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

CONSTRUCTION OF NAVAL REFRIGERATION FACILITIES (DESIGN & BUILD)

Brgy. Santissimo Rosario, Naval, Biliran

NOVEMBER 2024

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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 of Naval Refrigeration Facilities (Design & Build)

1. The Philippine Fisheries Development Authority (PFDA), through the National Government Subsidy intends to apply the sum of **₱ 46,807,546.75** being the Approved Budget for the Contract (ABC) to payments under the contract for the Construction of Naval Refrigeration Facilities **(Design & Build)** located at Brgy. Santissimo Rosario, Naval, Biliran. 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 **480 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).

   Subject to existing rules, the PFDA adopts the Filipino First policy in the award of Government's procurement contracts.

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 on the following schedules and venue:

Schedules	Venue
November 13 to December 2, 2024 (8am to 4pm)	PFDA - Central Office, Diliman, Quezon City
December 3, 2024 (not later than 8am)	Modern Market, Pier 3, Navotas Fish Port Complex

   The complete set of Bid Documents maybe acquired by interested bidders in the amount of **₱ 25,000.00**

5. The PFDA will hold a Pre-Bid Conference on **November 20, 2024**; **10:00 AM** onwards at the Modern Market, Pier 3, Navotas Fish Port Complex which shall be open to prospective bidders.

6. Bids must be duly received by the BAC Secretariat through manual submission at the Modern Market, Pier 3, Navotas Fish Port Complex on or before **December 3, 2024; 8:00 AM**. **Late bids shall not be accepted**.

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 **December 3, 2024**; **10:00 AM** onwards at the given address above. Bids will be opened in the presence of the bidder's representatives who choose to attend the activity

9. 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.

10. The Department of Agriculture – 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 Acting General Manager or the National Bureau of Investigation for entrapment and proper investigation.

11. For further information, please refer to below:

    Ms. Mary Ann D. Daquer
    Head, PFDA-BAC Secretariat
    PCA Annex Bldg.
    Elliptical Road, Diliman, Quezon City
    bac.co@pfda.gov.ph
    (02) 8925-8473
    (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

    12 November 2024

ATTY. EDWARD M. CAMPOS
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 of Naval Refrigeration Facilities (Design & Build) in Brgy. Santissimo Rosario, Naval, Biliran**.

The Procurement Project (referred to herein as "Project") is for the design and construction, as described in Section VI (Minimum Performance Standard and Specifications, MPSS).

2. Funding Information

2.1. The GOP through the General Appropriations Act for CY 2024 in the total amount of **₱ 46,807,546.75.**

2.2. The source of funding is:

a. General Appropriations Act

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 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 & Industrial Plant

The Contractor must have built one structure similar to the project at hand with a construction cost of at least 50% of the ABC

The Contractor’s designer must have designed one project similar to the project at hand with a construction cost of at least 50% of the ABC.</td></tr>
<tr><td>7.1</td><td>Subcontracting is allowed.</td></tr>
<tr><td>10.3</td><td>The required PCAB license for this contract is as follows:

a. Size Range : Medium A for Building & Industrial Plant
b. License Category B for Building & Industrial Plant

Note:

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>Lists of key personnel for the preparation of Detailed Engineering Design and for Construction Works of the contract to be bid with their respective curriculum vitae showing, among others, their educational attainment, professional qualification and experiences.

Key Staff Requirement for Detailed architectural and engineering design

<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>Team Leader</td><td>1</td><td>10</td><td>5</td><td>A licensed Civil/ Mechanical Engineer with DAED experience as Team Leader preferably with Master’s Degree.</td></tr>
<tr><td>Architect</td><td>1</td><td>8</td><td>5</td><td>A licensed Architect and has undertaken architectural design for</td></tr>
</table>
</td></tr>
</table>

					commercial building/ industrial plant projects preferably a certified green building professional.
	Civil Engineer	1	8	5	A licensed Civil Engineer preferably with Master's Degree in Structural Engineering and has undertaken structural designs for buildings and/or industrial plants or similar projects.
	Professional Electrical Engineer	1	8	5	A license Professional Electrical Engineer with experience in planning, engineering design and/or installation of electrical systems for vertical structures as well as power supply/distribution systems and telecommunication systems.
	Professional Mechanical Engineer	1	8	5	A licensed Professional Mechanical Engineer with experience in planning, engineering design, and/or installation of refrigeration facilities with knowledge in HVAC-R and fire protection and emergent alternative efficient HVAC-R technologies.
	Environmental Specialist	1	8	5	A BS Environmental Engineering/ Science with experience in commercial building projects. Preferably an accredited EIA/EIS preparer.
	Quantity/Cost Engineer	1	8	5	A Civil Engineer with experience as Estimator in at least 10 civil works projects.

