory and review services; (ii) pre-investment or feasibility studies; (iii) design; (iv) construction supervision; (v) management and related services; and (vi) other technical services or special studies. (2016 revised IRR, Section 5[i])

Contract – Refers to the agreement entered into between the Procuring Entity and the Supplier or Manufacturer or Distributor or Service Provider for procurement of Goods and Services; Contractor for Procurement of Infrastructure Projects; or Consultant or Consulting Firm for Procurement of Consulting Services; as the case may be as recorded in the Contract Form signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference therein.

Contractor – is a natural or juridical entity whose proposal was accepted by the Procuring Entity and to whom the Contract to execute the Work was awarded. Contractor as used in these Bidding Documents may likewise refer to a supplier, distributor, manufacturer, or consultant.

CPI – Consumer Price Index.

DOLE – Department of Labor and Employment.

DTI – Department of Trade and Industry.

Foreign-funded Procurement or Foreign-Assisted Project – Refers to procurement whose funding source is from a foreign government, foreign or international financing institution as specified in the Treaty or International or Executive Agreement. (2016 revised IRR, Section 5[b]).

GFI – Government Financial Institution.

GOCC – Government-owned and/or –controlled corporation.

Goods – Refer to all items, supplies, materials and general support services, except Consulting Services and Infrastructure Projects, which may be needed in the transaction of public businesses or in the pursuit of any government undertaking, project or activity, whether in the nature of equipment, furniture, stationery, materials for construction, or personal property of any kind, including non-personal or contractual services such as the repair and maintenance of equipment and furniture, as well as trucking, hauling, janitorial, security, and related or analogous services, as well as procurement of materials and supplies provided by the Procuring Entity for such services. The term "related" or "analogous services" shall include, but is not limited to, lease or purchase of office space, media advertisements, health maintenance services, and other services essential to the operation of the Procuring Entity. (2016 revised IRR, Section 5[r])

GOP – Government of the Philippines.

Infrastructure Projects – Include the construction, improvement, rehabilitation, demolition, repair, restoration or maintenance of roads and bridges, railways, airports, seaports, communication facilities, civil works components of information technology projects, irrigation, flood control and drainage, water supply, sanitation, sewerage and solid waste management systems, shore protection, energy/power and electrification facilities, national buildings, school buildings, hospital buildings, and other related construction projects of the government. Also referred to as *civil works or works*. (2016 revised IRR, Section 5[u])

LGUs – Local Government Units.

NFCC – Net Financial Contracting Capacity.

NGA – National Government Agency.

PCAB – Philippine Contractors Accreditation Board.

PhilGEPS - Philippine Government Electronic Procurement System.

Procurement Project – refers to a specific or identified procurement covering goods, infrastructure project or consulting services. A Procurement Project shall be described, detailed, and scheduled in the Project Procurement Management Plan prepared by the agency which shall be consolidated in the procuring entity's Annual Procurement Plan. (GPPB Circular No. 06-2019 dated 17 July 2019)

PSA – Philippine Statistics Authority.

SEC – Securities and Exchange Commission.

SLCC – Single Largest Completed Contract.

UN – United Nations.

Section I. Invitation to Bid

Republic of the Philippines
DEPARTMENT OF AGRICULTURE
PHILIPPINE FISHERIES DEVELOPMENT AUTHORITY
PCA Annex Building, Elliptical Road, Diliman, Quezon City
Telefax Telefax No. 925-61-41

Invitation to Bid

Construction, Rehabilitation, Improvement of Camaligan Fish Port

1. The Philippine Fisheries Development Authority (PFDA), through the GAA Multi-year Subsidy to PFDA intends to apply the sum of **₱ 277,364,319.66** being the Approved Budget for the Contract (ABC) to payments under the contract for the **Construction, Rehabilitation, Improvement of Camaligan Fish Port** located at the Municipality of Camaligan, Camarines Sur. Bids received in excess of the ABC shall be automatically rejected at bid opening.

2. The PFDA now invites bids for the above Procurement Project. Completion of the Works is required **720 calendar days**. Bidders should have completed a contract similar to the Project. The description of an eligible bidder is contained in the Bidding Documents/Instructions to Bidders (ITB).

3. Bidding will be conducted through open competitive bidding procedures using non-discretionary "*pass/fail*" criterion as specified in the revised Implementing Rules and Regulations (IRR) of Republic Act (RA) No. 9184.

4. A complete set of Bidding Documents may be acquired by interested bidders from the Bids and Awards Committee (BAC) Secretariat, in the amount of **₱ 50,000.00**, on the following schedules and venue:

Schedules	Venue
June 4 - 28, 2021	PFDA - Central Office, Diliman, Quezon City
June 29 - 30, 2021	Navotas Fish Port Complex (NFPC), Navotas City

5. Bids must be duly received by the BAC Secretariat through manual submission at the said venue on or before **June 30, 2021; 8:00 AM. Late bids shall not be accepted.**

6. The PFDA will hold a Pre-Bid Conference on **June 18, 2021**; **11:00 AM** at the **Navotas Fish Port Complex (NFPC) - Conference Room, Administration Building, Navotas City, Metro Manila** which shall be open to prospective bidders.

7. All bids must be accompanied by a bid security in any of the acceptable forms and in the amount stated in **ITB.**

8. Bid opening shall be on **June 30, 2021**; **1:00 PM** at the said NFPC Conference Room, Navotas City. Bids will be opened in the presence of the bidders' representatives who choose to attend the activity.

9. In observance with the protocol on social distancing, only one (1) designated/authorized representative per company shall be allowed to participate and/or attend in the conduct of the bidding activities.

10. The PFDA reserves the right to 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 the revised IRR of RA No. 9184 without thereby incurring any liability to the affected bidder or bidders.

11. The DA-PFDA does not condone any form of solicitation on any prospective winning and losing bidders by any of our staff/employees or any other party. Any sort of this kind shall be reported immediately to the Office of the General Manager or the National Bureau of Investigation for entrapment and proper investigation.

12. For further information, please refer to below:

    Ms. Gina Reyes
    Head, PFDA-BAC Secretariat
    PCA Annex Bldg.
    Elliptical Road, Diliman, Quezon City
    bac.co@pfda.gov.ph
    (02) 8925-7850
    (02) 8925-6146

    You may visit the following websites:

    Copy of the ITB will be uploaded here:

    https://pfda.gov.ph/index.php/bac/invitation-list

    Per PhilGEPS Advisory No. 11 - PhilGEPS Alternative Posting Tool, copy of the Bid Documents will be uploaded here:

    https://notices.ps-philgeps.gov.ph/main/index.php

June 4, 2021

JOSE A. RUIZ, JR.
Chairperson
Bids and Awards Committee

Section II. Instructions to Bidders

Instructions to Bidders

1. Scope of Bid

The Procuring Entity, Philippine Fisheries Development Authority (PFDA) invites Bids for the **Construction, Rehabilitation & Improvement of Camaligan Fish Port, Brgy. Dugcal, Camarines Sur**.

The Procurement Project (referred to herein as "Project") is for the construction of Works, as described in Section VI (Specifications).

2. Funding Information

2.1. The GOP through the General Appropriations Act for CY 2021 in the total amount of **₱ 277,364,319.66**.

2.2. The source of funding is:

a. GAA for CY 2021

3. Bidding Requirements

The Bidding for the Project shall be governed by all the provisions of RA No. 9184 and its 2016 revised IRR, including its Generic Procurement Manual and associated policies, rules and regulations as the primary source thereof, while the herein clauses shall serve as the secondary source thereof.

Any amendments made to the IRR and other GPPB issuances shall be applicable only to the ongoing posting, advertisement, or invitation to bid by the BAC through the issuance of a supplemental or bid bulletin.

The Bidder, by the act of submitting its Bid, shall be deemed to have inspected the site, determined the general characteristics of the contracted Works and the conditions for this Project, such as the location and the nature of the 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 and examine all instructions, forms, terms, and project requirements in the Bidding Documents.

4. Corrupt, Fraudulent, Collusive, Coercive, and Obstructive Practices

The Procuring Entity, as well as the Bidders and Contractors, shall observe the highest standard of ethics during the procurement and execution of the contract. They or through an agent shall not engage in corrupt, fraudulent, collusive, coercive, and obstructive practices defined under Annex "I" of the 2016 revised IRR of RA No. 9184 or other integrity violations in competing for the Project.

5. Eligible Bidders

5.1. Only Bids of Bidders found to be legally, technically, and financially capable will be evaluated.

5.2. 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 PSA's CPI, except under conditions provided for in Section 23.4.2.4 of the 2016 revised IRR of RA No. 9184.

A contract is considered to be "similar" to the contract to be bid if it has the major categories of work stated in the **BDS**.

5.3. 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 Bidding Document prepared for this purpose.

5.4. The Bidders shall comply with the eligibility criteria under Section 23.4.2 of the 2016 IRR of RA No. 9184.

6. Origin of Associated Goods

There is no restriction on the origin of Goods other than those prohibited by a decision of the UN Security Council taken under Chapter VII of the Charter of the UN.

7. Subcontracts

7.1. The Bidder may subcontract portions of the Project to the extent allowed by the Procuring Entity as stated herein, but in no case more than fifty percent (50%) of the Project.

The Procuring Entity has prescribed that:

Subcontracting is not allowed. The portions of Project and the maximum percentage allowed to be subcontracted are indicated in the **BDS,** which shall not exceed fifty percent (50%) of the contracted Works.

7.2. The Bidder must submit together with its Bid the documentary requirements of the subcontractor(s) complying with the eligibility criterial stated in **ITB** Clause 5 in accordance with Section 23.4 of the 2016 revised IRR of RA No. 9184 pursuant to Section 23.1 thereof.

7.3. The Supplier may identify its subcontractor during the contract implementation stage. Subcontractors identified during the bidding may be changed during the implementation of this Contract. Subcontractors must submit the documentary requirements under Section 23.1 of the 2016 revised IRR of RA No. 9184 and comply with the eligibility criteria specified in **ITB** Clause 5 to the implementing or end-user unit.

7.1. Subcontracting of any portion of the Project does not relieve the Contractor of any liability or obligation under the Contract. The Supplier 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. Pre-Bid Conference

The Procuring Entity will hold a pre-bid conference for this Project on the specified date and time and either at its physical address as indicated in paragraph 6 of the **IB.**

9. Clarification and Amendment of Bidding Documents

Prospective bidders may request for clarification on and/or interpretation of any part of the Bidding Documents. Such requests must be in writing and received by the Procuring Entity, either at its given address or through electronic mail indicated in the **IB**, at least ten (10) calendar days before the deadline set for the submission and receipt of Bids.

10. Documents Comprising the Bid: Eligibility and Technical Components

10.1. The first envelope shall contain the eligibility and technical documents of the Bid as specified in **Section IX. Checklist of Technical and Financial Documents**.

10.2. If the eligibility requirements or statements, the bids, and all other documents for submission to the BAC are in foreign language other than English, it must be accompanied by a translation in English, which 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. For Contracting Parties to the Apostille Convention, only the translated documents shall be authenticated through an apostille pursuant to GPPB Resolution No. 13-2019 dated 23 May 2019. The English translation shall govern, for purposes of interpretation of the bid.

10.3. A valid PCAB License is required, and in case of joint ventures, a valid special PCAB License, and registration for the type and cost of the contract for this Project. Any additional type of Contractor license or permit shall be indicated in the **BDS**.

10.4. A List of Contractor's key personnel (e.g., Project Manager, Project Engineers, Materials Engineers, and Foremen) assigned to the contract to be bid, with their complete qualification and experience data shall be provided. These key personnel must meet the required minimum years of experience set in the **BDS**.

A 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, must meet the minimum requirements for the contract set in the **BDS**.

11. Documents Comprising the Bid: Financial Component

11.1. The second bid envelope shall contain the financial documents for the Bid as specified in **Section IX. Checklist of Technical and Financial Documents**.

11.2. Any bid exceeding the ABC indicated in paragraph 1 of the **IB** shall not be accepted.

11.3. For Foreign-funded procurement, a ceiling may be applied to bid prices provided the conditions are met under Section 31.2 of the 2016 revised IRR of RA No. 9184.

12. Alternative Bids

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.

13. Bid Prices

All bid prices for the given scope of work in the Project as awarded shall be considered as fixed prices, and therefore not subject to price escalation during contract implementation, except under extraordinary circumstances as determined by the NEDA and approved by the GPPB pursuant to the revised Guidelines for Contract Price Escalation guidelines.

14. Bid and Payment Currencies

14.1. Bid prices may be quoted in the local currency or tradeable currency accepted by the BSP at the discretion of the Bidder. However, for purposes of bid evaluation, Bids denominated in foreign currencies shall be converted to Philippine currency based on the exchange rate as published in the BSP reference rate bulletin on the day of the bid opening.

14.2. Payment of the contract price shall be made in Philippine Pesos.

15. Bid Security

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

The Bid and bid security shall be valid until one hundred twenty (120) calendar days from the date of the opening of bids. Any bid not accompanied by an acceptable bid security shall be rejected by the Procuring Entity as non-responsive.

16. Sealing and Marking of Bids

Each Bidder shall submit one (1) original and two (2) copies of the first and second components of its Bid.

The Procuring Entity may request additional hard copies of the Bid. However, failure of the Bidders to comply with the said request shall not be a ground for disqualification.

17. Deadline for Submission of Bids

The Bidders shall submit on the specified date and time at its physical address as indicated in paragraph 7 of the **IB**.

18. Opening and Preliminary Examination of Bids

18.1. The BAC shall open the Bids in public at the time, on the date, and at the place specified in paragraph 9 of the **IB**. The Bidders' representatives who are present shall sign a register evidencing their attendance. In case videoconferencing, webcasting or other similar technologies will be used, attendance of participants shall likewise be recorded by the BAC Secretariat.

In case the Bids cannot be opened as scheduled due to justifiable reasons, the rescheduling requirements under Section 29 of the 2016 revised IRR of RA No. 9184 shall prevail.

18.2. The preliminary examination of Bids shall be governed by Section 30 of the 2016 revised IRR of RA No. 9184.

19. Detailed Evaluation and Comparison of Bids

19.1. The Procuring Entity's BAC shall immediately conduct a detailed evaluation of all Bids rated "*passed*" using non-discretionary pass/fail criteria. The BAC shall consider the conditions in the evaluation of Bids under Section 32.2 of 2016 revised IRR of RA No. 9184.

19.2. If the Project allows partial bids, all Bids and combinations of Bids as indicated in the **BDS** 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 Security as required by **ITB** Clause 16 shall be submitted for each contract (lot) separately.

19.3. In all cases, the NFCC computation pursuant to Section 23.4.2.6 of the 2016 revised IRR of RA No. 9184 must be sufficient for the total of the ABCs for all the lots participated in by the prospective Bidder.

20. Post Qualification

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**.

21. Signing of the Contract

The documents required in Section 37.2 of the 2016 revised IRR of RA No. 9184 shall form part of the Contract. Additional Contract documents are indicated in the **BDS**.

Section III. Bid Data Sheet

Bid Data Sheet

<table>
<tr><th>ITB Clause</th><th></th></tr>
<tr><td>5.2</td><td>For this purpose, contracts similar to the Project refer to contracts which have the same major categories of work for Building.</td></tr>
<tr><td>7.1</td><td>Subcontracting is allowed provided the portion of work to be subcontracted shall not exceed fifty percent (50%) of the total project cost.

NOTE: The Contractor shall undertake not less than 50% of the contracted works with its own resources.

The Subcontractor must have an updated PCAB license and must be eligible for the portion of the works it will undertake, and shall submit documents required under Section 23.1 (Eligibility Requirements for the Procurement of Infrastructure Projects) of the Revised Implementing Rules and Regulations (IRR) of R.A. 9184.</td></tr>
<tr><td>10.3</td><td>The required PCAB License for this contract is as follows:

a. Size Range – Medium B for Building
b. License Category – A for Building

For joint venture bidders, a Joint Special License issued by the PCAB pursuant to Section 38 of RA 4566, and the PCAB license and registration individually issued to each joint venture partner must be submitted. Failure of the joint venture bidder to submit a Joint Special License may be a ground for its disqualification despite the submission of the individual licenses of each joint venture partner.</td></tr>
<tr><td>10.4</td><td>List of Contractor’s personnel to be assigned to the contract to be bid with their respective curriculum vitae showing, among others, their educational attainment, professional qualification and experiences.

The key personnel must meet the required minimum years of experience set below:

Key Staff Requirement for Construction Works

<table>
<tr><th>Position</th><th>No.</th><th>Minimum Total Work Experience (years)</th><th>Minimum Total Similar Work Experience (years)</th><th>Type of Experience</th></tr>
<tr><td>Project Manager</td><td>1</td><td>15</td><td>10</td><td>A licensed Civil Engineer with experience in Civil Works and must managed or supervised at least ₱ 140 Million worth of project of similar nature. refrigeration systems design and installation and must have managed at least</td></tr>
</table>
</td></tr>
</table>

					P 100 Million project of similar nature.
	Project Engineer	1	10	5	A licensed Mechanical Engineer with experience in refrigeration systems design and installation and must have managed at least ₱ 70 Million worth of project of similar nature.
	Registered Electrical Engineer	1	7	5	A licensed Electrical Engineer with construction experience in the supervision/installation of electrical systems for vertical structures as well as power supply/distributions systems and communication systems.
	Registered Electronics & Communications Engineer	1	7	3	A licensed Electronics & Communications Engineer with experience in the supervision/ installation of telecommunication system.
	Materials Engineer	1	5	3	A DPWH Accredited Materials Engineer II and a licensed Civil Engineer.
	Safety Officer/ Engineer	1	5	3	Certified by the Bureau of Working Conditions of DOLE or with Certificate of 40 hours training in Construction Occupational Safety and Health (COSH).
	Foreman (Buildings)	1	15	10	With experience as Foreman of at least 10 Building Construction projects
	Total	7			

Note:

(1) The total work experience (in years) shall refer to the number of years of work experience of the key personnel in the exercise of his profession regardless of the type of Project he had undertaken.

(2) Bidder shall also submit duly signed Statement of Availability of Key Personnel

<table>
<tr><td>10.5</td><td>The minimum major equipment requirements are the following:

<table>
<tr><th colspan="2">No. of Units</th><th>Equipment
(Capacity)</th></tr>
<tr><td>1</td><td>unit</td><td>Backhoe, 0.80 cu.m. capacity</td></tr>
<tr><td>1</td><td>unit</td><td>Pile Hammer</td></tr>
<tr><td>1</td><td>unit</td><td>Grader, 140 Hp</td></tr>
<tr><td>3</td><td>units</td><td>Dump Truck, 10 cu.m. capacity</td></tr>
<tr><td>2</td><td>units</td><td>Vibratory Roller Compactor, 10 Tons</td></tr>
<tr><td>2</td><td>units</td><td>Transit Mixer, 5 cu.m. capacity</td></tr>
<tr><td>1</td><td>unit</td><td>Truck Mounted Crane, 41-45 Tons</td></tr>
<tr><td>1</td><td>unit</td><td>Payloader, 1.5 cu.m. capacity</td></tr>
<tr><td>1</td><td>unit</td><td>Water Truck, 1000 gal.</td></tr>
<tr><td>2</td><td>units</td><td>Concrete Mixer, 1-bagger</td></tr>
<tr><td>2</td><td>units</td><td>Welding Machine</td></tr>
<tr><td>2</td><td>units</td><td>Jackhammer, 5 Hp</td></tr>
</table>
</td></tr>
<tr><td>12</td><td>Alternative Bid is not allowed.</td></tr>
<tr><td>15.1</td><td>The bid security shall be in the form of a Bid Securing Declaration or any of the following forms and amounts:
a. The amount of not less than ₱ 5,547,286.39, if bid security is in cash, cashier’s/manager’s check, bank draft/guarantee or irrevocable letter of credit;

b. The amount of not less than ₱ 13,868,215.98 if bid security is in Surety Bond.</td></tr>
<tr><td>16</td><td>Each Bidder shall submit one (1) original and two (2) copies of its first and second components (Technical and Financial components) of its bid.

Failure to comply with this requirement will result in the rejection of the bidder’s bid.</td></tr>
<tr><td>19.2</td><td>Partial bids are not allowed.</td></tr>
<tr><td>20</td><td>Only tax returns filed and taxes paid through the BIR Electronic Filing and Payments System (EFPS) shall be accepted.

NOTE: The latest income and business tax returns are those within the last six months preceding the date of bid submission.</td></tr>
<tr><td>21</td><td>Additional contract documents relevant to the Project that may be required by existing laws and/or the Procuring Entity, such as construction schedule and S-curve, manpower schedule, construction methods, equipment utilization schedule, construction safety and health program approved by the DOLE, PERT/CPM or other acceptable tools of project scheduling and Contractor’s All Risk Insurance.</td></tr>
</table>

Section IV. General Conditions of Contract

General Conditions of Contract

1. Scope of Contract

This Contract shall include all such items, although not specifically mentioned, that can be reasonably inferred as being required for its completion as if such items were expressly mentioned herein. All the provisions of RA No. 9184 and its 2016 revised IRR, including the Generic Procurement Manual, and associated issuances, constitute the primary source for the terms and conditions of the Contract, and thus, applicable in contract implementation. Herein clauses shall serve as the secondary source for the terms and conditions of the Contract.

This is without prejudice to Sections 74.1 and 74.2 of the 2016 revised IRR of RA No. 9184 allowing the GPPB to amend the IRR, which shall be applied to all procurement activities, the advertisement, posting, or invitation of which were issued after the effectivity of the said amendment.

2. Sectional Completion of Works

If sectional completion is specified in the **Special Conditions of Contract (SCC)**, references in the Conditions of Contract to the Works, the Completion Date, and the Intended Completion Date shall apply to any Section of the Works (other than references to the Completion Date and Intended Completion Date for the whole of the Works).

3. Possession of Site

3.1 The Procuring Entity shall give possession of all or parts of the Site to the Contractor based on the schedule of delivery indicated in the **SCC,** which corresponds to 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.

3.2 If possession of a portion is not given by the above date, 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 may be addressed through contract extension provided under Annex "E" of the 2016 revised IRR of RA No. 9184.

4. The Contractor's Obligations

The Contractor shall employ the key personnel named in the Schedule of Key Personnel indicating their designation, in accordance with **ITB** Clause 10.3 and specified in the **BDS**, 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.

5. Performance Security

5.1. 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 successful Bidder shall furnish the performance security in any of the forms prescribed in Section 39 of the 2016 revised IRR.

5.2. The Contractor, by entering into the Contract with the Procuring Entity, acknowledges the right of the Procuring Entity to institute action pursuant to RA No. 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.

6. Site Investigation Reports

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

7. Warranty

7.1. In case the Contractor fails to undertake the repair works under Section 62.2.2 of the 2016 revised IRR, 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.

7.2. The warranty against Structural Defects/Failures, except that occasioned-on force majeure, shall cover the period from the date of issuance of the Certificate of Final Acceptance by the Procuring Entity. Specific duration of the warranty is found in the **SCC**.

8. Liability of the Contractor

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

If the Contractor is a joint venture, all partners to the joint venture shall be jointly and severally liable to the Procuring Entity.

9. Termination for Other Causes

Contract termination shall be initiated 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 corrupt, fraudulent, collusive, coercive, and obstructive practices as stated in **ITB** Clause 4.

10. Dayworks

Subject to the guidelines on Variation Order in Annex "E" of the 2016 revised IRR of RA No. 9184, and if applicable as indicated in the **SCC**, 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.

11. Program of Work

11.1. The Contractor shall submit to the Procuring Entity's Representative for approval the said Program of Work showing the general methods, arrangements, order, and timing for all the activities in the Works. The submissions of the Program of Work are indicated in the **SCC.**

11.2. 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 **SCC.** 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 **SCC** 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.

12. Instructions, Inspections and Audits

The Contractor shall permit the GOP or the Procuring Entity to inspect the Contractor's accounts and records relating to the performance of the Contractor and to have them audited by auditors of the GOP or the Procuring Entity, as may be required.

13. Advance Payment

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 **SCC**, subject to the requirements in Annex "E" of the 2016 revised IRR of RA No. 9184.

14. Progress Payments

The Contractor may submit a request for payment for Work accomplished. Such requests for payment shall be verified and certified by the Procuring Entity's Representative/Project Engineer. Except as otherwise stipulated in the **SCC**, materials and equipment delivered on the site but not completely put in place shall not be included for payment.

15. Operating and Maintenance Manuals

15.1. If required, the Contractor will provide "as built" Drawings and/or operating and maintenance manuals as specified in the **SCC.**

15.2. If the Contractor does not provide the Drawings and/or manuals by the dates stated above, or they do not receive the Procuring Entity's Representative's approval, the Procuring Entity's Representative may withhold the amount stated in the **SCC** from payments due to the Contractor.

Section V. Special Conditions of Contract

Special Conditions of Contract

<table>
<tr><th>GCC Clause</th><th></th></tr>
<tr><td>2</td><td>The Intended Completion Date is Seven Hundred Twenty (720) calendar days.

The breakdown of the computation for the total contract time is as follows:
<table>
<tr><td>1</td><td>Total actual number of working days (Counted six (6) days a week)</td><td>576</td></tr>
<tr><td>2</td><td>Allowance for Holidays and Weekends</td><td>144</td></tr>
<tr><td>3</td><td>Allowance for Inclement Weather</td><td>-</td></tr>
<tr><td></td><td>Total Contract Time</td><td>720 calendar days</td></tr>
</table>
NOTE: The contract duration shall be reckoned from the start date and not from contract effectivity date.</td></tr>
<tr><td>4.1</td><td>The Procuring Entity shall give possession of all parts of the Site to the Contractor beginning on the date of effectivity of contract until the date of its termination and/or project completion.</td></tr>
<tr><td>6</td><td>The site investigation reports are: none</td></tr>
<tr><td>7.2</td><td>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.

In case of semi-permanent structures, such as buildings of types 1, 2, and 3 as classified under the National Building Code of the Philippines, concrete/asphalt roads, concrete river control, drainage, irrigation lined canals, river landing, deep wells, rock causeway, pedestrian overpass, and other similar semi-permanent structures: Five (5) years.

In case of other structures, such as bailey and wooden bridges, shallow wells, spring developments, and other similar structures: Two (2) years.</td></tr>
<tr><td>10</td><td>Dayworks are applicable at the rate shown in the Contractor’s original Bid.</td></tr>
<tr><td>11.1</td><td>The Contractor shall submit the Program of Work to the Procuring Entity’s Representative within 7 calendar days of delivery of the Notice of Award.</td></tr>
<tr><td>11.2</td><td>The amount to be withheld for late submission of an updated Program of Work is five percent (5%) of the previous work accomplishment.</td></tr>
<tr><td>13</td><td>The amount of the advance payment is 15% of the total contract price to be made in lump sum amount.</td></tr>
<tr><td>14</td><td>No further instruction.</td></tr>
</table>

15.1	The date by which “as-built drawings” (one original in Mylar, two blue print copies and electronic file in USB) are required to be submitted is before the release of final payment. The date by which the “Operations and Maintenance Manuals” are required is before the release of final payment.
15.2	No final payment shall be made by the Procuring Entity unless the Contractor prepares and submits the required as-built plans.
Additional Clause	
16	**NEGATIVE SLIPPAGE** The Procuring Entity shall ensure the timely implementation of infrastructure projects by monitoring the performance of the contractors. When the contractor incurs negative slippage during the contract duration, the Procuring Entity shall implement the calibrated measures provided under GPPB Circular No. 03-2019 dated 8 March 2019, entitled “Guidance on Contract Termination Due to Fifteen Percent (15%) Negative Slippage by the Contractor in Infrastructure Projects.” See attached Annex “A” of SCC.

ANNEX “A”
Special Conditions of Contract

Republic of the Philippines
gppb
Government Procurement Policy Board

ANNEX "A"

CIRCULAR 03-2019
8 March 2019

TO: Heads of Departments, Bureaus, Offices and Agencies of the National Government including State Universities and Colleges, Government Owned and/or Controlled Corporations, Government Financial Institutions, and Local Government Units

SUBJECT: Guidance on Contract Termination Due to Fifteen Percent (15%) Negative Slippage By the Contractor in Infrastructure Projects

1.0 PURPOSE

This Circular is issued to further guide procuring entities on the actions to be undertaken when contractors incurred negative slippage in the implementation of infrastructure projects.

2.0 SCOPE

All Departments, Bureaus, Offices and Agencies of the National Government including State Universities and Colleges, Government-Owned and/or Controlled Corporations, Government Financial Institutions and Local Government Units.

3.0 CONTRACT TERMINATION DUE TO DEFAULT BY CONTRACTORS IN INFRASTRUCTURE PROJECTS

3.1 The provisions for the grounds contract termination of on-going infrastructure project under GPPB Resolution No. 018-2004 remain effective and continue to be the basis by which both the procuring entities and contractors should be guided, thus:

"2. In contracts for Infrastructure Projects:

The Procuring Entity shall terminate a contract for default when any of the following conditions attend its implementation:

a) 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;[1]

[1] Authorizing the Government's Take Over by Administration of Delayed Infrastructure Projects or Awarding of the Contract to other Qualified Contractors, issued on 12 July 1983.

4.0 GUIDELINES

4.1 The provisions of the Guidelines on Termination of Contracts as embodied in GPPB Resolution No. 018-2004 remain to be the basis for contract termination in infrastructure projects.

4.2 To ensure the timely implementation of infrastructure projects and effective management of the performance of contractors, the following calibrated actions in response to delays in the implementation of infrastructure projects are hereby adopted:

4.2.1 Negative slippage of five percent (5%) –

The contractor shall be given a warning and be required to:

4.2.1.1 Submit a detailed "catch-up" program every two weeks in order to eliminate the slippage and to restore the project to its original schedule;

4.2.1.2 Accelerate work and identify specific physical targets to be accomplished over a definite period of time; and

4.2.1.3 Provide additional input resources such as the following: money, manpower, materials, equipment, and management, which shall be mobilized for this action.

The Implementing Unit shall exercise closer supervision and meet the contractor every other week to evaluate the progress of work and resolve any problems and bottlenecks.

4.2.2 Negative slippage of ten percent (10%) –

The contractor shall be issued a final warning and be required to come-up with a revised detailed "catch-up" program with weekly physical targets together with the required additional input resources.

The implementing unit shall intensify on-site supervision and evaluation of the project performance to at least once a week and prepare contingency plans for a possible termination of the contract or take-over of the work by administration or contract.

4.2.3 Negative slippage of fifteen percent (15%) –

The contractor shall be issued a final warning and be required to come-up with a revised detailed "catch-up" program with weekly physical targets together with the required additional input resources.

The implementing unit shall intensify on-site supervision and evaluation of the project performance to at least once a week and prepare contingency plans for a possible termination of the contract or take-over of the work by administration or contract.

5.0 All procuring entities are enjoined to apply this Guidelines on all government infrastructure projects.

6.0 This Circular shall take effect fifteen (15) days after publication.

7.0 For guidance and compliance.

SGD

LAURA B. PASCUA
Alternate Chairperson

Section VI. Specifications

(See Separate Documents)

TECHNICAL SPECIFICATION
PART I – SITE DEVELOPMENT

A. SURVEY AND LAYOUT WORKS

Scope of Work

This section covers topographic and hydrographic survey including layout and installation of markers.

A.01 Topographic Survey

Reference: All survey works shall be carried out in reference to bench marks or monuments designated by the Engineer.

Surveyor: Licensed Surveyor shall carry out all survey works specified in this section. The Contractor shall submit in advance for the Owner's approval, the true copy of license and qualifications of the surveyor to be employed for the works.

Prior to commencement of the work, the Contractor shall carry out the pre-construction topographic survey of the project by means of traversing, sounding and leveling, and shall prepare topographic plan on tracing paper in a convenient scale approved by the Engineer. The salient features of the area with respect to their position and shall have contour lines of 250mm vertical intervals. This survey shall form the basis for future quantity measurements.

All stations shall be established by closed traversing with an error of closure of not more than 1:3000.

The Contractor shall submit to the Owner the original and two (2) copies of the plan signed by the Surveyor and the Owner's Representative.

A.02 Layout and Installation of Markers

The Contractors shall layout the works and shall be solely responsible for the accuracy of such layout. The Contractor shall provide, fix and maintain all stakes marks or the like which are necessary for the accurate laying out of the works and shall take all necessary

precautions to prevent their removal or disturbances, all as approved by the Owner. The Contractor shall provide suitable range in the water to indicate the boundary lines.

Laying out of works shall include the verification of position of all markers, supply and installation of any and all other markers which the Contractor may require for the proper execution and completion of the work, and shall also include the repositioning of the Owner's marker if such repositioning is deemed necessary by the Contractor and approved by the Owner.

A. 03 Construction Survey Work Shall Provide:

1. Lines and reference points for the existing structures, road and other major site improvements included under this contract.

2. Reference points, lines and levels necessary for layout of building, roadway and other construction related to the control of surface and storm water.

A.04 Field Notes

Field Notes, calculations sheets and other documents shall be prepared in a manner acceptable to the Owner. The Contractor shall submit such notes and other documents on completion of the respective works or, if required, during the progress of works for the Engineer's inspection thereof.

B. EMBANKMENT

B.01 Description

This item shall consist of introducing suitable materials obtained authorized borrow areas situated beyond the right-of way limits of the project at locations designated by the Owner's Representative and place as required within the area and to the required elevation. The materials shall be of a quality satisfactory for the purpose intended. Embankment shall include the clearing and grubbing of sites and the removal of all materials.

B.02 Materials Requirements

Selected filling materials (banday banda) shall consist of all types earthen materials such as soil, gravel, sand, and rock of any geologic origin and any additional filler for blending which have distinctive properties ready identified in the field and have distinct engineering characteristics of which practical use can be made. Materials such as weeds, silt, muck and other superfluous or organic materials are not considered suitable materials for reclamation.

B.03 Construction Requirements

B.03.1 By Borrow

Borrow material shall be secured from land sources recommended as borrow outside the limits of the project or at locations/sites approved by the Owner's Representative. The Contractor shall construct and maintain haul roads. Likewise, the Contractor shall secure borrow from sources other than those designated, provided that the materials and location are approved by the Owner's representative, in which case, the Contractor shall, at his own expense, secure the pit and construct and maintain the haul roads together with the necessary right-of way for such roads and the right-of-access thereto.

The materials shall be hauled and placed in positions on the reclamation indicated on the plans.

Borrow pits when practicable shall be so excavated that they will drain to the nearest natural outlet or to such outlet as indicated on the plans or designated by the Owner's Representative. Side slopes of borrow pits in all cases shall be dressed to such slope as the Engineer may direct.

B.04 Compaction Requirement

The materials above MLLW whether obtained by dredging or from borrow pits shall be spread out and compacted in layers not exceeding 300mm preferably by at least six passes of a vibratory roller of at least 8 ton drawn by a tractor. The fill shall be compacted to not less than 90% of standard proctor test requirement.

In case there is a layer of very compressible clay of variable thickness underneath the areas to be reclaimed, the filling immediately on top of the original sea or river beds shall be executed in thin layers not exceeding one meter spread over a wide area to avoid bulging of the soft compressible clay, until the MLLW elevation is reached. If in spite of this precaution, some clay eruption is observed on the fill material, this clay will be removed down to the elevation of the original sea or river bed and replace with good material. In the event that the top sea or river bed material is composed of soft silt, muck or organic material, the Contractor shall remove such soft material prior to filling or filling operation should be programmed so that the soft material can be push out of the reclamation area as directed by the Owner's Representative. The reclamation area shall be filled to the finished elevation shown on the plan plus allowances for expected settlement. Filling of the reclamation area and the construction of bulkheads shall be given top priority over other construction activities.

Final Test Acceptance: Upon assumed completion of filling up works, moisture content of the fill shall be determined in accordance with ASTM D 2216. Test samples shall be taken at places designated by the Owner. For each place designated, two test samples shall be taken at depths of 300 mm and 700 mm respectively. The average moisture content of any two specimens taken in one place shall not exceed 90 percent. All tests shall be performed in the presence of the Owner's Representative.

Graders or any equipment acceptable shall do grading of roadbed prior to the start of pavement works to the Owner. Grading and compaction shall be brought up to the specified lines and elevation as shown on the drawings. The roadbed shall be subject to the Owner's approval prior to the start of pavement works.

C. GEOTEXTILE (FILTER FABRIC)

C.01 Scope of Work

This work covers all the following requirements regarding the installation of geotextile (filter fabric) in accordance with the lines, grades, and dimensions shown in the Drawing.

C.02 General

The geotextile fabric shall meet the following requirements in full. If required, a sample of 1.00 sq. m. shall be supplied to the Engineer for approval and retention purposes of comparative testing against materials randomly sampled from the site.

C.03 Physical Properties

The geotextile must be UV-stabilized and the manufacturer shall certify that the quality of polymer used in the manufacture of the geotextile is such that retention of at least 80% of original tensile strength values after 3 months continuous exposure to natural sunlight will be achieved.

Fibers used in the manufacture of the geotextile shall be resistant to long-term contact with damp cementations substrates or acid or alkali leachate solutions in the pH range 2-13.

Where the geotextile is required as a filter in silty soil conditions, the minimum porosity of geotextile shall be >80%.

C.04 Mechanical and Hydraulic Properties

The geotextile supplier is required to certify that material delivered to site will be proven to meet or exceed the following properties:

Minimum Nominal Mass (ASTM D3776)	200 g./sq.m.
Multidirectional Tensile Strength (R)	13.0 KN/m
Minimum Tensile Elongation at Break (E) (According to ASTM D4595)	40 %
Indicative resistance to installation and construction stress (R x E (According to ASTM D4595)	5.20 KN/m

CBR Puncture Strength (According to DIN 5407)	2100 N
Maximum Effective Opening Size, 0 (Dw)	0.11 mm
Permeability under 100 mm head (Vertical water flow rate obtained from testing in an acceptable international laboratory)	200 l/sq. m./sec

C.05 Storage, Installation, and Measurement

The geotextile shall be delivered to site with an outer wrapper to protect it from exposure to the elements.

Installation of the geotextile shall be in accordance with the manufacturer's instructions.

The Engineer reserves the right to sample geotextile delivered to site for individual quality control testing at the Contractor's expense. Material not meeting the manufacturer's certified values will be rejected from the site.

The geotextile shall be proven to resist dynamic puncture damage when subject to impact stress from rock (200-400 kgs.) dropped from a minimum height of 2.0 m. Geotextile failing to resist puncture shall not be accepted.

To facilitate site Quality Assurance, each roll of geotextile delivered to site shall be clearly labeled with brand name, grade, and production batch number and this information is required to be clearly printed at regular intervals along the entire length of each roll.

Geotextiles overlaps shall be at least 1.00 m. when installed underwater and 0.35 m. to 0.50 m. for installation in dry conditions (depending on the subsoil conditions) unless otherwise stated on the Drawings. Alternatively, geotextile overlaps are to be heat-welded or sewn using appropriate polypropylene or other synthetic thread and portable hand sewing equipment. Joint seams shall meet or exceed 80 % of the fabric's tensile strength.

The geotextile shall not be subjected to direct construction vehicle traffic and backfill operations shall closely follow laying of the sheet.

The Contractor shall be responsible for avoiding damage to the geotextile during placement and compaction of the initial fill layer. The capability of the geotextile to resist installation damage shall be considered by the Contractor prior to submission of materials to the Engineer for approval.

If required by the Engineer, the Contractor shall at no charge, excavate down to the geotextile at regular intervals to visually check against construction damage and on completion of the inspection, backfill and re-compact. Damaged geotextile areas shall be fully exposed and overlaid with an additional layer of geotextile prior to backfilling.

In the event that consistent visible damage to the geotextile is observed, the Contractor shall be obliged to upgrade the quality of geotextiles used in subsequent sections of the construction.

D. Core stones

Unless otherwise specifically stated, all rocks to be used shall be hard, durable, and not likely to disintegrate in sea water. Core stone shall weigh not less than 1,500 kilograms per cubic meter (sp. gravity = 1.5) or approximately 15.09 Newton (kN) per cubic meter of solid materials when reasonably dig.

Rocks with specific gravity higher than those specified above will be accepted but no increase in the price will be made on this account.

Core stone shall be of any size and shapes provided that the piece shall weigh not less than 10 kilograms and not more than 50 kilograms per piece. Not more than five percent (5%) of the entire quantity thereof shall consist of pieces the least dimension of which is not less than the size of pea gravel or as shown.

D.01 Slope Protection

This work includes the supply, filling and compactions of materials to places required to form the landfill areas as shown on the plans. The works to be carried out shall be, but not limited to the following:

a. Supply and placing of Class III Rock (10-50 kgs. / pc.) with Stone Masonry Mortar conform to the requirements given in item 505 Volume II of Standard Specification for the particular class given.

b. Supply and installation of filter fabric as on the plan.

c. Construction of revetment cap.

E. EXCAVATION FOR EMBANKMENT

E.01 Description

This item shall consist of removal and disposal of unsuitable material that may be required for the construction of the bulkheads and reclamation works. It shall include all necessary clearing and maintenance of the excavation prior to backfilling. It shall also include removal of obstruction or parts thereof, as required. Materials such as weed, fine silt, mud and other superfluous material are considered unsuitable materials.

E.02 Construction Requirements

Excavation will include removal of unsuitable material along the line of pile. All unsuitable material shall be disposed of as directed by the PFDA Engineer. Materials encountered in the excavation and determined by the Engineer as suitable for slope protection or other purposes shall be conserved & utilized as directed by the Engineer.

The Contractor shall submit before proceeding with the work under this item his proposed method of excavation including drawings and other details left open to his choice when not fully shown on the Plans. The Owner shall approve such method, drawings and details before actual work is started under this item.

F. REVETMENT CAP

F.01 Scope of Work

This item includes furnishing of materials, labor, equipment required to complete the following works:

a. Construction of revetment cap, with a minimum strength of 3,000 psi (20.70 MPa) at 28 days and shall conform to the requirement of *Part II.C – CONCRETE WORKS* and the plan.

b. 200 mm x 200 mm Reinforced Concrete Mooring Post.

c. Supply/Install of 16 mm dia. Stainless Mooring Ring (2 ½" opening) as shown on the plan.

G. PORTLAND CEMENT CONCRETE PAVEMENT

G.01 Description

This item shall consist of a pavement of Portland Cement Concrete with or without reinforcement, constructed on the prepared base in accordance with this Specification and in conformity with the lines, grades, thickness and typical cross section shown on the Plans.

G.02 Surface Preparation

Laying/spreading and compaction of Aggregate Base Coarse (Item 201) and Aggregate Sub-Base Coarse (Item200).

Base coarse materials shall conform to the grading requirement of Table 201.1 of the DPWH Standard Specifications 2012 and shall be free from vegetable matter and lumps or balls of clay, and shall be such nature that it can be compacted readily to form a firm, stable base.

Sub-base coarse materials shall be conforming to the grading requirements of Tale 200.1 of the DPWH Standard Specifications 2012 and shall consist of hard, durable particles or fragments of crushed stone, crushed slag or crushed natural gravel and filter of natural crushed sand or other finely divided mineral matter.

Aggregate base coarse & sub-base coarse shall be laid in accordance with Plan & DPWH Standard Specification 2012, Volume II.

Compactions of materials shall conform to *Part I.B.04*

Filling, Grading and Compaction of fill materials.

Except when provided herein, all applicable provisions of the 1995 DPWH Standard Specifications for Item 201 – AGGREGATE BASE COARSE & Item 200 – AGGREGATE SUB-BASE COARSE shall be followed.

Prior to the delivery of materials, the Contractor shall submit samples to the Engineer for approval.

G.03 Concrete Pavement

The material shall be Field Mix Concrete and shall have flexural strength of 3,500 psi (24.1 MPa) when tested at twenty-eight (28) days in accordance with the AASHTO T 97, or 22 respectively.

Concrete pavement shall have thickness of 200mm and shall conform to DPWH Standard Specification 2012, Item 311- Portland Cement Pavement and the Plan.

Construction joints shall be provided with 16 mm. diameter X 0.60 m. dowel spaced at 0.60 m. on center.

Joint filler shall be mixed asphalt and mineral or rubber filler. It shall be punched to admit the dowels where called for in the Plans.

The filler for each joint shall be furnished in a single place for the full depth and width required for the joint.

G.04 Concrete Tire Guard

The material under this item shall be a Field Mix Concrete with a compressive strength of 3,000 psi (20.7 MPa) at 28 days. Concrete tire guard shall conform to DPWH Standard Specification 2012 and as shown in the plan.

G.05 Sidewalk, Curbs and Gutters

Bed coarse material shall consist of cinders, sand, slag, crushed stone or other porous materials of such grading that all particles will pass through 12.5 mm (1/2 inch) sieve and shall be placed and compacted to form a bed of the required thickness as shown on the plans.

All sidewalks, curbs and gutter shall have a minimum compressive strength of 20.70 Mpa at 28 days and shall conform to the requirements of *Part II.C – CONCRETE WORKS.*

Excavation shall be made to the required depth and the base upon which the curb and/or gutter are to be set shall be compacted to a firm and even surface.

G.06 Concrete Curbs and Tire Guard Painting

G.06.1 Description

This item shall consist of placing markings on the curbs and barrier electrical post. The work shall include the furnishing of reflective pavement marking paint, whichever is called for in the contract, sampling and packing, preparing the surface, and applying the paint to the surface, all in accordance with this Specification.

The paint shall be applied to the size, shape and location of the markings shown on the Plans or as required by the Engineer.

G.06.2 Material requirements

Paint shall be mixed at the factory, ready for application without the necessity of using thinners and shall be of a smooth uniform quality. It shall conform to the composition of given in Table 606.1, Item 606 – Pavement Markings of DPWH Standard Specifications 2012.

G.06.3 Construction Requirements

The painting of lane markers and traffic strips shall include the cleaning of the surface, the application, protection and drying of the paint coatings.

The paint shall not be applied during rain or wet weather or when the air is misty, or when in the opinion of the Engineer conditions or unfavorable for the work.

The paint shall be so applied as to produce a uniform, even coating in close contact with the surface being painted.

H. DRAINAGE AND SEWERAGE SYSTEM

H.01 Scope of Work

The Contractor shall furnish all works, equipment materials, labor and supervision required to complete this item in full compliance with the terms and conditions of contract.

H.02 Material Requirements

Materials for storm drainage system shall meet the requirement specified in the following standard specifications.

Portland Cement	ASTM C - 150
Fine and Coarse Aggregates	ASTM C - 33
Reinforcing Steel	ASTM A - 615
Non- reinforced Concrete Pipes	ASTM C - 14
Reinforced Concrete Pipes	ASTM C - 76
Polyvinyl Chloride Pipes (for conductors and downspouts)	ASTM D - 2729

Materials for sewerage system shall meet the requirements specified in the following standard specifications.

PVC Pipes and Fittings (where called in the Plans)	ASTM D - 1784
Solvent Cement (for securing PVC joints)	ASTM D – 2564

H.03 Construction Requirements

H.03.1 Work Included

a. Excavation and Backfilling

All excavation shall conform to the requirements of *Part II-B – EXCAVATION AND BACKFILLING FOR BUILDINGS.*

b. Construction of Drainage Gutter Type Canals shall be constructed in accordance with the plans and shall conform to the requirements of *Part II-E – CEMENT AND MASONRY.*

c. Provide sewage holding tank as shown in the plan. Concrete shall be 20.70 MPa at 28 days and conforming to the requirements of *Part II.C- CONCRETE WORKS.*

d. All pipes shall conform to the requirements of *Part II.K – PLUMBING WORKS.*

I. OUTSIDE WATER DISTRIBUTION SYSTEM

I.01 Scope of Work

The Contractor shall furnish all works, equipment, materials, labor, testing and supervision required to complete the entire water supply system, in strict compliance with the Drawing and these Specifications.

I.02 Work Included

a. Outside Water Distribution line from local source to water distribution system.

b. Furnishing and installation of gate valves, check valve and valve manholes.

c. Supply and installation of all pipes and fittings as indicated in the Plan and Specification.

d. Hydrostatic pressure testing of pipelines.

e. All works guarantee.

f. Expenses for water connection from the existing Local Water Cooperative shall be to the account of end user / Philippine Fisheries Development Authority (PFDA).

Specifications for inside water distribution system, please refer to provision of *Part II.K – PLUMBING WORKS.*

I.03 Trench Excavation/Backfilling

All excavations shall be protected from damage due to water and the Contractor, at his own expense, shall provide pumps, enclosure and temporary drainage whenever necessary to keep the excavation free of water.

Whenever it is necessary to excavate deeper to bring the pipe below the hydraulic gradient or for the purpose of protecting the pipe line, the Contractor shall do all the excavation work and backfill at his own expense.

After pipes have been laid, tested and approved, backfilling shall be done with approved materials free from large clods, stones and organic matters.

Excavated materials may be used for backfilling as approved by the Engineer.

In all cases, backfill materials shall be moistened, if dry, and tampered to 95% compaction.

I.04 Pipe Laying and Anchorage

Pipes shall not be laid in water, or when trench or weather conditions are unsuitable for the work. Water shall be kept out of the trench until the joining in complete.

All dirt shall be removed from the inside of the pipe before laying. Changes in direction of pipes and other fittings that maybe unsettled by pressure shall be properly anchored by concrete thrust blocks. Likewise, all exposed pipe shall also be supported and anchored whenever necessary.

The design of these supports shall be approved by the Engineer and all extra costs shall be at the expense of the Contractor.

I.05 Sand Bedding and Backfilling

Each layer of sand bed and backfill shall be moistened, if dry and tampered to 95% compaction. Water settling shall not be permitted in clayey soils.

No backfilling shall commence without proper installation of trust blocks and pressure testing.

I.06 High Density Polyethylene (HDPE) Pipe and Fittings

HDPE pipe shall conform with the standard specifications of PNS 55-SDR 13.5.

Fittings shall be injection molded compression type fittings. Installation shall be as per manufacturer's specification.

I.07 Galvanized/Black Iron Pipes and Fittings

Galvanized/Black steel pipe shall conform to the requirements of "ASTM A – 120" and shall be Schedule 40. Fittings for galvanized pipe shall be of galvanized malleable iron.

I.08 uPVC Pipes and Fittings

Pipes shall conform to the requirement of uPVC Portable Water Pipes stated in *Part II-PLUMBING WORKS* of this specification.

I.09 Water Meter

Water meter must be "ARAD" or "Asahi" brand, or approved equivalent, screw type brand with operating pressure containing and standard specification of MWSS and LWUA.

I.10 Valves

Gate valves to be used shall be screw type. KITZ brand or equivalent.

I.12 Testing Requirements

Pressure testing of the piping system shall be performed as work progresses to detect leaks especially at the pipe joints. Testing shall be done prior to backfilling. Testing shall be made only after all the pipes are properly anchored. Test pressures and procedures as approved by the Engineer.

Pump test shall also be performed to check its performance under actual operating condition. This is done after the installation works so that the whole system including its controls shall be subjected to demonstration test to prove that they operate and function satisfactorily.

All pipes, fittings, valves, joints and coupling found to be defective or cracked during the test shall be removed and replaced by the Contractor at his own expense.

J. OUTSIDE ELECTRICAL LIGHTING AND POWER SYSTEM

All works shall conform to the applicable provision of *Part III – ELECTRICAL WORKS.*

K. PERIMETER FENCE AND GATES

K.01 Description

This item shall consist of furnishing and constructing posts, concrete hollow blocks fences and fabrication and installation of steel gates in accordance with the details and at the locations shown on the Plans, or as required by the Owner.

K.02 Material Requirements

The fence shall be plastered finish both faces with a minimum thickness of 16mm. It shall be painted both faces and conform to the provision of *Part II.I PAINTING.*

Concrete work shall conform to the applicable provisions of *Part II.C-CONCRETE WORKS.*

Masonry works shall conform to the applicable provisions of *Part II.E- CEMENT AND MASONRY.*

Welding works shall conform to the Standard Specifications for Welding and the requirements of AWS.DI.1 Section 8 “Quality of Welds” and shall conform to the provision of *Part I.L-WELDING/METAL WORKS.*

L. WELDING AND METAL WORKS

L.01 Scope of Work

This section covers the furnishing of all work, equipment, materials labor and supervision required to complete the items in full compliance with the Drawing and this Specifications.

L.02 Material Provisions

All welding shall conform to the "AWS CODE FOR ARC AND GAS WELDING IN BUILDING" and as herein specified or any other welding standards approved by the Owner's Engineer's.

All metal works shall be done in accordance with all related publications of American Institute of Steel Construction (AISC), American Society of Testing Materials (ASTM) and American Welding Society (AWS).

Use only welding equipment, electrodes welding wire and fluxes capable of producing satisfactory when used in a qualified welding procedure.

The Contractor shall be responsible for all errors of detailing for correct fitting of the structural members.

L.03 Storage of Materials

The materials shall be stored out of contact with the ground and in a manner and location that will minimize contamination and deterioration.

L.04 Materials

All materials shall be new stock, free from surface imperfections and shall conform to the applicable ASTM Specifications and equivalent standards.

L.05 Shop Connections

As detailed in the drawing or as approved by the Owner's Engineer.

L.06 Field Connections

Provide welded connections as shown in the drawing or as approved by the Owner's Engineer's.

M. METAL PAINTING

M.01 Scope of Work

The work under this section shall include labor, materials, equipment, plant and other facilities for the satisfactory performance of all work necessary to complete all field painting as specified herein.

The Contractor shall responsible for cleaning and removal of corrosive surface on newly installed steel members. No painting shall be allowed unless the newly installed steel members are free from corrosive and surface imperfections.

All members shall meet the requirements of the Standard Specification of the Standard Committee on supplies and shall be in accordance with the latest classification "A" of the Institute of Science in Manila, Philippines and shall be delivered on the work in the original containers with the labels intact and seals unbroken.

Davies epoxy paint or its approved equivalent shall be used on all surfaces to be painted and certificate of original quality shall be submitted to the Owner for inspection and approved before using any of the paint.

All materials to be used in the work shall be stored in a single place be kept near and clean at all times. Any damages on its surrounding shall be rectified. All precautions to avoid danger of fire must be observed by removing oily rags, waste at the end of daily works.

All exposed works shall be protected while the steel members are being painted. Any dirt, smear, etc. shall be removed by the Contractor to the satisfaction of the Owner.

The work under this section shall include labor, materials, equipment, plant and other facilities for the satisfactory performance of all work necessary to complete all field painting as specified herein.

M.02 Inspection and Preparation of Surfaces

The Contractor shall inspect all surfaces to paint and all defects shall be remedied before starting the work.

No work shall be started unless Contractor shall have made certain as to the dryness of surface. The test shall be made in the presence of the Owner's Engineer to verify dryness of surface to be painted.

Before painting is started, all spaces shall be broom, clean and all dust, dirt, plaster, grease and other extraneous matter which would affect the finish shall be removed.

M.03 Workmanship

All painting shall be done in the workmanlike manner by skilled painters only.

All materials shall be evenly applied on, as to form a firm of uniform thickness, free from sags, runs, crawl or other defects. The use of heavy brushes are required and shall be cleaned and in good condition. Paint shall be thoroughly stirred so as to keep the pigment evenly in suspension while paint is being applied.

In general, and unless otherwise satisfied, and/ or instructed by the Owner's Engineer or due to actual conditions on the job, not less than one-day time shall elapsed between application succeeding coats. Each coat of paint shall be allowed to dry thoroughly and inspected for the approval before succeeding coat is applied. No work done shall be done under the conditions that are unsuitable for the production of good results. No painting shall be done while welding is in process or is drying.

Before any painting is started, the Contractor shall furnish the Owner the paint manufacturers detailed painting recommendations as to surface preparations and application plus relevant information regarding the use of the paint.

M.04 Painting

Prime with EPOXY PRIMER for Steel and allow to dry 24 hours apply by brush 2-coats of EPOXY PAINT and finish with silver Quick Dry Enamel Paint (Boysen, Davis or approved equivalent). Allow overnight drying in between coats. The color to be applied is the same color of the existing paint applied in the structure.

N. MISCELLANEOUS

N.01 Scope of Work

This section covers the furnishing of all work, equipment, materials, labor and supervision required to complete the items in full compliance with the Drawing and this Specifications.

N.02 SIGNBOARD/SIGNAGE

Letters of signboard shall be made of stainless steel bearing the name of the port, owner, location, logo of PFDA, BFAR, DA and LGU to be stamped to the concrete wall as indicated in the plan.

N.03 FLAGPOLE

Construction of concrete pedestal shall conform to the provision of *Part II.C-CONCRETE WORKS.*

Galvanized iron pipe to be used shall be of Schedule 40 materials and with size shown on the plan.

Accessories such as pulley, ring, cord and standard size flag shall be provided by the Contractor.

Actual location is to be designated by the Owner.

Painting of Flagpole shall conform to the provision of *Part II. I – PAINTING.*

Welding works shall conform to the provision of *Part I.L – METAL WORKS.*

N.04 SODDING

N.04.1 Description

This item shall consist of furnishing and laying of live sod on the shoulders, slopes or other location as shown on the Plans or as ordered and laid out in the field by the Owner's Representative, all in accordance with this Specifications.

N.04.2 Material Requirements

The sod shall consist of healthy, dense, well-rooted growth of permanent and desirable grasses indigenous to the general locality where it is to be used and shall be free from woods or undesirable grasses. At the time the sod is cut, the grass on the sod shall have a length of approximately 50mm (if no longer, the grass shall be cut to approximately this length) and the sod shall have been raked free from debris.

The sod shall be cut into uniform squares approximately 300mm x 300mm but not larger than is convenient for handling and transporting.

The thickness of the sod shall be uniform as possible, approximately 40mm or more depending on the nature of the sod, so that practically all of the dense root system of the grasses will be retained, but exposed, in the sod strip and that the sod can be handled without undue tearing or breaking.

In the event the sod to be cut is in dry condition as to cause crumbling or breaking during cutting operations, the Contractor at his own expense, shall apply water in sufficient quantities at least 12 hours before cutting to provide a well-moistened condition of the sod to the depth to which is to be cut, Sods shall be subject to the approval of the Owner.

N.04.3 Construction Requirements

N.04.3.1 Preparation of the Earth Bed

The area to be sodded shall be constructed to the required cross-section and contour, and the tops and bottoms of the slopes shall be rounded as shown in the typical roadway sections.

The areas to be sodded shall be free from stones, roots or other undesirable foreign materials.

The soil on the area to be sodded shall be loosened and brought to a reasonably fine texture to a depth of not less than 30mm by means of equipment of hand methods adapted for the purpose.

N.04.3.2 Placing the Sod

The earth upon which the sod is to be placed shall be moistened to the loosened depth, if not naturally sufficient moist, and the sod shall be placed thereon within 24 hours after the same has been cut.

As the sod is being laid it shall be lightly tamped with suitable wooden or metal tampers sufficiently to set or press the sod into underlying soil.

N.04.3.3 Staking the Sod

On all slopes steeper than one vertical to four horizontals, sods shall have pegged with stakes 200-300mm in length, spaced as required by the nature of the soil and steepness in slope. Stakes shall be driven into the sod at right angles to the slope until flush with the bottom of the grass with water.

N.04.3.4 Top Dressing

After staking has been completed, the surface shall have cleared of loose sod, excess soil, or other foreign material, whereupon a thin layer of topsoil shall then be thoroughly moistened by sprinkling wit water.

N.04.3.5 Watering

The Contractor shall regularly water and maintained sodded areas in satisfactory condition for the duration of the Contract and until final acceptance of the work by the Owner.

N.05 TOPSOIL

N.05.1 Description

This item shall consist of topsoil furnished, transported and spread, or topsoil removed from designated areas, hauled and spread, in accordance with the Specification at the location shown on the Plans or as required by the Engineer.

N.05.2 Material Requirements

Topsoil furnished shall consist of fertile friable soil of loamy character without admixture of undesirable subsoil, refuse of foreign materials. It shall be obtained from well-drained arable land and shall be reasonably free from roots, hard clay,

coarse gravel, stones, larger than 50mm in size, coarse sand, noxious seeds, stick, brush, litter and other deleterious substances.

Top soil shall be capable of sustaining healthy plant life and shall be subject to approval of the Engineer.

N.05.3 Construction Requirements

N.05.3.1 Sources of Materials

Topsoil shall be obtained as specified in Item 102, Excavation, or as other approved sources. The Contractor shall notify the Engineer at least five days before he intends to start topsoil stripping operations. After inspection and approval by ht Engineer and prior to stripping any topsoil, the Contractor shall remove noxious weeds and tall grasses, brush roots, and stones larger than 50mm in diameter.

N.05.3.2 Placing

The topsoil shall be evenly spread on the areas and to the line and level shown on the Plans and compacted with a light roller to a depth of not less than 100mm. Spreading shall not be done when the ground topsoil is excessively wet, or otherwise in a condition detrimental to such work. The roadway surfaces shall be kept clean during hauling and spreading operations.

After spreading has been completed, large clods, stones, roots, stumps and other loose-lying materials shall be raked up and removed. Any erosion, irregularities of grade or other incidental damage to the surface of the topsoil shall be repaired and/or restored to the Engineer's satisfaction.

N.06 TREE PLANTING

N.06.1 Description

This item shall consist of furnishing and planting of trees on the areas in the arrangements indicated on the Plans or as indicated by the Engineer, including the digging and preparation of pocket holes, furnishing and placing the necessary topsoil, mulch, water, fertilizer and other incidentals necessary to complete the item.

N.06.2 Material Requirements

N.06.2.1 Topsoil

Topsoil shall conform to the requirements of Item *Q.02 TOPSOIL.*

N.06.2.3 Trees

All trees furnished under this Item shall be 3-4 feet in height and shall be true to name and shall follow standard names of tree in accordance with the Bureau of Forestry Standards as adopted by the DPWH.

Plants furnished by the Contractor shall be healthy, shapely and well-rooted and roots shall show no evidence of having been restricted or deformed at any time. Plants shall be well-grown and free from insect pest and disease.

N.06.2.4 Construction Methods

N.06.2.4.1 Bailing of Plants and Trees

Bailing is employed in plants and trees to be transplanted or transferred. To bail out the tree, the depth to which the root system reaches is first determined. Digging around the tree is then done, being careful not to cut many roots. Watering the soil before bailing is prohibited. The surface of the earth is kept as smooth as possible. After the tree is dug out, the roots and earth is wrapped immediately with the sacking materials. The tree could now be tipped over and rolled to a new location. These plants shall be hauled by the ball only and not by the plant itself. The slightest indication of manufactured earth ball or hauling of the plants itself will be a cause for rejection of such plants.

N.06.2.4.2 Digging Plants

All plants, nursery- grown or collected, shall be dug with care and skill immediately before shipping and avoiding possible injury to the plants loss or damage of the roots, particular attention being given to fibrous roots in this respect. After the plants are dug, their roots shall not be permitted to dry out. They shall not be exposed to hot temperatures.

N.06.2.4.3 Layout of Planting

Before digging pocket holes or beds, the Contractor shall lay out, by suitable staking, the location of all pocket holes and beds. The layout of planting shall be approved by the Engineer.

N.06.2.4.4 Pocket Holes

Pocket holes shall be dug to the locations as shown on the Plans or as directed by the Engineer. The holes shall be dug to the depth and cross section specified and should be of sufficient size to provide for not less than 150mm of top soil backfill beneath and around the root system.

N.06.2.4.5 Backfill

The pocket holes shall be backfilled with top soil as each plant is set. The top soil shall be well-tamped by the worker's feet, rods or other approved tamping devices as it is shoveled into the holes.

N.06.2.4.6 Planting

The plants to be planted shall be the specie, variety, and size specified. The operation of the actual planting shall not be performed at any time when the soil is not in a friable or workable condition. The engineer shall also approve the location of each individual plant taking into consideration its size and shape in order that the best possible arrangement will result.

One plant shall be planted in the center of each pocket holes and in the arrangement shown on the plans. The plants shall set on tampered topsoil backfill brought to the height necessary to plant them at the same depth they grew, carefully spreading out the roots of barefoot stock in their natural position. Upright plant shall be kept in vertical position. After placing the plant in the hole, the backfill shall be carefully made tamping with the worker's feet and with round end rods or other approved tamping devices. All compaction shall be such that no plant will settle lower than the depth above specified. No air pocket shall be left around the root of any plants.

After filling halfway on the earth ball, he urlap shall be loosened and the top of half cut off and removed after which the balance of the pocket hole shall be backfilled and tamped.

After planting, fertilizers shall be applied evenly over the top of the backfilled area. Care shall be used so that the fertilizer does not get into contact with the stem trunk, branches or leaves of the plants.

N.06.2.4.7 Watering and Maintenance

All plants shall be watered during the planting operations, subject to direction and approval of the Engineer. From time to time during the life of the Contract, sufficient water shall be applied so that not only will the topsoil backfill about each plant be kept moist but also for moisture to extend into the surrounding soil.

The Contractor shall, during the life of the contract, properly care for all plants, furnished, planted or stored, performing such watering, weeding, cultivating and other maintenance as shall be necessary to keep the stock in a live and healthy condition. Plants which have died back shall be replaced at no additional expense to the Owner.

N.06.2.4.8 Dead Trees

Before completion and final acceptance of the project, all trees not healthy or that have died back into the crown or beyond the normal pruning line shall be replaced by the Contractor at his own expense with trees of the specified specie or variety, size and quantity.

N.07 STAINLESS RAILINGS

All works shall conform to the applicable provision of *Part I.L – WELDING AND METAL WORKS.*

The 50mm diameter handrail shall be made of stainless steel pipe Sch. 40, Grade 416.

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TECHNICAL SPECIFICATION
PART II – BUILDING FACILITIES

A. SURVEY AND LAYOUT WORK

General: Under **PART I.A** Site Development and Utilities work shall also be applied to this term with the additional provisions.

A.01 Construction Survey Requirements

The Contractor shall establish the following:

a. Column/grid reference system of the building
b. Boundary or primary perimeter lines of the building
c. Entrance points of all utilities in the project area
d. Reference mark to control the floor elevation and other finish grades.

A.02 Interior Layout Work

As the work progresses, the contractor shall provide the reference points throughout each interior area, which are necessary to facilitate detailed layout of partitions, doors, windows, equipment foundation, ceilings and other structures.

All layouts, locations and dimensions shall be rechecked and verified in the plans by the contractor before starting any work items of the project.

B. EXCAVATION AND BACKFILLING FOR BUILDINGS

B.01 Scope of Work

The Contractor shall furnish all labor, materials, equipment, plant and other facilities and perform all work necessary to complete the preparation of site, excavation, filling and grading in strict compliance with the applicable drawings and as specified herein.

B.02 Stake and Batter Boards

The Contractor shall stake out the buildings accurately and establish grades, after which the approval of the Owner shall be secured before any excavation work is started.

Basic batter boards and basic reference marks shall be erected at the expense of the Contractor, at such places where they will not be disturbed during construction. Materials shall be stored and work shall be conducted in such manner as to preserve all reference marks set.

The Contractor shall construct two (2) permanent benchmarks of previously known elevations near or within the site of construction for determining any settlement that may occur during the progress of construction.

Elevation reading shall be taken on at least four (4) points in the buildings and other related structures. A permanent record of the weekly reading shall be kept at construction site and monthly report thereof shall be submitted to the Owner unless some unusual reading is observed in which case report shall be made immediately.

B.03 Excavation

Excavation work shall commerce after the fill has thoroughly compacted and attained the required elevation.

The Contractor shall make all necessary excavation for foundations to grade indicated on the Drawings. All trenches shall be excavated at a neat size, leveled to a line at the bottom, which is ready to receive the foundation. The Contractor shall not excavate to a depth below elevations shown on the Drawings. Work that is excavated to a greater depth than required by the drawings and this specification shall be filled with lean concrete (fc' = 13.8 Mpa) at the expense of the Contractor.

No footings shall rest on fill. If the excavations for foundation reveal that footing will rest on fill, excavations shall be carried until the desired stratum is reached for safe bearing. All excavations shall be made with proper allowance made for floor slabs and forms. Bottom of footing and foundations shall be approximately level, clean and clear of loose materials with the lower section true to size.

All excavation for drainage, sewer and water services, and other underground utilities, which are within the property line or scope of work indicated on the Plans, are included.

Sheathing shall be driven below the bottom of excavation deep enough. Where walls or footings are to be poured without forms, trench sides shall be sharp and true.

The Contractor, at all times protects the excavation and trenches from damage due to water. He shall provide pumps and equipment, build enclosures and shall construct and maintain temporary drainage and do all pumping necessary to keep the excavation free of water. Sheet pilling if needed shall be provided and tightly driven, shored and braced to maintain its position until removed.

B.04 Utilities

When encountered in work or as indicated, protect the existing active sewer, water, gas, electric, other utility services, and structures, when required for proper execution of work, relocate them as directed. If encountered, requiring protection or relocation, request in writing for decision of the Owner. Do not proceed until written instructions are obtained.

B.05 Backfilling, Grading and Compaction

After forms have been removed from footings, beams, foundations, walls, etc., and when the concrete work has attained full designed strength, backfill shall be placed free from waste and objectionable matters. After the backfill has settled, the Contractor shall fill all shallow places to bring the backfill area to grade.

The Contractor shall grade the site within the area indicated in the scope of work.

All filling materials shall be placed in layers not exceeding 150 mm in thickness, each layer being thoroughly wetted and compacted by rolling or tamping. All fills shall have 95% compaction.

The types of filling materials for buildings shall be selected earth fill and the source shall be approve by the Engineer.

C. CONCRETE WORKS

C.01 Scope of Work

The work shall include all labor, materials, equipment, plant and other facilities for the satisfactory performance of all work necessary to complete all concrete and reinforced concrete work shown on the Drawing and specified herein.

C.02 Concrete and Reinforced Concrete

All concrete and reinforced concrete work shall be done in accordance with the *DPWH Standard Specifications for Highways and Bridges revised 2012 and the current American Concrete Institute "BUILDING CODE REQUIREMENTS FOR THE REINFORCED CONCRETE (ACI 318 – 76)".*

C.03 Concrete Materials

Portland Cement shall be Type I and shall conform to "Specification for Portland cement (ASTM – C – 150-76a)".

Concrete aggregates shall be well-graded particles of gravel or crushed rock conforming to the *"Specification for Concrete Aggregates (ASTM C33 – 74a)".*

The maximum size of the aggregates shall not be larger than 1/5 of the narrowest dimension between forms nor larger than 3/4 of the minimum clear spacing between reinforcing bars nor larger than 25 mm in diameter.

Larger diameters of aggregates may be allowed in massive concreting with written permissions from the Owner.

Water used in mixing concrete shall be clean and free from injurious amount of oil, acid, alkali, salt, organic matter or other deleterious substances.

All reinforcing bars used shall be deformed and shall be free from rust, oil, defects, grease or kinks.

All reinforcing steel bars shall conform to the *PHILIPPINE STANDARD GRADE DSB 275.*

C.04 Storage of Materials

Cement shall be stored immediately upon arrival at the site in substantial, weatherproof bodegas, with a floor raised from the ground sufficiently high to be free from dampness.

Aggregates shall be stored in such a manner as to avoid the inclusion of other/foreign materials.

Reinforcing bars shall be placed in racks raised above the ground and protected from moisture and vegetation.

C.05 Samples and Testing

Testing except as otherwise specified herein shall be performed by an approved testing agency as proposed by the Contractor and approved by the Owner at no additional cost to the Owner.

Cement: Sampled either at the mill or at the site of the work and tested by an approved independent commercial or national testing laboratory at no additional cost to the Owner. Certified copies of laboratory test reports shall be furnished for each lot of cement and shall include all test data results and certificates that the sampling and testing cement shall be used until notice has been given by the Owner that the test results are satisfactory. Cement that has been stored, other than in bins at the mills, for more than four (4) months after delivery to the site shall be retest before use. Cement delivered at the site and later found under the test to be unsuitable shall not be incorporated into the permanent works.

Aggregates: Tested as prescribed in ASTM C 33.

Reinforcement: Certified copies of mill certificates of tests shall accompany deliveries of steel bar reinforcement. If requested by the Owner, additional testing of the materials shall be made at the Contractor expense.

Concrete Test: Provide for test purposes three sets of test specimens taken under the instructions of the Owner from each 50 cu. m. or fraction thereof of each class of concrete placed. At least one set of test specimens shall provided for each Class of concrete placed in each 8-hour shift. Each shall consist of two specimens, and shall be made from separate batch. *Samples shall be secured in conformity with ASTM C 172. Test specimens shall be*

made, cured and packed for shipment in accordance with ASTM C 31. Cylinders will be tested by and at the expense of the Contractor in accordance with the ASTM C 39. Test specimens will be evaluated separately by the Owner for meeting strength level requirements for each cylinder with CONCRETE QUALITY of ACI 318. The standard age of test shall be 28 days, however 7 days tests may be allowed, with the permission of the Owner provided that the relation between the 7 day and the 28 day strengths on the concrete is established by tests for the materials and proportions used. When samples fail to conform to the requirements for strength, the Owner shall have the right to order a change in the proportions of the concrete mix for the remaining portions of the work at no additional cost to the Owner.

C.06 Proportioning of Concrete Work

Trial design batches and testing to meet requirements of the classes of concrete specified shall be the responsibility of the Contractor. The design mix shall be of consistencies specified herein after in ***PART II.C – CONCRETE WORKS***/Test for slump, unit weight, and air content shall be performed in the field under the presence of the Owner.

Concrete Proportioning: Samples of approved aggregate shall be obtained in accordance with the requirements of ASTM D 75. Samples of materials other than aggregate shall be representative of those proposed for the project and shall be accompanied by the manufacturer's test reports indicating compliance with applicable specified requirements. Trial mixes shall have proportions, consistencies, and air content suitable for the work. Trial mix shall be designed for maximum permitted slump and air content. The temperature of concrete in each trial batch shall be reported. For concrete in each water-cement ratio, at least three test cylinders for each test age shall be made and cured in accordance with ASTM C 39. From these test results, a curve shall be plotted showing the relationship between water-cement.

C.07 Strength Requirement

All concrete, unless otherwise indicated, shall develop a minimum 28 - day cylinder strength of 20.70 MPa.

The Contractor shall submit mix design obtained from at least three standard cylinder samples made in accordance with Section 5.4 of the NSCB, 1991, for the strength required stating the proposed slump and the proportional weights of cement, aggregates and water. The mixes shall be approved by preliminary tests fourteen (14) days before concreting and shall show the required strength. No substitutions shall be made in the materials or mix without additional tests to show that the quality for concrete is satisfactory.

Slump: Tests shall be made in conformity with ASTM C 143, and unless otherwise specified by the Owner slump shall be within the following limits:

Structural Element	*Slump of Vibrated Concrete*	
	Minimum	*Maximum*
Concrete	50 mm	70 mm
Wall, Column and girder, beam, 25 cm maximum thickness	50 mm	70 mm
All other concrete	50 mm	100 mm

C.08 Joints

No reinforcement, corner protection angles or other fixed metal items shall be run continuous through joints containing expansion – joint filler, through crack - control joints in slabs on grade and vertical surfaces.

Pre – molded Expansion Joint Filler

Joints with Joint Sealant: At expansion joints in concrete slabs to be exposed, and at the other joints indicated to receive joint sealant, pre–molded expansion joint filler strips shall be installed at the proper level below the elevation with a slightly tapered, dressed and wood strip temporarily secured to the top thereof to form a groove, when surface dry, shall be cleaned of foreign matter, loosed particles, and concrete protrusions, there filled approximately flush with joint sealant so as to be slightly concave after drying.

Finish of Concrete at Joints*:* Edges of exposed concrete slabs along expansion joints shall be nearly finished with slightly rounded edging tools.

Construction Joints: Unless otherwise specified herein, all construction joints shall be subject for approval of the Owner. Concrete shall be placed continuously to form a monolithic construction. Fresh concrete may be placed against adjoining units, provided the set concrete is sufficiently hard not to be injured thereby. Joints not indicated shall be made and located in a manner not to impair strength and appearance of the structure.

Placement of concrete shall be at such rate that surfaces of concrete not carried to joint levels will not have attained initial set before additional concrete is placed thereon. Lifts shall terminate at such levels as indicated or as to conform to structural requirements as directed. If horizontal construction joints are required, a strip of 25 mm square – edge lumber, leveled to facilitate removal shall be taken to the inside the forms at the construction joint. Concrete shall be placed to a point 25 mm above the underside of the strip. The strip shall be removed (1) one hour after the concrete has been placed, any

irregularities in the joint lines shall be leveled off with a wood float, and all laitance removed. Prior to placing additional concrete, horizontal constructed joints shall be prepared as specified in *BONDING*.

Crack control joints in slabs on grade are specified in ***Part II.C – CONCRETE WORKS/SLABS ON GRADE.***

C.10 Placing Concrete

Concrete shall be transport from mixer to the place of final deposit in a continuous manner, as rapidly as practicable without segregation or loss of ingredient until the approved unit of work is completed. Placing will not be permitted when the sun, heat, wind or limitations of facilities furnished by the Contractor, prevent proper finishing and curing of the concrete. Concrete shall be placed in the forms, as closed as possible in the final position, in uniform approximately horizontal layers not over 300 mm deep. Forms splashed with concrete of form coating shall be cleaned in advance of placing subsequent lifts. Concrete shall not be allowed to drop freely more than 10 m in unexposed work not more than 1.0 m in exposed work; where greater drops are required, tremie or other approved means shall be employed. The discharge of the tremies shall be controlled so that the concrete may be effectively compacted into horizontal layers no more than 300 mm thick, and spacing o the tremies shall be such that segregation does not occur. Concrete to receive other construction shall be screeded to the proper level to avoid excessive skimming or grouting. Conduits and pipes shall not be embedded in concrete unless specifically indicated or as directed by the Owner.

Time Interval between Mixing and Placing: Concrete mixed in stationary mixers and transported by non-agitating equipment shall be placed in the forms within 45 minutes from the time ingredients are charge into the mixing drum. Concrete transported in truck mixers or truck agitator shall be delivered to the site of work discharge in the forms within 45 minutes from the time that the ingredients are discharge into the mixing drum. Concrete shall be placed in the forms within 45 minutes after discharge from the mixer at the jobsite.

Earth – foundation Placement: Leveling concrete for concrete foundations, exterior slabs and exterior foundations receiving equipment or machinery shall be placed upon undisturbed surfaces conforming to ***Part II.B – EXCAVATION AND BACKFILLING FOR BUILDINGS***. The surfaces shall be clean, free from mud and water. The concrete foundations maybe placed over the leveling concrete surfaces.

Conveying Concrete by Chute, Conveyor or Pump: Concrete may be conveyed by chute, conveyor, or pump if approved in writing. In requesting approval, the Contractor shall submit his entire plan of operation for time of discharge of concrete from the mixer to final placement in the forms, and the steps to be taken to prevent the formation of cold joints, in case the transporting of concrete by chute, conveyor or pump is disrupted. Conveyor and pump shall be capable of expeditiously placing concrete at the rate most

advantageous to good workmanship. Approval will not be given for chutes or conveyors requiring changes in the concrete materials or design mix for efficient operation.

a. **Chutes and Conveyors:** Chutes shall be of steel or steel line wood, rounded in cross section rigid in construction, and protected from over flow. Conveyors shall be designed and operated and chute section shall be set, to assure a uniform flow of concrete from mixer to final place of deposit without segregation of ingredients, loss of mortar, or change in slump. The discharge portion of each chute or conveyor shall be provided with a device to prevent segregation. The chute and conveyor shall be thoroughly cleaned before and after each run. Waste material and flushing water shall be discharge outside the forms. When using tilted chutes, the inclination should not be flatter than one (1) vertical and two (2) horizontal. From the outlet/mouth of the chute to the concrete surface, the maximum allowable height shall be 1.50 m.

b. Pumps shall be operated and maintained so that a continuous stream of concrete is delivered into the forms without air pocket, segregation of change in slump. When pumping is completed, concrete remaining in the pipeline shall be ejected, wasted without contamination of concrete already.

c. After each operation, equipment shall be thoroughly cleaned and the flushing water shall be splashed outside the forms.

d. ***Placing Concrete Reinforcement:*** Where congestion of the steel or other conditions will make placing or compaction of concrete difficult, a layer of mortar shall be first deposited in forms to a depth of approximately 25 cm. Mortar proportions shall be the same as the concrete minus the coarse aggregate.

C.11 Compaction

Immediately after placing, each layer of concrete shall be compacted by internal concrete vibrators supplemented by hand-spading, rodding and tamping. Tapping or other external vibration of forms will not be permitted unless specifically approved by the Owner. Vibrators shall not be used to transport concrete inside forms. Internals vibrators submerged in concrete shall maintain a speed of not less than 7,000 impulses per minute. The vibrating equipment at all times shall be adequate in number of units and power to properly consolidate all concrete.

Spare units shall be on hand as necessary to insure such adequacy. Duration of vibrating equipment shall be limited to time necessary to produce satisfactory consolidation without causing objectionable segregation. The vibrators shall not be inserted into lower courses that have begun to set.

Vibrators shall be applied at uniformity spaced points not further apart that the visible effectiveness of the machine.

C.12 Bonding

Bonding/depositing new concrete on or against concrete that has set; The surfaces of the set concrete shall be thoroughly cleaned so as to expose the coarse aggregate and be free of laitance, coatings, foreign matter and loose particles. Forms shall be retightened. The cleaned surfaces shall be moistened, but shall be without free flowing water when concrete is placed.

C.13 Slabs on Grade

Capillary water barrier or surged shall conform to ***PART II.B – EXCAVATION AND BACKFILLING FOR BUILDINGS.***

Concrete shall be compacted, screeded to grade, and prepared for the specified finish. Concrete shall be placed continuously so that each unit of operation will be monolithic in construction. Concrete shall be placed in alternate check board pattern terminating at crack-control joints or construction joints or may be placed in alternative paving lanes as limited by expansion, and contraction joints. Crack-control joints shall be expansion, contraction, or construction joints. Joints not shown shall be lifted at column centerlines and at intermediate intervals so that such panel is shall not be more than 55 sq.m. . Panels shall be approximately square with dimensioning of one side not more than 7.5 m. Forms shall remain in place for at least 12 hours after complete placement.

Construction joints may be formed by the insertion of hard pressed fiberboard strips inserted in the plastic concrete or may be cut with an approved concrete sawing machine, after the concrete has set. Unless otherwise indicated or directed the joints shall be 3 mm wide and depth equal to approximately 1/4 of the slab thickness of the maximum size of the coarse aggregate whichever is greater.

C.14 Finishes of Concrete

Within 12 hours after forms are removed, surface defects shall be remedied as specified herein. Fine and loose material shall be removed. Honeycomb, aggregate pockets, voids over 13 mm in diameter, and holes left by the rods or bolts shall be cut out to solid concrete, reamed, thoroughly wetted, brush-coated with neat cement rout, and filled with mortar. Mortar shall be a stiff mix of 1 part portland cement to not more than 2 parts fine aggregates passing the no. 16 mesh sieve, and minimum amount of water. The color of the mortar shall match the adjoining concrete color. Mortar shall be thoroughly compacted in place.

Holes passing through walls shall be completely filled from the inside face by forcing mortar through to the outside face. Holes, which do not pass entirely through wall, shall be packed full.

Patchwork shall be finished to match adjoining surfaces in texture and color. Patchworks shall be damping cured for 72 hours. Ambient temperature shall not be less than 10

degrees C. Dusting of finish surfaces with dry material or adding water to concrete surfaces will not be permitted.

C.15 Concrete Finished for Slabs

Slabs Receiving Concrete Paving: After concrete is placed and consolidated, slab shall be screed or struck off and no further finish is required.

Smooth Finish: Required only when specified; screed concrete and floats to required level with no coarse aggregate visible. After surface moisture has disappeared and laitance has been removed the surface shall be finished by float and steel trowel.

Broom Finish: Required for paving, stairs and landings; the concrete shall be screed and floated to required finish level with no coarse aggregate visible. After the surface moisture has disappeared and laitance ahs been removed, surface shall be float finished to an even, smooth finish. The floated surfaces shall be broom with a fiber bristle brush in a direction transverse to the direction of the main traffic.

Tolerance: Smooth and broom finished surfaces shall be true to plane with no deviation in excess of 3 mm in any direction when tested with a 3.0 m. straight edge.

C.16 Finishes of Concrete other than Floor Slabs

Within 12 hours after forms are removed, surfaced defects shall be remedied as specified herein. Honeycomb, aggregate, pockets, voids over 12 mm in diameter, and holes left by the rods or bolts shall be cut out to, reamed and thoroughly wetted, brush coated with next cement grout and filed with mortar. Mortar shall be a stiff mix of 1 part Portland cement and not more than 2 parts fine aggregates passing the no. 16 mesh sieve. Minimum amount of water using white Portland cement for all or part of the cement so that when dry, the color of the mortar shall be thoroughly compacted in place. Holes passing entirely through walls shall be completely filled from the inside face by forcing mortar through the wall shall be packed full. Patchwork shall be damp cured for 72 hours protruding portions of bar supports shall be ground flush with concrete surfaces that will be exposed, painted or plastered directly.

Smooth Finish: After the above operations have been completed, smooth finish shall be given to interior and exterior concrete surfaces that are to be painted or exposed to view. Smooth finished shall consist of thoroughly wetting and then brush-coating the surfaces with cement grout composed by volume of 1 part fine aggregate passing the no. 30 mesh sieve and mix with water to the consistency of thick mixes, so that the final color of grout when dry, will be approximately the same as the color of the surrounding concrete. Grout shall be cork or wood-floated to fill all pits and air bubbles; visible grout film. The grout shall be kept damp by means of fog spray during the setting period. The finish of any area shall be completed in the same day and the limits of a finished area shall be made at natural breaks in the finished surface.

Rough Slab Finish: Slabs to receive full and mortar setting beds shall be screeded with straightedges to bring the surface to the required finish plane with no aggregate visible.

Broom Finish shall be given to exterior surfaces except concrete stairs treads, entrances, and landings for buildings. The concrete shall be screeded and floated to the required finish level with no coarse aggregate visible. After the surface moisture has disappeared and laitance has been removed, surfaces shall be still troweled to an even, smooth finish. The trawled surfaces shall be broomed with a fiber bristle brush in a direction transverse to that of the main traffic.

C.17 Curing

Concrete shall be protected against moisture loss, rapid temperature change, mechanical injury from rain or flowing water, for a minimum period of 7 days.

Concrete shall be maintained in a moist condition at temperature above 10 degrees C throughout the specified curing period and until remedied work started under ***Part II.C – CONCRETE WORKS***. Curing activities shall be started as soon as free water has disappeared from the surface of the concrete after placing and finishing. Form under surfaces shall be moist cured with forms in place for the full curing period or, if other removes forms prior to the end of the curing period approved means. Curing shall be accomplished by any of the following methods of combination thereof, as approved.

Water: Water used in curing shall be reasonably cleaned and free of oil, salt, acid, alkali, or other substances injurious to the concrete. Drinking water may be used for curing test.

Moist Curing: Uniformed surfaces shall be covered with burlap or mats, wetted before placing and over-lap at least 150 mm. Burlap or mats shall be kept continually wet and in intimate contract with the surface. If the forms are removed before the end of the curing period, curing shall be continued on uniformed surfaces, using suitable materials.

D. CONCRETE WATER PROOFING

D.01 Scope of Work

This item shall consist of furnishing all water proofing materials, labor, tools, equipment and other facilities and undertaking the proper work required as shown on the plan and in accordance with this specification and as directed by the Engineer.

D.02 Material Requirements

Liquid water proofing materials shall be Multi-high Quality Water Proofing Film (Castle Brand or equivalent materials) applied in liquid form and shall be approved by the Engineer.

Integral water proofing shall be in accordance with the approved manufacture's recommended amount/ratio of admixture for cement.

D.03 Construction Requirements

D.03.1 Submittals

The Contractor shall submit for approval of the Engineer the manufacture's recommended method of water proof installation/construction.