	Document Specialist/Specs. Engineer	1	8	5	A license Civil Engineer/ Architect and should have successful track record as document specialist for at least 10 projects.
	Total	8			

Key Staff Requirement for Construction Works

Position	No.	Minimum Total Work Experience (years)	Minimum Total Similar Work Experience (years)	Type of Experience
Project Manager	1	10	5	A licensed Civil Engineer with construction experience as Project Manager of refrigeration building projects or similar projects.
Project Engineer	1	8	5	A licensed Mechanical Engineer with experience in construction of refrigeration buildings or similar projects with knowledge in HVAC-R and fire protection and emergent alternative efficient HVAC-R technologies.
Registered Electrical Engineer	1	8	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.
Materials/Quality Control Engineer	1	5	3	A DPWH Accredited Materials Engineer I

	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	1	10	5	With experience as Foreman in the construction of buildings and industrial plants or similar projects.
	Total	6			

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

10.5 The minimum major equipment requirements are the following:

No. of Units		Equipment (Capacity)
1	unit	Backhoe, 1 cubic meter capacity
1	unit	Dump Truck, 10 cu. M. capacity
1	unit	Truck Mounted Crane, 41-45 Tons
2	units	Plate Compactor
1	unit	Welding Machine, 300 amp.
2	units	Concrete Mixer, 1-bagger
1	unit	Jackhammer, 5 Hp
1	unit	Concrete Vibrator
1	unit	Concrete Cutter

12 Alternative Bid is not allowed.

15.1 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 **₱ 936,150.94**, 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 **₱ 2,340,377.34** if bid security is in Surety Bond.

19.1	BID EVALUATION For the detailed evaluation of the design and build proposals a two-step procedure shall be adopted by the BAC, which may be undertaken with the assistance of the DBC. 26.6.1. First-Step Procedure: i. The first step of the evaluation shall involve the review of the preliminary conceptual designs and track record submitted by the contractor as indicated in the Bidding Documents using a nondiscretionary “pass/fail” criteria that involve compliance with the following requirements: a. Adherence of preliminary design plans to the required performance specifications and parameters and degree of details; b. Concept of approach and methodology for detailed engineering, design and construction with emphasis on the clarity, feasibility, innovativeness and comprehensiveness of the plan approach, and the quality of interpretation of project problems, risks, and suggested solutions; c. Quality of personnel to be assigned to the project which covers suitability of key staff to perform the duties of the particular assignments and general qualifications and competence including education and training of the key staff; ii. For complex or unique undertakings, such as those involving highly specialized or advanced engineering technology, eligible bidders may be required, at the option of the agency concerned, to make an oral presentation within fifteen (15) calendar days after the deadline for submission of technical proposals. 26.6.2. Second-Step Procedure: Only those bids that passed the above criteria shall be subjected to the second step of evaluation. The BAC shall open the financial proposal of each “passed” bidder and shall evaluate it using non-discretionary criteria - including arithmetical corrections for computational errors - as stated in the Bidding Documents, and thus determine the correct total calculated bid prices. The BAC shall automatically disqualify any total calculated bid price which exceeds the ABC. The total calculated bid prices (not exceeding the ABC) shall be ranked, in ascending order, from lowest to highest. The bid with the lowest total calculated bid price shall be identified as the Lowest Calculated Bid (LCB).
19.2	Partial bids are not allowed.

20	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.*
21	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.

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 Four Hundred Eighty (480) calendar days.

Contract time by stage is as follows:

<table>
<tr><td>1</td><td>Design Stage</td><td>90</td></tr>
<tr><td>2</td><td>Construction Stage</td><td>390</td></tr>
<tr><td></td><td>Total Contract Time</td><td>480 calendar days</td></tr>
</table>

On the other hand, contract time with allowances for holidays, weekends and inclement weather is broken down below:

<table>
<tr><td>1</td><td>Total actual number of working days (Counted six (6) days a week)</td><td>360</td></tr>
<tr><td>2</td><td>Allowance for Holidays and Weekends</td><td>90</td></tr>
<tr><td>3</td><td>Allowance for Inclement Weather</td><td>30</td></tr>
<tr><td></td><td>Total Contract Time</td><td>480 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.</td></tr>
<tr><td>8.1</td><td>No further instruction</td></tr>
<tr><td>10</td><td>Dayworks are applicable at the rate shown in the Contractor’s original Bid.</td></tr>
</table>

11.1	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.
11.2	Submit updated program of works after approval of the Final Detailed Architectural and Engineering Design. The amount to be withheld for late submission of an updated Program of Work is five percent (5%) of the previous work accomplishment.
13	The amount of the advance payment is 15% of the total contract price to be made in lump sum amount, subject to the requirements of Annex E of the Revised IRR of R.A. 9184
14	No further instruction.
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. Minimum Performance Standards and Specifications

1. PURPOSE

The purpose of the Minimum Performance Standards and Specifications is to establish the minimum requirements that the Bidder must comply with in order to design and construct the Project.