D.03.2 Delivery, Storage, and Product Handling

Deliver and store materials in sufficient quantity to allow for uninterrupted flow of work. Materials shall be delivered to the job site in their original unopened packages, clearly marked with the manufacturer's name, brand name, description of contents, and shelf life of containerized materials.

Materials shall be stored in clean, dry areas, away from excessive heat, sparks, and open flame. Storage area shall be ventilated to prevent build-up of flammable gases. Maintain temperatures in the storage area below the materials' flash point and within limits recommended by the manufacturer's printed instructions.

Handle materials and containers during application work safely and in accordance with manufacturer recommendations. Store liquids in airtight containers and keep containers closed except when removing materials. Do not use equipment or containers containing remains of dissimilar materials. Do not expose foam component containers to direct sunlight for periods of time sufficient to cause contents to exceed 26 degrees C. Mark and remove from job site materials which have been exposed to moisture or that exceed shelf life limits. Not more than half the shelf life shall have expired when materials are applied.

D.03.2 Surface Preparation

Concrete surface to be applied with water proofing shall be structurally sound, clean, and free of dirt, loose mortar particles, paints, films oil, protective coats, etc.

All defects shall be properly corrected and carefully formed to provide smooth surface that is free or marks and properly cured prior to application works.

Inside corners where vertical and horizontal structure meet shall be provide with cants measuring 50 mm. or rounded at corners a minimum of 50 mm. radius.

Concrete slabs shall be properly graded to drain rainwater. Provide a minimum pitch of 1 on 100 to satisfactorily drain rainwater freely into the drainage lines, gutters and downspout.

Drainage connections and weep holes shall be set permit the free flow of water.

Any expansion and contraction joint shall be cleaned, primed, fitted with a backing rod and caulked with sealant.

Provide reglets of about 40 mm. deep by 40 mm. wide and 250 mm. above floor along walls or parapets for the termination of the membrane.

Prepared surface shall be cured and kept wet by sprinkling with water at regular intervals for a period of at least three days and allow surface to actually set within seven (7) days.

Ensure that the prepared surface has completely set and all defects repaired.

D.03.4 Application Procedure

Prior to application to multi-high quality water proofing film, concrete surfaces should be sound and cured without the use of curing compound. Apply a coat neutralized to removed oil, dirt and other contaminants.

Apply a primer coat of Cement and Mortar Intensifier (Castle Brand, PME 901) or equivalent (coating of the manufacturer at the rate of 25 square meter per gallon over the surface area to be applied by brush or roller brush (Make mix of PME 901 and 150% of water perfectly).
The prime coat shall be allowed to dry in 40 to 60 minutes, before applying the main water proofing materials.

Apply three (3) coats of Multi-high Quality Water Proofing Film (Castle Brand, PME 202) or equivalent by using brush or roller at the rate of three (3) to four (4) square meters per gallon for three (3) coats at a film dry thickness of 1.0 mm. to 1.2 mm.

Integral water proofing with anti-crack fiber application/procedure shall conform to manufacturer's specification.

D.03.5 Environmental Conditions

Do not apply roof system materials during inclement weather or when surface moisture, or visible dampness is present on the surface to be covered, or when precipitation is imminent. Use moisture-measuring methods and equipment as required to verify that the moisture conditions of substrate surfaces are in accordance with roof system materials manufacturer requirement prior to application of foam and coating materials. Substrate temperature shall be within limits recommended by the manufacturer's printed instructions, unless specified otherwise.

D.03.6 Special Safety Provisions

During application, the following shall be required unless in conflict with the manufacturer's recommendations or requirements of a recognized legal authority, in

which case, the manufacturer's recommendations or the legal authority's requirements take precedence.

a) Special Equipment

1) Air Masks

Wear fresh air supply masks when applying foam or when handling hazardous liquid materials. Respiratory protective devices shall be as recommended by AIHA Z88.6. Instruct personnel required to use respiratory protective devices in the use of the devices. Maintain such equipment and inspect regularly.

2) Eye and Face Masks

Use eye and face protection during materials applications. Eye and face protective equipment shall meet the requirements of ANSI/ISEA Z87.1.

3) Clothing and Gloves

Wear protective clothing and gloves during materials applications. Skin areas not covered by clothing shall be protected by protective creams.

b) Handling Precautions

1) Venting of Material Containers

Partially unscrew material container and drum caps to gradually vent the containers prior to opening. Do not inhale vapors. Decontaminate empty component containers by filling with water and allowing to stand for 48 hours with bung caps removed. Under no circumstances seal, stop, or close the containers which have been emptied of the foam component.

D.03.7 Alternative

No substitution of materials shall be made unless authorized in writing by the Engineer prior to starting the work of waterproofing.

D.03.8 Minimum Guarantee Period

a) The Contractor shall guarantee the work for a minimum guarantee period of five (5) years. The Contractor shall make sub-contract agreement with approved manufacturer in which following conditions shall be included:

b) Minimum guarantee of five (5) years after the issuance of Certificate of Completion.

c) The Contractor shall transfer all the rights to the Employer, free of charge after the issuance of Certificate of Completion.

D.03.9 Flood Testing

Flood test for duration of 24 hours shall be undertaken upon completion of water proofing installation to determine any leakage or defect on the materials and/or workmanship.

E. CEMENT AND MASONRY

E.01 Scope of Work

The work under this section shall include all labor, materials, equipment, plant and other facilities and the satisfactory performance of all work necessary to complete all cement and masonry work shown on the Drawings and as specified herein.

Unless otherwise indicated on the Drawings, or specified herein; all materials or work under this section shall be subject to provision under ***Part II.C – CONCRETE WORKS***.

E.02 Mortar

Cement mortar shall be one (1) part portland cement and three (3) parts of sand by volume.

Re-tampering is not permitted. No mortar that has stood for more than one (1) hour shall be used. Works shall not be permitted on mortar that has reached its initial set.

E.03 Concrete Hollow Blocks

Concrete hollow blocks shall have a minimum compressive strength of 350 psi computed from the average of five (5) units based on the average gross area and a minimum of 300 psi for individual unit. Samples shall be taken at random for every batch/delivery of at least 2,000 pieces and upon the discretion of the Engineer.

E.04 Laying of Concrete Hollow Blocks

Do not wet blocks before using. Blocks must be dry when laid.

The first row of blocks must be thoroughly anchored to concrete walls, columns or slabs. Courses shall be laid straight and uniform with regular running bond and vertical faces truly vertical and set true to line. Each block shall be adjusted to its position in the wall while the mortar is still soft and plastic enough to ensure good bond. The position of the block shall never be shifted after the mortar has stiffened. No re-alignment of a block shall be attempted after a higher or following course has been laid.

All horizontal and vertical reinforcing bars shall be anchored 20 diameters into the concrete walls, columns and slabs.

Dowel bars properly spaced are placed into walls, columns or slabs during pouring and hooked to the vertical bar, leaving bar diameter exposed to splice with the reinforcing bars of the hollow block walls during construction.

All units shall be laid with mortar composed of one (1) part Portland cement and three (3) parts of sand. Unless otherwise specified or detailed on the drawings, horizontal and vertical joints shall be 10 mm thick with full mortar coverage on the face shells and on the web surrounding the cells to be filled.

Reinforcing bars shall have a lap of 40 bar diameters. All horizontal reinforcement must be tied to the vertical reinforcement at their intersection.

After each days work, uncompleted wall shall be covered with waterproof materials to keep the inside of the blocks dry in case of rain.

E.05 Plain Cement Plaster Finish

All concrete columns, beams, roof beams, exposed concrete hollow block walls and floor surfaces to be applied with plain cement finish shall be clean and evenly wet, slushed with a wash or neat cement and followed by cement mortar 5mm thick which shall be applied with a wooden float to leave the surface straight, true, smooth, plumb and even, and all corner angles and all intersections shall be straight, true and rounded slighted. The use of an approved bond fluid is suggested.

E.06 Vitrified Tiles

E.06.1 Description

This item shall consist of furnishing all vitrified tiles and cementitious material, tools and equipment including labor required in undertaking the proper installation of walls and floor tiles as shown on the Plans and in accordance with this Specification.

E.06.2 Material Requirement

Glazed tiles and trims shall have an impervious face of vitrified materials fused onto the color scheme approved by the Owner.

Walls to be finished with glazed tile wainscoting or elsewhere indicated as shown on Drawings, shall be chipped off, cleaned thoroughly with a wire brush, wetted with clean water and then pointed up solid with 1:2 cement mortar before applying the tile wainscoting.

Unglazed tiles shall be hard dense tile of homogeneous composition. The materials used in the body, the method of manufacture and the thermal treatment determine its color and characteristics.

Vitrified unglazed floor tiles shall be applied in the areas shown in the Plan. Floor tiles installation shall not be started in spaces requiring wall tile until the wall has been installed.
Floor and wall tiles and their accessories shall be first quality free from lamination, serrated edges, chipped-off corners and other imperfections affecting their quality, appearance and strength. Tiles shall conform to samples approved by the Owner.

Floor and wall tiles shall be of imported or locally manufacture's brand, first in quality.

Samples of all floor and wall tiles shall be submitted to the Owner for approval as to color, texture and quality.

E.06.3 Installation of Floor Tiles

Floor tiles shall be laid out with 1:3 mortar, at least 10mm thick, tiles and their accessories to be used shall be thoroughly soaked in water before laying.

The mortar shall be spread until the surface of the mortar setting bed is absolutely even and uniformly sloped for drainage as required.

Limit the area that can be covered with tile before the mortar has reached its initial set to what can be placed in one (1) operation. When more setting has been spread that can be thus covered, the unfinished portion shall be cut to a clean leveled edge and removed.

Cement shall uniformly hand-dusted over the surface of the mortar setting beds immediately preceding the setting of the tiles. The tiles shall be placed, firmly pressed and tamped, into the mortar until true and even with finished floor tiles. The tiles shall be laid to a straight edge at regular intervals.

The inner edged of all borders against filed bodies shall be kept straight and any cutting of tiles for irregularities in wall lines or vertical planes shall be done along the outer edges. All surfaces not intended to be level shall be sloped as detailed or directed.

Tile nosing, coves, capping or other molded or shaped pieces shall be thoroughly backed up with mortar. They shall be rigidly set, reinforced, or otherwise made firm and secure.

As soon as the cement mortar bed has sufficiently set, the tiles in floors or other horizontal surfaces shall be washed with clean water and joints between the tiles grouted or pointed as detailed or directed

E.06.4 Installation of Wall Tiles

Wall tiles shall be laid out with 1:3 cement mortar. Tiles and their accessories shall be thoroughly soaked in water before laying. Tiles wainscoting shall be one meter and sixty cm. (1.60m) high from the floor and shall be placed continuously around the entire room including lavatory and the minor partitions, except the doors.

The concrete or masonry wall shall be roughened, cleaned and soaked well with water then followed by a skim of neat cement in such quantity as can be covered with tiles before the initial set of the cement.

Each tiles shall be buttered with the setting mortar tamped in place and brought to a plumb and true surface flush with adjacent tiles already in place. The back of each tile shall be covered with mortar to make the bed full and even.

Vertical units and joints, together with all caps, bases and moulding shall be maintained plumb, level and even. All caps, bases, and mouldings, or other trim tiles shall be backed filled with mortar.

As soon as the cement mortar beds have sufficiently set, the tiles for walls or other vertical surfaces shall be washed with clean water and joints between the tiles grouted or pointed as detailed or directed

F. STEEL AND METAL WORKS

F.01 GENERAL

Division 1, "General Requirements," contain provisions and requirements essential to these specifications; and apply to this Section, whether or not referred to herein.

F.01.1 Scope of Work

The work includes the furnishing of all labor, materials, equipment, and other incidentals necessary for the fabrication and installation of structural steel and miscellaneous metal works as specified in relevant items of these specifications and as indicated on the drawings.

F.01.2 Submittal

Before placing orders for the materials for the steel and metal works, the Contractor shall submit to the Engineer for approval shop drawings for all steelwork. All project shop drawings shall show the dimension of all parts, method of construction, bolts, welding sectional areas and other details

The details of connections shown on the shop drawings shall be such as to minimize formation of pockets to hold condensation, water, or dirt. A minimum gap between abutting angles and the like shall be provided wherever possible to eliminate any traps and facilitate maintenance painting.

No materials shall be ordered nor fabrication commenced until the shop drawings are approved by the Engineer.

Prepare samples of each type of metal handrails & railings stainless steel hairline finish and automotive paint finish as required on GIP metal. Where finish involves normal color and texture variations, include sample sets composed of two or more units showing limits of such variations expected in completed works.

1. Include 6" long samples of each distinctly different railing member including handrails, top rails, and posts. Include samples of fittings and brackets if requested by Architect.

2. Include sample of typical welded connection.

F.01.3. Storage of Materials

Structural materials, either plain or fabricated, shall be stored above the ground upon platforms, skids, or other supports. Materials shall be kept free from dirt, grease, and other foreign matter and shall be protected from corrosion.

F.02 MATERIAL REQUIREMENTS

Unless specified herein all steel structures and metals shall conform to the requirements of Section 3.8, "Steel and Metal Works". Connections where details are not specified or indicated herein, shall be designed in accordance with the, latest edition of American Institute of Steel Construction (AISC), Manual of Construction.

Structural steel works consisting of I-beams, Wide Flanges, base plates, channels, gusset plates and other structural steel shape shall be indicated on the drawings and shall be structural carbon steel conforming to ASTM A 36. However, structural steel works for mechanical machine room at existing refrigeration building as well as new refrigeration building shall conform to ASTM A992, Standard Specification for Structural Steel Shapes. Shapes shall be as given in AISC, Manual of Steel Construction.

Purlins shall be light gage steel conforming to ASTM A500.

Structural steel tubing shall conform to ASTM A500. Grade A.

All anchor bolts shall conform to ASTM A325.

All bolts and threaded fasteners shall conform to ASTM A307 Carbon Steel Externally Threaded Standard Fasteners.

Tubular stainless steel handrail, rail, and post shall either be conform to ASTM A554, Type 316 with diameter and galvanized iron pipe. Refer to the drawings for the type of handrail/railing.

Ladders shall be 38 mm diameter galvanized iron pipe support with 6 mm steel plate, 10 mm x 160 bolt with epoxy anchor.

Electrodes for arc welding shall be in accordance with the American Welding Society Code AWS D1.1 unless indicated otherwise. Welding electrodes shall be E70xx.

Fastenings: commercial types, except where special types are shown or required. Fastenings for all exterior work shall be non-ferrous, unless otherwise shown. Fastenings for steel and aluminium and for all other interior work, where exposed, shall match the fastened metal.

Miscellaneous: miscellaneous materials or accessories not listed above shall be provided as specified hereinafter the various items of work and/or indicated on the drawings, or in accordance with manufacturer's specifications.

Contractor shall furnish all plates, cup angles, connectors, etc. Required for completion of the structure even if every such item is not shown on the drawings.

Tests are required under the ASTM Standards for steel to be used in the Works and shall be carried out in the presence of the Engineer and at least four (4) days notice must be given to him of the dates proposed for such tests. Four (4) calendar days notice on which fabricated steelwork will be ready for inspection in the Contractor's yard.

The 50mm diameter handrail shall be made of stainless steel pipe or square tube Sch. 40, Grade 416.

F.03 EXECUTION

F.03.1 Qualification

Qualification of steel fabricators, erectors, and welders shall comply with requirements of sub-section 3.9.3.1.

F.03.2 Fabrication Requirements

a) Workmanship

Fabrication shall be performed within the permissible tolerance by the approved fabricator. All workmanship shall be of the best quality with respect to internationally recognized.

b) Cutting

Low - carbon structural steel may be cut by machine - guided torch instead of by shears or saw. Harmful notches, burrs, irregularities, etc., shall not be developed at the cut surface.

c) Contact Faces

Contact surfaces between basses or other elements bearing directly upon bearing plates shall be ground or milled as necessary for full effective bearing. Edges for welding shall likewise be properly prepared.

d) Bolt Holes

Bolt holes shall be according to engineering practice and as specified in these specifications. Gas burning of holes will not be permitted.

e) High Strength Bolt Assembly Preparation

Surfaces of high strength bolted parts in contact with bolt heads and nuts shall not have a slope of more than 1:20 with respect to a plane normal to the bolt axis.

Where the surface of a high strength bolted part has a slope of more than 1:20, a bevelled washer shall be used to compensate for lack of parallelism.

High strength bolted parts shall fit solidly together when assembled and shall not be separated by gaskets or any other interposed compressible materials.

When assembled, all joint surfaces including those adjacent to washers shall be free scale except tight mill scale, and shall be free from dirt, loose scale, burrs, and other defects that would prevent solid seating of parts.

Contact surfaces of friction-type joints shall be free from oil, paint, lacquer, or galvanizing.

f) Welding

All welding shall be done only by welders certified as to their ability ti perform in accordance with accepted testing requirement.

Welding of parts shall be in accordance with structural standards and the Standard Code for Arc and Gas welding in Building Construction of AWS, and shall only be done where shown, specified, or permitted by the Engineer.

Damage to galvanized areas by welding shall be thoroughly cleaned with wire brushing and all traces of welding flux and loose or cracked zinc coating shall be removed prior to painting. The cleaned area shall be painted with two coats of zinc oxide-zinc dust paint. The paint shall be properly compounded with a suitable vehicle in the ratio of one part zinc oxide to four parts zinc dust by weight. As an alternative to the above, the Contractor may submit for approval the use of a galvanizing rod or galvanizing solder to repair damaged areas.

The welding machine shall be a stable welder, and have suitable functions for the dimension of materials to be welded. The auxiliary tools used for welding shall perform sufficiently and adequately

The welding machine used for field welding shall be of readily adjustable for electric current.

g) Shop Assembly

Structural units furnished shall be assembled in the shop.

An inspection shall be made to determine that the fabrication and the matching of the component parts are correct.

Jigs shall be used for the assembly of units as much as possible to maintain appropriate position of mutual materials.

Approval of the Engineer shall be required when drilling temporary bolt holes or welding temporary support to the assembled structure.

The tolerances shall not exceed those allowed by codes and each unit assembled shall be closely checked to insure that all necessary clearances have been provided and that binding does not occur in any moving part.

In order to maintain accurate finished dimensions and shape, appropriate reverse strain or restraint shall be provided as required.

Assembly and disassembly work shall be performed in the presence of the Engineer, unless waived in writing by the Engineer any errors or defects disclosed shall be immediately remedied by the Contractor.

Before disassembly for shipment, component parts of the structures shall be match marked to facilitate erection in the field.

F.03.3 Fabrication Tolerances

a) Dimensional Tolerances for Structural Work

Dimensions shall be measured by means of an approved calibrated steel tape at the time of inspection. Unevenness of plate-work shall not exceed the limitation of the standard mill practice as specified in the American Institute of Steel Construction, "Manual of Steel Construction".

b) Camber

Reverse camber in any structure steel members in excess of 1/1,000 of the span length shall cause rejection. The minimum dead load camber for any structural steel member shall be as allowed by Code, or otherwise specified.

F.03.4 Inspection and Test of Welding

a) Inspection of Welding

Inspection of welding shall be executed for the following work phases.

1) Before Welding

Scum, angle of bevel, root clearance, cleaning of surface to be welded, quality of end tab, drying of welding rod.

2) During Welding

Welding procedure, diameter of coil and wire, type of flux, welding current and voltage, welding speed, welding rod position, length of arc, melting, cleaning of slag of each level under surface chapping, supervision of welding rod.

3) After Execution of Welding

Assurance of bead surface, existence of harmful defects, treatment of crater, quality of slag removal, size of fillet, dimension of extra fill of butt welding, treatment of end tab.

b) Testing of Welding

Twenty percent (20%) of welds contributing in the overall strength of the structure and which will be inaccessible for the inspection in service shall be tested.

Welding shall be tested by ultrasonic test to the extent specified herein or as directed by the Engineer.

Where partial inspection is required, the ultrasonic test shall be located at random on the welds so as to indicate typical welding quality.

If ten percent (10%) of the random ultrasonic tested indicate unacceptable defect, the remaining eighty percent (80%) of the welding shall be tested.

Repair welding required shall be ultrasonic tested after the repairs are made.

F.03.5 Corrections

In lieu of the rejection of an entire piece or member containing welding which is unsatisfactory or which indicates inferior workmanship, corrective measures may be permitted by the Engineer whose specific approval shall be obtained for making each correction. Defective or unsound welds or base steel shall be corrected either by removing and replacing the entire weld, or as follows.

a) Excessive convexity or overlap shall be reduced by grinding

b) Undercuts, lack of weld shall be repaired with necessary reinforcement of weld after removal of any foreign materials such as slag, dust, oil, etc.

c) Any defects such as slag inclusions, incomplete fusion, or inadequate joint penetration, shall be completely removed, cleaned and re - welded.

d) Cracks in welds or vase steel, shall be removed to sound steel throughout their length and 5cm beyond each end of the crack, followed by welding. The extent of the crack, depth and length, shall be ascertained by the use of acid etching, magnetic particle inspection or other equally positive means.

The removal of welded steel shall be done by chipping, grinding, oxygen cutting, oxygen gouging, or air carbon arc gouging and in such manner that the remaining welded steel or base steel is not nicked or undercut. Defective portions of the welding shall be removed without substantial removal of the base steel.

F.03.6 Installation

a) Installation Program

1) Prerequisite Condition

Prior to executing steel fabrication and field installation, the Contractor shall prepare a comprehensive installation program including engineering supervision organization, fabrication procedures, field installation procedures, material application, machinery applications, inspection procedure, scope and standard of quality judgement, and submit to the Engineer for approval.

2) Special Technical Engineering

Special technical engineering different from contact specification can be applied upon receiving approval of the Engineer.

b) Installation Requirement

1) Setting of Anchor Bolt and Others

a. Anchor bolts shall be set in accurate position by using templates.

b. The setting method shall be proposed to the Engineer for his approval before setting starts.

c. The threads of bolts shall be cured with an appropriate method against rust and/or any damage before tightening.

d. Non-shrink mortar shall be placed under base plates, well cured to obtain the sufficient strength before bearing loads are applied to base plates.

c) Temporary Bracing

1. Temporary bracing shall be installed as necessary to stay assemblies and assume loads against forces due to transport, erection operations or other work.

2. Temporary bracing shall be maintained in place until permanent work in properly connected and other construction installed as necessary for support, bracing, or staying of permanent work.

3. Extent and quality of temporary bracing shall be as necessary against wind and other loads, including seismic loads not less than those for which the permanent structure is designed to resist.

d) Adequacy of Temporary Connections

During erection, temporary connection work shall be securely made by bolting and/or welding for all dead load, wind, and erection stresses.

e) Alignment

No permanent bolting or welding shall be done until the alignment of all parts with respect to each other shall be true within the respective tolerances required.

f) Field Welding

a. Any shop paint or surfaces adjacent to joints where field welding is to be executed shall be wire brushed to remove paint/primer.

b. Field welding shall conform to the requirements specified herein, except as approved by the Engineer.

g) High Strength Bolts

Final tightening of high strength bolts shall be done by using manufacturer's power operated equipment without any overstress to the threads.

h) Correction of Errors

a. Corrections of minor misfits by use of drift pins, and reaming, chipping or cutting will be permitted and shall be provided as part of erection work.

b. Any errors to be corrected or adjusted, preventing proper assembly, shall be immediately reported to the Engineer, and such corrections or adjustments shall be made as necessary and approved by the Engineer.

c. Cutting or alterations other than as approved will not be permitted.

i) Erection

a. Erection and installation shall be as per approved shop drawings.

b. Each structural unit shall be accurately aligned by the use of steel shims, or other approved methods so that no binding in any moving parts or distortion of any members occurs before it is finally fastened in place.

c. Operations, procedures of erection and bracing shall not cause any damage to works previously placed nor make overstress to any of the building parts or components. Damage caused by such operations shall be repaired as directed by the Engineer at no extra cost to the Employer.

F.04 GALVANIZING

F.04.1 Preparation

All mild steel parts exposed to weather shall be hot-dipped galvanized after fabrication in accordance with the requirements of ASTM A 123 or ASTM A 153. Prior to galvanizing, the surfaces shall be cleaned of dirt, weld splatter, grease, slag, oil, paint or other deleterious matters. The steel surfaces shall be chemically de-scaled and cleaned with the same abrasive blast or other suitable method as approved by the Engineer.

F.04.2 Coating

The zinc coating shall consist of uniform layers 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 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 rich paints.

F.05 PAINTING

This work shall consist of the preparation of the metal surfaces, the application, protection and drying of the painted surfaces, and supplying of all tolls, tackle, scaffolding, labor and materials necessary for the entire work. Painting shall be applied in the field or shop as approved by the Engineer.

Unless otherwise specified or approved, all painting work for structural steel shall comply with the requirements of this Section.

F.05.1 Shop Painting

All structural steel shall be given a shop primer after fabrication and cleaning before delivery to the site.

All steel work shall be thoroughly dried and cleaned of all loose mill scale, rust and foreign matters by means of sand blasting or other suitable methods approved by the Engineer before shop painting shall be applied. Each individual piece shall be painted prior to assembly. Portions where field contact with concrete is required, shall not be painted.

Shop Paintings - Except for galvanized surfaces and items to be encased in concrete, clean ferrous metal surfaces shall be given one coat of Amerlock 400 Epoxy Primer at 100 Microns or approved equal. Additional coat shall be applied to surfaces that will be concealed or inaccessible for finish painting by Amerlock 400, Top Coat at 150 Microns with color or equivalent.

F.05.2 Field Painting

After erection, the Contractor shall thoroughly prepare and clean the entire surface of all structural steel from all dirt, grease, rust or other foreign matters. The entire surface of all members shall then be field painted.

F.05.3 Materials

a) Structural Steel Work

1. After surface preparation, steel work shall be given one coat of approved prefabricating primer.

2. Before final assembly of steelwork at the fabricator's shop, two shop coats of special red lead primer shall be applied to the surface of sections to be in the permanent contact, meeting faces and all other concealed surfaces. After final assembly, but before delivery to the project site, the steel work shall likewise be given two shop coats of special red lead primer.

b) Galvanized Steelwork

All galvanized steelwork shall be treated with zinc chromate two-pack etch primer followed by one coat of non-etch zinc chromate primer.

c) Miscellaneous Metal Work

Unless otherwise specified in other Sections of the Specifications or shown on the drawing, miscellaneous metal works such as ladders, structural steel ladder rungs etc. shall be given two shop coats of epoxy primer and two coats of epoxy enamel.

F.05.4 Construction Methods

a) Cleaning of Surfaces

Surfaces of metal to be painted shall be thoroughly cleaned; removing rust, loose mill scale, dirt, oil or grease, and other foreign substances. Unless cleaning is to be done by sand blasting, all weld areas, before cleaning is started, shall be neutralized with a proper chemical, after which they shall be thoroughly rinsed with water.

Three methods of cleaning are provided herein. The particular method to be used shall be as directed by the Engineer.

b) Hand Cleaning

The removal of rust, scale, and dirt shall be done by the use of metal brushes, scrappers, chisels, hammers or other effective means. Oil and grease shall be removed by the use of gasoline or benzene.

Bristle or wood fiber brushes shall be used for removing loose dirt.

c) Sandblasting

All steel shall be cleaned by sandblasting. The sandblasting shall remove all loose mill scale and other substances. Special attention shall be given to cleaning of corners and re-entrant angles. Before painting, sand adhering to the steel in corners and elsewhere shall be removed. The cleaning shall be approved by the Engineer prior to any painting which shall be done as soon as possible before rust forms.

d) Flame Cleansing

All metal, except surface inside boxed members and other surfaces which shall be inaccessible to the flame cleaning operation after the member is assembled, shall be flame cleaned in accordance with the following operations.

1) Oil, grease, and similar adherent matter shall be removed by washing with a suitable solvent. Excess solvent shall be wiped from the work before processing with subsequent operations.

2) The surface to be painted shall be cleaned and dehydrated (free from occluded moisture) by the passage of oxyacetylene flames which have an oxygen to acetylene ratio of at least 1.0. The oxyacetylene flames shall be applied to the surfaces of the steel in such a manner and at such speed that the surfaces are dehydrated; dirt, rust loose scale in the form of blisters or scabs, and similar foreign matters are freed by the rapid, intense heating by the flames. The number arrangement and manipulation of the flames shall be such that all parts of the surfaces to be painted are adequately cleaned and dehydrated.

3) Promptly after the application of the flames, the surfaces of the steel shall be wire brushed, hand scraped wherever necessary, and then swept and dusted to remove all free materials and foreign particles.

4) Paint shall be applied promptly after the steel has been cleaned and while the temperature of the steel is still above that of the surrounding atmosphere.

e) Weather Conditions

1) Exterior Coatings: Coatings to surface shall not be applied during foggy or rainy weather, or under the following surface temperature conditions: below 4°C, or over 35°C, unless approved by the Engineer.

2) Interior Coatings: Coatings shall be applied when surfaces to be painted are dry and the following surface temperature van be maintained: between 18 to 35°C during the application.

f) Application

Paint shall be factory tinted and mixed. All paint shall be field mixed before applying in order to keep the pigments in uniform suspension.

1) Field Painting

When the erection work is complete, including all bolting and straightening of bent metal, all adhering rust, scale, dirt, grease or other foreign materials shall be removed as specified above.

As soon as the Engineer has examined and approved each steel and metal works structures, all field bolts, all welds, and any surfaces from which the top or first coat of paint has become worn off, or has otherwise come defective shall be cleaned and thoroughly covered with one coat of paint.

Surfaces to be bolted and surfaces which shall be in contact with concrete, shall not be painted. Surfaces which shall be inaccessible after erection shall be painted with such field coats as are required. When the paint applied for retouching the shop coat has thoroughly dried, and the field cleaning has been satisfactorily completed, such field coats as are required shall be applied. In no case shall a succeeding coat be applied until the previous coat is dry throughout the full thickness of the paint film. All small cracks and cavities which were not sealed in a watertight manner by the first field coat shall be filled with a pasty mixture of red lead and linseed oil before the second coat is applied.

The following provision shall apply to the application of both coats. To secure a maximum coating on edges of plates or shapes, bolt heads and other parts subjected to special wear and attack, the edges shall first be striped with a longitudinal motion and the bolt heads with a rotary motion of the brush, followed immediately by the general painting of the whole surface, including the edges and bolt heads.

The application of the second field coat shall be deferred until adjoining concrete work has been placed and finished. If concreting operations have damaged the paint, the surface shall be re-cleaned and repainted.

2) General Manners

Painting shall be done in a neat and workmanlike manner. Paint may be applied with hand brushes or be spraying, except aluminum paint which preferably shall be applied by spraying. By either method the coating of paint applied shall be smoothly and uniformly spread so that no excess paint shall collect at any point. If the work done by spraying is not satisfactory to the Engineer hand brushing shall be required.

3) Brushing

When brushes are used, the paint shall be so manipulated under the brush as to produce a smooth, uniform, even coating in coating in close contact with the metal or with previously applied paint, shall be worked into all corners and crevices

4) Spraying

Power spraying equipment shall be used to apply the paint in a fine spray. Without the addition of any paint, the sprayed area shall be immediately followed by brushing, when necessary, to secure uniform coverage and to eliminate wrinkling, blistering, and air holes.

5) Removal of Paint

If the painting is unsatisfactory to the engineer the paint shall be removed and the metal thoroughly cleaned and repainted.

G. ROOFING AND TINSMITHRY

G.01 SCOPE OF WORK

The work shall include but not limited to all labor, materials, tools, equipment and incidentals necessary to furnish and install the roofing sheets including fittings, flashing caps, ridge rolls, gutters and construction of concrete eaves and canopy excluding eaves and canopy excluding waterproofing, to provide completely sound water tight roof the building as shown on the Drawings and specified herein.

G.02 MATERIAL REQUIREMENT

G.02.1 Concrete Canopy

Concrete materials shall comply with the requirements in Section C, Concrete Works.

Reinforcing Steel bars shall likewise conform to the requirements in Section F, Steel and Metal Works of these Specification.

G.02.2. Metal Roofing

a) Metal Roofing Panel

Roofing for new refrigeration building shall be pre-painted metal roofing as specified and indicated on drawings. Roof panels shall be capable of supporting design loads between unsupported spans with deflection not greater than 1/180 of the span width on roofs, but in no case shall the wall thickness of the sheets of the panels be less than specified herein. Where gauges are specified, they are subjected to normal manufacturing tolerances. Roofing panels shall be long span rib-type roofing system, with a total coated thickness of not less than 0.60 mm (ga.24) utilizing a double baked-on epoxy primer and high grade polyester color finish.

Form sheets of galvanized steel shall have an alloy coating of 55% aluminum, 43% zinc and 1.6% silicon. Coating standard conforming to AZ 150 (150gm/m2) and ASTM A-792. Steel sheets shall be no lighter than 0.6 mm (ga.24) thick for roofing sheet but no case lighter than required to meet the deflection requirement specified herein for maximum deflections. Sheet profile shall be as specified herein.

Pre-finished Coating shall be factory applied. Finish coating shall feature a baked-on high-grade polyester coating providing excellent weather, corrosion, stain, and chemical resistance, and having passed all standard test requirements. Coating shall have a minimum top coat of 20 microns for exterior surfaces and not less than 8 microns for back coat finish. Exterior color as selected and approved by the Owner and Architect/Engineer.

b) Accessories

Sheet metal flagships, trim, moldings, closure strips, caps, splash pans, and other similar sheet metal accessories used in conjunction with performed metal panels shall be made of the same materials and finish as used for the panels, except that such accessories which will be concealed after installation, may be provided without the finish of they are aluminium-coated or zinc-coated steel. Thickness of the metal shall be closed-cell or solid cell synthetic rubbers, neoprene, or polyvinyl chloride pre-molded to match the configurations of the preformed metal panels. Finish color for flashing, trims, moldings, caps, and other exterior metal components shall be the same as that of the roofing panels.

c) Fastener

Fasteners for attaching panels to structural supports and to adjoining panels shall be as approved and in accordance with the manufacturer's recommendations. Unless specified otherwise, the fasteners shall be either self-tapping screws, bolts and nuts, self-locking rivets, self-locking bolts, end-welded studs, bolted or riveted studs, or step rivets held by steel straps. Design the fastenings system to withstand the design loads indicated. Fasteners, with the exception of those having integral hexagonal washer heads and those having aluminum drive caps, shall have composite metal and neoprene washers. Fasteners having integral hexagonal washer heads and fasteners having aluminum drive caps shall have polychloropene washers.

d) Screws

Screws shall not be less than No. 14 diameter self-tapping type or self-drilling and self-tapping type.

e) Blind Rivets

Blind rivets shall be stainless steel with 5 mm (3/16 inch) nominal diameter shank or aluminum with 5 mm (3/16 inch) nominal diameter shank. Use threaded-stem-type rivets for other than the fastening of trim. Rivets with hollow stems shall be closed.

f) Bolts

Bolts shall not be less than 6 mm (1/4 inch) diameter, shouldered or plan shank required, with nuts.

g) Joint Sealing Materials

Joint sealing material shall be as recommended by roofing panel manufacturer.

G.03 INSTALLATION

G.03.1 Concrete Canopy

Construction of concrete eaves and canopy shall be in accordance with Section C, "Concrete Works" as shown on the Drawings and as directed by the Engineer.

Waterproofing shall be in accordance with Section D, "Concrete Waterproofing".

G.03.2 Metal Roofing

a) Installation

Install in accordance with the manufacturer's approved erection instructions and diagrams, except as specified otherwise herein. Panels shall be in full and firm contact with supports and each other at side and end laps. Where sheets are cut in the field or where any of the factory-applied coverings or coatings are abraded or damaged in handling or installation, they shall, after the necessary repairs have been made with materials of the same types as the weather coating, be approved before installation. All cut ends and edges, including those at openings through the sheets, shall be sealed completely. Defects or errors in the materials shall be corrected in an approved manner. Remove materials which cannot be corrected in an approved manner and provide non-defective materials. Provide molded closure strips where indicated and whenever sheet terminate with open end after installation.

b) Roof Sheets

Apply roofing sheets with the configurations parallel to the slope of the roof and as indicated on drawings. Provide roofing sheets in the longest lengths obtainable, with end laps occurring only at structural members with no transverse joints except at the juncture of ventilators, roof hatch, and similar openings. Lay all side laps away from the prevailing wind and seal side and end laps with joint sealing material. Flash and seal the roof at the ridge, at eaves and rakes, at projections through the roof, and elsewhere as necessary. Accomplish the placement of closure strips, flashing, and sealing material in an approved manner that will assume complete weather tightness.

c) Flashing

All flashing and related closures and accessories in connection with the preformed metal panels shall be provided as indicated and as necessary to provide a watertight installation. Details of installations that are not indicated shall be in accordance with the panel manufacturer's printed instructions and details or the approved shop drawings. Installation shall allow for expansion and contraction of flashing.

d) Fasteners

Fastener spacing shall be in accordance with the manufacturer's recommendations and as necessary to withstand the design loads indicated. Install fasteners in valleys or crowns as recommended by the manufacturer of the sheet being used. Install fasteners in straight lines within a tolerance of 12 mm in the length of a bay. Drive exposed penetrating type fasteners normal to the surface and to a uniform depth to seat gasket washers properly and drive so as not to

damage factory-applied coating. Exercise extreme care in drilling pilot holes for fastenings to keep drills perpendicular and centered in valleys or crowns, as applicable. After drilling, remove metal fillings and burrs from holes prior to installing fasteners and washers. Torque used in applying fasteners shall not exceed that recommended by the manufacturer. Remove sheets deformed or otherwise damaged by over-torqued fastenings, and provide new sheets.

H. CEILING WORKS

H.01 Gypsum Board

H.01.1 Scope of Work

The scope of work shall consist of furnishing all tools, labor, equipment, and materials, unless otherwise specified to complete all ceiling works shown on the Drawings and specified herein.

H.01.2 Material Requirement

Gypsum Board: Maximum permissible length, ends square cut, tapered edges on boards to be finished, unless otherwise indicated

Standard gypsum board:

- Core – Regular gypsum core
- Surface paper – 100 percent recycled content paper on front, back and long edges
- Long Edges: [Square] [Tapered]
- Overall thickness: [1/4 inch] [3/8 inch] [1/2 inch]
- Panel complies with requirements of Standard Specification for Gypsum Board

Mold and Moisture resistant gypsum board:

- Core – Mold and moisture resistant gypsum board
- Surface paper - 100 percent recycled content moisture/mold/mildew resistant paper on front, back, and long edges
- Long Edges: [Square] [Tapered]
- Overall thickness: 1/2 inch
- Panel complies with requirements of Standard Specification for Treated Core and Non-Treated Core Gypsum Sheathing Board

Polyvinyl Chloride Panels:

- Fire retardant
- Overall thickness: 8mm
- Hallow core
- Matte synthetic wood finish. Color sample to be approved by the architect/engineer.

Unless otherwise shown on the drawings, the Contractor shall use non-structural metal framing in accordance with the schedule below:

- Steel Sheet Components – comply with ASTM C645 (Standard Specification for Nonstructural Steel Framing Members)
- Protective Coating – hot dip galvanized unless otherwise indicated.

H.01.3 Preparation

Protect adjacent areas and air distribution systems from gypsum dust.

Verify that plenum surfaces above gypsum & pvc board ceilings are free of dirt, dust and loose construction soil, that construction is otherwise complete and equipment installed, and that surfaces and openings are sealed to prevent leaks, prior to commencing installation of ceiling assembly

H.01.4 Installation

Gypsum board shall be installed in accordance with manufacturer recommendation and Standard Specification for Application and Finishing of Gypsum Board.

- Fasten gypsum board with screws.
- Install gypsum board plumb, level and plane.
- Erect gypsum board with edges and ends occurring on framing members, except edges and ends that are perpendicular to framing members
- Locate joints on opposite sides on different studs. Joints are not permitted at corners of openings unless detailed otherwise.
- Double Layer Applications: Gypsum backer board is permitted for first layer. Secure second layer to first with adhesive and sufficient mechanical support to hold in place. Apply adhesive in accordance with manufacturer's recommendations
- Ensure joints of second layer do not occur over joints of first layer
- Water Resistant Gypsum Board: Treat cut edges and holes with sealant
- Tolerances: Maximum variation of finished surface from true flatness 1/8 inch in 10 feet (3 mm in 3m)

Control joints must place consistent with lines of building spaces and as directed by Project Manager. Provide at the following conditions:

- Where system abuts structural elements.
- At dissimilar materials
- Partitions exceeding 30 feet (9.15m) lengths.
- Ceiling exceeding 50 feet (15.24m) or 2,500 sq. ft. (232.25sq. m)
- Wings of "L", "T" or "U" shaped ceilings.

Corner Beads must place at external corners; Use longest practical lengths.

Edge Trim must be placed where gypsum boards abut dissimilar materials.

Tape, fill and sand exposed joints, edges, corners and openings to produce surface ready to receive finishes. Feather coats onto adjoining surfaces.

Protect gypsum board work from moisture and contaminants.
Use the same installation method and ceiling support system for PVC Ceiling Panels. Conceal self-tapping screws within panel grooves. Edges and trims must be free of burs.

Remove and replace defective work.

I. CARPENTRY WORKS

I.01 Scope of Work

The scope of work shall consist of furnishing all tools, labor, equipment, and materials, unless otherwise specified to complete all carpentry and joinery works shown on the Drawings and specified herein.

I.02 General Provisions

Lumber shall be approved quality of the respective kinds required for the various parts of the work, well seasoned, thoroughly dry and free from large, loose or unsound knots, sap shakes or other imperfections impairing its strength, durability or appearance.

Framing lumber shall be of the rough dimensions unless otherwise shown on the Drawings.

All exposed woodwork shall be smoothly dressed and sandpapered.

ANY LUMBER equally good for the purpose intended may be substituted for the kinds specified, subject to the approval of the Owner. Provided, however, that in the substitution of the cheaper kind of lumber that specified, a reduction in the contract price equal to the difference in the cost of the cost of the two kinds of lumber will be made.

I.03 Fastenings

Fastenings shall be common nails, glue as specified, flat-head wood screws (F.H.W.S), round-head wood screws (R.H.W.S), bolts or lag screws where specified or called for shall be used.

Conceal fastening as much as possible, or if not possible, locate them in inconspicuous places. Where nailing is permitted through woodwork smooth-finished face, conceal nail heads.

I.04 Protection and Storage

Lumber shall be protected and kept under cover both in transit and all at the job site, and shall be carefully piled off the ground and be insured of proper drainage, ventilation, and protection from the weather. Surface of wood framework, and other wood members coming in contact with or embedded in concrete shall be painted with two (2) coats of hot applied asphalt.

The Contractor shall protect all finished wood work and millwork from injury after it has been set in place until the completion and final acceptance of work.

Temporary Supports: Make or provide wood centering or other necessary supports for openings in masonry walls accurately, strongly and well braced and secured in position until masonry has set thoroughly.

I.05 Wooden Materials

Unless otherwise shown on the drawings, the Contractor shall use the following lumber in accordance with the schedule below:

a. *Apitong* (common grade) for ceiling joist, hangers and nailers.

b. *Tanguile (select grade) for fascia, trims and mouldings.*

c. Coco Lumber for scaffoldings, shoring and bracing only.

d. Marine Plywood for built-in cabinets.

J. DOORS

J.01 Scope of Work

The work under this Section shall include all labor, materials, hardware, painting, equipment, and other facilities and the satisfactory performance of all work necessary to complete all doors shown on the Drawings and as specified herein.

J.02 Doors

All lumbers for doors and all woodwork of similar nature shall be kiln dried (KD) with not more than fourteen percent (14%) moisture content. All doors shall be done in

accordance with full sized details which will be furnished, hereafter to the contractor. Door shall have one and three fourth (1 ¾) inch finished thickness.

All flush doors shall be done in accordance with full size details and of the lumber specified herein. The plywood edge protection shall consist of rabbeting it around and glued into the outside frame of the door in order to prevent "peeling off" of the plywood veneer at the edges. Doors shall have one and three fourth (1 ¾) inch finished and shall use ¼" thick. Marine plywood on both faces.

All doors shall be guaranteed against warping, twisting or cracking for a period of twelve (12) months from the date of final acceptance of the finished building. This obligates the Contractor to make good such defects or replace entirely any and all such defective doors.