2. BASIC CONFIGURATION

The Project involves the design and construction of Naval Refrigeration Facilities. The scope of the project design is presented in Table 1.

Main Items	Project Scope	Description of Works
I. General Requirements	▪ Mobilization/Demobilization of Equipment	▪ Ingress & egress of equipment, materials and manpower
	▪ Provide Environmental Safety & Health Program in the execution of the project	▪ The contractor shall comply with the latest issuance of Implementing Rules and Regulations (IRR) for the implementation of Republic Act No. 11058 also known as the Occupational Safety and Health Standards (OSHS) law.
	▪ Permits (PAMB/SAPA, Comprehensive Devt & Management Plan, Foreshore Lease Agreement, Updated ECC, OBO Permits, EMB VIII Permit)	▪ The Contractor shall pay for any and all expenses necessary and incidental to be able to secure the required Permits and Clearances, in coordination with the PFDA and the Local Government Unit.
	▪ Support to PFDA's Engineers & Staff (Field	▪ The Contractor shall lease an office space to

	Office w/. office equipment & supplies and Staff House incl. maintenance and communication)	be used by the Engineer and another government representative near the site. The office shall be properly ventilated, lighted, and with a toilet/comfort room. ▪ Provide one (1) unit Drone ▪ Provide internet access (Starlink)
	▪ Provision of Temporary Facilities for Contractor (Medical Room, Staff House, Office, Worker's Quarters)	▪ Medical Room ▪ Staff House ▪ Office ▪ Worker's Quarters
II. Detailed Engineering Design	• Survey Works, Soil Investigations	
III.Site Development and Utilities Works	▪ Embankment and levelling	▪ Earthworks ▪ Slope Protection (Rock Works) ▪ Portland Cement Concrete Pavement ▪ Tire guard, Curbs, Gutter, Sidewalks, and Parking Slots
	▪ Utilities (Water/Drainage/Outside Power & Lighting)	▪ Water Pipeline System (use HDPE Pipe) ▪ Outside Power Distribution System (Underground System) ▪ Street Lighting System [Hybrid System (50% Solar Powered & 50% from Grid)] ▪ Provision of Grounding & Lighting Protection System ▪ Provision of Drainage and Sewerage System
	▪ Miscellaneous Work (Signage, Painting of curbs	▪ Computer cut engineering reflective sheeting on a GA. 22

	and concrete tire guard, etc.)	Alum. Sheet Substrate panel high intensity prismatic grade background
IV.Refrigeration Building		
IV.A. Food stalls	▪ Food Stalls with storage room: 55 sq.m	▪ Reinforced Concrete Building ▪ Roofing Works (incl. steel works, tinsmith & consumables) ▪ Furniture ▪ Fresh Water and Drainage
IV.B. Refrigeration Building (480 square meters)	▪ Ice Plant (Ammonia System) with 10MT capacity per day, and semi-automatic operation. ▪ Ice Storage (Freon System) with 10MT capacity per day, working temperature of at least minimum -5 deg. C, and control system of Semi-automatic operation.	▪ Reinforced Concrete Building ▪ Ice Making Equipment (Brine Tank, Dip tanks Dumper etc), Ice Storage Room, Machine Room, Comfort Room and Cashier Room ▪ Solar power or hybrid (Lighting & Power System) ▪ Fresh Water, Sewerage and Drainage System ▪ Furniture ▪ Roofing Works (incl. steel works, tinsmith & consumables)
	• Cold Storage (Freon System) with 50 MT capacity of product per day, working temperature of at least minimum -25 deg. C, and control system of Semi-automatic operation	▪ Food grade flooring ▪ Solar powered or hybrid (Lighting and Power System)
	• Blast Freezer (1 ton per cycle), with a working room temperature of at least -35	▪ Design, manufacture and fabrication, assembly, factory testing

	deg.C, and freezing time of maximum 4 hrs.	of equipment, materials and component.
V.Electro-Mechanical and other related Works	▪ Ice Making Equipment ▪ Supply, Installation, Testing and Commissioning of new (1) 300kVa Deisel Generator set. Incl foundation of 1000L Fuel Day Tank, ▪ 2 Assy. of Motor Control Center (Including Concrete Pedestal) ▪ Supply of tools, testing equipment, spare parts and consumables ▪ Reliability trial testing and Commissioning into normal operating condition in accordance with the desired capacity and systems operation and actual training of ice plant personnel for at least two (2) weeks.	▪ Design, manufacture and fabrication, assembly, factory testing of equipment, materials and components. ▪ Design, fabrication and assembly of the block ice plant, ice storage facility, cold storage, and blast freezer complete with the required accessories and plant tested to meet the desired capacity. ▪ Warranty
VI.Permanent Power and Water Supply Connection	▪ The Supplier/Contractor shall facilitate/furnish all labor, materials, equipment service, testing supervision for the completion of the power and water supply system of the facility and other works necessary to operationalize the ice plant facility.	▪ Provide the necessary application/expenses for power connection from “Local Electric Cooperative” to include the following: ▪ Construction and extension of 3-phase primary transmission line to the nearest tapping point which include poles, ACSR and ground wires, insulators and other accessories as may be necessary and required by the local electric cooperative.