All doors inside public toilet shall be PVC complete with jambs and accessories.

Panel type door shall be kiln dried (KD).

All flushed type doors/panel door shall be provided with loose pin hinges 3 ½" x 3 ½" and lever type door lockset of *"Schlage"* brand or approved equal.

K. WINDOWS

K.01 Scope of Work

The work under this Section shall include all labor, materials, hardware, equipment, and other facilities and the satisfactory performance of all work necessary to complete all aluminum glass windows shown on the Drawings and as specified herein.

K.02 Materials Requirements (Aluminum Glass Windows) Analoc Type

- Frame and panel members shall be fabricated from extruded aluminum sections true to details with clean, straight, sharply defined profiles and free from defects impairing strength of durability. Extruded aluminum sections shall conform to the specifications requirements as defined in ASTM B211.

- Screw, nuts, bolts, rivets and other miscellaneous fastening devices shall be made of non-corrosive materials such as aluminum, stainless steel, etc.

- Hardware for fixing and locking devices shall be closely match to the extruded aluminum section and adaptable to the type and method of opening.

- Weather strips shall be provided with good quality

- For Aluminum Glass Windows use 6mm thick glass.

K.03 Construction Requirements

- For all assembly and fabrication works and cut ends shall be true and accurately jointed, free of burrs and rough edges. Cut-out recesses, mortising, grinding operation for hardware shall be accurately made and properly reinforced when necessary.

- Installation procedure:

Main frame shall consist of head sill and jamb stiles specifically designed and machined to interfit and be joined at corners with self-threading screw.

Sliding window shall be provided with nylon sheave. Sliding panel shall be suspended with concealed roller overhead tracks with bottom guide pitch outward and slotted to complete drainage. The sliding panels shall be provided with interior handles. The locking devices shall be spring loaded extruded latch that automatically engages special frame hips.

All joints between metal surfaces and masonry shall be properly caulked.

K.04 Protection

- All Aluminum parts and glasses shall be protected adequately to ensure against damage during transit and construction phase.

K.05 Cleaning

- The contractor shall be responsible for removal of protective materials and cleaning the aluminum surface including glazing before work is accepted by the Owner.

- Aluminum shall be thoroughly cleaned with kerosene or gasoline diluted with water and then wipe surface using clean clothing.

- No abrasive cleaning materials shall be permitted in cleaning surface.

L. PAINTING

L.01 Scope of work

The work under this Section shall include all labor, materials, equipment, plant and other facilities and the satisfactory performance of all work necessary to complete all field painting and as specified herein.

L.02 General

Color schemes for the painting of the whole building, complete both inside and outside shall be furnished by the Architect to the Contractor upon request. Color scheme samples required by these Specifications shall be submitted by the Contractor to the Owner for approval. Expenses for sample of color schemes shall be at Contractor's expense.

All exposed work shall be protected while the building is being painted. Any dirt, smears, etc., shall be removed by the Contractor to the satisfaction of the Owner.

L.03 Material

All paint materials shall meet the requirements of the standard specifications of the *Standardization Committee* on supplies and shall be in accordance with latest *Classification Class "A" of the Institute of Science, Manila, Philippines*, and shall be delivered on the work in the original containers, with labels intact and seals unbroken.

Davies Paint or Boysen Paint or equivalent shall be used on all surfaces to be painted and certificate of origin and quality shall be submitted to the Owner for inspection and approval before using any of the paint materials.

The use of ready mixed paint may be allowed in this project, provided, however, that such paint is in accordance with the standard Specification No. 13 of the Philippine Government and that ready mixed paints shall be those listed under "Good Substitutes" only.

Tinting colors for latex shall be the highest grade obtainable. Tinting colors for oil paint shall be color in oil ground in pure linseed oil. Color shall be non fading. Color pigments shall be used to produce the exact shades of paint which shall conform to the approved color scheme of the building. Except as otherwise noted, color of priming coat shall be white.

All materials to be used in the work shall be stored in a place to be designated by the Owner, and such place shall be kept neat and clean at all times. Any damage on this place and its surroundings shall be rectified. All precautions to avoid danger of fire must be observed by removing oily rags, waste, etc., from the building at the end of daily work.

L.04 Inspection and Preparation of Surface

The Contractor shall inspect all surfaces to be painted and all defects shall be remedied before starting work.

No work shall be started unless the Contractor shall have made certain as to the dryness of surface. Tests shall be made, in the presence of the Owner, to verify dryness of surface to be painted.

Before painting is started, all spaces shall be broom clean and all dust, dirt, plaster, grease and other extraneous matter that would affect the finish work shall be removed.

L.05 Workmanship

All painting work shall be done in workmanlike manner by skilled house painters only.

All materials shall be evenly applied on, so as to form a film of uniform thickness, free from sags, runs, crawl, or other defects. The use of a heavy brush (nylon brushes for oil paints) is required and they shall always be clean and in good condition. Light brushes shall not be permitted. Paint shall be thoroughly stirred so as to keep the pigment evenly in suspension while paint is being applied.

In general, and unless otherwise specified, and/or instructed by the Owner or due to actual conditions on the job, not less than 3 days time shall elapse between application of succeeding coats.

Each coat of paint shall be allowed to dry thoroughly and inspected for approval before the succeeding coat is applied. No painting shall be done in damp weather. No work shall be done under conditions that are unsuitable for the production of good results. No painting shall be done while plastering is in process or is drying.

Except where otherwise noted or specified, all paints shall be applied in three (3) coats (priming, body and finish). Each coat shall be brush applied (except as otherwise noted), spread evenly and in full covering body.

Surfaces which cannot be satisfactory finished on the number of coats specified shall have such additional coats, or such preparatory coats and subsequent coats as may be required to produce satisfactory finished work.

Spray gun application shall be used where indicated in color scheme schedule.

Before any painting is started, the Contractor shall furnish the Owner the paint manufacturer's detailed painting recommendation as to surface preparations and applications plus relevant information regarding the use of the paint.

L.06 Concrete and Masonry Surfaces

Surface Preparation

For New Surfaces: Scrapes off loose cement, chalk, dust and other surface deposits. Treat the surface with *Davies/Boysen Masonry Neutralizer* or equivalent. Mix one (1) liter Acri-Free Concentrate with sixteen (16) liters of water. Apply by brush and make sure that the alkaline surfaces are completely neutralized. In case of doubt, test the surface with red litmus paper. If it turns blue, then the second neutralization will be necessary. Let dry thoroughly. Do not rinse.

For areas affected by high alkalinity, apply one coat of Dutch Boy Concentrate Sealer. Allow to dry at least four (4) hours before applying succeeding coats.

Application

Apply Davies/Boysen Flat Latex or equivalent as primers. Thin with water if necessary. First coat may be tinted with Davies/Boysen Acrycolor to the desired color of topcoat. Dry for at least 2-4 hours.

Repair minor surface imperfection with suitable putty. Dry for 24 hours, sand then spot coat with top coat color.

Apply two (2) coats Davies/Boysen Gloss Latex or equivalent for interior/exterior. Tint with Davies/Boysen Acrycolor or equivalent to the desired color.

L.07 Wood Surfaces

For first coat - apply *Davies/Boysen Flat Wall Enamel* or equivalent. Repair surface imperfection with glazing putty.

For second and third coat – apply *Davies/Boysen Quick Dry Enamel or equivalent.* Tint with *Davies/Boysen oil tingting color.*

L.08 Epoxy Polymide Topcoat (1.20 m. from the floor surface)

Surface Preparation

Prepare the surface by removing dirt, oil, grease, burns, weld spatter, loose concrete, masonry and other contaminants before application is performed.

New concrete must be full cured at least 28 days before etching or neutralizing the surface.

Application

Prime with epoxy Deep Penetrating Sealer to seal up loose aggregates to give perfect hold for subsequent coatings.

Apply two (2) coats of Epoxy Polymide Topcoat. Maybe thin up to 25% by volume if necessary. Allow overnight drying in between coats.

L.09 Metal Surfaces

Painting of metal surfaces shall conform to the provision of **PART F.05 – STEEL AND METAL WORKS – PAINTING**

L.10 Wood Preservative

Apply two (2) coats of wood preservatives for all wood surfaces such as fascia board and ceiling joist.

L.11 Protection and Cleaning

Protection

a. Lighting fixtures shall be loosened and removed from contact with surfaces covered and protected, and reset upon completion.

b. Remove all electric plates, surface hardware, etc., before painting, protected and replace when completed.

c. The Contractor at his own expense shall make all undue damage to any part or parts of present structure caused by the Contractor, during the execution of the work good.

The Contractor shall, upon completion of work remove all paint, where it has been spilled, splashed, or splattered on the surface, remove all surplus materials, scaffolds, etc., so as to leave premises in perfect condition, acceptable to the Owner.
Finished surfaces shall be solid, even colors; and finished texture free from drops, runs, lumps, brush marks, discoloration and other defects. Before final inspection, any work that has become damaged or discolored shall be touched up or refinished in a satisfactory manner.

All other items or work to painted and not specified herein, but necessary to complete the work shall be painted with appropriate first quality paint and suited to the service and nature of the surface and material in accordance with these Specifications.

M. PLUMBING WORKS

M.01 General

a. The Contractor shall provide all items, articles, materials, operations, or methods listed, mentioned, or schedule on the drawings and/or herein specified, including all labor, materials, equipment and incidentals necessary and required for their completion.

b. All fittings, connections, pipings, hidden or embedded in concrete shall be subject to inspection by the Authority before covering.

c. The drawings and these Specifications as complementary to each other, and any labor or materials called for by either, whether or not called for by both, if necessary for the successful operation of any of the particular type of equipment shall be furnished and installed by the Contractor without additional cost to the Authority. All dimensional locations of fixture, floor drains, risers and pipe chases shall be verified on the architectural drawings and manufacturer's catalogue.

d. Intent – It is not intended that the drawings shall shoe every pipe, fitting, valve and appliance. All such items, whether specifically mentioned or not, or indicated on the drawings, shall be furnished and installed if necessary to complete the system in accordance with the best practice of the plumbing trade and to the satisfaction of the Authority.

M.02 Work Included

a. Work included under this Section shall consist of furnishing all labor, tools, equipment, appliances and materials necessary for complete installation testing and operation of the plumbing system in accordance with these Specifications and all applicable drawings in the contract.

- Inside potable water distribution and supply pipes to fixtures and hose bibs/faucets. The Contractor shall furnish all piping materials and accessories of all water supply line located inside the building structures.

- Sanitary sewers from the building and their connections to the point of discharge including septic vault as shown in the plans.

- Drainage system for the entire building of the point of discharge including pipes, open canals, screening tank and catch basin.

- Soil, waste and vent pipe system within the building

- Plumbing fixtures, trims and accessories.

- Furnishing of water meter, gate valves, check valves and related accessories.

- Furnishing and installation of spherical fiber glass water tank and water pump including control for potable water line

- Hydrostatic testing and reliability testing.

M.03 Materials

a. All materials to be used shall conform to the standards below. Use of material shall further be governed by other requirements imposed on other sections of these Specifications.

For Water Pipes

- Blue uPVC Fresh/Brackish Water Pipes and Fittings shall conform to ASTM and ISO Standards with nominal pressure of 230 psi. Pipe fittings as per manufacturer's specification.

For Sewer and Drainage Line

- Orange uPVC Sanitary Pipe (for 100mm Diameter and below) uPVC Pipe shall conform to ASTM 2729. Pipes and fittings are specified with integral push on bell complete with elastomeric neoprene O-ring gasket on one end and plain leveled on the other end.

- Orange Gravity Sewer Pipe (for above 100mm Diameter)

- uPVC Pipe shall conform with the Standard Specification of ISO R-161/ISO 4435, SDR-41 Jointing method shall be solvent cement jointing/rubber ring on joint. Pipe fittings shall be as per manufacturer's specifications.

b. Alternative Materials – Use of materials not specified in these Specifications may be allowed provided such alternative has been approved by the Owner and provided further that tests, if required, shall be done by an approved agency in accordance with generally accepted standards.

c. Identification of Materials – each length of pipe, fittings, traps, fixtures and devices used in the plumbing system shall have cast, stamped or indelibly marked on it, the manufacturer's trademark or name, the weight, type and classes of product when required by the standards mentioned above.

M.04 Make of Fixtures

Unless otherwise indicated, water closets shall be close coupled, siphon jet, push button dual flush type (equivalent to HCG Eton Model CS4510Q). Water closets shall be equipped with satin finish hand bidet sprayer set.

Lavatory:
Countertop type should be single hole, L580 x W485 x H210
(HCG – TITANIA L363 or equivalent)

Pedestal type should be single hole, L480 x W390 x H780 mm
(HCG - SATURN II LF61L or equivalent)

Wall Hung type should be single hole, L660 x W450 x H170 mm
(HCG - SHANGRI-LA L4715 or equivalent)

Wall Hung type should be single hole, L500 x W375 x H196 mm

(HCG – TITAN L60 or equivalent)

Urinals shall be top inlet wall hung with exposed push valve. Urinal assembly should be HCG brand or equivalent.

Kitchen sinks should be stainless steel, schedule 304.

Faucets, bath mixing faucet with hand shower sets shall be quarter turn lever type, chrome plated, HCG brand or equivalent.

Soap and tissue holders, glass shelves shall be complete with accessories, HCG brand or equivalent.

M.05 Soil, Water, Drain and Vent Pipes (For Drainage and Sanitary Sewer Lines)

Underground soil, waste pipes and fittings shall be uPVC Sanitary Pipe, Orange or Brown.

All main vent stacks shall be extended to full size to end above the roofline except where otherwise specifically indicated.

Vent pipes in roof spaces shall run as close as possible to underside of roof, with horizontal piping pitched down to stacks without forming traps. Vertical vent pipes maybe connected into one main vent riser above the highest vented fixtures.

Where end or circuit vent pipe from any fixtures or line of fixtures is connected to a vent line serving other fixtures, the connections shall be at least 1,200 mm above the floor on which the fixtures are located, to prevent the use of any vent line as waste pipe, unless indicated otherwise.
Horizontal waste lines receiving the discharge from two or more fixtures shall be provided with end vents, unless separate venting of fixture is noted.

Rough in for pipes and fixtures shall be carried along the building construction. Correctly located opening of proper sizes shall be provided where required in the walls and floor for the passage of pipes. All items to be embedded in concrete shall be thoroughly cleaned and free from all rust scale and paint.

M.06 Cleanout, Plugs, Test and Traps

Cleanouts shall be the same size as the pipe but cleanouts larger than 100 mm shall not be required.

Every plumbing fixtures or equipment requiring connection to the sanitary drainage system shall be equipped with a trap. Each trap shall be placed as near the fixture as possible. No fixture shall be double-trapped.

M.07 Valves and Faucets for Building

Valves shall be KITZ or equivalent and shall be provided on all supplied fixtures as specified.

All valves shall be gate valves, check valves and ball valves unless otherwise specified or noted on the drawings.

Valves up to and including 50 mm dia. shall be brass with threaded ends, rough bodies and finished trimmings.

Faucets shall be U.S. made, chrome plated.

M.08 Fixtures and Equipment Supports and Fastenings

Stub-outs for sanitary lines, and vents shall be 300 mm above the floor line, and properly capped or else installed ready to receive the fixtures. The entire comfort room shall be properly tiled and finished, complete with doors and windows.

All fixtures shall be supported and fastened in a safe and in satisfactory manner.

Bolts and nuts shall be horizontal and exposed. Bolts, nuts, cap nuts and screw shall be chromium plated and provided with chromium plated brass washer.

M.09 Drains and Floor Sinks

Floor drains and floor sinks shall be made of high-grade, strong tough and even grained metals.

M.10 Cleaning

All exposed metal surfaces shall be rid of grease, dirt or other foreign materials.

All plumbing fixtures shall be properly protected from use and drainage during the construction period. At the end of the work and prior to approval, the fixture shall be cleaned as per manufacturer's recommendations to the satisfaction of the Owner.

All pipes, valves and fittings shall be cleaned of grease and sludge, which may have accumulated. The Contractor shall repair any stoppage or discoloration or other damage to parts of the building, its finished or furnishing due to the system without additional cost to the Owner.

M.11 Defective Work

If inspection or test show any defect, such defect work or matter shall be replaced by the Contractor and inspection and tests repeated until satisfactory to the Owner.

M.12 Septic Vault/Screening Tank/Catch Basin/Holding Tank

Dimensions and locations are indicated in the plan, cement plaster for all inner linings.

Construction shall conform to Sanitary and Plumbing Code of the Philippines.

All septic vault outlets shall be connected to the nearest sewer system.

The work shall conform to the applicable provision of ***PART II.C – CONCRETE WORKS AND PART II.E – CEMENT AND MASONRY WORKS***.

M.13 Galvanized/Black Iron Pipes and Fittings

Galvanized/black steel pipe shall conform to the requirements of "AST M – 120", and shall be Schedule 40. Fittings for galvanized pipe shall be galvanized malleable iron.

N. DAMPPROOFING

N.01 GENERAL

Division 1, "General Requirements", contain provisions and requirements essential to these specifications; and apply to this Section, whether or not referred to herein.

N.01.1 Scope of Work

The work shall cover the dampproofing and waterproofing requirements for buildings as shown on the drawings.

The work shall consists of furnishing all labor, materials, equipment, and other incidentals necessary for the dampproofing and waterproofing works where required as shown on the drawings and in accordance with the requirements of these specifications and as directed by the Engineer.

N.01.2 Submittal

1) The Contractor shall submit for approval of the Engineer the name of the manufacturer nominated for the supply of materials and installation. Subcontracting documents shall be submitted to the Engineer by the Contractor.

2) The contractor shall submit the procedure of dampproofing and waterproofing installation/construction for approval of the Engineer.

3) All dampproofing and waterproofing materials shall be installed only by an experienced installer and shall be installed in accordance with the approved manufacturer's installation procedures or methods, approved by the Engineer.

4) Submit mock-up samples of each dampproofing and waterproofing type.

N.01.3 Delivery, Storage, and Product Handling

Refer to item no D.03.2.

N.01.4 MATERIAL REQUIREMENTS

N.01.4.1 Dampproofing

Vapour Barrier: Layer at 6 mils (0.006") polythylene thick layer.

To be applied for slab on grade of the building interior.

N.01.4.2 EXECUTION- Dampproofing of Slab on Grade

a) Prior to placing the concrete, the hard core should be compacted to a smooth, even surface, eliminating all sharp projections or irregularities which may puncture the moisture barrier.

b) Cover the entire area with a layer of dampproofing film, extending past the perimeter of the slab and turning up against walls for the depth of the concrete.

c) Overlapping of sides and ends, minimum is 0.15 meter.

O. FORMS & SCAFFOLDING

O.01 FORMS

The Contractor shall provide forms that will produce correctly aligned concrete. Plastering in general shall not be allowed so that extra care shall be exercised by the Contractor in choice of fitting, and rigid supporting of the forms. Plywood, metal, compact phenolic board, or surfaced lumber forms shall be used for all exposed concrete works.

Column forms shall checked for plumpness before concrete is poured. Handholds shall be provided in column forms at lowest points of per lifts to render this space accessible for cleaning.

Forms and shoring shall not be removed until the concrete is adequately set and strong enough to withstand anticipated loading, and in no case less than seven (7) days after pouring.

All girders, beams, centering shall be crowned at least 25 mm in all direction from every eight (8) meters span. However, chambers for all cantilevers shall be as indicated in Plans or obtained from the Owner.

O.02 SCAFFOLDING

O.02.1 General Requirements

Every scaffold shall be of good construction of sound materials and strength for the purpose for which it is intended.

Timber used for scaffolds shall be in good condition, the bark completely stripped off, and not painted or treated in any manner that defects cannot be easily seen.

All materials and parts of scaffold not in use or intended for re-use shall be kept under good condition and separate from other materials unsuitable for scaffolds.

O.02.3 Design and Stability

Design

The design shall be in accordance with recognized engineering principles taking into consideration the variability of materials, workmanship, methods of construction, site conditions, construction tolerances and the space for scaffolds.

Scaffolds shall be designed with regard to ease and safety of erection and dismantling.

Supported scaffolds and their components shall be capable of supporting without failure at least four (4) times the maximum intended load, while suspended scaffolds shall have six (6) times factor of safety

All scaffolds designed by a structural engineer shall be approved by appropriate authority.

Strength and Stability of Scaffolds

All scaffolds shall have vertical members (posts) diagonally and horizontally braced to prevent lateral movement.

All scaffolds shall have no splices between the points of support of load carrying horizontal members and secured to prevent lateral movement.

The footing, sills or anchorage for scaffolds shall be sound, rigid, and capable of carrying twice the maximum intended load without settling or displacement. Unstable objects such as barrels, boxes, loose brick, or concrete blocks shall not be used to support scaffolds.

Scaffold posts shall bear on a foundation of sufficient size and strength to spread the load from the posts over a sufficient area to prevent settlement. All posts shall be set plumb.

Any damaged or weakened scaffold members from any cause shall be immediately repaired, replaced or discarded.

Scaffolds shall not be loaded in excess of the working load for which they are intended.

Scaffolds shall be anchored or secured to permanent or rigid structures. In the absence of permanent structures guys and sway bracing and/or outrigger shall be used.

O.02.4 Scaffold Erection

No scaffold work shall be undertaken without the direct supervision of a competent/qualified person as the case may be.

All posts shall be maintained plumb regardless of connection.

All posts spacing and materials shall conform to the designer's specification.

All runners shall be perpendicular to the posts in all situations. Spacing of the runners shall conform to the designed scaffold.

Diagonal brace shall extend from one connection to another. It shall be connected to the post within 150 millimeters from the point of connection.

Diagonal braces shall not exceed an angle of 60 degrees from horizontal.

Diagonal braces shall be installed immediately as the scaffold rises to maintain plumbness of the system.

All posts shall be joined or connected by means of joint pin, spigot or any appropriate means of connections. No lap connection shall be allowed. 9. Always maintain the base width to height ratio of 1:4 during erection for stability. If the height exceeds what is allowed, refer to Section (strength and stability of scaffolds).

Scaffolds of more than 6 meters in height shall be designed by a structural engineer and shall be erected, installed and dismantled by TESDA certified erectors.

Scaffold shall be erected, added, altered or dismantled only under the supervision of the competent/qualified person in the construction.

O.02.5 Scaffold Dismantling

During dismantling, no component, which endangers the stability of the remaining structure, should be removed.

If dismantling has reached the stage at which a critical member has to be removed, (e.g. a tie or a brace) the stability of the structure should be assured by fixing a similar or otherwise adequate member in place before the member to be taken out is removed.

If changes are made in the scaffold structure during its working life, it is not safe to assume that dismantling can be carried out in the reverse order to the erection, hence, ties and braces shall be inspected prior to dismantling.

Materials should be lowered to the ground and not stored on the scaffold. Components should not be thrown on the ground; they should be lowered hand-to-hand in an orderly manner or brought down by crane, pulley or other suitable means.

Progressive Dismantling:

1. Scaffolds, which are to be progressively dismantled during the demolition of a building, should not be left projecting above the residual height of the walls more than is necessary. Stabilizing ties should be maintained, especially with sheeted scaffolds.

2. Scaffolds, which are to remain in use while partly dismantled, should be fitted with end guardrails and toe boards at the end of the portion in use. 3. If access is possible on to a partly dismantled scaffold, warning notices should be fixed.

O.02.6 Maintenance and Storage

All scaffolds shall be properly maintained and shall be kept, clean, and free of damage. Scaffolds accessories requiring lubrication shall be oiled prior to storage in a covered or closed container, or as per manufacturer's recommendation.

O.02.7 Protection from Falling Objects

All materials, equipment, and tools, which are not in use while on the scaffold shall be secured against accidental displacement.

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TECHNICAL SPECIFICATIONS
PART - III ELECTRICAL WORKS

A. GENERAL

GENERAL REQUIREMENTS contain requirements essential to these specifications and apply whether or not individually referred to under this section.

A-01 SCOPE OF WORK

The work shall consist of the supply of labor, materials, equipment and other facilities necessary to complete the Electrical Works.

All works herein shall comply with the pertinent provisions of the latest edition of the Philippine Electrical Code and is hereby made part of the Contract.

Compliance with the provisions herein shall be Contractor's responsibility to provide as part of the Contract Work and without separate payment therefore.

NOTE: *Expenses for the power connection/tapping from the existing local Electric Cooperative including electric meter deposit, billing deposit, drop wires and other accessories necessary for the energization of the project shall be provided by the contractor with assistance of Philippine Fisheries Development Authority (PFDA).*

A-02 EXECUTION AND INSTALLATION WORKS

The work under this contract shall be done in accordance with the provision of the latest edition of the Philippine Electrical Code, the Rules and Regulations of the Bureau of Labor and Standards and in compliance with the requirements of the local utility company. Nothing contained in these Specifications or shown in the drawing shall be construed as to conflict with national and local ordinance or laws governing the installation of electrical works and all such laws and ordinances are hereby made part of these specifications. The contractor is required to meet the requirement thereof.

A.03 GUARANTEE

The Contractor shall guarantee that the electrical system is free from all grounds and from all defective workmanship and will remain so for a period of one year from the date of acceptance of the work. The Contractor at his owns expense shall remedy any defects, appearing within the aforesaid period.

A.04 WORKMANSHIP

The work throughout shall be executed in the best and most thorough manner under the direction of and to the satisfaction of the PFDA who will interpret the meaning of the Drawings and Specifications and shall have power to reject any work and materials that in his judgment are not in full accordance therewith.

A.04.1 Standard of Materials

All materials shall be new and shall conform to the standards of Underwriter's Laboratories, Inc., IEEE, NEMA and Philippine Standard Agency (PSA) for every case where such a standard has been established for the particular type of materials in questions.

All materials on all systems shall comply with the specifications, and all material, which is not specified, shall be of the best of their respective kind.

A.04.2 Ground Test

The entire installation shall be free from improper grounds and from short circuits. Test shall be made in the presence of the PFDA. Each panel shall be tested with mains connected to the feeder and branches, and all switches closed all fixtures in place and permanently connected, lamps removed or omitted from the sockets and all switches closed. Each individual power feeder shall be tested with the power equipment connected for proper and intended operation. In no case shall the resistance be less than that allowed by the Regulations for Electrical Equipment of Buildings. Failure shall be corrected in a manner satisfactory to the PFDA.

A.04.3 Performance Test

It shall be the responsibility of the Contractor to test all system of the entire electrical installation for proper operational condition. This condition shall apply to the power and lighting installation as well as low voltage and alarm control, signal and communication systems. Where sequence operation is required, the Contractor shall test for proper sequence of the entire electrical installation for satisfactory working condition as approved by the PFDA.

A.04.4 Completion Requirements

Remove waste and debris resulting from this work, as work progresses and upon completion.

Service and adjust moving or mechanical parts for smooth, quiet and proper operating condition.

Touch-up abraded or damaged prime paintings or galvanizing and leave clean and ready for finishing work required.

A.04.5 Trade/Brand Names

Trade/Brand names of equipment are intended only to show the degree of standardization on which the design of the particular work is based and also to avoid ambiguous description of the equipment. The indication of the trade/brand names therefore shall in no way be considered to limit the acceptability of other products of equal or better performances, functions, reliability and durability.

A.04.5 Inspection Test

The Contractor in the presence of the owner's representative shall conduct inspection and tests. These tests shall be for the normal operation of the entire electrical system of the project. The decision made by the owner's representative for correction on any item of work, alteration of incorrect installation, or replacement of defective materials, or any other defects as found by him shall be final and must be complied with by the Contractor within forty-eight (48) hours after receipt of the official written communication before final acceptance can be made.

A.04.6 Grounding System Test

Test grounding system to ensure continuity, and that 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 Engineer, and indicate location of rods as well as resistance and soil conditions at time measurements were made.

A.04.7 Temporary Light and Power

The Contractor shall provide, install and maintain adequate incoming service transformer, light feeders, branch circuits, outlets, lamps and fixtures, as required for performance of the work by all trades engaged in the construction of the building structures and installation.

B. LIGHTING SYSTEM

The lighting system shall be complete in every aspect, all as indicated in the plans.

If anything has been omitted in any item of work or material usually furnished which are necessary for the completion of the lighting system work as outline hereunder, then such item must be and hereby included in this section of the work.

Each lighting outlet shall have standard deep 100 mm. Octagonal or square box for each ceiling and bracket fixture installation. Each box shall finish flush against concrete and plaster walls or ceiling, except for exposed work.

The Contractor shall provide and install all lighting fixtures of the size and type as indicated in the drawings. All fixtures shall be wired and installed completely including all lamps and/or tubes, transformers, ballast, supports, canopies, globes, and other parts and devices necessary for the complete installation and operation.

B.01 RELAMPING

The Contractor shall furnish and install all lamps for the entire lighting fixture installations and shall replace all broken or burned out lamps up to the time that the owner takes final acceptance of the work.

B.02 LIGHTING FIXTURES/ LUMINAIRES

- 39 watts maximum system power, highly efficient built-in LED chip, made with polycarbonate diffuser and housing material, IP66/69–IK08–Class II, 1200x110x74 mm, 4840 lumens, 80000 hours (expected life), 4000K CCT with 80 CRI, with Internal Surge Immunity up to 2kV, 220-240V MVolt LED driver, 50-60Hz, -25°C to 40°C operating temperature complete with connectors and brackets similar to *Gewiss model Smart 3 LED Weatherproof Luminaire* (valid LED Chip and LED Driver Brand specs sheet submittal and LED Fixtures Photometric or IES file submittal) with minimum of 3-year warranty period.

- 40 watts maximum system power, highly efficient built-in LED chip, made with polycarbonate diffuser and housing material, IP67, 1270x147x4.2 mm, 4000-5000 lumens, 50000 hours (expected life), 5000K CCT with 80 CRI, with Internal Surge Immunity up to 2kV, 220-240V MVolt LED driver, 60Hz, -40°C to +35°C operating temperature, vapor tight luminaire complete with connectors and mounting brackets (valid LED Chip and LED Driver Brand specs sheet submittal and LED Fixtures Photometric or IES file submittal)

with minimum of 3-year warranty period

- Recessed mounted luminaire with mirrorized aluminum reflector and multi-lined satin louvers, 1200x300 mm, complete with 2x16 watts master value LED T8 tubes similar to *Fumaco model Modena (fixture) and Philips brand (lamp)*

- 15 watts LED floodlight in die-cast aluminum housing chemically pre-treated and UV stabilized powder coating bronze finish, 120-277 V, 50/60 Hz, IP65, 233x85x319 mm, 5000K CCT with 70 CRI, L70 50000 h, 1650lumens similar to *Britetech model Munich F15* (valid LED Chip and LED Driver Brand specs sheet submittal and LED Fixtures Photometric or IES file submittal) with minimum of 3-year warranty period

- 15 watts LED floodlight in die-cast aluminum housing chemically pre-treated and UV stabilized powder coating bronze finish, 120-277 V, 50/60 Hz, IP65, 233x85x319 mm, 5000K CCT with 70 CRI, L70 50000 h, 1650lumens additional remote photocontrol switch with photo control receptacle with L-Type Aluminum Bracket similar to *Britetech model Munich F15* (valid LED Chip and LED Driver Brand specs sheet submittal and LED Fixtures Photometric or IES file submittal) with minimum of 3-year warranty period

- 93 watts LED die-cast aluminum housing high-bay luminaire with diffuse aluminum reflector with hook and adapter, 120-277 V, 50/60 Hz, IP65, Internal Surge Immunity up to 6kV/3kA, 5000K CCT with 80 CRI, L90 >54000 h, 13452lumens, -40°C to 55°C operating temperature, similar to *Lithonia lighting model JEBL* (valid LED Chip and LED Driver Brand specs sheet submittal and LED Fixtures Photometric or IES file submittal) with minimum of 3-year warranty period

- Surface mounted downlight with center frosted glass cover and plain mirrorized reflector; 180 mm overall dia. x 195 mm height, complete with E27 socket and Phillips 1x12 watts essential daylight LED lamp similar to *Fumaco model FDL-SC6001* with minimum of 1-year warranty period for LED lamp

- Surface mounted downlight with center frosted glass cover and plain mirrorized reflector; 100 mm dia., complete with E27 socket and Phillips 1x12 watts essential daylight LED lamp with minimum of 1-year warranty period for LED lamp

- Surface mounted downlight with center frosted glass cover and plain

mirrorized reflector; 75 mm dia., complete with E27 socket and Phillips 1x3 watts essential daylight LED lamp with minimum of 1-year warranty period for LED lamp

- Recessed mounted square downlight with center frosted glass cover and plain mirrorized reflector; 150 mm dia. white powder coated flange and black gear box, complete with E27 socket and Phillips 1x12 watts essential daylight LED lamp similar to *Firefly model FD411WH6* with minimum of 1-year warranty period for LED lamp

- 24 watts warm white LED flexible strip light, IP20, 24V, 5 m complete with 50/25 watts LED power supply similar to *Landlite model Dilux300 Strip and RS-25-24/RS-50-24* with minimum of 1-year warranty period

- Recessed mounted pinlight unidirectional fixture, 90x90 mm, 45 mm inner dia. and 68 mm dia. cutout complete with 3 watts warm white LED pinlight similar to *Landlite model LL216 MC GU10 and LDM-GU10-301C* with minimum of 1-year warranty period

- Recessed mounted pinlight stationary fixture, 105x105 mm, 45 mm inner dia. and 84x84mm dia. cutout complete with 3 watts warm white LED pinlight similar to *Landlite model LL-MQ202D-L1 MC and LDM-GU10-301C* with minimum of 1-year warranty period

- Wall mounted oval bulkhead with ring, shockproof resin material, silicon rubber gasket, diffuser made of UV rays stabilized, rust and corrosion free, IP66 complete with E27 socket and Phillips 1x9 watts essential daylight LED lamp similar to *Fumagalli model Maddi Range* with minimum of 1-year warranty period for LED lamp

C. WIRING DEVICES

C.01 SWITCHES

Wall switches shall be rated at 15-amps, 240-volts, illuminated switch, wide series, one-way or three-way as required. The type of switch shall be tumbler or snap-on as required, *Panasonic*. Where switches are installed surface mounted, they shall be installed in type FS conduit fittings and provided with surface mounting covers.

Switches shall not arc during switching operations. Wall switches shall be mounted 1400 mm. from center of device to FFL.

C.02 RECEPTACLES

Receptacles outlets shall be flush-mounted, single or duplex (wall-mounted) or pop-up single or duplex (floor-mounted) rated at 20-amps, 240-volt connection with grounding, wide series, *Panasonic* or equivalent. Type and color of receptacle outlet plates shall be as selected by the Engineer and appropriate samples of outlet and plates shall be submitted prior to purchase of device.

Weatherproof, if any, shall be *Panasonic* brand. Wall receptacles shall be mounted 300mm from floor finish unless otherwise indicated in the plan.

C.03 OUTLET AND SWITCH BOXES

All outlets or whatever kind for all systems, there shall be provided suitable outlet boxes or other fittings specially designed to receive the type of devices to be mounted thereon. All outlet boxes shall be uPVC type.

Boxes installed in damp or wet locations shall be specifically approved for the purpose and shall be so placed and constructed as to prevent moisture from entering or accumulating within the box.

In walls or ceiling constructed of wood, concrete of other similar materials, boxes and covers shall be flush with finished surfaces. Number of wires and devices contained in the box shall be in accordance with the code. Where necessary flush square outlet boxes shall be fitted with extension rings or raised cover plates.

Boxes shall be securely and rigidly fastened to surface upon which they are mounted or embedded in concrete or masonry, and shall be supported from a structural member of building either directly or by using substantial and approved metal braces.

Standard outlet boxes shall be of the octagonal, square or rectangular shapes and only deep types no less than 54mm depth shall be used for all installations.

D. PULLBOXES AND WIRE GUTTERS

Pull boxes and wire gutters for the pulling or concealment of wires or cables shall be provided where indicated and also where required though not indicated. It shall be made of steel sheets, thickness not less than gauge 16, galvanized and painted with anti-rust primer.

Pull boxes shall be provided on all conduit runs exceeding 30 meters between outlets,

and shall be sufficiently set by bolts braces and fasteners. In large pull boxes, cables shall be tied or racked in an approved manner.

E. RACEWAYS AND CONDUITS

E.01 NON-METALLIC CONDUITS

All conduits shall be unplasticized Polyvinyl Chloride (uPVC), schedule 40, and uniformed wall thickness. It shall be compression and impact resistant, non-corrosive, weatherproof as manufactured by *Moldex, Neltex, Emerald* or its approved equal. The material shall not support combustion and shall not deteriorate when exposed to sunlight, rain and other elements.

E.02 METALLIC CONDUITS

Conduit shall be Rigid Steel Conduit (RSC), zinc coated high strength steel tubing meeting Philippine Electrical Code specifications and conforming Underwriter's Laboratories, Inc. requirements, equal to *Nichi*. The material shall be hot-dipped galvanized inside and out.

For ceiling drop, conduit shall be flexible metal conduit equal to *Hokki*. The material shall be hot-dip galvanized steel and shall have extruded polyvinyl covering with integral ground.

E.03 INSTALLATION OF CONDUIT SYSTEM

Conduits shall be installed and supported in a rigid and satisfactory manner. No conduits shall be used in any system smaller than 20mm (1/2") outside diameter trade size, nor shall have more than four quarter bends in any one run between outlets and/or fittings. When necessary, pull boxes shall be provided as directed by the Engineer.

All cut ends of conduit shall be reamed to remove rough edges. Where a conduit enters a box or fitting, bushing shall be provided to protect wire from abrasion, unless design of box or fitting is such as to afford equivalent protection.

Raceways shall be installed at right angles or parallel to building lines. Conduit shall be firmly fastened within 300mm of each outlet box fitting or cabinet by means of standard clamps and intermediately spaced no more than 1.0 meter. All clamps, bolts, straps, etc. shall be galvanized and painted metal.

Support and braces may be welded to structural steel with the specific approval

of the Engineer. When running over concrete surfaces, the screws shall be held in place by expansion sleeves.

F. WIRES AND CABLES

600 Volt grade wire shall be copper, hard drawn and annealed and shall be of 98% conductivity.

Wire or cable for lighting and power systems shall be plastic insulated type THHN/THWN as noted on plans or as specified. All wires 8.0 mm^2 and larger shall be stranded unless noted on plans.

No wire smaller than 3.5 mm^2 shall be used except where otherwise specified. Control leads for motors shall be types THHN/THWN, unless otherwise indicated.

All wires shall be color coded (Black, Red, Yellow, Green) and shall be as manufactured by *Phelpsdodge, Philflex, Columbia* or its approved equal.

Ungrounded conductors shall have distinct insulation color from grounded and grounding wires. Grounding wires and cables shall be colored green or white or as approved by the Engineer.

F.01 CABLE CONNECTORS

The connection of conductors from sizes 8.0mm^2 and larger shall be made with copper, solderless, pressure type connectors. Connection shall be done without damaging the individual cable strands. Connectors shall be provided insulators or fish paperboard separators.

F.02 INSTALLATION OF WIRE AND CABLES

Conductors or cable shall not be installed in conduits, raceway until such systems has been completed, nor it be installed until the inside of conduit has been cleaned.

The Contractor shall exercise due care to prevent damage to conductors, insulation or sheathing when pulling wires and cables.

All feeder cables installed shall be continuous from origin to panel or equipment terminations without running splices in pull box except where taps and splices are approved by the Engineer using suitable connectors.

Wires and cables for power and lighting shall be in separate conduit from any wires or cables for communication and signal systems.

Where cable passes through building exterior walls and underground identification tags of non-corrosive materials shall be stamped on each end and every route.

Wires and cables inside panelboards and control boxes shall be binded by means of plastic straps in a neat and orderly manner.

F.03 600-Volt Wiring Test

Test wiring rated 600 volt and less to verify that no short circuits or accidental grounds exist. Perform insulation resistance tests on wiring 14 mm^2 and larger using instrument which applies voltage of approximately 500 volts to provide direct reading of resistance. Minimum resistance shall be 250,000 ohms.

Furnish test equipment and personnel and submit written copies of test results. Give Engineer 5-working day notice prior to each tests.

G. SWITCHBOARDS, SWITCHGEARS AND PANELBOARDS

G.01 PANELBOARDS

Panelboard shall be as specified in the approved plans.

All protective devices shall meet NEMA and Underwriter Laboratories Inc. specifications. In multiple circuit breakers, all poles shall be interrupted simultaneously during fault conditions. Indoor panels shall be NEMA1/IP41 made up of 100% galvanized steel sheets, 1.5 mm thick, powder coated gray finish with pure polyester paint, 80 microns, smooth paint texture and NEMA4x/IP66 made up of 304 stainless steel gauge 14 for outdoor.

All busbars and current carrying parts shall be high conductivity copper and shall have current density not more than 1.5 amperes per sg.m. of cross sectional area and shall be heavier where required for mechanical strength. Supply with non-ferrous or galvanized bolts, nuts, washers and other required attachment devices.

Each and every panel shall be provided on the inside of the door, with directory frame protected by a transparent plastic window, containing typed card indicating the member and designation of the circuits.

All panels shall have swing type dead front cover and multi-grounding bus or lugs with pressure type terminals of sufficient quantity and size and so located inside as to permit easy termination of cables.

Panelboards shall be supplied and installed by Contractor as specified in the plan.

G.02 CIRCUIT BREAKERS

Circuit breakers shall consist of quick-make, quick break operating mechanism, thermal magnetic trip unit on each pole and enclosed in a molded phenolic case. The thermal magnetic trip unit shall provide time delay overload protection in case of overload and instantaneous trip for short circuit condition in any one pole.

Rating of circuit breaker shall be suitable for each service application and shall be specified as to rated voltage, current, type, frame, size and frequency as manufactured by similar to *Schneider, GE, ABB or Square D*.

Enclosure of individual circuit breakers or knife switches shall be general purpose NEMA type 1 or rain tight NEMA type 4X or as required according to the specific duty called for.

G.03 SUBMITTALS

- **Shop Drawings**

  Include wiring diagrams and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, piping, ductwork, and other items that must be shown to ensure a coordinated installation. Wiring diagrams shall identify circuit terminals and indicate the internal wiring for each item of equipment and the interconnection between each item of equipment. Drawings shall indicate adequate clearance for operation, maintenance, and replacement of operating equipment devices. Submittals shall include the nameplate data, size, and capacity. Submittals shall also include applicable federal, military, industry, and technical society publication references.

- **Product Data**

  Switchboard, Switchgear and Panelboards

- **Test Reports**

    - Switchboard and Switchgear production tests Acceptance checks and tests

    - Operation and Maintenance Data

    - Switchboard and Switchgear Operation and Maintenance

- **Closeout Submittals**

  Assembled Operation and Maintenance Manuals Equipment Test Schedule Request for Settings

G.04 MAINTENANCE

- **Switchboard and Switchgear Operation and Maintenance Data Submit**

  Operation and Maintenance Manuals.

- **Assembled Operation and Maintenance Manuals**

  Manuals shall be assembled and bound securely in durable, hard covered, water resistant binders. The manuals shall be assembled and indexed in the following order with a table of contents. The contents of the assembled operation and maintenance manuals shall be as follows:

    - Manufacturer's O&M information required by the paragraph entitled "Operation and Maintenance Data".

    - Catalog data required by the paragraph entitled, "Product Data".

    - Drawings required by the paragraph entitled, "Shop Drawings".

    - Prices for spare parts and supply list.

    - Information on metering

    - Design test reports

    - Production test reports

G.05 FIELD QUALITY CONTROL

Contractor shall submit request for settings of breakers to the Engineer after approval of Switchboard and Switchgear and at least 30 days in advance of their requirement.

- **Performance of Acceptance Checks and Tests**

  Perform in accordance with the manufacturer's recommendations and include the following visual and mechanical inspections and electrical tests, performed in accordance with NETA.

- **Follow-Up Verification**

  Upon completion of acceptance checks, settings, and tests, the Contractor shall show by demonstration in service that circuits and devices are in good operating condition and properly performing the intended function. Circuit breakers shall be tripped by operation of each protective device. Test shall require each item to perform its function not less than three times. As an exception to requirements stated elsewhere in the contract, the Engineer shall be given 5 working days advance notice of the dates and times for checks, settings, and tests. Tests shall be performed by a recognized independent testing firm or independent electrical consulting firm.