		▪ Standard testing and commissioning by the local electric cooperative, as required, prior to the installation of distribution transformers including its metering instruments and accessories. ▪ Metering instruments, billing and metering deposits, permits and other required documents, fees and equipment as may be required by the local electric cooperative to complete the power supply system. ▪ Furnishing and installation of pipes and fittings, trench excavation and backfilling from tapping point to the water meter at the entrance of the project site. ▪ Supply and installation of necessary gate valves and check valve, as may necessary. ▪ Supply and installation of water meter and construction of concrete valve manhole, as may necessary. ▪ Provide the necessary application/expenses for water connection from “Local Water District” including metering, deposit, permits, and other related works necessary to complete

		the water distribution system. ▪ The supplier shall be responsible for the layout of the system and specification of the pump and pipings. This will be submitted to PFDA, for review and approval, before installation.
VII.Auxiliary System	▪ Enhance security and surveillance through a reliable CCTV network. ▪ Design and implement auxiliary systems that optimize the primary ice-making processes. ▪ Ensure all systems comply with industry safety standards and environmental regulations. ▪ Minimize operational costs through energy-efficient solutions. ▪ Provide a comprehensive plan for integration, testing, and commissioning.	▪ The supplier/ contractor will design, procure, and install the auxiliary systems required for an ice plant to function efficiently and safely. These auxiliary systems support the primary refrigeration units and other core plant operations. This project ensures that all secondary equipment works in harmony with the primary system to provide operational efficiency, minimize downtime, and increase the overall plant's reliability.
VIII.Fire Protection and Supression System	▪ Design, supply, installation, and commissioning of a comprehensive fire protection and suppression system for an ice plant, ice storage, blast freezer, and cold storage facility. The fire safety system will be	▪ Design a fire detection system tailored for low-temperature and wet environments, including appropriate sensors and fire alarms. ▪ Incorporate automatic sprinkler systems rated

	compliant with local fire codes, insurance requirements, and international standards (NFPA, ISO, or equivalent). The system will ensure the safety of both personnel and the facility's critical infrastructure by mitigating the risk of fire hazards associated with electrical systems, refrigeration units, and other fire-prone elements.	for cold storage (dry-pipe or pre-action) to prevent freezing in the lines. ▪ Ensure zoning and coverage to account for compartmentalized areas within the facility. ▪ Ensure fire-rated doors, ventilation control systems, and firewalls are incorporated into the design. ▪ Equip the ice plant areas with manual fire extinguishers rated for electrical, liquid, and refrigerant-based fires. ▪ Ensure the system complies with local fire safety codes, including integration of emergency lighting, exit signs, and egress routes. ▪ Use corrosion-resistant materials for piping in cold and humid environments. ▪ Select sprinkler heads rated for low-temperature storage facilities.

3. DESIGN OUTPUTS

The Contactor shall coordinate and report to the PFDA-TSD for uniformity and cohesiveness in the preparation of related documents, consistent with the latest edition of the Design Guidelines, Criteria and Standards for Public Works and Highways, AASHTO guidelines and other applicable provisions of existing laws, codes and Department Orders.

All reports and other created documents prepared by the Contractor shall be in a format agreed and accepted by the PFDA-TSD. The Contractor shall undertake the following surveys/studies and design works:

3.1 Topographic Surveys
3.2 Environmental Assessment
3.3 Architectural Design
3.4 Road Network and Pavement Design
3.5 Structural Design Analysis
3.6 Electrical System
3.7 Water Supply System
3.8 Drainage System
3.9 Detailed Specifications of Materials
3.10 Others as may be required by PFDA

Plans (PDF and CAD formats) and technical report, in electronic files and hard copies for the work prepared, must be submitted by the Contractor to the PFDA - TSD for review and approval.