I. TRANSFORMERS

Supply and installation of complete designed and manufactured product for the system consisting of 3-250 kVA and 3-100kva, 1-phase, 60Hz distribution-type transformer. It shall meet ANSI/IEEE/NEMA specifications.

I.1 TEMPERATURE RISE

The average temperature rise of the windings, measured by the resistance method, shall be 65°C when the transformer is operated at rated kVA output in a 30°C average and 40°C maximum ambient, as defined by without loss of service life expectancy.

I.2 INSULATING FLUID

The dielectric fluid self-cooled immersed used are either mineral oil or an environment friendly high fire point fluid.

I.3 RATED VOLTAGE/TAP SETTINGS

Primary voltage and secondary voltage shall be 13.2kV wye and 230V delta, respectively. Tap settings shall be externally operated tap changer consisting 2A2B at 2.5% tap.

Basic Impulse Level (BIL) shall be 95kV and 30kV for primary winding and secondary winding, respectively.

I.4 COILS

Coils shall be wound with copper conductors at primary side and copper/aluminum at secondary side. Core/coil assembly shall be the five-legged wound core type, using high grade, grain oriented silicon steel laminations carefully annealed after fabrication to restore high magnetic permeability. Magnetic flux is to be kept well below the saturation point.

I.5 HV/LV Bushings

The cover-mounted and tank-wall mounted high voltage bushings are made of wet process porcelain suitable for both copper/aluminum conductors.

Single or double eyebolt or spade terminal made of wet process porcelain for LV bushings.

I.5 Transformer Tests

Perform the standard, not optional, tests in accordance with the Inspection and Test Procedures for transformers, as specified in NETA standards. Measure primary and secondary voltages for proper tap settings. Tests shall be performed by a recognized independent testing firm or independent electrical consulting firm.

J. GENERATORS

J.1 EQUIPMENT REQUIREMENTS

- **300 kVA**

Supply and Installation of 300 kVA Standby Power Engine and 275 Prime Power Engine, 4 x 1.4 x 2 meters (length x width x height) and 3,000 kg gross weight, engine manufactured similar to Perkins FG Wilson, control panels similar to

PowerWizard 2.1 + Control Panel (PWT2.1), EasYgen 2500 Control Panel, 8 hours continuous running at full power (Fuel Tank Capacity), 115 - 440 Volts, 60 Hz, FG Wilson alternator IP23 Protection with Coastal Insulation Protection and SHUNT Excitation, Lead Acid Battery (Dry), Engine filled with lubrication oil, High coolant temperature shutdown, Low Oil Pressure shutdown. Fan, Fan drive and Battery charging alternator drive fully guarded to meet EC Machinery Directive, Coolant System filled with Coolant Mix. In term of mounting Base, Formed Steel with Single Wall Fuel Tank, Certified Base mounted lifting eyes and rear drag eyelets. In General, Upgrade to Standard Set for European Union's Conformity Marking, Compact Skid Base for Open sets, Sound attenuated for residential area with steel or galvanized enclosure and dual wall base tank, 50°C High ambient capability available.

- **500 kVA**

Supply and Installation of 500 kVA Standby Power Engine and 438 Prime Power Engine, 4.62 x 1.82 x 2.28 meters (length x width x height), 5,500 kg gross weight, engine manufactured similar to Perkins – DPX Power, 73 Liters per hour at 75% Load control panels similar to PowerWizard 2.1 + Control Panel (PWT2.1), EasYgen 2500 Control Panel, 8 hours continuous running at full power (Fuel Tank Capacity), 127 - 480 Volts, 60 Hz, 1800 RPM, Engine filled with lubrication oil, High coolant temperature shutdown, Low oil pressure shutdown, Engine mounted battery charging alternator. Package mounted radiator, cooling system filled with coolant mix. FG Wilson Alternator with IP21 Protection Coastal ingress protection alternator, Quadrature Droop Kit (AR6), Anti-Condensation Heater and Panel Circuit (AH1) AREP/ PMG Excitation, AVR Upgrades, Three phase sensing and SHUNT Excitation. In terms of Mounting it has Robust Steel Constructed Base Frame, Base frame drag and lift points, Captive Linear Vibration Isolators between base and Engine – Generator, Battery tray. Heavy duty dry battery, battery charger with auto boost, battery isolator switch. In General, Upgrade to Standard Set for European Union's Conformity Marking, EEC Declaration of conformity, sound attenuated for residential areas or high ambient enclosures about 50°C High ambient capability available, robust and highly corrosion resistant construction.

- **660 kva**

Supply and Installation of 600 kVa Standby Power Engine and 600 Prime Power Engine, 5.05 x 2.15 x 2.55 meters (length x width x height), 5,870 kg gross weight, engine manufactured similar to Perkins – Mecc Alte, control panels similar to PowerWizard 2.1 + Control Panel (PWT2.1), EasYgen 2500 Control Panel, 8 hours continuous running at full power (Fuel Tank Capacity), 220 - 440

Volts, 60 Hz, 1500 RPM, Engine filled with lubrication oil, High coolant temperature shutdown, Low oil pressure shutdown, Engine mounted battery charging alternator. Package mounted radiator, cooling system filled with coolant mix. FG Wilson Alternator with IP21 Protection Coastal ingress protection alternator, Quadrature Droop Kit (AR6), Anti-Condensation Heater and Panel Circuit (AH1) AREP/ PMG Excitation, AVR Upgrades, Three phase sensing and SHUNT Excitation. In terms of Mounting it has Robust Steel Constructed Base Frame, Base frame drag and lift points, Captive Linear Vibration Isolators between base and Engine – Generator, Battery tray. Heavy duty dry battery, battery charger with auto boost, battery isolator switch. In General, Upgrade to Standard Set for European Union's Conformity Marking, EEC Declaration of conformity, sound attenuated for residential areas or high ambient enclosures about 50°C High ambient capability available, robust and highly corrosion resistant construction.

- **800 kva**

Supply and Installation of 800 kVA Standby Power Engine, 4.485 x 1.798 x 1.987 meters (length x width x height), 6,256 kg gross weight, engine manufactured similar to Caterpillar, control panels similar to CAT EMCP 4.2B Control Panels with Digital Indication for RPM, DC Volts, Operating Hours, Oil Pressure, Coolant Temperature, and etc. 8 hours continuous running at full power (Fuel Tank Capacity), 220 - 440 Volts, 60 Hz, 1800 RPM, Engine filled with lubrication oil, High coolant temperature shutdown, Low oil pressure shutdown, Caterpillar Alternator with IP23 Protection Coastal ingress protection alternator, Package mounted radiator, Single element canister type air cleaner with service indicator, 203mm (8in) ID round flanged outlet exhaust manifold outlet. Installed with a Flexible fuel lines together with Electric fuel priming pump. Genset attachments includes Integrated Voltage Regulator (IVR), Bus bar connections, SR5 Permanent Magnet. 68 liters volume of oil pan, Fumes disposal open crankcase ventilation routed to front of package. Mounting includes Rubber anti vibration mounts and rails. Starting charging system 24 volt electric Starting Motor, Battery racks and cables, battery disconnect switch, charging alternator 45A, Flywheel and flywheel housing SAE No. 0 and SAE No. 18 20 Amp enclosure battery chargers, 10 Amp battery chargers, 24 volt battery sets (Dry) Air starting motor with control and silencer 24 V electric start motors (heavy duty).

J.2 SHOP DRAWINGS AND CALCULATIONS

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

- 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.
- General arrangement drawings showing location of all auxiliary equipment in relation to the diesel generating unit.
- Piping schematic for compressed air starting, fuel oil, lubricating oil, jacket water, and cooling water integral with diesel engine.
- Brake Mean Effective Pressure (BMEP) calculations.
- Air Starting and Cranking time calculations.
- Battery sizes.
- Critical speed calculations.
- Electrical elements, schematics and writing diagrams, including details of the safety shutdown systems and main generator circuit breaker trip system.

J.3 CERTIFIED TEST REPORTS

- Diesel engine shop tests Generator shop tests
- Diesel engine driven electric generator set shop test tests Radio-interference suppression.

J.4 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.

J.5 SAFETY REQUIREMENTS

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

J.6 INSTALLATION

Installation shall conform to the requirements of NFPA 70.

J.7 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.

- **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.

- **Speed Governing Test**

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

- **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:

  - Demonstrate proper operation of all system.

  - Conduct three (3) hour run utilizing Contractor-furnished portable load bank or dummy load as follows:
    - ½ load - one hour
    - Full load - two hours

K. SOLAR PV SYSTEM

K.1 SYSTEM REQUIREMENTS

- **Supply, Delivery, Installation, Testing & Commissioning of 49.5 kWp 3P Solar PV System**

Item No.	Specification	UOM	QTY
1	**3 x 3.3kW Ongrid Inverter**	Sets	5
	Start Voltage: 150Vdc		
	Voltage Range: 100Vdc - 500Vdc		
	MPPT Voltage Range: 180Vdc - 800Vdc		
	DC Rated Voltage: 350Vdc		
	No of MPPT: 1		
	Nominal AC Power: 3.3kW		
	AC Rated Voltage: 220Vac/230Vac		
	Frequency: 60Hz (tolerance adjustable)		
	Power Factor: > 0.99		
	Max Efficiency: 97.2%		
	European Efficiency: 96.2%		
	Protection: Anti-Islanding (IEEE1547)		
	Protection: DC Reversed Polarity		
	Protection: AC Short Circuit		
	Protection: Ground Fault		
	Protection: DC Over Voltage		
	Protection: Over Load		
	Protection: Over Heat		
	Protection: AC Over/Under Voltage		
	Protection: Over/Under Frequency		

	IP Grade: IP65		
	Cooing Mode: Natural Cooling		
	Display: LED		
	Communication: RS485		
	TUV Certified		
2	Polycrystalline 330W Module	Pcs	150
	Maximum Power (Pmax): 330W		
	Open Circuit Voltage (Voc): 46.74Vdc		
	Short Circuit Current (Isc): 9.15A		
	Maximum Power Voltage (Vmpp): 38.53Vdc		
	Maximum Power Current (Impp): 8.57A		
	Module Efficiency: 17.01%		
	IEC61215 Compliance		
	IEC61730 Compliance		
	TUV Certified		
3	$4mm^2$ DC Cable (Black)	Meters	500
	Rated Voltage: 1500Vdc		
	Halogen-free and flame-retardant		
	Weather / UV-resistant acc. to EN 50618		
	Ozone-resistant acc. to EN 50396		
	TUV Certified		
	CE Certified		
4	$4mm^2$ DC Cable (Red)	Meters	500
	Rated Voltage: 1500Vdc		
	Halogen-free and flame-retardant		
	Weather / UV-resistant acc. to EN 50618		

	Ozone-resistant acc. to EN 50396		
	TUV Certified		
	CE Certified		
5	MC4 Connector (Male & Female)	Lot	1
	Rated Current: 30A		
	Rated Voltage: 1000Vdc		
	Overvoltage Type/Pollution Degree: CAT III / 2		
	Contact Material: Copper, Tin-plated		
	Insulation Material: PPO		
	Degree of Protection: IP2X/IP67		
	Flame Class: UL94-VO		
	Safety Class: II		
	TUV Certified		
	UL Certified		
6	Standalone Energy Management System w/ Export Control	Lot	1
	In App feature to turn on/off inverters		
	In App grid/utility monitoring		
	In App solar/inverter monitoring		
	In App fault monitoring with notification		
	In App scheduling of inverter operation		
	Free android/ios app; No monthly subscription charges		
	Support daisy chaining multi brand of inverters		
	Monthly, daily and hourly historical graph		
	Real-time telemetry update every 10 seconds		
	Support local storage that can keep data over a year in case of internet failure; Auto-sync when internet resumes		

	Non-Intrusive grid/utility monitoring utilizing CT		
	Support export control		
7	System Rapid Shutdown NEC 690.12 for 2014, 2017 & 2020 Compliance	Lot	1
	R SS Transmitter (Single Core)		
	Max Current: 150A		
	Max String Voltage: 1500Vdc		
	Max Number of String per Core: 10		
	Max Supported PV Modules per String: 30		
	P V Module Add-On		
	Manual or Automatic shutdown		
	Module-level monitoring for energy production tracking and system management		
	Total Max Input Voltage (Voc @ Lowest Temp) - 90V		
	Voltage Range: 16 - 90V		
	Maximum Current: 15A		
	Maximum Power: 500W		
8	Standard AC & DC Protection w/ Enclosures	Lot	1
9	Standard Grounding: Wire, Rod and Connector	Lot	1
10	Aluminum Light-Weight Mounting	Lot	1
11	Installation	Lot	1

- **Supply, Delivery, Installation, Testing & Commissioning of 55.44 kWp 3P Solar PV System**

Item No.	Specification	UOM	QTY
1	**30kW 3P Ongrid Inverter (Low Voltage)**	Pcs	2

	Max PV Power: 30kW		
	Max PV Input Voltage: 1000Vdc		
	Max PV Input Current: 99A		
	No. of MPPT: 3		
	No. of Strings: 9		
	MPPT Voltage Range: 300Vdc - 1000Vdc		
	Start Up Voltage: 250Vdc		
	MPPT Efficiency: 99.90%		
	Nominal AC Output Power: 30kW		
	Max Output Power: 33kW		
	Nominal AC Voltage: 220Vac		
	Rated Output Current: 83.2A		
	Max Output Current: 91.6A		
	Nominal Grid Frequency: 60Hz		
	Grid Frequency Range: 55Hz - 65Hz		
	Power Factor: > 0.99 (full load)		
	PF Adjustable Range: 0.8 (leading) - 0.8 (lagging)		
	THDi: < 3% (nominal power)		
	Max Efficiency: 98.5%		
	European Efficiency: 98.0%		
	Anti-Islanding		
	DC Reversed Connection		
	AC Short Circuit Protection		
	Temperature Protection		
	Surge Protection		
	PV Fault Detect		

	DC Switch		
	IP Grade: IP65		
	Self Power Consumption at Night: < 1W		
	Cooing Mode: Natural Cooling		
	Display: LCD+LED		
	Communication: RS485		
2	Polycrystalline 330W Module	Pcs	168
	Maximum Power (Pmax): 330W		
	Open Circuit Voltage (Voc): 46.74Vdc		
	Short Circuit Current (Isc): 9.15A		
	Maximum Power Voltage (Vmpp): 38.53Vdc		
	Maximum Power Current (Impp): 8.57A		
	Module Efficiency: 17.01%		
	IEC61215 Compliance		
	IEC61730 Compliance		
	TUV Certified		
3	$6mm^2$ DC Cable (Black)	Meters	1000
	Rated Voltage: 1500Vdc		
	Halogen-free and flame-retardant		
	Weather / UV-resistant acc. to EN 50618		
	Ozone-resistant acc. to EN 50396		
	TUV Certified		
	CE Certified		
4	$6mm^2$ DC Cable (Red)	Meters	1000
	Rated Voltage: 1500Vdc		
	Halogen-free and flame-retardant		

	Weather / UV-resistant acc. to EN 50618		
	Ozone-resistant acc. to EN 50396		
	TUV Certified		
	CE Certified		
5	MC4 Connector (Male & Female)	Lot	18
	Rated Current: 30A		
	Rated Voltage: 1000Vdc		
	Overvoltage Type/Pollution Degree: CAT III / 2		
	Contact Material: Copper, Tin-plated		
	Insulation Material: PPO		
	Degree of Protection: IP2X/IP67		
	Flame Class: UL94-VO		
	Safety Class: II		
	TUV Certified		
	UL Certified		
6	Standalone Energy Management System w/ Export Control	Lot	1
	In App feature to turn on/off inverters		
	In App grid/utility monitoring		
	In App solar/inverter monitoring		
	In App fault monitoring with notification		
	In App scheduling of inverter operation		
	Free android/ios app; No monthly subscription charges		
	Support daisy chaining multi brand of inverters		
	Monthly, daily and hourly historical graph		
	Real-time telemetry update every 10 seconds		
	Support local storage that can keep data over a		

	year in case of internet failure; Auto-sync when internet resumes		
	Non-Intrusive grid/utility monitoring utilizing CT		
	Support export control		
7	System Rapid Shutdown NEC 690.12 for 2014, 2017 & 2020 Compliance	Lot	1
	R SS Transmitter (Single Core)		
	Max Current: 150A		
	Max String Voltage: 1500Vdc		
	Max Number of String per Core: 10		
	Max Supported PV Modules per String: 30		
	P V Module Add-On		
	Manual or Automatic shutdown		
	Module-level monitoring for energy production		
	tracking and system management		
	Total Max Input Voltage (Voc @ Lowest Temp) - 90V		
	Voltage Range: 16 - 90V		
	Maximum Current: 15A		
	Maximum Power: 500W		
8	Standard AC & DC Protection w/ Enclosures	Lot	1
9	Standard Grounding: Wire, Rod and Connector	Lot	1
10	Aluminum Light-Weight Railless Mounting	Lot	1
11	Installation	Lot	1

K.2 SUBMITTALS

K.2.1 Shop Drawings

- Schematic Diagrams
- Interconnection Diagrams

- Installation Drawings

K.2.2 Product Data

- Combiner Boxes
- Disconnects
- Inverters
- Mounting Structure for Modules
- Photovoltaic Module Backsheet
- Photovoltaic Module Encapsulant
- Photovoltaic Modules
- Photovoltaic Wire
- System Monitoring

K.2.3 Design Data

- System Operation
- Calculations

K.2.4 Certificates

- Installer
- Materials
- Warranty

K.3 QUALITY ASSURANCE

K.3.1 Installation Drawings

- Submit drawings for Owner approval prior to equipment construction or integration.

- Submit shop drawings at a minimum of 11 by 17 inches in size A3 paper.

- All details legible and all text no smaller than 2.50 mm in height on any drawing. As needed, provide enlargements to ensure clarity of intent.

- Shop drawings must include one-wire diagrams and installation details of photovoltaic (PV) system equipment indicating location as proposed in design drawings, layout and arrangement of PV modules, support and mounting mechanism, inverters, combiner boxes, AC and DC disconnects, equipment enclosures, conduits, monitors, meters,

security systems, and all other accessories associated with the installation of the PV system. Wiring diagrams must identify circuit terminals and indicate the internal wiring for each item of equipment and the interconnection between each equipment item.

- Shop drawings may include legible copies of manufacturer's product literature, with selected items and specifications highlighted thereon.

- Modifications to original drawings made during installation must be immediately recorded for inclusion into the as-built drawings. When items have changed relative to the approved design, the designer must provide certification indicating that the changes will not negatively affect the system's operation or the structure supporting the system.

K.3.2 System Operation

Provide a complete description of the function of each component including PV modules, DC wiring, combiner boxes, inverters, AC wiring, AC and DC disconnect switches, and monitoring system. Provide a discussion of the overall system operation.

K.3.3 Installer

Submit PV Installation certification, and a resume with references that details least four successful projects that, in aggregate, equal or exceed the size of the proposed project.

K.3.4 Materials

Provide materials and equipment that are products of manufacturers regularly engaged in the production of such products which are of equal material, design and workmanship. Submit proof of compliance with requirements of UL, where material or equipment is specified to comply. The label of or listing in UL Electrical Construction Directory will be acceptable evidence. In lieu of the label or listing, a written certificate from an approved nationally recognized testing laboratory (NRTL) equipped to perform such services, stating that the items have been tested and conform to the requirements and testing methods of Underwriters Laboratories may be submitted.

K.4 OPERATION AND MAINTENANCE DATA

Submit Solar Photovoltaic Systems data package for the following items.

- Troubleshooting guide

- Warranty.

- Operation instructions.

- Preventive maintenance and inspection data, including a schedule for system operators.

- As-built plans displaying modules identified according groups or zones, coordinated with activity to organize as required.

K.5 WARRANTY

The equipment items must be supported by service organizations which are reasonably convenient to the equipment installation in order to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

K.5.1 Solar Photovoltaic Modules

Furnish the solar photovoltaic module manufacturer's warranty. The warranty must be a 25-year linear 80 percent (minimum) power warranty (at the end of the 25th year after purchase an actual minimum power output of 80 percent based on the nameplate rating must be achieved) and not less than 10-years for workmanship material and manufacturing defects from the date of manufacture.

The warranty must state that the malfunctioning solar photovoltaic module must be exchanged by the manufacturer and promptly shipped to the Owner facility. The replacement solar module must be identical to, or an improvement upon, the original design of the malfunctioning solar module. Provide an extra spare module in the event of necessary replacement of malfunctioning installed module.

K.5.2 Inverters

Furnish the inverter manufacturer's warranty. The warranty period must be 15 years (minimum) from the date of manufacture. Inverter device installation, transportation, and on-site storage must not exceed 12 months, thereby permitting 14 years of the 15 year warranty to be in service and energized.

The warranty must state that the malfunctioning inverter must be exchanged by the manufacturer and promptly shipped to the Owner facility, and arrive in no more than ten days. The replacement inverter must be identical to, or an improvement upon, the original design of the malfunctioning inverter. Provide an extra spare inverter in the event of necessary replacement of malfunctioning installed inverter.

K.6 GROUNDING AND BONDING

- Provide properly sized equipment grounding conductors.

- Provide bonding fittings on concentric/eccentric knockouts with metal conduits for circuits over 250 volts in accordance with NFPA 70 and PEC.

- Provide bonding fittings for ferrous metal conduits enclosing grounding electrode conductors in accordance with NFPA 70 and PEC.

- Provide grounding lugs for aluminum PV solar module frames of either stainless steel or tin-coated copper.

K.7 TRAINING PLAN

The training period must consist of a total of 2 hours of normal working time and begin after the system is functionally completed but prior to final acceptance tests. Submit the training course curriculum for approval, along with the proposed training date, at least 14 days prior to the date of proposed conduction of the training course. Instruction must be given during the first regular work week after the equipment or system has been accepted and turned over to the Owner for regular operation. Provide any PowerPoint slides as part of the final documentation for those that cannot attend. Extend safety training to fire department representatives. Coordinate with Engineer for Fire Department first responder training.

K.8 OTHER REQUIREMENTS

- The Contractor must have in their company payroll a Safety officer with COSH Certificate
- The Contractor must have in their company payroll a Certified Data Engineer - monthly power analysis report
- The Contractor must submit un-amended literature/brochure from manufacturer
- The Contractor must submit PV Module Manufacturer Certificate
- The Contractor must submit PV Module Authorised Distributorship
- The Contractor must submit Authorised Distributorship from Manufacturers
- The Contractor must submit manufacturer's warranty certificate
- The Contractor must submit Inverter TUV Certificate
- The Contractor must submit PV Module TUV Certificate
- The Contractor's solution must not use step down transformer
- System must comply with NEC 690.12 for 2014, 2017 and 2020 and PEC 2017

TECHNICAL SPECIFICATION
PART III.A – AUXILIARY WORKS

A. GENERAL

GENERAL REQUIREMENTS contain requirements essential to these specifications and apply whether or not individually referred to under this section.

A-01 SCOPE OF WORK

The work shall consist of the supply of labor, materials, equipment and other facilities necessary to complete the Auxiliary Works.

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within 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.

a. ASTM International (ASTM)

ASTM D709 (2017)	Laminated Thermosetting Materials

b. Electronic Components Industry Association (ECIA)

ECIA EIA/ECA 310-E (2005)	Cabinets, Racks, Panels, andAssociated Equipment

c. Institute of Electrical and Electronics Engineers (IEEE)

IEEE 100 (2000)	The Authoritative Dictionary of IEEE Standards Terms

d. Insulated Cable Engineers Association (ICEA)

ICEA S-83-596 (2016)	Indoor Optical Fiber Cables
ICEA S-90-661 (2012)	Category 3, 5, & 5e Individually Unshielded Twisted Pair Indoor Cables for Use in General Purpose and LAN Communications Wiring Systems Technical Requirements

e. National Electrical Contractors Association (NECA)

NECA/BICSI 568 (2006)	Standard for Installing Building Telecommunications Cabling

f. National Fire Protection Association (NFPA)

NFPA 70 (2017)	National Electrical Code

g. Institute of Integrated Electrical Engineers of the Philippines (IIEE)

PEC (2017)	Philippine Electrical Code

h. Bureau of Product Standards (BS)

PNS (2002)	Philippine National Standard

i. Telecommunications Industry Association (TIA)

TIA-1152 (2009)	Requirements for Field Test Instruments and Measurement for Balanced Twisted-Pair Cabling
TIA-455-21 (2012)	FOTP-21 - Mating Durability of Fiber Optic Interconnecting Devices
TIA-526-14 (2015)	OFSTP-14A Optical Power Loss Measurements of Installed Multimode Fiber Cable Plant
TIA-568-C.0 (2012)	Generic Telecommunications Cabling for Customer Premises
TIA-568-C.1 (2012)	Commercial Building Telecommunications Cabling Standard
TIA-568-C.2 (2016)	Balanced Twisted-Pair Telecommunications Cabling and Components Standards
TIA-568-C.3 (2011)	Optical Fiber Cabling Components Standard
TIA-569 (2015)	Commercial Building Standard for Telecommunications Pathways and Spaces
TIA-606 (2017)	Administration Standard for the

	Telecommunications Infrastructure
TIA-607 (2017)	Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises
TIA/EIA-598 (2018)	Optical Fiber Cable Color Coding
TIA/EIA-604-10 (2002)	FOCIS 10 Fiber Optic Connector Intermateability Standard - Type LC

j. Underwriters Laboratories (UL)

UL 1286	(2018)	Safety Office Furnishings
UL 1666	(2012)	Test for Flame Propagation Height of Electrical and Optical-Fiber Cables Installed Vertically in Shafts
UL 1863	(2016)	Safety Communication Circuit Accessories
UL 444	(2015)	Communications Cables
UL 467	(2017)	Safety Grounding and Bonding Equipment
UL 50 Non-	(2015)	Safety Enclosures for Electrical Equipment, Environmental Considerations
UL 514C Boxes,	(2018)	Safety Nonmetallic Outlet Boxes, Flush-Device and Covers
UL 969	(2018)	Safety Marking and Labeling Systems

A-02 EXECUTION AND INSTALLATION WORKS

The work under this contract shall be done in accordance with the provision of the latest edition of above-said standards and codes. Nothing contained in these Specifications or shown in the drawing shall be construed as to conflict with national and local ordinance or laws governing the installation of auxiliary works and all such laws and ordinances are hereby made part of these specifications. The contractor is required to meet the requirement thereof.

A.02.1 Installation (Structured Cabling System)

Install telecommunications cabling and pathway systems, including the horizontal and backbone cable, pathway systems, telecommunications outlet/connector assemblies, and associated hardware in accordance with NECA/BICSI 568, TIA-568-C.1, TIA-568- C.2, TIA-568-C.3, TIA-569, NFPA 70, PEC and UL standards as applicable. Provide cabling in a star topology network. Pathways and outlet boxes shall be installed as specified. Install telecommunications cabling with copper media in accordance with the following criteria to avoid potential electromagnetic interference between power and telecommunications equipment. The interference ceiling shall not exceed 3.0 volts per meter measured over the usable bandwidth of the telecommunications cabling.

a. Cabling

   Install UTP, and optical fiber telecommunications cabling system as detailed in TIA-568-C.1, TIA-568-C.2, and TIA-568-C.3. Screw terminals shall not be used except where specifically indicated on plans. Use an approved insulation displacement connection (IDC) tool kit for copper cable terminations. Do not exceed manufacturers' cable pull tensions for copper and optical fiber cables. Provide a device to monitor cable pull tensions. Do not exceed 110 N pull tension for four pair copper cables. Do not chafe or damage outer jacket materials. Use only lubricants approved by cable manufacturer. Do not over cinch cables, or crush cables with staples. For UTP cable, bend radii shall not be less than four times the cable diameter. Cables shall be terminated; no cable shall contain unterminated elements. Cables shall not be spliced. Label cabling in accordance with paragraph LABELLING in this section.

b. Open Cable

   Use only where specifically indicated on plans for use in cable trays. Install in accordance with TIA-568-C.1, TIA-568-C.2 and TIA-568-C.3. Do not exceed cable pull tensions recommended by the manufacturer. Cable shall not be run through structural members or in contact with pipes, ducts, or other potentially damaging items. Placement of cable parallel to power conductors shall be avoided, if possible; a minimum separation of 300 mm shall be maintained when such placement cannot be avoided.

Plenum cable shall be used where open cables are routed through plenum areas. Plenum cables shall comply with flammability plenum requirements of NFPA 70 and PEC.

c. Backbone Cable

Optical fiber Backbone Cable. Install intrabuilding backbone optical fiber in indicated pathways. Do not exceed manufacturer's recommended bending radii and pull tension. Prepare cable for pulling by cutting outer jacket 250 mm leaving strength members exposed for approximately 250 mm. Twist strength members together and attach to pulling eye. Vertical cable support intervals shall be in accordance with manufacturer's recommendations.

d. Horizontal Cabling

Install horizontal cabling as indicated on drawings. Do not untwist Category 5E/6 UTP cables more than 12 mm from the point of termination to maintain cable geometry. Provide slack cable in the form of a figure eight (not a service loop) on each end of the cable, 3 m in the telecommunications room, and 300 mm in the work area outlet.

e. Pathway Installations

e.1 Provide in accordance with TIA-569, NFPA 70 and PEC. Provide building pathway as specified.

e.2 Cable Tray Installation. Install cable tray as specified. Only CMP and ΘFNP type cable shall be installed in a plenum.

e.3 Terminations. Terminate UTP cable in accordance with TIA-568-C.1, TIA-568-C.2 and wiring configuration as specified. Terminate fiber optic cables in accordance with TIA-568- C.3.

e.4 Cover Plates. As a minimum, each outlet/connector shall be labelled as to its function and a unique number to identify cable link in accordance with the paragraph LABELING in this section.

e.5 Cables. Unshielded twisted pair and fiber optic cables shall have a minimum of 300 mm of slack cable loosely coiled into the

telecommunications outlet boxes. Minimum manufacturer's bend radius for each type of cable shall not be exceeded.

e.6 Pull Cords. Pull cords shall be installed in conduit serving telecommunications outlets that do not have cable installed.

f. Telecommunications Space Termination

Install termination hardware required for Category 5E and optical fiber system. An insulation displacement tool shall be used for terminating copper cable to insulation displacement connectors.

f.1 Connector Blocks. Connector blocks shall be cabinet mounted in orderly rows and columns. Adequate vertical and horizontal wire routing areas shall be provided between groups of blocks. Install in accordance with industry standard wire routing guides in accordance with TIA-569.

f.2 Patch Panels. Patch panels shall be mounted in equipment cabinets with sufficient ports to accommodate the installed cable plant plus 25 percent spares.

f.2.1 Copper Patch Panel. Copper cable entering a patch panel shall be secured to the panel with cable ties as recommended by the manufacturer to prevent movement of the cable.

f.2.2 Fiber Optic Patch Panel. Fiber optic cable loop shall be provided as recommended by the manufacturer. The outer jacket of each cable entering a patch panel shall be secured to the panel to prevent movement of the fibers within the panel, using clamps or brackets specifically manufactured for that purpose.

g. Equipment Support Frames

Install in accordance with TIA-569:

g.1 Cabinets, freestanding modular type. When cabinets are connected together, remove adjoining side panels for cable routing between cabinets. Mount rack mounted fan in cabinet.

g.2 Cabinets, wall-mounted modular type. Mount cabinet to plywood backboard in accordance with manufacturer's recommendations.

Mount cabinet so height of highest panel does not exceed 1800 mm above floor.

h. Electrical Penetrations

Seal openings around electrical penetrations through fire resistance-rated wall, partitions, floors, or ceilings.

i. Labeling

i.1 Labels. Provide labelling in accordance with TIA-606. Handwritten labelling is unacceptable. Stenciled lettering for voice and data circuits shall be provided using laser printer.

i.2 Cable. Cables shall be labelled using color labels on both ends with identifiers in accordance with TIA-606.

i.3 Termination Hardware. Workstation outlets and patch panel connections shall be labelled using color coded labels with identifiers in accordance with TIA-606.

A.02.1 Installation (CCTV System)

Install the system in accordance with safety and technical standards NFPA 70 and PEC. Configure components within the system with appropriate service points to pinpoint system trouble in less than 20 minutes.

Install all system components and appurtenances in accordance with the manufacturer's instructions, IEEE C2 and as shown on the drawings, and furnish all necessary connectors, terminators, interconnections, services, and adjustments required for a complete and operable system.

a. Existing Equipment

Connect to and utilize existing video equipment, video and control signal transmission lines, and devices as shown. Video equipment and signal lines that are usable in their original configuration without modification may be reused with Owner approval. Perform a field survey, including testing and inspection of all existing video equipment and signal lines intended to be incorporated into the CCTV system, and submit a report to the Owner. For those items considered

nonfunctioning, provide (with the report) specification sheets, or written functional requirements to support the findings and the estimated cost to correct the deficiency. As part of the report, include the scheduled need date for connection to all existing equipment. Make written requests and obtain approval prior to disconnecting any signal lines and equipment, and creating equipment downtime. Such work shall proceed only after receiving Owner approval of these requests. If any device fails after the Contractor has commenced work on that device, signal or control line, diagnose the failure and perform any necessary corrections to the equipment. The Owner is responsible for maintenance and repair of Owner equipment. The Contractor will be held responsible for repair costs due to Contractor negligence or abuse of Owner equipment.

b. Software Installation

Load software as specified and required for an operational system, including databases and specified programs. Provide original and backup copies of all accepted software, including diagnostics, upon successful endurance test completion.

c. Enclosure Penetrations

Enclosures are to be penetrated from the bottom unless shown otherwise. Penetrations of interior enclosures having transitions of conduit from interior to exterior, and penetrations of exterior enclosures are to be sealed with rubber silicone sealant to preclude the entry of water. Terminate conduit risers in a hot-dipped galvanized metal cable terminator that is filled with a sealant as recommended by the cable manufacturer, and in a manner that does not damage the cable.

d. Galvanizing

Ferrous metal is to be hot-dip galvanized in accordance with ASTM A123/A123M. Provide screws, bolts, nuts, and other fastenings and supports that are corrosion resistant.

Field welds or brazing on factory galvanized boxes, enclosures, conduits, and so on, are to be coated with a cold galvanized paint containing at least 95 percent zinc by weight.

e. Cable and Wire Runs

Perform required cable and wire routings per NFPA 70, PEC and as specified. Terminate conduits including flexible metal and armored cable in the device enclosure. Fit ends of conduit with insulated bushings. Exposed conductors at ends of conduits external to devices are not acceptable.

f. Conduits

Install interior conduits in accordance with NFPA 70, PEC and as specified.

g. Camera Housings, Mounts, and Poles

Install the camera housings and mounts as specified by the manufacturer and as shown, provide mounting hardware sized appropriately to secure each camera, housing and mount with maximum wind loading encountered at the site; provide electrical and signal transmission cabling to the mount location as specified connect signal lines and AC power to mount interfaces; and connect pole wiring harness to camera.

h. Adjustment, Alignment, Synchronization, and Cleaning

h.1 Clean each system component of dust, dirt, grease, or oil incurred during and after installation or accrued subsequent to installation from other project activities subsequent to installation.

h.2 Prepare for system activation by manufacturer's recommended procedures for adjustment, alignment, or synchronization.

h.3 Prepare each component in accordance with appropriate provisions of component installation, operations, and maintenance manuals.

h.4 Remove large vegetation that may sway in the wind and touch fencing.

i. System Start-up

Do not apply power to the system until after:

i.1 Set up system equipment items and communications in accordance with manufacturer's instructions.

i.2 Conduct a system visual inspection to ensure that defective equipment items have not been installed and that there are no loose connections.

i.3 Test and verify system wiring as correctly connected.

i.4 Verify system grounding and transient protection systems as properly installed. Verify the correct voltage, phasing, and frequency of the system power supplies.

i.5 Satisfaction of the requirements above does not relieve the contractor of responsibility for incorrect installations, defective equipment items, or collateral damage as result of Contractor work or equipment.

A-03 GUARANTEE

The Contractor shall guarantee that the auxiliary system is free from all grounds and from all defective workmanship and will remain so for a period of one year from the date of acceptance of the work. The Contractor at his owns expense shall remedy any defects, appearing within the aforesaid period.

A-04 WORKMANSHIP

The work throughout shall be executed in the best and most thorough manner under the direction of and to the satisfaction of the PFDA who will interpret the meaning of the Drawings and Specifications and shall have power to reject any work and materials that in his judgment are not in full accordance therewith.

A.04.1 Standard of Materials

All materials shall be new and shall conform to the standards of Underwriter's Laboratories, Inc., IEEE, NEMA and Philippine Standard Agency (PSA) for every case where such a standard has been established for the particular type of materials in questions.

All materials on all systems shall comply with the specifications, and all material, which is not specified, shall be of the best of their respective kind.

A.04.2 Grounding and Bonding Products

Provide in accordance with UL 467, TIA-607, NFPA 70 and PEC. Components shall be identified as required by TIA-606. Provide ground rods, bonding conductors, and grounding busbars, as specified.

a. Manufacturer's Nameplate

Each item of equipment shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.

b. Field Fabricated Nameplates

ASTM D709. Provide laminated plastic nameplates for each equipment enclosure, relay, switch, and device; as specified or as indicated on the drawings. Each nameplate inscription shall identify the function and, when applicable, the position. Nameplates shall be melamine plastic, 3 mm thick, white with black center core. Surface shall be matte finish. Corners shall be square. Accurately align lettering and engrave into the core. Minimum size of nameplates shall be 25 by 65 mm. Lettering shall be a minimum of 6 mm high normal block style.

c. Tests, Inspections, And Verifications (Factory Reel Tests)

Provide documentation of the testing and verification actions taken by manufacturer to confirm compliance with TIA-568-C.1, TIA-568-C.2, TIA- 568-C.3, and TIA-526-14 for multimode optical fiber cables.

A. A.04.3 Performance Test

It shall be the responsibility of the Contractor to test all system of the entire electrical installation for proper operational condition. This condition shall apply to the low voltage and alarm control, signal and communication systems. Where sequence operation is required, the Contractor shall test for proper sequence of the entire auxiliary installation for satisfactory working condition as approved by the PFDA.

Perform testing for each outlet as follows:

a. Perform Category 5E link tests in accordance with TIA-568-C.1 and TIA- 568-C.2. Tests shall include wire map, length, insertion loss, NEXT, PSNEXT, ELFEXT, PSELFEXT, return loss, propagation delay, and delay skew.

b. Optical fiber Links. Perform optical fiber end-to-end link tests in accordance with TIA-568-C.3.

A.04.4 Completion Requirements

Remove waste and debris resulting from this work, as work progresses and upon completion.

Service and adjust moving or mechanical parts for smooth, quiet and proper operating condition.

Touch-up abraded or damaged prime paintings or galvanizing and leave clean and ready for finishing work required.

A.04.5 Trade/Brand Names

Trade/Brand names of equipment are intended only to show the degree of standardization on which the design of the particular work is based and also to avoid ambiguous description of the equipment. The indication of the trade/brand names therefore shall in no way be considered to limit the acceptability of other products of equal or better performances, functions, reliability and durability.

A.04.5 Inspection Test

The Contractor in the presence of the owner's representative shall conduct inspection and tests. These tests shall be for the normal operation of the entire electrical system of the project. The decision made by the owner's representative for correction on any item of work, alteration of incorrect installation, or replacement of defective materials, or any other defects as found by him shall be final and must be complied with by the Contractor within forty-eight (48) hours after receipt of the official written communication before final acceptance can be made.

Visually inspect UTP and optical fiber jacket materials for UL or third party certification markings. Inspect cabling terminations in telecommunications rooms and at workstations to confirm color code for T568A pin assignments, and inspect cabling connections to confirm compliance with TIA-568-C.1, TIA-568-C.2 and TIA-568-C.3. Visually confirm Category 5E/6 marking of outlets, cover plates, outlet/connectors, and patch panels.

Perform verification tests for UTP and optical fiber systems after the complete telecommunications cabling and workstation outlet/connectors are installed.

a. Voice Tests. These tests assume that dial tone service has been installed. Connect to the network interface device at the demarcation point. Go off- hook and listen and receive a dial tone. If a test number is available, make and receive a local, long distance, and DSN telephone call.

b. Data Tests. These tests assume the Information Technology Staff has a network installed and are available to assist with testing. Connect to the network interface device at the demarcation point. Log onto the network to ensure proper connection to the network.

A.04.5 Temporary Light and Power

The Contractor shall provide, install and maintain adequate incoming service transformer, light feeders, branch circuits, outlets, lamps and fixtures, as required for performance of the work by all trades engaged in the construction of the building structures and installation.

A.04.6 Delivery and Storage

Provide protection from weather, moisture, extreme heat and cold, dirt, dust, and other contaminants for telecommunications cabling and equipment placed in storage.

A.04.7 Environmental Requirements

Connecting hardware shall be rated for operation under ambient conditions of 0 to 60 degrees C and in the range of 0 to 95 percent relative humidity, noncondensing.

A.04.8 Warranty

The equipment items shall be supported by service organizations which are reasonably convenient to the equipment installation in order to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

A.04.9 Operation and Maintenance Manuals

Commercial off the shelf manuals shall be furnished for operation, installation, configuration, and maintenance of products provided as a part of the telecommunications cabling and pathway system. Ensure that these drawings and documents depict the as-built configuration.

B. MATERIAL REQUIREMENTS

B-01 Supply, Installation and Configuration of MDF and IDF Switches

B.01.1 Core Switch

- With at least 24 x 1 Gigabit Ethernet SFP ports
- With at least 2 additional x 1 Gigabit Ethernet SFP ports
- With at least 2 Gigabit Ethernet ports combo
- Supports at least 54 Gbps switching capacity
- Supports at least 16,368 total number of MAC addresses
- Supports at least 498 static routes and up to 128 IP interfaces
- With at least 16 MB Flash
- Support for up to 4096 VLANs simultaneously Port-based and 802.1Q tag-based VLANs MAC based VLAN
- Supports at least 9,198 bytes of jumbo frame
- Supports at least 40.67 Mpps of forwarding rate
- With at least 9 units 1000BASE-SX SFP Transceiver Module
- Supports static routing
- With 19in Rackmount Bracket
- With 1-year partner support for hardware and service

B.01.2 Admin Access Switch

- With at least 24 Gigabit Ethernet ports

- With at least 2 Small Form-Factor Pluggable (SFP) uplink ports, 10 1000BASE-SX SFP Fiber transceiver module
- Supports Power over Ethernet (POE)
- 10.1-inch depth
- With RJ45 console access for simplified operations
- Intuitive web UI for easy deployment and management
- With at least 16 MB Flash Memory
- Supports at least 56 GBps Switching Capacity
- Supports at least 41.67 Mpps Forwarding Rate (64-byte packet size)
- Supports at least 16K MAC entries
- With at least 4K active VLANs
- With at least 8 maximum STP instances
- Supports at least 9KB of jumbo frame
- Supports at least 310,755 hours (@40C) hours MTBF
- With 19in Rackmount Bracket
- With 1-year partner support for hardware and service

B.01.3 IDF Access Switches

- With at least 10 Gigabit Ethernet ports
- With at least 2 Small Form-Factor Pluggable (SFP) uplink ports, 10 1000BASE-SX SFP Fiber transceiver module
- Supports Power over Ethernet (POE)
- Fan less operation and operational temperature up to 40°C for deployment outside the wiring closet
- Higher mean time between failure (MTBF) because they have no moving mechanical parts
- Less than 6.5-inch depth
- Reduced power consumption
- With RJ45 console access for simplified operations
- Intuitive web UI for easy deployment and management
- With at least 16 MB Flash Memory
- Supports at least 20 Gbps Switching Capacity
- Supports at least 14.88 Mbps Forwarding Rate (64-byte packet size)
- Supports at least 16K MAC addresses
- With at least 4K active VLANs
- With at least 8 maximum STP instances
- Supports at least 9KB of jumbo frame
- Supports at least 945,042 hours MTBF

- With 19in Rackmount Bracket
- With 1-year partner support for hardware and service

B-02 Supply and Installation of Uninterruptible Power Supply (UPS) and Mounting Racks

B.02.1 For MDF

- 1 unit 1000 VA rack-mountable UPS
- Supports double-conversion or online technology
- Configurable for 220 : 230 or 240 nominal output voltage
- Supports up to 92% efficiency at full load
- Supports 50/60 Hz +/- 3 Hz user adjustable output frequency (sync to mains)
- Supports 700 and 2100 W output power capacity for the 1 kVA and 3 kVA UPS respectively
- With at least (6) IEC 320 C13 and (8) IEC 320 C13; (2) IEC 320 C19 output connections for the 1 kVA and 3 kVA UPS respectively
- Supports 230 V nominal input voltage
- Supports 45-65 Hz (auto sensing) input frequency
- With at least British BS1363A; IEC 320 C20; Schuko CEE 7/EU1-16P input connections
- With at least Automatic and Manual (Built-in) bypass
- With Maintenance-free sealed lead-acid battery with suspended electrolyte: leak proof battery type
- Capable of at least 32/14 minutes battery runtime at half and full load
- Include 1unit RACK 7FT X 660MM X 1000MM for MDF with
  - modular removable lockable side panels
  - removable/lockable rear door and front door
  - vertical mounting profiles for IT Equipment, PDU's (Power Distribution Unit) and Cable Managers
  - heavy duty casters and levelers (4)

B.02.2 For IDF

- 1000 VA UPS per unit
- With Automatic restart of loads after UPS shutdown
- With Maintenance-free sealed lead-acid battery with suspended electrolyte: leak proof battery type
- Supports up to 98.3% efficiency at full load

- Supports 230 V nominal input/output voltage
- Supports 50-60 Hz (auto sensing) input frequency
- Supports 50/60 Hz +/- 3 Hz user adjustable output frequency (sync to mains)
- With at least IEC-320 C14 input connections
- With at least (8) IEC 320 C13 (Battery Backup) (2) IEC Jumpers (Battery Backup) output connections
- Each IDF must have at least Closed Type Rack 2ft, Wall Mounted, Standard 19" Rack mountable, W=66cm, D=66cm with
  - modular removable lockable side panels
  - removable/lockable rear door and front door
  - vertical mounting profiles for IT Equipment, PDU's (Power Distribution Unit) and Cable Managers

B-03 Supply, Installation and Configuration of IP CCTV Surveillance System

B.03.1 Bullet IP Cameras (7-35mm Focal Length)

- 1/3" 4Megapixel progressive scan CMOS
- H.265&H.264 dual-stream encoding
- 25/30fps@4Mp(2688×1520)
- Smart Detection supported
- WDR(120dB), Day/Night(ICR), 3DNR, AWB, AGC, BLC
- Multiple network monitoring: Web viewer, CMS(DSS/PSS) & DMSS
- 7mm ~35mm 5x zoom lens
- 2/1 Alarm in/out, 1/1 audio in/out
- Max. IR LEDs Length 100m
- Micro SD memory, IP67, IK10, PoE
- Should have POE injector included for each unit
- Should be ONVIF Interoperable
- With 1-year partner support for hardware and service

B.03.2 Dome IP Cameras (2.7-13.5mm Focal Length)

- 1/3" 4Megapixel progressive scan CMOS
- H.265&H.264 dual-stream encoding
- 25/30fps@4Mp(2688×1520)
- WDR(120dB), Day/Night(ICR), 3DNR, AWB, AGC, BLC
- Multiple network monitoring: Web viewer, CMS(DSS/PSS) & DMSS
- 2.7mm ~13.5mm motorized lens

- 2/1 Alarm in/out, 1/1 audio in/out
- Max. IR LEDs Length 50m
- Micro SD memory, IP67, IK10, PoE
- Should have POE injector included for each unit
- Should be ONVIF Interoperable
- With 1-year partner support for hardware and service

B.03.3 PTZ IP camera

- 1/2.8" 2Megapixel STARVIS™ CMOS
- Powerful 30x optical zoom
- Starlight technology
- H.265 Encoding
- Max. 50/60fps@1080P, 25/30/50/60fps@720P
- Auto-tracking and IVS
- IR distance up to 150m
- IP66
- Should be ONVIF Interoperable
- Include at least 30W of mid span per camera (1 unit)
- With 1-year partner support for hardware and service
- With network controller

B.03.4 Network Video Recorder – 1 unit

- Up to 64 channel IP Camera input
- Includes 8 units of 4TB HDD
- H.265/H.264/MJPEG/MPEG4 codec decoding
- Up to 12Mp resolution preview and playback
- Max 320 Mbps incoming bandwidth
- Support 8 SATA HDD's up to 48TB, 4USB(2USB3.0,2USB2.0)
- 2HDMI/VGA simultaneous video output
- Support Multi-brand network cameras
- ONVIF Version 2.4 conformance
- Supports RAID 0/1/5/6/10
- Support for mobile viewing software to view camera feeds from the internet or outside the office premise
- Support for centralized monitoring software (CMS)
- With 1-year partner support for hardware and service

B.03.5 Client PC for Monitoring – 1 unit

Branded not cloned with the minimum specifications below:

- Intel® Core™ i7 Processor
- 4G Video card (Dual Display capability)
- 1 TB HDD
- 8GB DDR4 RAM
- Gigabit Ethernet (10/100/1000)
- WIN7 PRO/WIN10 PRO DUAL LOAD
- Includes 43" Monitor with wall mount bracket (HDMI port)
- Includes keyboard and mouse
- Includes 600VA UPS
- With 1-year partner support for hardware and service

B.03.6 Smart TV for CCTV Streaming/monitoring – 2 units

- Real 4K Picture Quality
- 4k Upscaling
- High Dynamic Range
- UHD Dimming
- Mega Contrast
- Adaptive Sound
- 20W Sound Output
- 2 Ch Speaker
- Smart TV
- SmartThings App Support
- Bluetooth Audio
- Tap View
- 3 Slide Bezel-Less
- Clean Cable Solution
- 120Hz Motion Rate
- Wireless Built-In WiFi
- HDMI (2 Ports)
- USB (1 Port)
- 1 Year Manufacturer Warranty

C. SUBMITTALS

C-01 For Structured Cabling System

C.01.1 Shop Drawings

Include wiring diagrams and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, piping, ductwork, and other items that must be shown to ensure a coordinated installation. Wiring diagrams shall identify circuit terminals and indicate the internal wiring for each item of equipment and the interconnection between each item of equipment. Drawings shall indicate adequate clearance for operation, maintenance, and replacement of operating equipment devices. Submittals shall include the nameplate data, size, and capacity. Submittals shall also include applicable federal, military, industry, and technical society publication references.

C-02 For CCTV System

- System schematic wiring diagram clearly indicating equipment and termination of devices.
- Mounting/installation details and fabrication drawing equipment certified with dimensions.
- Control and design logic.
- Schedule of materials and equipment to be supplied and its delivery.
- Comprehensive technical data and catalogues.

D. ADDITIONAL: SUPPLIER REQUIREMENTS

1. Supplier must be Authorized Partner/reseller of the equipment they are supplying (fiber switches, CCTV cameras and NVRs, and wireless transceivers) with Certificate issued from Manufacturer/Distributor.
2. Supplier must have PCAB License for Communication facilities license issued by DTI
3. Supplier must have certified Installer for the Fiber Backbone installation. He/she must be a full-time employee of the supplier with SSS, PHIC and HDMF remittances as proof.
4. Supplier must have a licensed Electronics Engineer/s with CCNA to install and configure the switches. Engineers must be a full-time employee of the supplier with SSS, PHIC and HDMF remittances as proof.
5. Supplier must have an ICT Related Engineer that undergone Network Technical Training for the product offered and must present certificate issued by Manufacturer/Distributor for the configuration of Access Points and Wireless Bridge. Engineers must be a full-time employee of the supplier with

SSS, PHIC and HDMF remittances as proof.

6. Must have an office in Bicol Region for faster after-sales support.
7. Supplier must have 24x7 helpdesk hotline for after-sales support.
8. Should be CAT 6 FTP cables (outdoor) for wired CCTV and Access points
9. Fiber should be Multi-mode Outdoor Figure 8 Type
10. Supplier should provide OTDR (Optical Time-Domain Reflectometer) Test results for the Fiber Backbone.
11. Fiber optic termination by Fusion Splicing Machine is a must.
12. All IDF should have a direct fiber connection to the MDF

TECHNICAL SPECIFICATION
PART IV – MECHANICAL WORKS

A. APPRECIATION OF THE PROJECT

The facility was completed in 1990 and since that time, no major upgrading/improvement/rehabilitation was implemented. Minor repairs/upgrading were done thru the years to keep the equipment in operation, thanks to the diligence of the engineering and maintenance people of the port. However, due to normal wear and tear, a major upgrading/rehabilitation of its facilities is needed to efficiently cater to the present demand of its clientele, and the fishing industry of the region. Luckily, the National Economic Development Board (NEDA) has approved the funding of its rehabilitation/improvement project. It is envisioned that with the new facility the port will be able to meet the demands of the clientele, thus boosting its income capacity and become a major contributor to the corporate success of Camaligan Fish Port and PFDA as a whole.

B. SCOPE OF WORK

The works under this section shall include the following:

1. Design, manufacture and fabrication, assembly, factory testing of equipment, materials and component.

2. Delivery to project site.

3. Erection and installation including supervision.

4. Commissioning into normal operating condition in accordance with the desired capacity and systems operation stipulated under this specification.

5. Reliability trial testing for two (2) weeks, actual training of plant personnel for one (1) month and warranty of one (1) year against defects/deficiencies in workmanship, equipment, materials and components.

6. Installation of power and water supply system at site.

C. GENERAL SPECIFICATIONS & SYSTEM CONFIGURATIONS

C.01 New Cold Storage Facility

Systems Configuration: The facility will have 12 cold storage rooms and 2 units blast freezer rooms. The refrigeration system configuration is individual compressor-

evaporator per room. There will be four (4) condensing systems composed of four (4) cold storage and two (2) blast freezer rooms per system.

1. Blast Freezer Room (2 units)

Refrigeration System	:	Ammonia
Room Temperature	:	-35° C
Capacity	:	1ton/batch @ 6 hours
Product for freezing	:	fresh marine/meat products

2. Cold Storage Room (12 units)

Refrigeration System	:	Ammonia
Room Temperature	:	-30° C
Product for storage	:	Frozen marine/meat products
Capacity	:	50 tons

3. Loading Platform/ Ante Rooms for Cold Storage

Refrigeration System	:	Freon type
Room Temperature	:	+ 5° C

C.02 Existing Refrigeration Facility

Systems Configuration: The refrigeration system configuration for Ice plant + ice storage, contact freezers, and cold storage will have individual compressor-evaporator per room/contact freezer. There will be a centralized condensing system for these facilities. Freon systems for ante room and processing area.

1. Ice Plant

Refrigeration System	:	Ammonia
Capacity	:	15 TPD
Ice type	:	Block

2. Ice Storage

Refrigeration System	:	Ammonia
Capacity	:	15 Tons
Room Temperature	:	- 5° C

3. Contact Freezers (2 units)

Refrigeration System	:	Ammonia
Capacity	:	500 and 1000 kg/batch
Freezing Time	:	3 to 4 hours

4. Cold Storage Rooms (2 units)

Refrigeration System	:	Ammonia
Room Temperature	:	-30° C
Product for storage	:	Frozen marine/meat products
Capacity	:	30 tons

5. Loading Platform/ Ante Rooms for Cold Storage

Refrigeration System	:	Freon type
Room Temperature	:	+ 5° C

6. Processing Area

Air Conditioning System	:	Unitary type AC system
Room Temperature	:	+ 18° C

C.03 T& T Processing Facility

Systems Configuration: The refrigeration system configuration for blast freezer and cold storage rooms consist of individual compressor-evaporator per room. Freon systems for ante room and processing area.

1. Blast Freezer Room (2 units)

Refrigeration System	:	Ammonia
Room Temperature	:	-35° C
Capacity	:	1ton/batch @ 6 hours/batch
Product for freezing	:	fresh marine/meat products

2. Cold Storage Rooms (2 units)

Refrigeration System	:	Freon
Room Temperature	:	-30° C
Product for storage	:	Frozen marine/meat products
Capacity	:	25 tons

3. Loading Platform/ Ante Rooms for Cold Storage

Refrigeration System	:	Freon type
Room Temperature	:	+ 5° C

4. Processing Area

Air Conditioning System	:	Freon
Room Temperature	:	+ 18° C

D. REFRIGERATION EQUIPMENT

D.01 New Cold Storage Facility

Ammonia reciprocating compressors mounted in single skid base. Brand new, with the following minimum refrigeration capacities (Cold Storage: 22,500 w @ -35° C ET and +40° C CT; Blast freezer: 27,000 watts @ -40° C ET and +40° C CT) , driven by electric motor, 3 phase, 230 V, 60 Hz , similar to Hasegawa model HVU VKL24ADL or equivalent, complete with standard accessories as follows:

- Pressure gauges (O, L, M & H)
- Dual pressure, oil pressure and low pressure switches
- Oil cooler, water cooled
- Unloader device
- Water flow switch
- Other standard accessories

Evaporative type condenser, with heat rejection capacity appropriate for its use and Phil. Ambient air temperature complete with accessories with steel base and stub end.

Horizontal type liquid receiver, complete with accessories such as sight glass, pressure gauge etc., with stub connections and steel support.

Suction Accumulator, vertical type complete with steel support and stub end connection

Intercooler, vertical type complete with various refrigerant controls, valves, steel support and stub end connection

Cooling pumps for compressor cooling, centrifugal type, cast iron construction, with capacities and heads appropriate for its purpose as defined in the systems configuration of the facility driven by electric motor, 3 phase, 230 V, 60 Hz.

All materials for pressure vessels such as liquid receiver, oil separator etc., shall have a thickness not lower than 3/8".

D.01.1 Unit Cooler for Blast Freezer, Cold Storage and Ante rooms

All unit coolers shall be designed with cooling capacities appropriate for its purpose complete with fan and motor drive, three phase, 60Hz 230V and mounted electric defrost equipment, brand new, imported and completely built unit, US Japanese or European brands.

D.01.2 Air Cooled Condensing Unit (ACCU) for Ante Rooms/Unloading platform

F 404A, semi hermetic or hermetic type refrigeration compressor with refrigerating capacities designed appropriate to its purpose and ambient air

temperature in the Philippines, directly driven by new electric motor, single phase, 60 Hz, complete with standard accessories as follows:

- liquid line filter dryer with sight glass
- crankcase heater
- oil separator
- liquid line solenoid valve
- suction filter
- suction accumulator
- vibration eliminator
- electrical controls

Air cooled type condenser, with heat rejection capacity appropriate for its use and Phil. Ambient air temperature complete with air blower motor, steel base and stub end, imported accessory of above condensing unit.

Horizontal type liquid receiver, complete with accessories such as sight glass, pressure gauge etc., with stub connections and steel support, imported accessory of above condensing unit.

Vertical type oil separator complete with steel support and stub end connection, imported accessory of above condensing unit.

All materials for pressure vessels such as liquid receiver, oil separator etc., shall have a thickness not lower than 3/8".

D.O2 Existing Refrigeration Facility

D.02.1 ICE MAKING UNIT & ICE STORAGE UNIT

Two (1) units (1-unit spare) - Compressor unit and standard accessories:

a. Ammonia open type refrigeration compressor imported, brand new, with refrigeration capacity of 110.1 KW, evaporating temperature 0f -15° C and condensing temp of +40° C driven by brand new TEFC electric motor, 230v, 3 phase, 60 Hz, similar to Hasegawa model HVU –VKL 18ADL or equivalent, complete with accessories as follows:

   - Oil separator with check valve
   - manifold valves
   - high and low compound pressure cut-out switches
   - oil failure cut out switch
   - safety relief valves
   - oil cooler
   - unloader mechanism,

- pressure gauges for oil, suction and discharge pressures
- other standard accessories

b. One (1) unit – Suction accumulator, vertical cylindrical type D = 500 mm; H = 2225 mm with a design pressure of 1.4 MPa complete with stub ends and steel support.

c. Cooling coils for ice storage, convection type, made from schedule 40 seamless cast iron pipes, with cooling surface appropriate to maintain – 5° C room temperature. Complete with refrigeration controls and accessories.

D.02.2 Brine tank and accessories mounted in single skid base

a. Ice making brine tank made of 6 mm thk MS plate complete with cooling coils, insulated with PE foam, 100 mm thick with gauge 18 stainless steel sheet cladding complete with ice cans, can grids, can guides, fiberglass laminated wood cover.

b. 300 pcs ice cans made of stainless steel 304, 50 kgs net weight of block ice after thawing.

c. Brine agitator assembly, vertical screw propeller type with stainless steel impeller, directly driven by brand new TEFC electric motor 3 phase, 230 V 60 Hz complete with steel support for anchorage.

d. One (1) unit motorized hoist, rail, wheels and girder assembly for ice harvesting. Motorized hoist shall have a capacity of 1000 kg and capable of forward, backward and lift movements. Geared motor shall be brand new, 220 v 3 phase, 60 Hz Japan US or European brands.

e. One (1) unit crystallizing equipment composed of air compressor with tank and accessories, air pipes and valves, quick coupling and sets of drop tubes corresponding to the number of ice can grids. Air compressor shall be Japanese, US or European brands.

f. Ice crusher with blower assembly manufactured from 3 mm thk mild steel plate, complete with steel drum with teeth, belt driven by a 2 HP electric motor, 220 V, 3 phase suitably designed for 50 KG ice blocks, locally fabricated/assembled.

g. Auxiliary equipment and materials for brine tank:

- Dip tank shall be made of 6 mm thk MS plate complete with drain, wood can rest and bar stiffener.

- Ice can dumper, balanced cradle type with counterweight and wood carriage to protect the ice cans from dent. It shall be supplied with bearings and steel support assembly.

- Ice can filler assembly with float valve, hose coupling and level filler, manufactured from 6 mm thk MS plates with gauge 18 GI sheet cover or other design acceptable to PFDA.

- Ice can grids shall be manufactured from 9 mm thk x 125 mm hot dipped galvanized flat bars suitable for the number of ice cans capacity as indicated in the drawings.

D.02.3 CONTACT FREEZERS (1000 &500 KG/BATCH), & COLD STORAGE

Ammonia reciprocating compressors mounted in single skid base. Brand new, with the following minimum refrigeration capacities Contact freezer: 40,000 kcal/hr (1000 kg) and 20,000 kcal/hr (500 kg), Cold Storage, 22,500 W, @ -40° C ET and +40° C CT) driven by TEFC electric motor, 3 phase, 230 V, 60 Hz , similar to Hasegawa models HVU VKL or equivalent, complete with standard accessories as follows:

- pressure gauges (O, L, M & H)
- dual pressure, oil pressure and low pressure switches
- oil cooler, water cooled
- unloader device
- water flow switch
- other standard accessories

Evaporative type condenser, with heat rejection capacity appropriate for its use and Phil. Ambient air temperature of +35° C, complete with accessories, steel base and stub end.

Horizontal type liquid receiver, complete with accessories such as sight glass, pressure gauge etc., with stub connections and steel support.

Suction Accumulator, vertical type complete with steel support and stub end connection

One (1) unit Air purger, with design pressure of 2 MPa complete with stub end connections and steel support.

One (1) unit Emergency drainer, design pressure of 1.6 MPa complete with stub end connections and steel support.

One (1) unit – Automatic liquid supply device composed of expansion valve with solenoid, liquid controller complete with steel support.

One (1) unit – Oil separator, vertical cylindrical type complete with accessories, stub end connections and steel support

Intercooler, vertical type complete with various refrigerant controls, valves, steel support and stub end connection

Cooling pumps for compressor cooling, centrifugal type, cast iron construction, with capacities and heads appropriate for its purpose as defined in the systems configuration of the facility driven by electric motor, 3 phase, 230 V, 60 Hz.

All materials for pressure vessels such as liquid receiver, oil separator etc., shall have a thickness not lower than 3/8". All pressure vessels shall be factory tested and painted with one coat anti-rust paint with two (2) top coats of epoxy enamel paint color beige.

Contact freezers, with capacities of 1000 and 500 kg/ batch of 3 to 4 hours, stainless steel cabinet with hot dipped galvanized inner frame, similar to Hasegawa brand or equivalent, complete with freezing pans and trays with the following dimension and quantities:

For 500 kg/batch

Freezing pans	:	580 x 380 x 30 mm- 50 pcs
Freezing trays	:	290 x 190 x 70 mm – 200 pcs

For 1000 kg/batch

Freezing pans	:	580 x 380 x 30 mm- 100 pcs
Freezing trays	:	290 x 190 x 70 mm – 400 pcs

D.02.4 Unit Cooler for Cold Storage

All unit coolers shall be designed with cooling capacities appropriate for its purpose complete with fan and motor drive, three phase, 60Hz 230V and mounted electric defrost equipment, brand new, imported and completely built unit, US Japanese or European brands.

D.02.5 Air Cooled Condensing Unit (ACCU) for Ante Rooms/Unloading platform

F 404A, semi hermetic or hermetic type refrigeration compressor with refrigerating capacities designed appropriate to its purpose and ambient air temperature in the Philippines, directly driven by new electric motor, single phase, 60 Hz, complete with standard accessories as follows:

- liquid line filter dryer with sight glass
- crankcase heater
- oil separator

- liquid line solenoid valve
- suction filter
- suction accumulator
- vibration eliminator
- electrical controls

Air cooled type condenser, with heat rejection capacity appropriate for its use and Phil. Ambient air temperature complete with air blower motor, steel base and stub end, imported accessory of above condensing unit.

Horizontal type liquid receiver, complete with accessories such as sight glass, pressure gauge etc., with stub connections and steel support, imported accessory of above condensing unit.

Vertical type oil separator complete with steel support and stub end connection, imported accessory of above condensing unit.

All materials for pressure vessels such as liquid receiver, oil separator etc., shall have a thickness not lower than 3/8".

E. AIR CONDITIONING SYSTEMS (FOR ALL PROCESSING AREAS AND ADMINISTRATION BUILDING)

E.01 Unitary Air Conditioning System – Split Types

The air conditioning systems shall be designed, constructed and rating tested in accordance with ARI standards for unitary air conditioning equipment. Cooling capacities of units shall meet the sensible heat requirement and total heat requirements as indicated. In selecting unit size, make true allowance for "sensible to total heat ratio" to satisfy required sensible submittals shall include catalog selection data which account for sensible to total heat ratio, entering conditions at evaporator and condenser air conditions.

The AC units shall consist of evaporator blower unit and remote air cooled condensing unit. Compressors shall be hermetic, semi hermetic or screw type provided with the minimum standard equipment and accessories. Provide compressors motors suitable to the electric power characteristics as indicated, constant speed, squirrel cage induction, low starting current, high torque type, furnished with reduced or magnetic across the line type starter with weather resistant enclosures.

Cooling coils shall be fin and tube constructed of seamless copper or aluminum tubes mechanically bonded or soldered or helically wound to tubes, factory tested to 300 psi air pressure under water and suitable for 200 psi working pressure. Each coil shall be dehydrated and sealed at factory after completion of test.

Refrigerant piping shall be seamless copper tubing, hard drawn, type K ASTM B88. Fittings shall be wrought copper or bronze or solder joint type ANSI b16.18. Copper flared type tubing shall be made only in annealed copper tubing and in normal sizes smaller than one inch only for connections to equipment and no larger than 1-3/8 inches diameter for other connections.

Field test and inspection- all test shall be performed in the presence of owner and subject to his approval. Upon completion of installation, testing shall be done on leaks, and shall be subjected to an initial operation to ensure it is functioning in accordance with the system requirement as indicated.

F. INSULATED ROOMS

The work under this section includes the supply, installation and commissioning of works in accordance with the desired operating temperature and performance stipulated in this specification.

The walls and ceiling shall be made of pre-fabricated insulated panels manufactured from pre-painted off-white color bond metal skin 0.6 mm thk. and bonded to a core of fire retardant polyurethane foam, with thickness appropriate for the following purpose: blast freezer room - 150 mm thk; cold storage room – 150 mm; Loading platform and ante rooms – 100 mm thk; processing and other clean rooms – 75 mm. It shall be constructed in a manner that will provide a strong and rigid envelope enclosing the storage room, with a continuous insulation to cover completely the surface area with no thermal bridges between cold storage room and the exterior. However, other insulation materials of equal or superior capability may be considered upon presentation of brochure/performance characteristic and approved by the owner.

Floor insulation shall be insitu type using polyurethane foam 150 mm for cold storage rooms; 100 mm for ice storage room, laid on vapor barrier materials on both sides with 100 mm diameter PVC pipe as breather pipe, for blast and contact freezer rooms. The contractor shall submit shop drawings for this work item to be approved by the owner before the start of fabrication work.

Panels shall be satisfactorily locked together by slip joint system with anodized aluminum extrusion on corners sealed on the warm side with non-setting flexible sealant to ensure air tight and vapor proof joint. All corners shall be provided with specialized corner wall panel and fastened with camlock.

All doors shall have the following schedules:

PROJECT REQUIREMENT (INSULATED DOORS AND PANELS)

1. New Cold Storage Facility

Main Door	-	2,400 W x 2,700 H mm, insulated

		150mm thk, Double sliding, Automatic door (1 set)
Cold Storage Doors	-	2,400 W x 2,700 H mm, insulated 150mm thk, Double sliding, Manual door (12 sets)
Blast Freezer	-	1,200 W x 2,100 H mm, insulated 150mm thk, swing type (4 sets)
Loading / Unloading Door, Dock / Roll up Doors	-	(5 sets)

2. T&T Processing Facility

Cold Storage	-	2,400 W x 2,100 H mm, insulated 125mm thk, Double sliding, Manual (4 sets)
Blast Freezer	-	1,200 W x 2,100 H mm, insulated 150mm thk, swing type (2 sets)
Processing Area Doors	-	900 W x 2,100 H mm, insulated 75mm thk, swing type (2 sets)
Ante Room/Unloading Area	-	2,400 W x 2,700 H mm, insulated 100mm thk, double sliding, manual (4 sets)

3. Existing Refrigeration Facility

Cold Storage Doors	-	2,400 W x 2,100 H mm, insulated 125mm thk, double sliding manual (2 sets)
Ice Storage Door	-	1,200 W x 2,100 H mm, insulated 100mm thk, swing type (1 set)
Contact Freezer Room door	-	2,400 W x 2,100 H mm, insulated 75mm thk, double sliding manual (1 set)
Processing Area, Receiving, Unloading Area Doors	-	2,400 W x 2,700 H mm, insulated 100mm thk, double sliding manual (3 sets)
Ice Dispensing Door	-	900 W x 2,100 H mm, insulated 75mm thk, swing type
Ante Room Door	-	2,400 W x 2,100 H mm, insulated 100mm thk, double sliding manual (2 sets)

4. Insulated Panels (PU), 200,150, 100, 75mm (price per sq.m. including accessories) - All insulated doors shall have 0.6mm outer skin, Stainless Steel 304. Insulated panels shall have 0.6mm outer skin, PPGI.

All doors shall be framed with heavy duty gauge 16 stainless steel sheet provided with labyrinth gasket, door hinges, safety latch, door heater, and plastic strip curtain.

Pre-fabricated Insulated panels for walls, ceiling and floor including door shall be manufactured by reputable manufacturer and installed by experienced installer of pre-fabricated insulated panels.

Shop drawing and manner of installation shall be submitted by the Contractor before site installation for evaluation and approval.

G. MISCELLANEOUS MATERIALS FOR CONTACT FREEZERS, COLD ROOMS AND ANTE ROOMS

Assorted refrigerant valves, for high pressure side both for cold storage and chill room facilities.

Refrigerant piping materials, BI pipe, seamless schedule 40 for ammonia lines and copper tubing hard drawn type L and M, and necessary fittings for both high and low pressure sides for all Freon refrigeration & air conditioning systems.

Assorted refrigerant valves, for low pressure side for all refrigeration & air conditioning systems.

Initial charge of refrigerant and compressor oil for all refrigeration & air conditioning systems.

Insulation materials for low pressure side pipes and vessels.

H. MODULAR WASTE WATER TREATMENT PLANT (WWTP)

The WWTP shall be designed to process about 100 cu.m. per day liquid waste from the processing plants, Administration Building, food stalls and other waste producing centers. The waste water drained from processing is expected to contain a lot of suspended substances such as fish scales, fish bowels and small amount of fish flesh as well as high concentration of fish bloods, fat and amino acid which will contaminate the body of water if drained directly without being treated.

The WWTP is expected to process the waste water into manageable levels that is within the tolerable limits as prescribed by the DENR DAO 35 Class B. The Supplier shall verify, before the final design of the equipment, the actual raw waste water quality on site to ensure adherence to the herein to DAO class 35 regulations. All auxiliary supporting facility such as concrete sump pit for raw waste water and screen and WWTP shed, if needed, shall be included in the design.

The final design shall be modular and compact type that can fit our requirement of small area for installation. It can be modified or can be increased in capacity for future consideration with ease in setup, at minimum cost.

All electrical requirements such as power supply line to the plant and motor control center shall also form part of the facility and borne by the main contractor in case non-inclusion in the contract of the supplier.

GENERAL REQUIREMENTS FOR MECHANICAL WORKS

A. QUALIFICATION OF REFRIGERATION CONTRACTOR

Company should be regularly providing work of types required for not less than 5 years from date of bidding.

Workmen shall be well trained and experienced in the trade for this type of work.

B. EQUIPMENT/MATERIALS LISTING

The Contractor shall submit to PFDA the complete list of equipment/materials to be furnished, with each item accompanied by detailed sizing computations, manufacturer's specification, technical data, installation instructions and shop drawings.

Provide primary materials or finished or other components necessary for the efficient operation of the system.

C. REVIEW OF REFRIGERATION SYSTEM

Before starting work, the Contractor shall review and evaluate the refrigeration systems and other mechanical systems provided herein. In the event in which the Contractor has no expertise in such works, an independent consultancy firm who performs regular designing works related to this work shall be consulted by the contractor at no extra cost to the project.

Any discrepancy, questions and/or necessary correction(s) shall be brought to the owner's attention for proper action.

D. GENERAL PROVISION

Trade/Brand Names of equipment are intended only to show the degree of standardization of which the design is based. The indication of trade/brand name shall in no way be considered to limit the acceptability of other products of equal or better performances, functions, reliability and durability

The technical specification/refrigeration system provided in this contract documents are general specification intended as guide in the detailed specification of component/equipment. Therefore, other systems/product which has equal or better functional performance, durability and reliability can also be considered.

Mechanical systems layout provided in the drawings are generally diagrammatic and location of penetration, outlets and equipment are approximate only.

E. MAINTENANCE SERVICES, WARRANTY AND RELIABILITY TRIAL TESTING

The Contractor shall provide warranty and appropriate maintenance services for a period of 12 months reckoned from the date of issuance of Certificate of Acceptance as assurance against any defect(s) due to material, manufacturing, fabrication and installation that may occur during normal operation. In this regard emergency services shall be available when called for at no additional cost to the owner.

The Contractor shall conduct a reliability trial test for a period of 15 days within the contract date before the project completion. During this test period, the Contractors shall provide at least one (1) refrigeration technician for the refrigeration system, WWTP specialist for the WWTP plant and supplier representative for the stand by generator set and other electro mechanical equipment to oversee the operation of the plant.

F. COORDINATION/CORRELATION REQUIREMENTS

Provide layouts, templates and/or instruction with building works Contractor for proper preparation to supporting constructions.

Coordinate work with other works for adjustments, installation requirements and other rough ins necessary for properly coordinated installation.

On contract Drawings it shall be examined as necessary with other works to achieve proper installation as provided herein.

G. SUPERVISION OF MECHANICAL WORKS

On equipment installation, furnish services of manufacturer's representative or other specially qualified person as necessary to supervise installation when regular full time supervisor are not otherwise qualified.

H. EXECUTION REQUIREMENT

Prior to starting work, review details of work with PFDA Engineer and incorporate adjustments deemed necessary and as indicated without additional cost.

The work shall not proceed until the Contractor has verified that the supporting construction is in proper condition, improper construction has been corrected and layout and tolerance are correct for this work.

I. COMPLETION REQUIREMENTS

1. General

   a. Remove waste and debris resulting from this work, as work progresses and on completion.

   b. Service and adjust moving or mechanical parts for smooth quiet and proper operating condition.

   c. Touched up abraded or damaged prime painting or galvanizing and leave clean and ready for finishing work required.

2. When Complete

   a. Exposed surfaces must be clean and free from dust, dirt, scratches dents, broken parts, misaligned or improperly fitted joints, stains, discoloration or other defects or damage.

   b. Installation must be free from exposed fastenings, unnecessary cuts, holes, blank plates or advertising labels or signs other than as particularly show, specified and approved.

   c. Exterior or below grade installation must be watertight throughout and free from leaks or entry of water into or through interior or concealed spaces of structure.

   a. Each time, unit or assembly must be tightly and rigidly in place and free from unnecessary movement, squeaks or rattles.

   b. Each time, unit or assembly must be set straight, plumb and level accurately and positioned at locations required; adjacent like units accurately aligned.

   c. Movable or mechanical items or devices must be serviced and adjusted to operate smoothly, quietly and free from binding or super flous or unwanted noises.

   d. Electrical devices assemblies or system must be properly connected and grounded and must operate in compliance with performance requirements shown or specified.

J. CORRELATION AND COOPERATION

1. General

   a. Work under this section includes correlation with work under other division; to provide and effect a complete and operable system and equipment throughout the project as required and intended under these contract documents.

   b. Correlation includes consideration or locations, sizes, capacities and performance characteristics of equipment furnished and installed under the works.

   c. Correlation further includes adjustments to meet the needs of said equipment; and cooperation with other works as may be necessary to make determination required.

2. Provide minor adjustments as and were necessary as directed by PFDA.

3. Substantial adjustments or changes resulting from compliance with requirements specified herein which results in substantial extra or materials and any claims on that account will be considered only when fully justified by the Contractor and duly processed in accordance with provision for changes condition as labels or signs other than as particularly show, specified and approved.

4. General Construction

   a. Review drawings for opening and access provision to be provided under this Section.

   b. Verify sizes and location if adequate and proper.

   c. Supply drawings, instructions or information necessary thereof.

5. Painting Procedure

   a. One (1) coat unless otherwise specified is required for:

      1. Black iron or steel items inaccessible after installation.

      2. Black pipe, including valves and other appurtenances, within 7 days after installation.

      3. Hanger rods and devices and other items not galvanized.

6. Site Utility System

a. Review drawing of plumbing works serving system of this section.

b. Verify sizes, capacities and location if adequate for proper service.

c. Arrange for adjustments whenever as may be necessary to meet requirement of this section.

d. Adjust work as required to correlate with utility service connection prints or types of connection necessary.

7. Electrical Work

a. Review drawings of electrical services and facilities to be provided under this section.

b. Compare and verify electrical work to be provided if sufficient and adequate.

c. Supply drawing, diagram or other information relative to this section.

d. Arrange for additional services, outlets or connections where and as may be required.

K. PROTECTIVE PAINTING

1. General

a. Materials and equipment not otherwise galvanized prefinished, or protected shall be painted with one (1) coat of painting media appropriate to the kind of materials/equipment.

2. Preparation

a. Surfaces to be painted shall be cleaned free from dirt, dust, rust, grease or coatings of foreign matter.

b. Thoroughly wiped clean, using suitable solvent where necessary, and dried.

TECHNICAL SPECIFICATION
PART V – GENERAL ITEMS

A. SCOPE OF WORK

This section includes the provisions of Service Vehicle for PFDA Construction Management Group.

B. OFFICE MISCELLANEOUS ITEMS FOR PFDA ENGINEERS

B.01 OFFICE SUPPLIES

The Contractor shall provide office supplies to be use in preparation of correspondence and progress reports. Likewise, the contractor shall be responsible for the reproduction of pictures and communication expenses (pre-paid cellular card at least P5,000.00/month) borne by the PFDA personnel during the project implementation.

B.02 PROJECT SIGNBOARD

The Contractor shall provide project signboard (1.20m x 2.40m) at the construction site bearing the name of the project, location, project cost, starting date and completion date, name of implementing agency, the name of the contractor and the other information that shall be required by the PFDA.

The signboard shall be made of tarpaulin in wood framing. It shall be erected with necessary wooden support and bracing. The signboard shall be erected by the contractor within two (2) weeks after the project commence.

C. PROVIDE ONE (1) UNIT UTILITY VEHICLE FOR CONSTRUCTION MANAGEMENT GROUP

The Contractor shall within seven (7) days after the receipt of Notice to Proceed shall provide a utility/service vehicle for the Resident Engineer/Inspector use during the contract duration. The vehicle shall comply in all respect with all relevant National or Local Laws. The vehicle shall be well kept, brand new crew cab pick-up type acceptable to the Owner, in perfect running condition and shall be provided by the Contractor with a competent qualified and experienced driver who shall be in direct order of the Owner's Resident Engineer/Inspectors.

The Contractor shall properly maintain the vehicle in first class condition and shall have a daily minimum fuel allocation of ten (10) liters per day for at least twelve (12) days per month including regular service maintenance.

The Contractor shall provide equivalent substitute vehicle during such period when the specified vehicle is taken out of service for maintenance, repair or any other reason.

SPECIFICATION OF UTILITY VEHICLE

One (1) Unit Brand New Crew Cab Pick-Up Type Vehicle

ENGINE

Engine Type	:	2.8L Diesel, 4 Cylinder, 16-Valve DOHC Variable Nozzle Turbo with Air-cooled Intercooler
Engine Displacement (cc)	:	2755
Maximum Output (ps/rpm)	:	204 / 3,400
Maximum Torque (nm/rpm)	:	500 / 1,600 – 2,800
Fuel Capacity (L)	:	80

TRANSMISSION

Power Transmission	:	6-Speed A/T
Front Brake / Rear Brake	:	Ventilated Discs / Drum Type
Tires	:	265/60 R18
Wheels (size)	:	18” Alloy

TECHNICAL SPECIFICATION
PART VI – MOBILIZATION / DEMOBILIZATION OF EQUIPMENT

A. SCOPE OF WORK

The contractor shall mobilize and demobilized all equipment necessary to complete all work items of the project.

Mobilization and demobilization shall be treated as a separate item. It shall be computed based on the cost of transportation of all equipment of the contractor to complete the project.

Section VII. Drawings

(See Separate Documents)

Section VIII. Bill of Quantities

BID PROPOSAL FORM
PROPOSED REHABILITATION AND IMPROVEMENT OF THE CAMALIGAN FISH PORT
BID PRICE SUMMARY

ITEM NO.	WORK ITEMS	BID AMOUNT EDC + VAT + Mark-up
I.	**SITE DEVELOPMENT AND UTILITIES WORKS**	
A.	Construction of Additional Roadways and Parking Area	
B.	Construction of Perimeter Fence and Gate	
C.	Declogging of Existing Drainage System and Rehabilitation of Inside Water Supply System	
D.	Rehabilitation / Improvement of Outside Power Distribution System	
E.	Outside Auxiliary Distribution System	
F.	Waste Water Treatment Plant Facility including Pipeline Collection System	
G.	Outside Water Distribution System and Repiping of Pipeline from Water Source to the Port	
H.	Miscellaneous Work Items	
	TOTAL OF I.	P
II.	**BUILDING FACILITIES**	
A.	New Cold Storage Building for fish, meat and other agro products	
B.	Rehabilitation / Improvement of Existing Refrigeration Facility	
C.	Conversion of Existing T&T Processing Facility to Two (2) Units Processing Facility	
D.	Rehabilitation / Improvement of Existing Administration Building	
E.	Food Stall	
F.	Public Toilet	
G.	Guard House	
	TOTAL OF II	P
III.	**CONSTRUCTION OCCUPATIONAL SAFETY AND HEALTH PROGRAM**	
	TOTAL OF III	P
IV.	**GENERAL ITEMS**	
	TOTAL OF IV	P
V.	**MOBILIZATION / DEMOBILIZATION**	
	TOTAL OF V	P
	TOTAL ESTIMATED CONSTRUCTION COST	**P**

TOTAL BID PRICE (in figure) : **P** _____

In Words : _____

_____

Construction Company : _____

_____

Contractor's Representative : _____

Signature : _____

BID PROPOSAL FORM

PROPOSED REHABILITATION AND IMPROVEMENT OF THE CAMALIGAN FISH PORT

Brgy. Dugcal, Camaligan, Camarines Sur

ITEM NO.	DESCRIPTION OF WORKS	PFDA QUANTITY	BIDDER QUANTITY	UNITS	UNIT COST (Estimated Direct Cost & Mark-ups and Value Added Tax)	TOTAL COST
I.	SITE DEVELOPMENT AND UTILITIES WORKS					
A.	Construction of Additional Roadways and Parking Area					
	1.0 Embankment and Slope Protection					
	a. Class III Rocks, 25-50 kgs / pc	155.00		cu.m.		
	b. Filling Materials, Banday Banda (include compaction)	5,675.00		cu.m.		
	c. Filter Fabric	240.00		sq.m.		
	2.0 Concrete Works					
	a. Concrete Pavement, 24.1 MPa	2,525.00		sq.m.		
	b. Base Course, 200mm thk	76.00		cu.m.		
	c. Concrete Curbs & Tire Guards	1.00		l.s.		
	Sub - Total I. A					
B.	Construction of Perimeter Fence and Gate					
	1.0 Entrance / Exit Gate (including Arch and Signage)					
	a. Entrance / Exit Gate	1.00		unit		
	b. Entrance / Exit Arch	1.00		unit		
	c. Signage with PFDA Logo	1.00		l.s.		
	d. Electrical Works	1.00		l.s.		
	2.0 Perimeter Fence	164.00		l.m.		
	Sub - Total I. B					
C.	Declogging of Existing Drainage System and Rehabilitation of Inside Water Supply System					
	1.0 Cleaning/declogging of existing drainage canal lines	1.00		l.s.		
	2.0 Earthworks (drainage lines, septic tank & holding tank)					
	a. Excavation	567.50		cu.m.		
	b. Backfilling and Compaction	456.00		cu.m.		
	c. Sandbedding	55.00		cu.m.		
	3.0 R.C. Manholes and R.C. Pipes					
	a. R.C. Manhole 1	17.00		units		
	b. R.C. Manhole 2	8.00		units		
	c. 0.6 m. diameter R.C. Pipes (incl. conc. Collar)	269.00		l.m.		
	d. 0.5 m. diameter R.C. Pipes (incl. conc. Collar)	111.00		l.m.		
	e. 0.3 m. diameter R.C. Pipes incl. concrete collar	30.00		l.m.		
	f. 0.15m. diameter R.C. Pipes incl. concrete collar	92.00		l.m.		
	4.0 Septic Tank	1.00		units		
	5.0 Holding Tank, (including concrete, rebars, scaffolding & accessories)	2.00		units		
	Sub - Total I. C					
D.	Rehabilitation / Improvement of Outside Power Distribution System					
	1.0 Service Entrance Pedestal, Handholes and Concrete Ducts	1.00		l.s.		