The Contractor shall deliver to the PFDA Procuring Entity the following outputs of the Detailed Engineering Design (DED) of the Project:

3.11 General:
- A. Cover Sheet
- B. General Index
- C. Vicinity and Key Map
- D. Location Plan/Layout
- E. Legend, Abbreviation and Symbols
- F. General Notes
- G. Hydrographic and Topographic Plans

3.12 Site Development Plan
- A. Perspective
- B. Elevation and Section Plans
- C. Layout Plan of Water Supply System
- D. Layout Plan of Drainage/Sewerage System
- E. Layout Plan of Lighting and Electrical Auxiliaries

3.13 Refrigeration Building/Ice Plant & Ice Storage Plans

- A. Perspective
- B. Elevation and Section Plans
- C. Spot Details
- D. Detailed Structural Plans
- E. Detailed Plumbing and Sanitary Plans including Rainwater and Water Retention and Use Plans
- F. Detailed Electrical Plans including Emergency Power and Solar Power

Utilization Plan
G. Detailed Electrical Auxiliaries Plans
H. Detailed Refrigeration/Mechanical Plans including Engineered Mechanical Building Utilities and Ventilation Systems
I. Scope of Works and Technical Specifications
J. Detailed Estimate, Bill of Quantities
K. Walk Through Presentation 3D Model
L. Proposed Design and Construction Schedule
M. Occupational Safety and Health Program (Construction Phase)

3.14 Road Network Plan

A. Typical Roadway Section
B. Summary of Quantities
C. Grading Quantities
D. Plan and Profile with the final alignment incorporated in the Topographic/Hydrographic Plans
E. Detailed Cross Section
F. Detailed Drainage Plans and Cross Sections
G. Geometric Road Design Elements and Standards
H. Road Standards and Details
I. Pavement Joint Details
J. Drainage Standards and Details

The Contractor shall submit the reports/data on DED to PFDA as shown below.

A. Survey Data: 5 copies, one (1) month after the effectivity of the Contract
B. Detailed Geotechnical Investigation report: 5 copies, one (1) Month after the effectivity of the contract
C. Design Analysis: 5 copies, two (2) months after the Effectivity of the contract
D. Detailed Engineering plans including quantity calculations: 5 Copies, three (3) months after the effectivity of the contract
E. As-Built Plans: 5 copies, two months after project completion
F. Maintenance Manual, two months after project completion
G. Others, if required by PFDA.

3.15 Value Engineering Studies

The Contractor shall undertake “value engineering (VE) studies” as part of the DED, where appropriate, to minimize and/or reduce non-essential Project features and costs and to reduce the life cycle cost of the Project without sacrificing the quality and integrity of the structures while attaining their essential functions consistent with the required performance, reliability and safety. The Contractor shall observe the DPWH Guide to VE (Appendix A of the Main Guidelines of the DPWH Procurement Manual for Infrastructure).

VE shall essentially involve the following phases:

A. Information Phase. Under this phase, the activities include Project information gathering and investigation and performing functional analysis of systems and subsystems to identify high cost areas of the project.
B. Speculative/Creative Phase. Activities under this phase involve developing effective and efficient group interaction process (brainstorming) to identify alternative ideas, proposals and solutions for accomplishing the function of a system or subsystem.
C. Evaluation/Analytical Phase. During this phase, the Contractor shall evaluate and analyze process to determine which ideas, solutions and measures would show greater potential for cost savings and project improvement.
D. Development/Recommendation Phase. Activities under this phase include description of project components, preparation of sketches, and estimation of life cycle cost to be used in justifying and supporting value engineering recommendations.
E. Report or Presentation Phase. During this phase, the Contractor shall prepare and present his report, which should contain information, such as list of items or processes examined, alternatives, functional and the life cycle analyses, value engineering proposals and supporting information.

3.16 Design Analyses and Computations

3.17 Sources of Construction Materials

3.18 Performance Specifications for Materials and Equipment

4. DESIGN CODES

The DED of the Project shall comply with the relevant provisions of different codes and standards.

4.1 LOCAL CODES AND STANDARDS

It should noted that many Philippine codes and standards are based on American equivalents including DPWH and NSCP, e.g. NSCP is based on ACI 318, and similarly with the DPWH.

A. DPWH Design Guidelines, Criteria and Standards, Volume 1 and 2
B. DPWH Highway Safety Design Standards, Part 1, Road Safety Design Manual and Part 2, Road Signs and Pavement Marking Manual, February 2004
C. DPWH Philippine Manual on Pavement Marking, 1980
D. DPWH Standard Specifications, Volume 2, Highways Bridges and Airports

E. National Structural Code of the Philippines (NSCP C102-97), Volume II — Bridges, 2nd Edition, 1995
F. National Building Code (NBC)
G. National Plumbing Code of the Philippines
H. Philippine Electrical Code, Part I and II
I. The Fire Code of the Philippines and Regulations
J. Code on Sanitation of the Philippines
K. Department of Environmental and Natural Resources (DENR) Publications and Standards
L. Bureau of Fisheries and Aquatic Resources (BFAR) Publications and Standards
M. PPA Engineering Standard for Port and Harbor Structures - Design Manual, March 2009