BID PROPOSAL FORM

PROPOSED REHABILITATION AND IMPROVEMENT OF THE CAMALIGAN FISH PORT

Brgy. Dugcal, Camaligan, Camarines Sur

ITEM NO.	DESCRIPTION OF WORKS	PFDA QUANTITY	BIDDER QUANTITY	UNITS	UNIT COST (Estimated Direct Cost & Mark-ups and Value Added Tax)	TOTAL COST
	2.0 Wires	1.00		l.s.		
	3.0 Conduits, Terminal Kits, Lugs, fittings & miscellaneous	1.00		l.s.		
	4.0 45' Concrete Poles, LBS, Fuse Cut-Out, Lightning Arresters including extension of Primary Lines from Power Transformer To Tapping Point and Accessories	1.00		l.s.		
	5.0 Testing and Commissioning	1.00		l.s.		
	Sub - Total I. D					
E.	Outside Auxiliary Distribution System					
	1.0 Service Entrance Pedestal, Handholes and Concrete Ducts	1.00		l.s.		
	2.0 Auxiliary Equipment (CCTV Camera and Access Point) Including mounting tower & accessories	1.00		l.s.		
	3.0 Cables (Fiber Optic)	1.00		l.s.		
	4.0 Conduits, Boxes, Fittings and Miscellaneous	1.00		l.s.		
	5.0 Testing and Commissioning	1.00		l.s.		
	Sub - Total I. E					
F.	Waste Water Treatment Plant Facility including Pipeline Collection System					
	1.0 Installation of new sewage line (existing facilities) going to WWTP					
	a. Earthworks/restoration of concrete pavemnt	1.00		l.s.		
	b. Sewage pipes, fittings & accessries	1.00		l.s.		
	c. Sewage R.C. Manholes	7.00		units		
	2.0 Earthworks (G-Cube 100, Regulating tank & DAF Machine)					
	a. Mechanical Excavation	120.00		cu.m.		
	b. Backfilling and compaction	120.00		units		
	c. Gravel bedding	12.00		cu.m.		
	3.0 Waste Water Treatment Plant					
	a. 100 cu.m. WWTP equipment, Regulating Tank and DAF Machine (including delivery and concrete platform)	1.00		l.s.		
	b. Accessories (spare parts package, pump & grease trap)	1.00		kgs.		
	Sub - Total I. F					
G.	Outside Water Distribution System and Repiping of Pipeline from Water Source to the Port					
	1.0 Earthworks					
	a. Excavation	126.00		cu.m.		
	b. Backfilling and compaction	110.00		cu.m.		
	c. Sandbedding	12.00		l.s.		
	d. Trust blocks support	1.00		l.s.		
	e. Hydrostatic, Testing and Reliability Trial testing	1.00		l.s.		
	2.0 Fire Hydrants	2.00		units		
	3.0 Repiping of pipeline from existing water source to the proposed/new water line					
	a. Concrete cutting, earthworks and restoration of concrete pavement	1.00		l.s.		

BID PROPOSAL FORM

PROPOSED REHABILITATION AND IMPROVEMENT OF THE CAMALIGAN FISH PORT

Brgy. Dugcal, Camaligan, Camarines Sur

ITEM NO.	DESCRIPTION OF WORKS	PFDA QUANTITY	BIDDER QUANTITY	UNITS	UNIT COST (Estimated Direct Cost & Mark-ups and Value Added Tax)	TOTAL COST
	b. Pipes, fittings, valves and accessories	1.00		l.s.		
	Sub - Total I. G					
H.	Miscellaneous Work Items					
	1.0 Flag Pole	1.00		l.s.		
	2.0 Sodding	1,976.00		sq.m.		
	3.0 Painting / Markings - Curbs, Perimeter Fence and Road	822.00		sq.m.		
	Sub - Total I. H					
	TOTAL OF I.					
II.	BUILDING FACILITIES					
A.	New Cold Storage Building for fish, meat and other agro products					
	1.0 Earthworks					
	a. Excavation	274.00		cu.m.		
	b. Backfilling and compaction	170.00		cu.m.		
	c. Selected Earthfill	4,005.00		cu.m.		
	d. Gravel Bedding	76.00		cu.m.		
	2.0 Precast Concrete Piles					
	a. Casting of 2 Pcs. Precast Concrete Test Piles PCP, 5000 psi 0.40mx0.40mx13.0m (including rebars, and forms)	26.00		l.m.		
	b. Handle, Pitch and Driving of Test Pile (include square hole and pile guide in the unit cost)	26.00		l.m.		
	c. Casting of Precast Concrete Piles PCP, 5000 psi 0.40mx0.40mx13.0m (including rebars, and forms)	936.00		l.m.		
	d. Handle, Pitch and Driving of Vertical Pile (include square hole and pile guide in the unit cost)	936.00		l.m.		
	e. Chipping/Cutting of Driven Pile up to cut off elevation	72.00		pcs.		
	f. Square Hole/Pile Guide, etc. for pile driving	1.00		l.s.		
	3.0 Concrete, Masonry and Tile Works					
	a. Concrete, 20.7 Mpa. (Including lintel beams for all doors and wingdow opening)	518.00		cu.m.		
	b. Lean concrete 17.2 Mpa	92.00		cu.m.		
	c. Fabrication of Rebars and Tie Wires	45,531.00		kgs.		
	d. Formworks and Scaffoldings	1.00		l.s.		
	e. 150mm thk. CHB Laying	292.00		sq.m.		
	f. Plain Cement Plaster Finish	1,092.00		sq.m.		
	g. Vitrified Unglazed Floor Tiles	28.00		sq.m.		
	h. Vitrified Glazed Tiles	33.00		sq.m.		
	4.0 H-Frames (steel structure & misc.)	1.00		l.s.		
	5.0 Roofing Works (roof framing, pre-painted metal roofing sheets, accessories & misc. items)	3,629.00		sq.m.		
	6.0 Carpentry and Other Related Works					

BID PROPOSAL FORM

PROPOSED REHABILITATION AND IMPROVEMENT OF THE CAMALIGAN FISH PORT

Brgy. Dugcal, Camaligan, Camarines Sur

ITEM NO.	DESCRIPTION OF WORKS	PFDA QUANTITY	BIDDER QUANTITY	UNITS	UNIT COST (Estimated Direct Cost & Mark-ups and Value Added Tax)	TOTAL COST
	a. Gypsum Board, 12mm thk on Metal Furring	69.00		sq.m.		
	b. D1 - Aluminum Roll-up Door (3.30 m x 2.725 m)	1.00		set		
	c. D2 - Aluminum Roll-up Door (3.10 m x 2.50 m)	8.00		sets		
	d. D3 - 0.90m x 2.10 m Mahogany Panel Door (Include door jamb, hinges, lockset & painting)	3.00		sets		
	e. D4 - 0.80m x 2.10 m Mahogany Panel Door (Include door jamb, hinges, lockset & painting)	1.00		set		
	f. Compact/Phenolic Board Partition (incl. partitions, doors & acc.)	1.00		lot		
	g. D10 - 0.70m x 2.10 m Flush Type Panel Door (Include door jamb, hinges, lockset & painting)	1.00		set		
	h. Louver Door for Slop Sink (include door jamb hinges, lockset and shelves)	1.00		set		
	i. D11 - 2.00m x 2.10m Galvanized Louver Door (Include door jamb, hinges, lockset & painting)	1.00		set		
	j. Aluminum framed Tempered GLASS WALL PARTITION with 10 mm thk. colored glass on a 2"x 4" Analok Aluminum Frame for Electrical Room	7.36		sq.m.		
	k. W1 - 2.00m x 1.00m Metal Louver	7.00		sets		
	l. W2 - Louver Blocks	16.00		sq.m.		
	m. W3 - Analok Aluminum fixed window with 10 mm thk. colored tempered glass on a 2"x 4" Analok Aluminum Frame, 1.20m x 1.80m	1.00		set		
	n. W4 - Analok Aluminum fixed window with 10 mm thk. colored tempered glass on a 2"x 4" Analok Aluminum Frame, 1.20m 0.80m	1.00		set		
	o. GA. STD (3.2mm) Cyclone wire, 2 1/2 opening on 2" Ø G.I pipe sch. 40 with accessories	1.00		l.s		
	7.0 Painting Works					
	a. Masonry surfaces, 3 coats	1,092.00		sq.m.		
	b. Metal Surfaces, 2 coats	3,250.00		sq.m.		
	8.0 Drainage and Sewerage System					
	a. Septic Tank, (Include concrete, chb & rebars)	1.00		unit		
	b. Catch Basin , (Include concrete, strainer & rebars)	22.00		units		
	c. PVC Pipes, fittings and accessories (include downspout, strainer etc.)	1.00		lot		
	9.0 Plumbing and Sanitary Works					
	a. Pipes, fittings, valves, water meter & accessories	1.00		lot		
	b. Sanitary plumbing fixtures, (Include water closet, bidet, lavatory, soap and tissue holders etc.)	1.00		l.s.		
	c. Hand Hole (incl. water meter, valves & fittings)	1.00		lot		
	10.0 Electrical Works					
	a. Lighting Fixtures	1.00		l.s.		
	b. Wires and Wiring Devices	1.00		l.s.		
	c. Conduits, Boxes, Fittings, Support, Bracket, Hangers and Miscellaneous	1.00		l.s.		
	d. Power and Control Centers	1.00		l.s.		
	e. Grounding System	1.00		l.s.		
	f. Transformer Platform, Cable Trench and Concrete Duct	1.00		l.s.		
	g. Transformer and accessories incl. extension of primary line from transformer platform to tapping point	1.00		l.s.		
	h. 660 Kva, 3Ø, 60Hz, 230V, Stand by Generating Set	1.00		l.s.		

BID PROPOSAL FORM

PROPOSED REHABILITATION AND IMPROVEMENT OF THE CAMALIGAN FISH PORT

Brgy. Dugcal, Camaligan, Camarines Sur

ITEM NO.	DESCRIPTION OF WORKS	PFDA QUANTITY	BIDDER QUANTITY	UNITS	UNIT COST (Estimated Direct Cost & Mark-ups and Value Added Tax)	TOTAL COST
	i. 55.44 KWP 3 Phase Solar PV System	1.00		l.s.		
	j. Testing and Commisioning	1.00		l.s.		
	11.0 Auxiliary Works					
	a. Auxiliary Equipment (CCTV Cameras, IDF, etc.) - owner supply					
	b. Cables and Wiring Devices	1.00		l.s.		
	c. Conduits, Boxes, Fittings and Miscellaneous	1.00		l.s.		
	12.0 Mechanical Works					
	a. Cold Storage - compressor and accessories	10.00		sets		
	b. Blast Freezer - compressor and accessories	2.00		sets		
	c. Blast Freezer Unit Coolers and accessories	2.00		sets		
	d. Unit Cooler Cold Storage and accessories	10.00		sets		
	e. Refrigeration System Accessories	1.00		l.s.		
	f. Floor Insulation, Concrete Topping & Painting and Breather Pipes	1.00		l.s.		
	g. Refrigerant pipes, fittings, controls & Miscellaneous installation materials	1.00		l.s.		
	h. Insulated panels & miscellaneous installation materials	1.00		l.s.		
	i. Insulated Doors, air curtain & accessories	1.00		l.s.		
	j. Reliability Trial testing, 2 weeks	1.00		l.s.		
	k. Delivery Cost (Manila Naga Camaligan) Door to door service	1.00		l.s.		
	l. Miscellaneous materials and consummables	1.00		l.s.		
	m. Ante Room	2.00		sets		
	Sub - Total II. A					
B.	Rehabilitation / Improvement of Existing Refrigeration Facility					
	1.0 Demolition Works (includes breaking of floor slab, demolition of wall partition, dismantling of doors and windows & removal of roofing and accessories)	1.00		l.s.		
	2.0 Earth Works					
	a. Excavation	46.00		cu.m.		
	b. Backfilling and Compaction	42.00		cu.m.		
	c. Selected Earthfill	75.00		cu.m.		
	d. Gravel Bedding	4.00		cu.m.		
	3.0 Concrete and Masonry Works					
	a. Concrete, 20.7 Mpa. (Including lintel beams for all doors and wingdow opening)	71.00		cu.m.		
	b. Concrete Topping - Epoxy Floor Coating	554.00		sq.m.		
	c. Fabrication of Rebars and Tie Wires	11,838.92		kgs		
	d. Formworks and Scaffoldings	1.00		l.s.		
	e. 100mm thk. CHB Laying	435.00		sq.m.		
	f. Plain Cement Plaster Finish	892.00		sq.m.		
	g. Vitrified Glazed Wall Tiles, 300 x 600mm	160.00		sq.m.		
	h. Vitrified Unglazed Floor Tiles, 400 x 400mm	70.00		sq.m.		
	i. Vitrified Unglazed Floor Tiles, 600 x 600mm	251.00		sq.m.		

BID PROPOSAL FORM

PROPOSED REHABILITATION AND IMPROVEMENT OF THE CAMALIGAN FISH PORT

Brgy. Dugcal, Camaligan, Camarines Sur

ITEM NO.	DESCRIPTION OF WORKS	PFDA QUANTITY	BIDDER QUANTITY	UNITS	UNIT COST (Estimated Direct Cost & Mark-ups and Value Added Tax)	TOTAL COST
	4.0 Steel and Metal Works					
	a. Steel Columns & Beams	1.00		l.s.		
	b. Metal Decking	150.00		sq.m.		
	c. Metal Railings	1.00		l.s.		
	5.0 Ceiling Works					
	a. Gypsum Board, 12mm thk on Metal Furring	267.00		sq.m.		
	b. Moisture Resistant Gypsum Board, 12mm thk on Metal Furring	42.00		sq.m.		
	6.0 Waterproofing Works					
	a. Cementitious Waterproofing	28.00		sq.m.		
	7.0 Fenestration Works					
	a. WD-1, machine press laminated HDF Door	7.00		sets		
	b. WD-2, machine press laminated HDF Door	2.00		sets		
	c. WD-3, machine press laminated HDF Door	4.00		sets		
	d. DD-1, double solid wooden door	1.00		set		
	e. FW-1, fixed glass partition w/ glass door	2.00		sets		
	f. FW-2, fixed glass partition w/ glass door	1.00		set		
	g. FW-3, fixed glass partition	1.00		set		
	h. FW-4, fixed glass partition	1.00		set		
	i. AW-1, awning glass window	5.00		sets		
	j. AW-2, awning glass window	5.00		sets		
	k. AW-3, awning glass window	11.00		sets		
	l. AW-4, awning glass window	4.00		sets		
	m. SW-1, slidding window	1.00		set		
	8.0 Painting Works					
	a. Masonry surfaces, 3 coats	2,348.00		sq.m.		
	b. Ceiling Surfaces, 2 coats	309.00		sq.m.		
	c. Metal Surfaces, 2 coats	141.00		sq.m.		
	9.0 Drainage and Sewerage System					
	a. Septic Tank, (Include concrete, chb & rebars)	1.00		l.s.		
	b. Catch Basin , (Include concrete, strainer & rebars)	12.00		units		
	c. PVC Pipes, fittings and accessories (include downspout, strainer etc.)	1.00		l.s.		
	10.0 Plumbing and Sanitary Works					
	a. Pipes, fittings, valves, water meter & accessories	1.00		l.s.		
	b. Sanitary plumbing fixtures, (Include water closet, bidet, lavatory, soap and tissue holders etc.)	1.00		l.s.		
	c. Hand Hole and Water Meter Box	1.00		l.s.		
	11.0 Electrical Works					
	a. Lighting Fixtures	1.00		l.s		
	b. Wires and Wiring Devices	1.00		l.s		
	c. Conduits, boxes fittings and Miscellaneous	1.00		l.s		

BID PROPOSAL FORM
PROPOSED REHABILITATION AND IMPROVEMENT OF THE CAMALIGAN FISH PORT
Brgy. Dugcal, Camaligan, Camarines Sur

ITEM NO.	DESCRIPTION OF WORKS	PFDA QUANTITY	BIDDER QUANTITY	UNITS	UNIT COST (Estimated Direct Cost & Mark-ups and Value Added Tax)	TOTAL COST
	d. Power and Control Centers	1.00		l.s		
	e. Grounding System	1.00		l.s		
	f. 49.50 KWP 3 Phase Solar PV System	1.00		l.s		
	g. Testing and Commisioning	1.00		l.s		
	12.0 Auxiliary Works					
	a. Auxiliary Equipment (CCTV Cameras, IDF, etc.) - owner supply					
	b. Cables and Wiring Devices	1.00		l.s		
	c. Conduits, boxes fittings and Miscellaneous	1.00		l.s		
	13.0 Mechanical Works					
	a. Compressor Ice Plant	2.00		sets		
	b. Brine Tank & Accessories (fabrication & installation)	1.00		sets		
	c. Fabrication of cooling coil	1.00		l.s.		
	d. Harvesting Crane	1.00		l.s.		
	e. Dip tank, dumper and refill mechanism	1.00		set		
	f. Crystallyzing equipment	1.00		unit		
	g. Ice Crusher assembly	1.00		set		
	h. Brine Solution and Ammonia for ice making	1.00		l.s.		
	i. Ice Storage Ins panels, doors & cooling coils	1.00		l.s.		
	j. Contact Freezer, 500 kg	1.00		set		
	k. Contact Freezer 1000 kg	1.00		set		
	l. Cold Storage Refrigeration Equipment	1.00		l.s.		
	m. Floor Insulation, Concrete Topping & Painting and Breather Pipes	1.00		l.s.		
	n. Insulated panels, CS & Ante Room	1.00		l.s.		
	o. Ante room Refrigeration Equipment	1.00		l.s.		
	p. Processing Room, CF Room, Sorting Room & Processing Equipment Room	1.00		l.s.		
	q. Refrigeration Accessories	1.00		set		
	r. Refrigerant pipes, fittings, controls & Miscellaneous installation materials	1.00		l.s.		
	s. Reliability Trial testing, 2 weeks	1.00		l.s.		
	t. Delivery Cost (Manila Pier to Camaligan) Door to door service	1.00		l.s.		
	u. Miscellaneous materials and consummables for CF,CS & Ante Room	1.00		l.s.		
	Sub - Total II. B					
C.	Conversion of Existing T&T Processing Facility to Two (2) Units					
	Processing Facility					
	1.0 Demolition of Existing wall (Including disposal of debris)	1.00		l.s.		
	2.0 Earthworks					
	a. Excavation	124.00		cu.m.		
	b. Backfilling and compaction	86.00		cu.m.		
	c. Selected Earthfill	218.00		cu.m.		
	d. Gravel bedding	4.00		cu.m.		

BID PROPOSAL FORM

PROPOSED REHABILITATION AND IMPROVEMENT OF THE CAMALIGAN FISH PORT

Brgy. Dugcal, Camaligan, Camarines Sur

ITEM NO.	DESCRIPTION OF WORKS	PFDA QUANTITY	BIDDER QUANTITY	UNITS	UNIT COST (Estimated Direct Cost & Mark-ups and Value Added Tax)	TOTAL COST
	3.0 Concrete, Masonry and Tile Works					
	a. Concrete, 20.7 Mpa. (Including lintel beams for all doors and wingdow opening)	106.00		cu.m.		
	b. Fabrication of Rebars and Tie Wires	13,390.56		kgs		
	c. Formworks and Scaffoldings	1.00		l.s.		
	d. 150mm thk. CHB Laying	413.00		sq.m.		
	e. 100mm thk. CHB Laying	352.00		sq.m.		
	f. Plain Cement Plaster Finish	1,452.00		sq.m.		
	g. Vitrified Unglazed Floor Tiles	42.00		sq.m.		
	h. Vitrified Glazed Tiles	190.00		sq.m.		
	4.0 Steel and Metal Works					
	a. Roof Framing Works (Includes trusses,Wide Flange, purlins, cleats, and Anchor Bolt)	1.00		l.s.		
	5.0 Roofing Works (roof framing, pre-painted metal roofing sheets, accessories & misc. items)	439.00		sq.m.		
	6.0 Carpentry and Other Related Works					
	a. Gypsum Board, 12mm thk on Metal Furring	444.00		sq.m.		
	b. D11 - Aluminum Roll-up Door (2.00 m x 1.80 m)	2.00		sets		
	c. D1 - 0.90m x 2.10 m Mahogany Panel Door (Include door jamb, hinges, lockset & painting)	2.00		sets		
	d. D2 - 0.60m x 2.10 m Mahogany Panel Door (Include door jamb, hinges, lockset & painting)	5.00		sets		
	e. D3 - 0.70m x 2.10 m Flush Type Panel Door (Include door jamb, hinges, lockset & painting)	5.00		sets		
	f. D4 - 0.80m x 2.10 m Mahogany Panel Door (Include door jamb, hinges, lockset & painting)	2.00		sets		
	g. D5 - 0.90m x 2.10 m Flush Type Panel Door (Include door jamb, hinges, lockset & painting)	2.00		sets		
	h. D6 -0.90m x 2.10m Steel Door (Include door jamb, hinges, lockset & painting)	5.00		sets		
	i. D7-1.80m x 2.10m Steel Door (Include door jamb, hinges, lockset & painting)	1.00		set		
	j. W1 - 0.80 x 2.40 Clear Glass Fixed Window with 8mm Thk. powder coated aluminum frame (analok)	2.00		sets		
	k. W2 - 1.80 x 0.40 smoked glass awning window on powder coated aluminum frame (analok)	12.00		sets		
	l. W3 - 0.40 x 0.40 smoked glass awning window on powder coated aluminum frame (analok)	1.00		set		
	m. W4 - 0.40 x 0.60 smoked glass awning window on powder coated aluminum frame (analok)	2.00		sets		
	n. W5 - 0.40 x 2.40 smoked glass awning window on powder coated aluminum frame (analok)	2.00		sets		
	o. W6 - 0.40 x 1.20 smoked glass awning window on powder coated aluminum frame (analok)	2.00		sets		
	p. W7 - 1.20 x 1.20 smoked glass awning window on powder coated aluminum frame (analok)	2.00		sets		
	q. GA. STD (3.2mm) Cyclone wire, 2 1/2 opening on 2" Ø G.I pipe sch. 40 with accessories	1.00		l.s		
	7.0 Drainage and Sewerage System					
	a. Septic Tank, (Include concrete, chb & rebars)	1.00		unit		
	b. Catch Basin , (Include concrete, strainer & rebars)	14.00		units		
	c. PVC Pipes, fittings and accessories (include downspout, strainer etc.)	1.00		lot		
	8.0 Plumbing and Sanitary Works					
	a. Pipes, fittings, valves, water meter & accessories	1.00		lot		
	b. Sanitary plumbing fixtures, (Include water closet, bidet, lavatory, soap and tissue holders etc.)	1.00		l.s.		
	c. Hand Hole (incl. water meter, valves & fittings)	1.00		lot		

BID PROPOSAL FORM

PROPOSED REHABILITATION AND IMPROVEMENT OF THE CAMALIGAN FISH PORT

Brgy. Dugcal, Camaligan, Camarines Sur

ITEM NO.	DESCRIPTION OF WORKS	PFDA QUANTITY	BIDDER QUANTITY	UNITS	UNIT COST (Estimated Direct Cost & Mark-ups and Value Added Tax)	TOTAL COST
	9.0 Painting Works					
	a. Masonry surfaces, 3 coats	1,452.00		sq.m.		
	b. Metal Surfaces, 2 coats	630.00		sq.m.		
	10.0 Electrical Works					
	a. Lighting Fixtures	1.00		l.s.		
	b. Wires and Wiring Devices	1.00		l.s.		
	c. Conduits, Boxes, Fittings, Support, Bracket, Hangers and Miscellaneous	1.00		l.s.		
	d. Power and Control Centers	1.00		l.s.		
	e. Grounding System	1.00		l.s.		
	f. Transformer Platform, Cable Trench and Concrete Duct	1.00		l.s.		
	g. Transformer and accessories incl. extension of primary line from transformer platform to tapping point	1.00		l.s.		
	h. 300 Kva, 3Ø, 60Hz, 230V, Stand by Generating Set	1.00		l.s.		
	i. Testing and Commisioning	1.00		l.s.		
	11.0 Auxiliary Works					
	a. Auxiliary Equipment (CCTV Cameras, IDF, etc.) - owner supply					
	b. Cables and Wiring Devices	1.00		l.s.		
	c. Conduits, Boxes, Fittings and Miscellaneous	1.00		l.s.		
	12.0 Mechanical Works					
	a. Cold Storage Compressor unit cooler and accessories	2.00		sets		
	b. Blast Freezer Compressor unit cooler and accessories	2.00		sets		
	c. Blast Freezer Unit coolers	2.00		sets		
	d. Refrigeration Accessories	3.00		sets		
	e. floor insulation, concrete topping & painting and breather pipes	1.00		l.s.		
	f. Refrigerant pipes, fittings, controls & Miscellaneous installation materials	1.00		l.s.		
	g. Insulated panels	1.00		l.s.		
	h. Insulated Doors, air curtain & accessories	1.00		l.s.		
	i. Reliability Trial testing, 2 weeks	1.00		l.s.		
	j. Delivery Cost (Manila Camaligan) Door to door service	1.00		l.s.		
	k. Miscellaneous materials and consummables	1.00		l.s.		
	l. Ante Room	2.00		sets		
	m. Processing Area ACU	2.00		sets		
	Sub - Total II. C					
D.	Rehabilitation / Improvement of Existing Administration Building					
	1.0 Demolition Works (includes breaking of floor slab, demolition of wall partition, dismantling of doors and windows & removal of roofing and accessories)	1.00		l.s.		
	2.0 Earthworks					
	a. Excavation	127.00		cu.m.		
	b. Backfilling and Compaction	155.00		cu.m.		

BID PROPOSAL FORM

PROPOSED REHABILITATION AND IMPROVEMENT OF THE CAMALIGAN FISH PORT

Brgy. Dugcal, Camaligan, Camarines Sur

ITEM NO.	DESCRIPTION OF WORKS	PFDA QUANTITY	BIDDER QUANTITY	UNITS	UNIT COST (Estimated Direct Cost & Mark-ups and Value Added Tax)	TOTAL COST
	c. Selected Earthfill	50.00		cu.m.		
	d. Gravel Bedding	6.00		cu.m.		
	3.0 Concrete and Masonry Works					
	a. Concrete, 20.7 Mpa. (Including lintel beams for all doors and wingdow opening)	195.00		cu.m.		
	b. Fabrication of Rebars and Tie Wires	18,647.37		kgs		
	c. Formworks and Scaffoldings	1.00		l.s.		
	d. 150mm thk. CHB Laying	421.00		sq.m.		
	e. 100mm thk. CHB Laying	505.00		sq.m.		
	f. Plain Cement Plaster Finish	1,851.00		sq.m.		
	g. Vitrified Glazed Wall Tiles, 300 x 600mm	321.00		sq.m.		
	h. Vitrified Unglazed Floor Tiles, 400 x 400mm	56.00		sq.m.		
	i. Vitrified Unglazed Floor Tiles, 600 x 600mm	516.00		sq.m.		
	4.0 Steel and Metal Works					
	a. Roof Framing Works (Includes trusses,purlins, cleats, and Anchor Bolt)	1.00		l.s.		
	b. Metal Railings	1.00		l.s.		
	5.0 Roofing Works (pre-painted metal roofing sheets, accessories & misc. items)	271.00		sq.m.		
	6.0 Ceiling Works					
	a. Gypsum Board, 12mm thk on Metal Furring	402.00		sq.m.		
	b. Moisture Resistant Gypsum Board, 12mm thk on Metal Furring	66.00		sq.m.		
	c. Laminated Gypsum Board, 12mm thk on Metal Furring	8.00		sq.m.		
	d. PVC Ceiling Panels, 9mm thk on Metal Furring	93.00		sq.m.		
	7.0 Carpentry and Other Related Works					
	a. Reception Counter and Backwall with Signage	1.00		set		
	b. Panty Undercounter Cabinet	1.00		set		
	c. Bedroom Closet	2.00		sets		
	d. Kitchen Granite Counter Top & Cabinet - Ground Floor	1.00		set		
	e. Kitchen Granite Counter Top & Cabinet - Second Floor	1.00		set		
	8.0 Fenestration Works					
	a. D-1 Aluminum Framed 10mm thk Tempered Brown Glass Double Door	1.00		set		
	b. D-2 Mahogany Panel Swing Door	6.00		sets		
	c. D-3 Flush Type MDF Swing Door	3.00		sets		
	d. D-4 Aluminum Framed 10mm thk Tempered Clear Glass Swing Door	4.00		sets		
	e. D-5/D-5b Flush Type Laminated Waterproof HDF Concealed Swing Door	5.00		sets		
	f. D-6/D-6b Swing Type PVC Door with Louver	7.00		sets		
	g. D-7 Flush Type MDF Swing Door	5.00		sets		
	h. D-8 Laminated Pheonolic Swing Door	5.00		sets		
	i. SD-1 Aluminum Framed 10mm thk Tempered Fixed Clear Glass w/ Sliding Door	1.00		set		
	j. SD-2 Aluminum Framed 10mm thk Tempered Clear Glass Sliding Door w/ 6mm Fixed and Awning Window	1.00		set		

BID PROPOSAL FORM

PROPOSED REHABILITATION AND IMPROVEMENT OF THE CAMALIGAN FISH PORT

Brgy. Dugcal, Camaligan, Camarines Sur

ITEM NO.	DESCRIPTION OF WORKS	PFDA QUANTITY	BIDDER QUANTITY	UNITS	UNIT COST (Estimated Direct Cost & Mark-ups and Value Added Tax)	TOTAL COST
	k. SD-3 HDF Panel Sliding Door	1.00		set		
	l. W-1 Aluminum Framed Fixed Window with 6mm thk Brown Tempered Glass	1.00		set		
	m. W-2 Aluminum Framed Fixed Window with 6mm thk Brown Tempered Glass	1.00		set		
	n. W-3 1.8x1.2m Aluminum Framed Awning Window with 6mm thk Brown Glass	14.00		set		
	o. W-4 1.0x1.2m Aluminum Framed Awning Window with 6mm thk Brown Glass	10.00		set		
	p. W-5 2.4x1.2m Aluminum Framed Awning Window with 6mm thk Brown Glass	11.00		sets		
	q. W-6 1.0x0.9m Aluminum Framed Awning/Fixed Window with 6mm thk Brown Glass	1.00		set		
	r. W-7 0.6x0.6m Aluminum Framed Awning Window with 6mm thk Brown Glass	8.00		sets		
	s. W-8 1.2x0.6m Aluminum Framed Awning Window with 6mm thk Brown Glass	3.00		sets		
	t. W-9 2.4x0.9m Aluminum Framed Awning Window with 6mm thk Brown Glass	1.00		set		
	u. W-10 2.4x0.55m Aluminum Framed Awning Window with 6mm thk Brown Glass	1.00		set		
	9.0 Painting Works					
	a. Masonry surfaces, 3 coats	1,851.00		sq.m.		
	b. Ceiling Surfaces, 2 coats	468.00		sq.m.		
	c. Metal Surfaces, 2 coats	1.00		l.s.		
	10.0 Drainage and Sewerage System					
	a. Septic Tank, (Include concrete, chb & rebars)	1.00		l.s.		
	b. Catch Basin , (Include concrete, strainer & rebars)	21.00		units		
	c. PVC Pipes, fittings and accessories (include downspout, strainer etc.)	1.00		l.s.		
	11.0 Plumbing and Sanitary Works					
	a. Pipes, fittings, valves, water meter & accessories	1.00		l.s.		
	b. Sanitary plumbing fixtures, (Include water closet, bidet, lavatory, soap and tissue holders etc.)	1.00		l.s.		
	c. Hand Hole and Water Meter Box	1.00		l.s.		
	12.0 Electrical Works					
	a. Lighting Fixtures	1.00		l.s.		
	b. Wires and Wiring Devices	1.00		l.s.		
	c. Conduits, Boxes, Fittings, Support, Bracket, Hangers and Miscellaneous	1.00		l.s.		
	d. Power and Control Centers	1.00		l.s.		
	e. Testing and Commisioning	1.00		l.s.		
	13.0 Auxiliary Works					
	a. Auxiliary Equipment (CCTV Cameras, NVR, HDD, controller, OS, Smart TV, UPS and acc.)	1.00		l.s.		
	b. Auxiliary Equipment (Data Rack/MDF, IDFs and accessories)	1.00		l.s.		
	c. Cables and Wiring Devices	1.00		l.s.		
	d. Conduits, Boxes, Fittings and Miscellaneous	1.00		l.s.		
	e. Testing and Commisioning	1.00		l.s.		
	Sub - Total II. D					
E.	Food Stall					
	1.0 Earthworks					
	a. Excavation	66.00		cu.m.		

BID PROPOSAL FORM

PROPOSED REHABILITATION AND IMPROVEMENT OF THE CAMALIGAN FISH PORT

Brgy. Dugcal, Camaligan, Camarines Sur

ITEM NO.	DESCRIPTION OF WORKS	PFDA QUANTITY	BIDDER QUANTITY	UNITS	UNIT COST (Estimated Direct Cost & Mark-ups and Value Added Tax)	TOTAL COST
	b. Backfilling and Compaction	49.00		cu.m.		
	c. Selected Earthfill	23.00		cu.m.		
	d. Gravel Bedding	3.00		cu.m.		
	2.0 Concrete and Masonry Works					
	a. Concrete, 20.7 Mpa. (Including lintel beams for all doors and wingdow opening)	28.00		cu.m.		
	b. Fabrication of Rebars and Tie Wires	3,662.07		kgs		
	c. Formworks and Scaffoldings	1.00		l.s.		
	d. 150mm thk. CHB Laying	230.00		sq.m.		
	e. Plain Cement Plaster Finish	472.00		sq.m.		
	f. Vitrified Glazed Tiles	20.00		sq.m.		
	3.0 Steel and Metal Works					
	a Roof Framing Works (Includes trusses,Wide Flange, purlins, cleats, and Anchor Bolt)	1.00		l.s.		
	4.0 Roofing Works (pre-painted metal roofing sheets, accessories & misc. items)	188.00		sq.m.		
	5.0 Ceiling Works					
	a. Moisture Resistant Gypsum Board, 12mm thk on Metal Furring	100.00		sq.m.		
	b. PVC Ceiling Panels on Metal Furring	84.00		sq.m.		
	6.0 Fenestration Works					
	a. 0.90m x 2.10 m Wooden Solid Door (Include door jamb, hinges, lockset and paint)	5.00		sets		
	b. Aluminum Roll-up Door	15.00		sets		
	7.0 Carpentry and Other Related Works					
	a. Kitchen Cabinet (over head cabinet and undercounter cabinet)	5.00		sets		
	8.0 Drainage and Sewerage System					
	a. Septic Tank, (Include concrete, chb & rebars)	1.00		l.s.		
	b. Catch Basin , (Include concrete, strainer & rebars)	12.00		units		
	c. PVC Pipes, fittings and accessories (include downspout, strainer etc.)	1.00		l.s.		
	9.0 Plumbing and Sanitary Works					
	a. Pipes, fittings, valves, water meter & accessories	1.00		l.s.		
	b. Sanitary plumbing fixtures, (Include water closet, bidet, lavatory, soap and tissue holders etc.)	1.00		l.s.		
	c. Hand Hole and Water Meter Box	1.00		l.s.		
	10.0 Electrical Works					
	a. Lighting Fixtures	1.00		l.s.		
	b. Wires and Wiring Devices	1.00		l.s.		
	c. Conduits, Boxes, Fittings, Support, Bracket, Hangers and Miscellaneous	1.00		l.s.		
	d. Power and Control Centers	1.00		l.s.		
	e. Testing and Commisioning	1.00		l.s.		
	11.0 Painting Works					
	a. Masonry surfaces, 3 coats	482.00		sq.m.		
	b. Ceiling surfaces, 3 coats	100.00		sq.m.		
	c. Metal Surfaces, 2 coats	1.00		l.s.		

BID PROPOSAL FORM
PROPOSED REHABILITATION AND IMPROVEMENT OF THE CAMALIGAN FISH PORT
Brgy. Dugcal, Camaligan, Camarines Sur

ITEM NO.	DESCRIPTION OF WORKS	PFDA QUANTITY	BIDDER QUANTITY	UNITS	UNIT COST (Estimated Direct Cost & Mark-ups and Value Added Tax)	TOTAL COST
	Sub - Total II. E					
F.	Public Toilets					
	1.0 Earthworks					
	a. Excavation	39.00		cu.m.		
	b. Backfilling and Compaction	28.00		cu.m.		
	c. Selected Earthfill	11.00		cu.m.		
	d. Gravel Bedding	2.00		cu.m.		
	2.0 Concrete and Masonry Works					
	a. Concrete, 20.7 Mpa. (Including lintel beams for all doors and wingdow opening)	17.00		cu.m.		
	b. Fabrication of Rebars and Tie Wires	2,892.84		kgs		
	c. Formworks and Scaffoldings	1.00		l.s.		
	d. 150mm thk. CHB Laying	134.00		sq.m.		
	e. 100mm thk. CHB Laying	35.00		sq.m.		
	f. Plain Cement Plaster Finish	275.00		sq.m.		
	g. Vitrified Unglazed Floor Tiles	42.00		sq.m.		
	h. Vitrified Glazed Wall Tiles	165.00		sq.m.		
	i. Granite Slab - Counter top	1.00		l.s.		
	3.0 Steel and Metal Works					
	a Roof Framing Works (Includes trusses,Wide Flange, purlins, cleats, and Anchor Bolt)	1.00		l.s.		
	4.0 Roofing Works (pre-painted metal roofing sheets, accessories & misc. items)	110.00		sq.m.		
	5.0 Ceiling Works					
	a. Moisture Resistant Gypsum Board, 12mm thk on Metal Furring	49.00		sq.m.		
	b. PVC Ceiling Panels on Metal Furring	56.00		sq.m.		
	6.0 Fenestration Works					
	a. D-1 KD Mahogany Wood Panel Swing Door (Wood stain finish)	3.00		sets		
	b. D-2 600mm x 2000mm x 12mm thk Laminated Phenolic / Compact Door	7.00		sets		
	c. D-3 500mm x 1700mm x 12mm thk Laminated Phenolic / Compact Door	2.00		sets		
	d. W-1 3700mm x x 500mm Aluminum Screen Analok Finish w/ expanded metal titanium mesh	4.00		sets		
	f. W-2 2400mm x x 500mm Aluminum Screen Analok Finish w/ expanded metal titanium mesh	2.00		sets		
	g. W-3 2200mm x x 500mm Aluminum Screen Analok Finish w/ expanded metal titanium mesh	1.00		sets		
	7.0 Carpentry and Other Related Works					
	a. Over-hang Lavatory Counter	1.00		l.s.		
	b. Stainles Steel Grab Bar - PWD	1.00		l.s.		
	8.0 Drainage and Sewerage System					
	a. Septic Tank, (Include concrete, chb & rebars)	1.00		l.s.		
	b. Catch Basin , (Include concrete, strainer & rebars)	8.00		units		
	c. PVC Pipes, fittings and accessories (include downspout, strainer etc.)	1.00		l.s.		
	9.0 Plumbing and Sanitary Works					
	a. Pipes, fittings, valves, water meter & accessories	1.00		l.s.		

BID PROPOSAL FORM

PROPOSED REHABILITATION AND IMPROVEMENT OF THE CAMALIGAN FISH PORT

Brgy. Dugcal, Camaligan, Camarines Sur

ITEM NO.	DESCRIPTION OF WORKS	PFDA QUANTITY	BIDDER QUANTITY	UNITS	UNIT COST (Estimated Direct Cost & Mark-ups and Value Added Tax)	TOTAL COST
	b. Sanitary plumbing fixtures, (Include water closet, bidet, lavatory, soap and tissue holders etc.)	1.00		l.s.		
	c. Hand Hole and Water Meter Box	1.00		l.s.		
	10.0 Electrical Works					
	a. Lighting Fixtures	1.00		l.s.		
	b. Wires and Wiring Devices	1.00		l.s.		
	c. Conduits, Boxes, Fittings, Support, Bracket, Hangers and Miscellaneous	1.00		l.s.		
	d. Power and Control Centers	1.00		l.s.		
	e. Testing and Commisioning	1.00		l.s.		
	11.0 Painting Works					
	a. Masonry surfaces, 3 coats	114.00		sq.m.		
	b. Ceiling surfaces, 3 coats	49.00		sq.m.		
	c. Metal Surfaces, 2 coats	1.00		l.s.		
	Sub - Total II. F					
G.	Guard House					
	1.0 Earthworks					
	a. Excavation	12.24		cu.m.		
	b. Backfilling and Compaction	7.20		cu.m.		
	c. Selected Earthfill	21.52		cu.m.		
	d. Gravel Bedding	2.60		cu.m.		
	2.0 Concrete and Masonry Works					
	a. Concrete, 20.7 Mpa. (Including lintel beams for all doors and window opening)	17.00		cu.m.		
	b. Rebars and Tire Wire	1,004.25		kgs		
	c. Formworks and Scaffoldings	1.00		l.s.		
	d. 150mm thk. Chb Wall	36.00		sq.m.		
	e. Plain Cement Plaster Finish (For columns, parapet, beams and walls)	50.50		sq.m.		
	3.0 Doors and Windows					
	a. D1 - 0.6m x 2.10m High Density Fiberboard Door 0 (Include door jamb, hinges, lockset)	1.00		set		
	b. W1 - Aluminum fixed / Sliding window (include aluminum frame "analok" and 6mm thk. brown glass in the unit cost)	1.00		l.s.		
	c. W2 - Aluminum fixed window (include aluminum frame "analok" and 6mm thk. brown glass in the unit cost)	1.00		l.s.		
	4.0 Cabinets (including hardwares, accessories amd paintings)					
	a. Office Low Cabinet	1.00		set		
	5.0 Electrical Works	1.00		l.s.		

BID PROPOSAL FORM

PROPOSED REHABILITATION AND IMPROVEMENT OF THE CAMALIGAN FISH PORT

Brgy. Dugcal, Camaligan, Camarines Sur

ITEM NO.	DESCRIPTION OF WORKS	PFDA QUANTITY	BIDDER QUANTITY	UNITS	UNIT COST (Estimated Direct Cost & Mark-ups and Value Added Tax)	TOTAL COST
	6.0 Auxiliary Works					
	a. Auxiliary Equipment (CCTV Cameras, IDF, etc.)	1.00		l.s.		
	b. Cables and Wiring Devices	1.00		l.s.		
	c. Testing and Commisioning	1.00		l.s.		
	7.0 Painting Works					
	a. Masonry Surfaces	56.30		sq.m.		
	Sub - Total II. G					
	TOTAL OF II					
III.	CONSTRUCTION OCCUPATIONAL SAFETY AND HEALTH PROGRAM	1.00		l.s.		
	TOTAL OF III					
IV.	GENERAL ITEMS					
	A. Service Vehicle for PFDA Construction Management Group	1.00		l.s.		
	TOTAL OF IV					
V.	MOBILIZATION / DEMOBILIZATION	1.00		l.s.		
	TOTAL OF V					
	TOTAL DIRECT COST					

PROPOSED REHABILITATION AND IMPROVEMENT OF CAMALIGAN FISH PORT

BILL OF QUANTITIES

NOTE:

1.0 The items, description and quantities given on the first three columns of this list guides only to the Bidder interpreting the plans and specifications. The PFDA is not responsible for any mistakes, inaccuracies, duplications or omissions in these list special quantities which shall never be a basis for additions nor deletions to the scope of work. Only the entries of the Bidder on the last three columns consisting of his own take off quantities from the plans and his unit cost and corresponding sums shall be considered.

2.0 These bill of quantities and costing as prepared by the Bidder cannot be used as basis for claims for any extra work, but may only be used solely by the Owner as aid in judging if bid is a responsive bid.

3.0 The unit and total bid prices must include all direct and indirect cost/expenses such as overhead, contingencies and miscellaneous (OCM); profit; value added tax, and other obligations of any kind under which the contract must be borne by the Contractor since they are necessary to install, construct and complete the whole of the contract in accordance with the bid documents.

4.0 Use the Form, “Detailed Estimates (Detailed Unit Price Analysis) in the preparation of Detailed Cost Estimate (Derivation of Unit Cost and Lump Sum Item) for every work item.

Section IX. Bidding Forms/ Contract Forms

CHECKLIST OF TECHNICAL AND FINANCIAL DOCUMENT

1. TECHNICAL COMPONENT ENVELOPE

CLASS "A" DOCUMENTS

Legal Documents	
☐	(a) Valid PhilGEPS Registration Certificate (Platinum Membership) (all pages); **or**
☐	(b) Registration certificate from Securities and Exchange Commission (SEC), Department of Trade and Industry (DTI) for sole proprietorship, or Cooperative Development Authority (CDA) for cooperatives or its equivalent document; **and**
☐	(c) Mayor's or Business permit issued by the city or municipality where the principal place of business of the prospective bidder is located, or the equivalent document for Exclusive Economic Zones or Areas; **and**
☐	(d) Tax clearance per E.O. No. 398, s. 2005, as finally reviewed and approved by the Bureau of Internal Revenue (BIR).
Technical Documents	
☐	(e) Statement of the prospective bidder 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**
☐	(f) Statement of the bidder's Single Largest Completed Contract (SLCC) similar to the contract to be bid, except under conditions provided under the rules; **and**
☐	(g) Philippine Contractors Accreditation Board (PCAB) License; or Special PCAB License in case of Joint Ventures; **and** registration for the type and cost of the contract to be bid; **and**
☐	(h) Original copy of Bid Security. If in the form of a Surety Bond, submit also a certification issued by the Insurance Commission; **or** Original copy of Notarized Bid Securing Declaration; **and**
	(i) Project Requirements, which shall include the following:
☐	a. Organizational chart for the contract to be bid;
☐	b. List of contractor's key 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;
☐	c. List of contractor's major equipment units, which are owned, leased, and/or under purchase agreements, supported by proof of ownership or certification of availability of equipment from the equipment lessor/vendor for the duration of the project, as the case may be; **and**
☐	d. Original duly signed Statement of Availability of Key Personnel and Equipment
☐	(j) Original duly signed Omnibus Sworn Statement (OSS);

	and if applicable, Original Notarized Secretary's Certificate in case of a corporation, partnership, or cooperative; or Original Special Power of Attorney of all members of the joint venture giving full power and authority to its officer to sign the OSS and do acts to represent the Bidder.
☐	(k) Original Notarized Affidavit of Site Inspection;
☐	(l) Original and duly signed List of Proposed Subcontractors;
☐	(m) Original and duly signed Letter of Authority to Validate Submitted Documents.
Financial Documents	
☐	(n) The prospective bidder's audited financial statements, showing, among others, the prospective bidder's total and current assets and liabilities, stamped "received" by the BIR or its duly accredited and authorized institutions, for the preceding calendar year which should not be earlier than two (2) years from the date of bid submission; **and**
☐	(o) The prospective bidder's computation of Net Financial Contracting Capacity (NFCC).
CLASS "B" DOCUMENTS	
☐	(p) If applicable, duly signed joint venture agreement (JVA) in accordance with RA No. 4566 and its IRR in case the joint venture is already in existence; **or** duly notarized statements from all the potential joint venture partners stating that they will enter into and abide by the provisions of the JVA in the instance that the bid is successful.

2. FINANCIAL COMPONENT ENVELOPE

☐	(q) Original of duly signed and accomplished Financial Bid Form; **and**
Other documentary requirements under RA No. 9184	
☐	(r) Original of duly signed Bid Prices in the Bill of Quantities; **and**
☐	(s) Duly accomplished Detailed Estimates Form, including a summary sheet indicating the unit prices of construction materials, labor rates, and equipment rentals used in coming up with the Bid; **and**
☐	(t) Cash Flow by Quarter.

TECHNICAL COMPONENT ENVELOPE
Class “A” Document

Technical Documents

LIST OF ON-GOING GOVERNMENT and PRIVATE CONSTRUCTION CONTRACTS INCLUDING CONTRACTS AWARDED BUT NOT YET STARTED

Business Name : _____

Business Address : _____

Name of Contract/Location Project Cost	a. Owner Name b. Address c. Telephone Nos.	Nature of Work	Contractor's Role		a. Date Awarded b. Date Started c. Date of Completion	% of Accomplishment		Value of Outstanding Works
			Description	%		Planned	Actual	
Government								
Private								
						Total Cost		

Note: This statement shall be supported with:

1 Notice of Award and/or Contract
2 Notice to Proceed issued by the owner
3 Certificate of Accomplishments signed by the owner or Project Engineer

Submitted by : _____
(Printed Name & Signature)

Designation : _____
Date : _____

STATEMENT SHOWING THE BIDDER'S SINGLE LARGEST COMPLETED CONTRACT WHICH IS SIMILAR IN NATURE

Business Name : _____

Business Address : _____

Name of Contract	a. Owner Name b. Address c. Telephone Nos.	Nature of Work	Contractor's Role		a. Amount at Award b. Amount at Completion c. Duration	a. Date Awarded b. Contract Effectivity c. Date Completed
			Description	%		
Government						
Private						

Note: This statement shall be supported with:

1 Owner's Certificate of Final Acceptance or the Certificate of Completion

2 Whenever applicable, the Constructor Performance Evaluation Summary (CPES) Final Rating which must be satisfactory.

3 Contract

Submitted by : _____
(Printed Name & Signature)

Designation : _____

Date : _____

Bid-Securing Declaration FORM

[shall be submitted with the Bid if bidder opts to provide this form of bid security]

REPUBLIC OF THE PHILIPPINES)
CITY OF _____) S.S.

BID SECURING DECLARATION
Project Identification No.: *[Insert 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 procurement 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 the 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 No. 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; and
    c. I am/we are declared 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 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. _____.

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 ____**.**

BID SECURITY FORM (BANK GUARANTEE)

WHEREAS, __*(Name of Bidder)*__ (hereinafter called "the Bidder") has submitted his bid dated __*(Date)*__ for the __*(Name of Contract)*__ (hereinafter called "the Bid").

KNOW ALL MEN by these presents that We __*(Name of Bank)*__ of __*(Name of Country)*__ having our registered office at _____ (hereinafter called "the Bank" are bound unto __*(Name of the Procuring Entity)*__ (hereinafter called "the Employer") in the sum of _____ for which payment well and truly to be made to the said Employer the Bank binds itself, his successors and assigns by these presents.

SEALED with the Common Seal of the said Bank this _____ day of _____ 20___.

THE CONDITIONS of this obligation are:

1. If the Bidder withdraws his Bid during the period of bid validity specified in the Form of Bid; or

2. If the Bidder does not accept the correction of arithmetical errors of his bid price in accordance with the Instructions to Bidder; or

3. If the Bidder having been notified of the acceptance of his bid by the Employer during the period of bid validity:

    a) fails or refuses to execute the Form of Agreement in accordance with the Instructions to Bidders, if required; or

    b) fails or refuses to furnish the Performance Security in accordance with the Instructions to Bidders;

we undertake to pay to the Employer up to the above amount upon receipt of his first written demand, without the Employer having to substantiate his demand, provided that in his demand the Employer will note that the amount claimed by him is due to him owning to the occurrence of one or both of the two (2) conditions, specifying the occurred condition or conditions.

The Guarantee will remain in force up to and including the date _____ days after the deadline for submission of Bids as such deadline is stated in the Instructions to Bidders or as it may be extended by the Employer, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this Guarantee should reach the Bank not later than the above date.

DATE _____ SIGNATURE OF THE BANK _____

WITNESS _____ SEAL _____

** To be accompanied by a confirmation from the bank that it issued the Bank Guarantee*

BID SECURITY: SURETY BOND

BOND NO.: _____
DATE BOND EXECUTED: _____

By this bond, We __*(Name of Bidder)*__ (hereinafter called "the Principal") as Principal and __*(Name of Surety)*__ of the country of *(Name of Country of Surety)*, authorized to transact business in the country of __*(Name of Country of Employer)*__ (hereinafter called "the Surety") are held and firmly bound unto __*(Name of Employer)*__ (hereinafter called "the Employer") as Obligee, in the sum of _____, callable on demand, for the payment of which sum, well and truly to be made, we, the said Principal and Surety bind ourselves, our successors and assigns, jointly and severally, firmly by these presents.

SEALED with our seals and dated this _____ day of _____ 20 _____

WHEREAS, the Principal has submitted a written Bid to the Employer dated the _____ day of _____ 20 _____, for the _____ (hereinafter called "the Bid").

NOW, THEREFORE, the conditions of this obligation are:

1) If the Principal withdraws his Bid during the period of bid validity specified in the Form of Bid; or

2) If the Principal does not accept the correction of arithmetical errors of his bid price in accordance with the Instruction's to Bidders: or

3) If the Principal having been notified of the acceptance of his Bid by the Employer during the period of bid validity:

   a) fails or refuses to execute the Form of Agreement in accordance with the Instructions to Bidders, if required; or

   b) fails or refuses to furnish the Performance Security in accordance with the Instructions to Bidders;

then this obligation shall remain in full force and effect, otherwise it shall be null and void.

PROVIDED HOWEVER, that the Surety shall not be:

a) liable for a greater sum than the specified penalty of this bond, nor

b) liable for a greater sum that the difference between the amount of the said Principal's Bid and the amount of the Bid that is accepted by the Employer.

This Surety executing this instrument hereby agrees that its obligation shall be valid for 120 calendar days after the deadline for submission of Bids as such deadline is stated in the Instructions to Bidders or as it may be extended by the Employer, notice of which extension(s) to the Surety is hereby waived.

PRINCIPAL _____ SURETY _____

SIGNATURE(S) _____ SIGNATURES(S) _____

NAME(S) AND TITLE(S) _____ NAME(S) _____

SEAL _____ SEAL _____

Insurance Commission

Logo

Republic of the Philippines
Department of Finance
INSURANCE COMMISSION
1071 United Nations Avenue

C E R T I F I C A T I O N

This is to certify that **[NAME OF INSURANCE COMPANY]** is licensed to transact non-life insurance business in the Philippines for [state lines such as **FIRE, MARINE, CASUALTY and SURETY]** lines under **Certificate of Authority No**. _____ effective **[date: day/month/year]** until **[date: day/month/year]**, unless sooner revoked or suspended for cause.

It is certified, moreover, that **[NAME OF INSURANCE COMPANY]** is authorized under its license to issue surety bonds required by the Implementing Rules and Regulations of R.A. No. 9184, and that the insurance company had issued [state surety bond: [type of surety bond] with **[BOND NUMBER]** which **callable upon demand** together with the principal [**NAME OF THE PRINCIPAL]** in favor of the obligee [**NAME OF THE OBLIGEE]** in the amount of [**AMOUNT OF WORDS]** (Php _____) for the project: **[NAME OF THE PROJECT],** certified photocopy [or duplicate] of said bond was submitted by the company to the Insurance Commission.

This Certification is issued upon the request of [**NAME OF THE REQUESTING PERSON**], [Position] of [Name of Insurance Company], pursuant to the Revised implementing Rules and Regulations of R.A. No. 9184.

Issued on this [*day/month/year*].

City of Manila, Philippines.

For the Insurance Commissioner:

[NAME OF THE IC DIVISION MANAGER]
IC Division Manager
Regulation, Enforcement,
& Prosecution Division

* *To be accompanied by a certification from the Insurance Commission stating that the Bonding Company is authorized to issue a security*

CONTRACTOR'S ORGANIZATIONAL CHART FOR THE CONTRACT

Submit Copy of the Organizational Chart that the Contractor intends to use to execute the Contract if awarded to him to include in the chart, among others, the names of the required proposed Key Personnel as indicated in ITB Clause 10.4 of the Bid Data Sheet and other Key Engineering Personnel.

Attach the required Proposed Organizational Chart for the Contract as stated above

Note: This organization chart should represent the "Contractor's Organization" required for the Project, and not the organizational chart of the entire firm.

QUALIFICATION OF KEY PERSONNEL PROPOSED TO BE ASSIGNED TO THE CONTRACT

			Project Manager (Licensed Civil Engineer)	Project Engineer (Licensed Mechanical Engineer)	Electrical Engineer (Licensed Electrical Engineer)	Electronics & Communications Engineer (Licensed ECE)	Materials Engineer II	Safety Officer	Foreman		
1	Name										
2	Address										
3	Date of Birth										
4	Employed Since										
5	Experience										
	Total Experience (Years)	Required	15	10	10	7	5	5	15		
		Actual									
	Experience in Similar Project (Years)	Required	10 (see note below)	5 (see note below)	5	3	3	3	10		
		Actual									
6	Previous Employment										
7	Education										
8	PRC License/Accreditation/Certification/ training (as required) Attached Supporting Documents for validation purposes										

Note: Refer to ITB Clause 10.4 of the Bid Data Sheet for the minimum work experience requirements for each key personnel.

- For the Project Manager: at least 15 years practice of the profession and 10 years as Project Manager in Building Construction and Civil Work Projects, of which, a minimum of 3 year experience in Building Repair(s). In addition, has also managed/supervised a building construction project with a minimum amount of ₱ 150 Million.
- For the Project Engineer, at least 10 years of practice of the profession and 5 years experience in refrigeration system design and installation and must have supervised at least ₱ 75 Million worth of project similar in nature.
- For the Electrical Engineer: at least 5 year experience as Electrical Engineer in Building Construction and Civil Work Projects, of which, a minimum of 2 year experience in Building Repair(s).
- Materials/ Engineer II shall be DPWH Accredited. Attached Proof of Accreditation.
- Safety Officer shall be certified by BWC of DOLE or with Certificate of Training in Occupational Safety and Health. Attached DOLE Certificate of Accreditation or Certificate of Completion of Training.

Submitted by :_____
(Printed Name & Signature)

Designation :_____

Date :_____

KEY PERSONNEL
(FORMAT OF BIO-DATA/RESUME)

Give the detailed information of the following personnel who are scheduled to be assigned as full-time field staff for the project. Fill up a form for each person.

- Authorized Managing Officer / Representative
- Sustained Technical Employee

1. Name : _____
2. Date of Birth : _____
3. Nationality : _____
4. Education and Degrees : _____
5. Specialty : _____
6. Registration : _____
7. Length of Service with the Firm : _____ Year from ____ (months) _____ (year)
   To ____ (months) _____ (year)
8. Years of Experience : _____
9. If Item 7 is less than the required number of years, give name and length of service with previous employers. (attached additional sheet/s), if necessary:

Name and Address of Employer	Length of Service
_____	_____ year(s) from _____ to _____
_____	_____ year(s) from _____ to _____
_____	_____ year(s) from _____ to _____

10. Experience:

    This should cover the number of years of experience required under ITB Clause 12.1b (ii.2) of the Bidding Documents for each of the required key personnel (Attached as many pages as necessary to show involvement of personnel in projects using the format below).

1. Name : _____
2. Name and Address of Owner : _____
3. Name and Address of the Owner's Engineer (Consultant) : _____
4. Indicate the Features of Project (particulars of the project components and any other particular interest connected with the project) : _____
5. Contract Amount Expressed in Philippine Currency : _____
6. Position : _____

7. Structures for which the employee was responsible : _____

8. Assignment Period : from _____ (months) _____ (years)
: to _____ (months) _____ (years)

_____
Name and Signature of Employee

It is hereby certified that the above personnel can be assigned to this project, if the contract is awarded to our company.

_____ _____
(Place and Date) (The Authorized Representative)

LIST OF EQUIPMENT, OWNED OR LEASED AND/OR UNDER PURCHASE AGREEMENTS, PLEDGED TO THE PROPOSED CONTRACT

Business Name : _____

Business Address : _____

Minimum Required Equipment	No. of units	Model/ Year Manufactured	Capacity/ Performance/ Size	Plate No.	Motor No./ Body No.	Specific Location	Condition	Status		
								Owned with attached Proof	Leased with attached Proof from the Lessor	Under Purchase Agreement with attached Proof from the Vendor

This Certifies that the above list of equipment are in good working condition and will be available for use during the execution of the Project.

Submitted by : _____
(Printed Name & Signature)

Designation : _____

Date : _____

Note:

(a) if owned: Submit proof of ownership of equipment i.e. receipt, etc.

(b) If leased and/or under purchase agreement: submit proof of lease and/or under purchase agreement (with corresponding engine numbers, chassis numbers and/or serial numbers) and Certification of availability of equipment in good working condition for the duration of the Project issued by the Equipment Lessor/Vendor.

STATEMENT OF AVAILABILITY OF KEY PERSONNEL AND EQUIPMENT

[Date of Issuance]

[Name of the Head of the Procuring Entity]
[Position of the Head of the Procuring Entity]
[Name of Procuring Entity]
[Address of Procuring Entity]

Attention : The Chairman
Bids and Awards Committee

Dear Sir:

In compliance with the requirements of the Philippine Fisheries Development Authority (PFDA) for the bidding of the Construction, Rehabilitation and Improvement of Zamboanga Fish Port Complex, we certify that *[Name of the Bidder]* has in its employ key personnel, such as Project Manager, Senior Architect. Project Engineers, Materials Engineer, Safety Officer and Foreman who may be engaged for the construction of the said contract.

Further, we likewise certify the availability of equipment that *[Name of the Bidder]* owns, has under lease, and/or has under purchase agreement that may be used for the construction contracts.

Very truly yours,

[Name of the Representative]
[Position]
[Name of Bidder]

Omnibus Sworn Statement

[shall be submitted with the Bid]

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, **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;**

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. <u>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.</u>

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 _____
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 _____

AFFIDAVIT OF SITE INSPECTION

I, ___*(Representative of the Bidder)*___, of legal age, __*(civil status)*__, Filipino and residing at ___*(Address of the Representative)*_, under oath, hereby depose and say:

1. That I am the __*(Position in the Bidder)*__ of the ___*(Name of the Bidder)*___, with office at ___*(Address of the Bidder)*___;

2. That I have inspected the site for the Construction, Rehabilitation and Improvement of Zamboanga Fish Port Complex;

3. That I am making this statement as part of the requirement for the Technical Proposal of the ___*(Name of the Bidder)*___ for the Construction, Rehabilitation and Improvement of Zamboanga Fish Port Complex.

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 _____
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 _____

LIST OF PROPOSED Subcontractors

The Bidder is required to insert below the names of all Subcontractors (to include the Specialty Subcontractors) proposed for the Project and to indicate the specific work they will be required to undertake:

Name of Subcontractors	Elements of Work to be Undertaken

Provision of the above information shall not be taken to mean that the above-named Subcontractors will be acceptable in the event that the Bidder is awarded the Contract. Before being allowed to sublet any element of work, the selected Contractor will be required to further demonstrate the capabilities of the proposed Subcontractor and seek permission from the Engineer to sublet such work to that Subcontractor.

(Signed by Authorized Representative of the Bidder):
Date: _____

LETTER OF AUTHORITY TO VALIDATE SUBMITTED DOCUMENTS

The General Manager
Philippine Fisheries Development Authority
PCA Annex Bldg., Elliptical Rd., Diliman
Quezon City

Attention : The Chairman
Bids and Awards Committee

Dear Sir/Madame:

Reference is made to our Application for eligibility and to Bid for the hereunder contract

Name of Contract : _____
Location : _____
Brief Description : _____

In accordance with Republic Act 9184 and its Implementing rules and Regulations (IRR), we/I hereby authorize the Philippine Fisheries Development Authority or its authorized representative/s to verify the statements, documents and information submitted herewith to substantiate our eligibility to participate in the bidding for the above-mentioned contract.

You may contact the following persons to provide further information with regard to this application:

	NAME	TEL. NUMBER	FAX NUMBER
a. Technical Matters			
b. Financial Matters			
c. Personnel Matters			

Very truly yours,

_____
Name of firm/Contractor

By:

_____
Name and Signature of Authorized Representative
Position/Designation: _____
Date: _____

TECHNICAL COMPONENT ENVELOPE
Class "A" Document

Financial Documents

COMPUTATION OF NET FINANCIAL CONTRACTING CAPACITY (NFCC)

A. Summary of the Firm's/Contractor's assets and liabilities on the basis of the audited financial statement, stamped "RECEIVED" by the Bureau of Internal Revenue or BIR authorized collecting agent, for the immediately preceding year and a certified copy of Schedule of Fixed Assets particularly the list of construction equipment.

		Year 20__
1.	Total Assets	
2.	Current Assets	
3.	Total Liabilities	
4.	Current Liabilities	
5.	Total Net Worth (1-3)	
6.	Current Net Worth or Net Working Capital (2-4)	

B. The Net Financial Contracting Capacity (NFCC) based on the above data is computed as follows:

NFCC = [(current asset – current liabilities) (15)] minus value of all outstanding contracts including those awarded contracts but not yet started

NFCC = Php _____

Submitted by:

_____
Name of Firm / Contractor

_____
Signature of Authorized Representative

Date: _____

NOTE:

As per Section 23.1.b) of IRR of R.A.9184: For Joint Venture Bidder, the partner responsible to submit the NFCC shall likewise submit the Statement of all its on-going contracts and Audited Financial Statements.

FINANCIAL COMPONENT ENVELOPE

BID FORM FOR THE PROCUREMENT OF INFRASTRUCTURE PROJECTS
[shall be submitted with the Bid]

BID FORM

Date : _____
Project Identification No. : _____

To: [name and address of Procuring Entity]

Having examined the Philippine Bidding Documents (PBDs) including the Supplemental or Bid Bulletin Numbers *[insert numbers],* the receipt of which is hereby duly acknowledged, we, the undersigned, declare that:

a. We have no reservation to the PBDs, including the Supplemental or Bid Bulletins, for the Procurement Project: *[insert name of contract];*

b. We offer to execute the Works for this Contract in accordance with the PBDs;

c. The total price of our Bid in words and figures, excluding any discounts offered below is: *[insert information]*;

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

e. The total bid price includes the cost of all taxes, such as, but not limited to: *[specify the applicable taxes, e.g. (i) value added tax (VAT), (ii) income tax, (iii) local taxes, and (iv) other fiscal levies and duties],* which are itemized herein and reflected in the detailed estimates,

f. Our Bid shall be valid within the a period stated in the PBDs, and it shall remain binding upon us at any time before the expiration of that period;

g. 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, or a Performance Securing Declaration in lieu of the the allowable forms of Performance Security, subject to the terms and conditions of issued GPPB guidelines[2] for this purpose;

h. 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;

i. 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

[2] currently based on GPPB Resolution No. 09-2020

j. We understand that you are not bound to accept the Lowest Calculated Bid or any other Bid that you may receive.

k. 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 [Name of Project] of the [Name of the Procuring Entity*].*

l. 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: _____
Legal Capacity: _____
Signature: _____
Duly authorized to sign the Bid for and behalf of: _____
Date: _____

DETAILED COST ESTIMATES (DERIVATION OF UNIT COST AND LUMP SUM ITEMS)

Proposed Rehabilitation & Improvement of Camaligan Fish Port

UNIT PRICE ANALYSIS

Pay Item No. : **Unit Price :** **P / UNIT**
Description : **Quantity :** **UNIT**

REF. NO.	DESCRIPTION	QTY.	UNIT	NO. OF HOURS	UNIT COST	TOTAL AMOUNT
A.	EQUIPMENT					
	TOTAL (A)					
B.	LABOR					
	TOTAL (B)					
	OUTPUT	.....	UNIT / hr			
	TOTAL (A + B)					
	UNIT COST (EQUIP. + LABOR)		P / UNIT			
C.	MATERIAL/BASIC ITEM					
	TOTAL (C)					
	UNIT COST (MATERIAL)		P / UNIT			
D.	ESTIMATED DIRECT COST (EDC)					
E.	DIRECT UNIT COST (EDC/QUANTITY)					
F.	OVERHEAD, CONTINGENCIES & MISCELLANEOUS			..... %		
G.	PROFIT			..... %		
H.	VALUE ADDED TAX			5 %		
I	TOTAL COST (D + F + G + H)					
	TOTAL UNIT PRICE (I / QTY.)		P / UNIT			

SUMMARY SHEET INDICATING THE UNIT PRICES OF CONSTRUCTION MATERIALS, LABOR RATES AND EQUIPMENT RENTALS

The Bidder shall submit Summary Sheets indicating the unit prices of construction materials, labor rates and equipment rentals/owned/leased used in coming up with the Bid.

AS ATTACHMENT

Contract Name : _____
Location : _____

CASH FLOW BY QUARTER AND PAYMENT SCHEDULE

PARTICULAR	% WT.	1ST Quarter	2nd Quarter	3rd Quarter	4th Quarter	5th Quarter	6th Quarter	7th Quarter	8th Quarter	9th Quarter	10th Quarter	11th Quarter	12th Quarter
ACCOMPLISHMENT													
CASH FLOW													
CUMULATIVE ACCOMPLISHMENT													
CUMULATIVE CASH FLOW													

Submitted by:

Name of the Representative of the Bidder Date: _____
Position
Name of the Bidder

One of the requirements from the bidder to be included in its Financial Component Envelope is the Cash Flow by Quarter and Payment Schedule.

DRAFT CONTRACT

CONTRACT AGREEMENT FORM

[not required to be submitted with the Bid, but it shall be submitted within ten (10) days after receiving the Notice of Award]

CONTRACT AGREEMENT

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 *[contract price in words and figures in specified currency]* 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 as required by the 2016 revised Implementing Rules and Regulations of Republic Act No. 9184 shall be deemed to form and be read and construed as part of this Agreement, *viz*.:

    a. Philippine Bidding Documents (PBDs);
    - i. Drawings/Plans;
    - ii. Specifications;
    - iii. Bill of Quantities;
    - iv. General and Special Conditions of Contract;
    - v. Supplemental or Bid Bulletins, if any;

    b. Winning bidder's bid, including the Eligibility requirements, Technical and Financial Proposals, and all other documents or statements submitted;

    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;

    c. Performance Security;

    d. Notice of Award of Contract and the Bidder's conforme thereto; and

    e. Other contract documents that may be required by existing laws and/or the Procuring Entity concerned in the PBDs. **Winning bidder agrees that additional contract documents or information prescribed by the GPPB that are subsequently required for submission after the contract execution, such as the Notice to Proceed, Variation Orders, and Warranty Security, shall likewise form part of the**

Contract.

3. In consideration for the sum of *[total contract price in words and figures]* or such other sums as may be ascertained, *[Named of the bidder]* agrees to *[state the object of the contract]* in accordance with his/her/its Bid.

4. The *[Name of the procuring entity]* agrees to pay the above-mentioned sum in accordance with the terms of the Bidding.

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

[Insert Name and Signature] *[Insert Signatory's Legal Capacity]* *for:* *[Insert Procuring Entity]*	*[Insert Name and Signature]* *[Insert Signatory's Legal Capacity]* *for:* *[Insert Name of Supplier]*

Acknowledgment

[Format shall be based on the latest Rules on Notarial Practice]

DRAFT Contract Agreement

KNOW ALL PERSONS BY THESE PRESENTS:

This Contract, made and entered into this _____ day of _____ by and between:

> The PHILIPPINE FISHERIES DEVELOPMENT AUTHORITY (PFDA), a government-owned corporation, established under Presidential Decree No. 977, with principal office address at the 2nd-4th Floors, PCA Annex Building, Elliptical Road, Diliman, Quezon City, herein represented by its General Manager, ATTY. GLEN A. PANGAPALAN and hereinafter referred as the AUTHORITY.

- AND–

Whereas, the Philippine Fisheries Development Authority (PFDA) is empowered by the Department of Agriculture (DA) to implement the Post-Harvest and other Infrastructure Component of the _____;

WHEREAS, in a public bidding conducted by the Authority, the bid of the Contractor has been determined as the lowest calculated responsive bid;

WHEREAS, under Board Resolution No. _____ dated - _____ the PFDA Board of Directors award the Contract for _____.

NOW, THEREFORE, for and in consideration of the foregoing premises and mutual covenants, stipulation and agreements herein contain, the Authority and the Contractor have agreed, as they do hereby agree and contract, as follows:

ARTICLE I

CONTRACT DOCUMENTS

The following documents, hereinafter referred to as Contract Documents, shall be deemed integral parts of this Contract, as fully as if hereto attached or herein stated, and shall continue to govern and control in full force and effects the rights and obligations of the parties as if the documents were set forth in full except as otherwise modified by mutual agreement in writing of both parties, to wit:

a) Contract Agreement

b) Conditions of Contract

c) Drawings/Plans

d) Specifications

e) Invitation to Bid

f) Instruction to Bidders

g) Addenda

h) Bid Form including the following Annexes in Two (2) Envelopes:

The First Envelope shall contain of the eligibility and technical documents:

(a) Eligibility Documents:

Class “A” Documents

1. Registration Certificate from Securities & Exchange Commission (SEC) or Department of Trade and Industry (DTI)
2. Mayor’s permit
3. Statement of all its on-going and completed government and private contracts
4. PCAB License
5. Audited financial statements
6. NFCC computation
7. Tax Clearance

Class “B” Document:

1. Joint Venture Agreement, if applicable

(b) Technical Documents

1. Bid security as to form, amount and validity period
2. Organizational chart
3. List of contractor’s personnel
4. List of contractor’s equipment units, owned or leased
5. Sworn statement in accordance with Section 25.3 of the IRR of RA 9184
6. Affidavit of Site Inspection

The Second Envelope (Financial Proposal) shall contain the following:

1. Bid prices in the bill of quantities in the prescribed bid form
2. 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

3. Breakdown of Lump Sum Bid items

4. Cash flow by the quarter and payment schedule

i) Performance Security

j) Notice of Award of contract and contractor's "conforme" thereto

k) Other contract documents that may be required by the Authority

The Contract Documents shall be complementary and supplementary to each other and what is called for or prescribed by one shall be considered as if called or prescribed by the other. In case of any discrepancy between, or of any defective prescription, errors, omissions, or ambiguity in any of the Contract Documents, the Contractor shall promptly submit the matter in writing. Such determination by the Authority shall be final and binding upon the Contractor and the latter shall accordingly proceed with the work strictly in accordance with such determination.

ARTICLE II

CONTRACTOR'S UNDERTAKING

The Contractor shall, in accordance with the provision and subject to the terms and conditions contained in the Contract Documents and supplied by the Authority and the Authority's written corrective determination mentioned in Article I hereof, fully and faithfully furnish to the satisfaction of the Authority all necessary labor, equipment, materials, tools, supplies, machinery and perform all operations (including mobilization, supervision and other similar or necessary acts) required for the _____ complete and ready for use and services as per plans and specifications.

ARTICLE III

CONTRACT PRICE

In consideration of the work to be performed by the Contractor as specified in Article II, the Authority shall pay the Contractor the fixed sum of _____ in the manner herein prescribed. It is understood that that all billings shall be based on work actually performed as verified by the Authority.

All payments made by the Authority to the Contractor shall be at all times subject to the usual government accounting and auditing procedures and requirements.

This amount is deemed full compensation for everything furnished and done by the Contractor under this Contract, including all works required but not specifically mentioned and also for all losses or damages arising out of the work aforesaid from the action of the elements or from any obstruction or difficulty encountered in the prosecution of this Contract, for all expenses incurred by or in consequence of the suspension or discontinuance of the Contract and the whole thereof, at the time and in the manner provided in the Contract Documents.

ARTICLE IV

MANNER OF PAYMENT

The Authority shall pay the Contractor the Price of _____ _____ subject to the following terms and conditions:

1. The CONTRACTOR, upon his request shall receive from the AUTHORITY an advance payment equivalent to fifteen percent (15%) of the total Contract Price.
2. The advance payment shall be made only upon submission to and acceptance by the AUTHORITY of an irrevocable standby letter of credit of equivalent value from a commercial bank or a guarantee payment bond, callable on demand, issued by a surety or insurance company duly licensed by the Office of the Insurance Commissioner and confirmed by the AUTHORITY.
3. The advance payments shall be repaid by the Contractor by deducting fifteen percent (15%) from its periodic progress payments.
4. The AUTHORITY shall have the right to deduct from the CONTRACTOR progress billing certain amount as may be necessary to cover third party liabilities, as well as uncorrected discovered defects in the project.
5. The CONTRACTOR, shall therefore, receive its progress payment less the retention money, 2.0% expanded withholding tax, 5% Final VAT and other deductions provided for the Contractor, if any.

ARTICLE V

WORK COMPLETION

The work called for in this Contract, as specified in Article II hereof, shall be completed within _____ calendar days. This Contract time shall commence to run after ten (10) calendar days following the receipt by the CONTRACTOR of the Notice to Proceed issued by the AUTHORITY.

The CONTRACTOR, may, however, ask for extension of the contract period through a written request submitted to the AUTHORITY 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 arises.

Condition for the granting of extension of contract time shall be based on the applicable provisions of the Implementing Rules and Regulations of RA 9184.

ARTICLE VI

PERFORMANCE SECURITY

Before the signing of the Contract, the Contractor shall furnish the AUTHORITY a performance security in the form of cash, certified check, manager's check, cashier's check, bank draft, bank guarantee, letter of credit issued by a reputable bank, surety bond callable on demand, issued by the Government Service Insurance System or by

a surety or insurance companies duly accredited by the Office of the Insurance Commissioner, or a combination thereof, in accordance with the following schedule:

a. Cash, or cashier's/manager's check, bank draft/guarantee or irrevocable letter of credit issued by a Universal of Commercial Bank-ten percent (10%) of the total contract price.

b. Surety bond callable on demand issued by a surety or insurance company duly certified by the Insurance commission as authorized to issue such security-thirty percent (30%) of the contract price.

The performance security shall be posted in favor of the AUTHORITY and shall guarantee the faithful performance by the CONTRACTOR of its obligations under the contract prepared in accordance with the bidding documents.

The performance security shall be posted in favor of the AUTHORITY, and shall be forfeited in favor of the AUTHORITY in the event it is established that the CONTRACTOR is in default in its obligations in this contract.

The following provisions shall form part of the performance security: "The right to institute action on the penal bond pursuant to Act No. 3688 if any individual firm, partnership, corporation and association supplying the CONTRACTOR with labor and material for the prosecution of the work is hereby acknowledge and confirmed.

Subject to the conditions of the contract, the performance security may be released by the AUTHORITY after the issuance of the Certificate of Completion of the contract, provided that there are no claims for labor and materials filed against the contractor or the surety company.

The CONTRACTOR shall post an additional performance security to cover any cumulative increase of more than ten percent (10%) over the original value of the contract as a result of adjustments in unit prices, and/or change orders extra work orders, and supplemental agreements. The CONTRACTOR shall post the extension of the validity of the performance security to cover approved contract time extensions.

ARTICLE VII

RETENTIONS

The AUTHORITY shall deduct and withhold from every progress payment due to the Contractor an amount equivalent to ten percent (10%) of the amount due as retention. After fifty percent (50%) of the work shall have been completed to the satisfaction of the AUTHORITY and in accordance with the time schedule of work completion, no further amount shall be withheld or retained from any subsequent progress payments.

All amounts withheld or retained shall be paid to the Contractor upon final acceptance of the work and only after presentation to the Authority by the Contractor of a Guaranty Bond issued by the GSIS in an amount equivalent to ten percent (10%) of the total contract price including the cost of extra work if any, and affidavit executed by the Contractor stating that all wages and salaries of each employee, cost of materials and/or supplies, damages if any, or other obligations arising out this contract,

whether directly or indirectly have all been fully paid or settled, subject to No. 5 Art. Hereof.

ARTICLE VIII

OPTION TO COMPLETE WORK

In any case the CONTRACTOR, at any time before the satisfactory completion of the work and acceptance by the Authority of the project, should fail, refuse or neglect to supply the needed materials, equipment or workmen or should abandon the project, the Authority may, at its option, provide materials, equipment and all necessary labor, after giving the Contractor a written notice at least three (3) days before supplying the said materials, equipment or labor in order to complete the project.

The AUTHORITY may then proceed with the execution of the project in accordance with the plans and specifications until the same is completed. The AUTHORITY may, in the same event, engage the service of another Contractor to complete the work in accordance with the contract. In any case, the AUTHORITY shall have the right to charge the cost of completion of the project to the Contractor, directly against his performance security, if under this or if any other contract. Nothing in this Article shall relieve the Contractor or in any diminish its responsibility to the AUTHORITY for all cases, the Contractor shall be liable to the AUTHORITY for all forms of damages that may be suffered by it, by reason of the Contractor's failure, refusal or neglect to supply the necessary materials, equipment and labor or its abandonment of the project.

ARTICLE IX

DELAY AND LIQUIDATED DAMAGES

It is understood that in the execution of the work herein contracted, time is of essence. For that matter, if the Contractor refuses or fails to complete the undertaking called for within the contract period as specified herein, or any extension or extensions thereof, the Contractor shall pay the AUTHORITY the fixed and liquidated damages or to collect or charge such liquidated damages against the performance security filed by the Contractor or from the retention money, whichever is convenient and expeditious to the AUTHORITY; provided, however, that no liquidated damages or any excess cost shall be charged when the delay in the completion of the undertaking is due to unforeseeable of fortuitous events or causes beyond the control and without the fault or negligence of the Contractor, or to any cause directly attribution to the AUTHORITY.

The determination of the amount of liquidated damages shall be based on the applicable provisions of RA 9184.

ARTICLE X

LIABILITY TO THIRD PERSONS

All damages and losses of whatever nature that may be suffered by third persons as a result, directly or indirectly, of the fault or negligence of the Contractor in the execution of its work or performance of its undertaking under this contract shall be sole responsibility of the Contractor. The Contractor therefore shall save and hold the AUTHORITY free and exempt from all claims for damages, losses, penalties and liabilities of whatever kind or nature including all causes of action, suits, judgments arising from death or injury to person or damage to property resulting from the Contractor's fault or failure to exercise the diligence required in the execution of its work and in the performance of its undertakings.

It is the duty of the Contractor, in order to minimize if not eliminate the incidence of such damages or losses that may be inflicted upon third persons, to provide all necessary safeguards including the posting of warning signs strategic points of the work area and its vicinity to the end that incidents that may result in injury or death to persons and damage to property may be avoided or prevented.

ARTICLE XI

WARRANTY

The Contractor shall assume full responsibility for the contract work from the time project construction commenced up to final acceptance by the AUTHORITY 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 and shall be required to put up a warranty security in accordance with the following schedule:

a. Cash or letter of credit - five percent of the contract price

b. Bank guarantee – ten percent of the contract price

c. Surety bond callable on demand – thirty percent of the contract price

The warranty security shall remain effective during the applicable warranty period in Section 62.2; specifically under sub-sections 62.2.1; 62.2.2; 62.2.3; and 62.2.4 of RA 9184 and shall be returned only after the lapse of the said warranty period.

ARTICLE XII

NO EMPLOYER-EMPLOYEE RELATIONSHIP

The Contractor is not an employee of the AUTHORITY and there is absolutely no employer employee relationship between them. All personnel, workmen and laborers hired by the Contractor, all persons contracted by its sub-contractors, if allowed under Art. XVII hereof, for the work shall be deemed employees or agents of

the Contractor solely and never that of the AUTHORITY. Hence, personal injury or death, or any other forms of damages, caused by the said employees or agents or sub-contractor.

ARTICLE XIII

SUPPLETORY USE OF CONTRACT DOCUMENTS

The contract documents shall be suppletory to this contract. Any and all deficiencies in the provision of this contract intended to be covered hereby otherwise connected with or related to the project covered hereby, but no expressly covered by the provisions of this contract, shall be supplied by the contract documents.

In case of irreconcilable conflict between the provisions of the contract documents and agreement, the latter shall prevail.

ARTICLE XIV

VALIDITY CLAUSE

If any or any condition of this contract is held invalid or contrary to law, the validity of the other terms and conditions hereof shall not be affected thereby.

ARTICLE XV

CONTRACT TERMINATION AND JURISDICTION

Should the Contractor fail to comply with any of its obligations and responsibilities or violate any of the terms and conditions hereof, the AUTHORITY may terminate this contract without need of judicial action or intervention by serving upon the Contractor a written notice to that effect at least fifteen (15) days prior to the intended date of termination; provided, that such termination shall not relieve the Contractor of its liabilities and responsibilities under this contract nor shall the AUTHORITY, by such termination be deemed to have waived any right that may have accrued in its favor and against the Contractor.

ARTICLE XVI

TAXES, DUTIES AND FEES

The Contractor shall give all necessary notice to and obtain the necessary permits and sanction of the proper government authorities in respect to the project. All taxes, duties and fees of whatever nature arising out of, or connected with this contract, execution of work contemplated herein, or which may be due and payable in all tools, equipment, labor and materials, plants, supplies and other facilities necessary for the performance and accomplishment of the project, including the transport or movement thereof, shall be for the sole account and responsibility of the Contractor. Any fee, imposition, charge, fine, penalty or loss or damage paid or incurred by the AUTHORITY by reason of any breach of this stipulation by the Contractor shall be reimbursed by the Contractor as soon as the demand therefore is made by the AUTHORITY.

The Contractor certifies under oath that is free and clear of all tax liabilities to the government and will pay the taxes in full and on time. Failure to do so will entitle the AUTHORITY to suspend payment for the work accomplished by the Contractor. Moreover, the Contractor is required to regularly present within the duration of the contract, appropriate tax clearance from the Bureau of Internal Revenue as well as a copy of its income and business tax returns duly stamped and received by the Bureau of Internal Revenue and duly validated with the tax payments made thereon.

ARTICLE XVII

ASSIGNMENT AND SUB-CONTRACTING

The Contractor shall not assign its rights or obligations under this contract, nor sub-contract any portion of the work covered by this contract, without the prior written approval of the AUTHORITY. Violation of these conditions shall be sufficient ground for the termination by the AUTHORITY of this contract.

ARTICLE XVIII

NON-WAIVER OF RIGHTS

No document, except the Certificate of Final Acceptance, shall be accepted as evidence of the satisfactory completion of the project. No proof of payment shall be taken or construed as an acceptance of satisfactory performance of the work or the good quality of the materials used, whether in whole or in part as contemplated in this contract.

ARTICLE XIX

VENUE OF ACTION

The venue of any action or suit arising out of or necessarily connected with this contract for whatever cause shall be the proper courts of Quezon City.

ARTICLE XXI

CONTRACT EFFECTIVITY

Notwithstanding, full compliance with all the legal requirements for the effectivity of this contract, no rights or obligations shall be accrues in favor of any against any party hereunder unless and until written certification to the funds cover the cost of the contract are available is issued by the Chief, Accountant of the AUTHORITY, who shall, for this purpose, affix her/his signature hereon as an instrumental witness and certify to the availability of funds pursuant to and in accordance with the existing laws.

IN WITNESS WHEREOF, the parties hereto have caused this contract to be signed in their names through their respective authorized representatives this _____ in Quezon City.

PHILIPPINE FISHERIES
DEVELOPMENT AUTHORITY

BY: BY:

_____ _____
General Manager

SIGNED IN THE PRESENCE OF:

Accounting Division _____

A C K N O W L E D G M E N T

REPUBLIC OF THE PHILIPPINES)

QUEZON CITY) S.S.

BEFORE ME, a Notary Public for and in Quezon City, personally appeared on this _____ day of _____,___ the following persons with their valid identification cards as follows:

Name	Type of I.D. & No.
_____	_____
_____	_____
_____	_____

ALL known to me and to me known as the same persons who executed the foregoing Contract consisting of _____ (__) pages including this page and they acknowledge to me that the same is their true and voluntary act and deed.

WITNESS, MY HAND AND SEAL, in the date and place, first above written.

_____

Notary Public

Doc. No. _____ Page No. _____

Book No. _____

Series of _____

PERFORMANCE SECURING DECLARATION

[if used as an alternative performance security but it is not required to be submitted with the Bid, as it shall be submitted within ten (10) days after receiving the Notice of Award]

REPUBLIC OF THE PHILIPPINES)
CITY OF _____) S.S.

PERFORMANCE SECURING DECLARATION

Invitation to Bid: [Insert Reference Number indicated in the Bidding Documents]

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

I/We, the undersigned, declare that:

1. I/We understand that, according to your conditions, to guarantee the faithful performance by the supplier/distributor/manufacturer/contractor/consultant of its obligations under the Contract, I/we shall submit a Performance Securing Declaration within a maximum period of ten (10) calendar days from the receipt of the Notice of Award prior to the signing of the Contract.

2. I/We accept that: I/we will be automatically disqualified from bidding for any procurement contract with any procuring entity for a period of one (1) year for the first offense, or two (2) years **for the second offense**, upon receipt of your Blacklisting Order if I/We have violated my/our obligations under the Contract;

3. I/We understand that this Performance Securing Declaration shall cease to be valid upon:

    a. issuance by the Procuring Entity of the Certificate of Final Acceptance, subject to the following conditions:
        i. Procuring Entity has no claims filed against the contract awardee;
        ii. It has no claims for labor and materials filed against the contractor; and
        iii. Other terms of the contract; or

    b. replacement by the winning bidder of the submitted PSD with a performance security in any of the prescribed forms under Section 39.2 of the 2016 revised IRR of RA No. 9184 as required by the end-user.

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 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

Notary Public for _____ until

Roll of Attorneys No.

PTR No. _____ *[date issued], [place issued]*

IBP No. _____ *[date issued], [place issued]*

_____

_____

_____

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