4.2 INTERNATIONAL CODE AND STANDARDS

A. AASHTO A Policy on Geometric Design of Highways and Streets, 2004 Edition
B. AASHTO Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT <400), 2001 Edition
C. AASHTO Standard Specification for Highways Bridges, 16th Edition, 1996
D. AASHTO 1998 Supplemental Guide for Design of Pavement Structures
E. American Society for Testing and Materials (ASTM) Publications
F. National Fire Protection Association (NFPA)
G. Illumination Engineering Society (IES) Lighting Handbook
H. Occupational Safety and Health Association (OSHA)
I. Uniform Plumbing Code (UPC)
J. American Society of Plumbing Engineers (ASPE)

4.3 Other Design Criteria and Standards

The following codes may be used as references for more specialized aspects of design not covered in the ruling design code:

A. PTI “Recommendations for Stay Cable Design, Testing and Installation.
B. Batas Pambansa (BP) Blg.344 (Accessibility Law)
C. Gender and Development (GAD) Toolkit

The structural design and detailing shall comply with the Philippine Codes and Regulations and other relevant International Standards. Details are given below.

A. DESIGN CRITERIA

1. ACI 318-14, Building Code Requirements for Structural Concrete

2. ACI 350-06, Code Requirements for Environmental Engineering Concrete Structures
3. ACI 315-04, Details and Detailing of Concrete Reinforcement
4. American Society of Civil Engineers (ASCE), ASCE 7-10 Minimum Design Loads for Buildings and Other Structures
5. AISC 360-16 — Specification for Structural Steel Buildings
6. AISC 341-16 — Seismic Provisions for Steel Buildings
7. Association of Structural Engineers of the Philippines (ASEP), National Structural of the Philippines (NSCP), 2015

B. CONCRETING

1. ASTM 0150 — Standard Specification for Portland Cement
2. ASTM C33 — Standard Specification for Concrete Aggregates
3. ASTM C330 — Standard Specification for Lightweight Aggregates for Structural Concrete
4. ASTM 094 — Standard Specification for Ready Mixed Concrete
5. ASTM C260 — Standard Specification for Air-Entraining Admixtures for Concrete
6. ASTM C494 Type A — Standard Specification for Chemical Admixtures for Concrete Water-Reducing Admixtures
7. ASTM 0494 Type E - Standard Specification for Chemical Admixtures for Concrete Water-Reducing and Accelerating Admixtures
8. ASTM C494 Type F - Standard Specification for Chemical Admixtures for Concrete Water-Reducing, High Range Admixtures
9. ASTM C171 — Standard Specification for Sheet Materials for Curing Concrete
10. ASTM 0309 Type 1 — Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete - Class A
11. ASTM 0309 Type 1 — Water-Based Acrylic Membrane Curing Compound - Class B
12. ASTM C881 — Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete
13. ASTM C172 — Standard Practice for Sampling Freshly Mixed Concrete
14. ACI 304 — Guide for Measuring, Mixing, Transporting and Placing Concrete

C. CONCRETE FORMWORK

1. ACI 347 — Guide to Formwork for concrete

D. QUALITY CONTROL TESTING FOR STRUCTURAL ELEMENTS

1. ASTM 0143 — Standard Test Method for Slump of Hydraulic-Cement Concrete

2. ASTM C173 — Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
3. ASTM 0231 — Standard Practice for Air Content of Freshly Mixed Concrete by the Pressure Method
4. ASTM C31 — Standard Practice for Making and Curing Concrete Test Specimens in the Field
5. ASTM C39 — Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
6. ASTM A370 — Standard Test Methods and Definitions for Mechanical Testing of Steel Products
7. ASTM E29 — Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications
8. ASTM E154 — Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or Ground Cover
9. ASTM E96 — Standard Test Methods for Water Vapor Transmission of Materials
10. ASTM D2240 — Standard Test Method for Rubber Property — Durometer Hardness
11. ASTM C311 — Standard Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use as a Mineral Admixture in Portland Cement Concrete

E. MASONRY

1. ASTM C90 — Standard Specification for Load-Bearing Concrete Masonry Units
2. ASTM C129 — Standard Specification for Non-Load-Bearing Concrete Masonry Units
3. ASTM C270 — Standard Specification for Mortar for Unit Masonry
4. ASTM C476 — Standard Specification for Grout for Masonry
5. ASTM A82 — Standard Specification for Steel Wire, Plain, for Concrete Reinforcement
6. ASTM 091 — Standard Specification for Masonry Cement
7. ASTM C140 — Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units
8. ASTM C144 — Standard Specification for Aggregates for Masonry Mortar
9. ASTM 0150 — Standard Specification for Portland Cement
10. ASTM 094 — Standard Specification for Ready Mixed Concrete
11. ASTM C109 — Standard Test Method for Compressive Strength of Hydraulic Cements Mortars (Using 2 inches or 50 mm Cube Specimens)
12. ASTM 033 — Standard Specification for Concrete Aggregates
13. ASTM C143 — Standard Test Method for Slump of Hydraulic-Cement Concrete

14. ASTM 0207 — Standard Specifications for Hydrated Lime for Masonry Purposes
15. ASTM C404 — Standard Specifications for Aggregates for Masonry Grout
16. ASTM C881 — Standard Specifications for Epoxy-Resin-Base Bonding Systems for Concrete
17. ASTM 0979 — Standard Specification for Pigments for Integrally Colored Concrete

F. REINFORCING BARS

1. ASTM A706 — Standard Specification for Low-Alloy Steel Deformed and Plain Bars for concrete Reinforcement
2. ASTM A615 — Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
3. ASTM A775 — Standard Specification for Epoxy-Coated Reinforcing Bars
4. ASTM A185 — Standard Specification for Steel Welded Fabric, Plain, for Concrete Reinforcement
5. ASTM A370 — Standard Test Methods and Definitions for Mechanical Testing of Steel Products
6. ASTM A510 — Standard Specification for General Requirements for Wire rods and Coarse Rounds Wire, Carbon Steel
7. ASTM A700 — Standard Practices for Packaging, Marking and Loading Methods for Steel Products for Domestic Shipment

G. STRUCTURAL STEEL

1. ASTM A36 — Standard Specifications for Carbon Structural Steel
2. ASTM A500, Grade B — Standard Specifications for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
3. ASTM A501 — Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing
4. ASTM A307 — Standard Specification Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength (anchor bolts, regular low-carbon steel bolts and nuts)
5. AWS D1.1 — Structural Welding Code – Steel
6. ANSI/AWS D1.1 — Conformance of Welder Qualification Test Requirement
7. AWS D1.6 — Structural Welding Code - Stainless Steel
8. ASTM A325 — Standard Specification for Structural Bolts, Steel, Heat Treated, 830 MPa (120/105 ksi) Minimum Tensile Strength
9. ASTM A490 — Standard Specification for High Strength Steel Bolts, Classes 10.9 and 10.9.3 for Structural Steel Joints 1040 MPa (150 ksi) minimum Tensile Strength

10. ASTM F1554 — Standard Specification for Anchor Bolts, Steel, 36, 55, and 105 ksi Yield Strength
11. ASTM A594 — Specification for Stainless Steel Nuts
12. ASTM F959 — Standard Specification for Compressible-Washer Type Direct Tension Indicators for Use of Structural Fasteners (Metric)
13. ASTM E709 — Standard Guide for Magnetic Particle Examination
14. ASTM E94 — Standard Guide for Radiographic Examination using Industrial Radiographic Film
15. ASTM E164 — Standard Practice for Ultrasonic Contact Examination of Weldments
16. ASTM A53 — Standard Specification for Pipe, Steel, Black and Hot Dipped, Zinc Coated Welded and Seamless

5. MINIMUM PERFORMANCE SPECIFICATIONS AND PARAMETERS (MPSP)

5.1 ARCHITECTURAL DESIGN

1) Architectural Design Considerations

A. Layout and Spatial Planning:

- Design an efficient layout to facilitate the flow of goods, vehicles, and people within the fish port.
- Separate areas for different functions such as fish trading and dining areas to avoid congestion and improve operational efficiency.
- Allocate sufficient space for maneuvering of fishing vessels, including berthing areas and docking facilities.

B. Functionality and Operations:

- Provide amenities such as water, electricity, and waste disposal systems to support daily operations.
- Include administrative offices, inspection facilities, and customer service centers to facilitate business transactions and regulatory compliance.

C. Safety and Security:

- Implement safety measures such as designated pedestrian walkways, emergency exits, and firefighting equipment to protect workers and visitors.

- Install security systems including surveillance cameras, perimeter fencing, and access control measures to prevent unauthorized access and theft.
- Hazard Analysis Critical Control Point (HACCP) Compliance

D. Environmental Sustainability:

- Design infrastructure to minimize environmental impact, such as wastewater treatment facilities and storm water management systems to prevent pollution.
- Incorporate green building practices and renewable energy sources to reduce carbon footprint and energy consumption.

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E. Community Engagement:

- Involve local stakeholders such as fishermen, fish processors, and community organizations in the design process to ensure their needs and concerns are addressed.
- Create spaces for community activities and events to foster social cohesion and economic development in the surrounding area.

F. Natural Light and Ventilation

Passive Design: Passive design is working with the environment to create the most optimal conditions inside a structure, taking advantage of the behavior or the sun and wind patterns simultaneously reducing the need for mechanical lighting and air-conditioning, thus effecting energy conservation.

Passive Cooling: The ceiling cavity of a building may also provide an effective means of replacing hot air with cool air from outside using convection. Roof ventilation can be provided through the use of vents placed at the highest point that allows collected hot air at the highest point to flow out. These are aided by installing vents in ceiling or roof cavities (where provided) to allow cooler air in and promote better air flow through the roof vent (if provided).

Thermal mass: Thermal mass refers to the capacity of a material to absorb, store and release heat. The use of materials with lower thermal mass such as non-banned timber is preferable on walls directly exposed to the sun. The use of lightweight materials like timber enables the building to cool faster. The use of heavy textures of non-timber materials i.e. that create light and shadow features on walls directly exposed to the sun may help achieve the same effect.

Natural lighting: Designs should maximize the utilization of natural lighting in order to minimize the use of artificial lighting during daytime,

thus effecting energy conservation and has been shown to increase productivity particularly in workplaces.

Natural lighting or sunlight should be used to best advantage by:

1. Providing rooms with adequate window opening with area of at least ten percent (10%) of the room area served; windows should be glazed and opening directly to a court or open spaces;
2. Providing skylight where necessary or setbacks or open courts as required in P.D. No. 1096 but never to compromise fire integrity;
3. Providing means of controlling direct sunrays into the building such as overhangs, vertical or horizontal sun baffles, etc.
4. Natural lighting can be enhanced by aligning ceilings and internal walls to maximize reflection of light sources, as well as using light colors on floors, walls, and horizontal surfaces. This must be balanced with strategies to manage heat gain and glare.

Renewable energy: Adapting Solar Power help lessen greenhouse gas emissions and increase energy security. The roof deck area of the building can be provided with solar panels which can provide solar electricity use for the buildings.

Energy Efficient Systems and Appliances: Building fit outs, if possible, should install the energy-efficient appliances and systems to minimize building operational costs. These include the following:

1. Air-conditioning Systems;
2. Lighting Systems; and
3. Water Heating Systems
4. Etc.,

5.2 CONSTRUCTION SAFETY AND HEALTH

A. SCOPE OF WORK

A.01 The contractor shall provide construction safety materials to be used by construction personnel for the entire duration of the project. These includes safety shoes, helmets (hard hat), rubber boots, raincoats and safety dust masks.

The contractor shall also hire one (1) safety officer for the whole duration and one (1) first aider for the half of the entire duration.

A.02 Construction safety shall be treated as a separate item. It shall be computed based on the cost of construction safety materials and the rate of safety officer and first aider for the contractor to complete the project.

A.03 All construction works shall adhere set by Republic Act 11058 and its Implementing Rules and Regulations.

5.3 SITE DEVELOPMENT AND UTILITIES WORKS

A. SURVEY AND LAYOUT WORKS

Scope of Work

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

A.01 Topographic and Hydrographic 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 and hydrographic survey of the project by means of traversing, sounding and leveling, and shall prepare topographic/hydrographic 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. The 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 laying-out. 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 verification of position of all markers, supply and installation of any and all other markers which the contractors may require for the proper executions 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 and widening of causeway road and other major site improvements included under this contract.

2. Reference point, 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 so required, during the progress of works for the Engineer's inspection thereof.

B. CLEARING AND GRUBBING

B.01 Clearing and grubbing

This item of work shall consist of clearing, grubbing, removing and disposing of all vegetable and debris as designated in the contract, except those objects that are designated to remain in place or are to be removed in consonance other provisions of this specification.

The work shall conform to DPWH Standard Specifications 2013, Item 100-Clearing and Grubbing. The works to be carried out shall be, but not limited to the following:

a. Breaking and disposal of the existing pavement.

b. Chipping and disposal of the existing pile cap, revetment, curbs and gutter.

c. Clearing and disposal of any kind of obstruction along pile line.

d. Demolition of Existing Market Hall, Admin. Building, Broker's Office, Ice Stall and other structures designated not to remain.

C. PORTLAND CEMENT CONCRETE PAVEMENT

C.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.

C.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 DPWH Standard Specification.

Filling, Grading and Compaction of fill materials.

Except when provided herein, all applicable provisions of the 2012 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.

C.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. It shall conform to the requirements of Item 404, Reinforcing Steel, Dowels and Tie Bars of the DPWH Standard Specification 2012 and the Plans.

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 and conforming to the applicable requirements of Item 705 – Joint Materials.

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

C.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 2010 and as shown in the plan.

C.05 Sidewalk, Curbs and Gutters

Bed coarse 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 requirement of ***Part 5.4. C – CONCRETE WORKS.***

C.06 Concrete Curb and Tire Guard Painting

C.06.1 Description

This item shall consist of placing markings on the cub 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 surfaces, 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.

C.06.2 Material Requirements

Paint shall be mixed at the factory, ready for application without the necessity of using thinners and shall be of smooth uniform quality. It shall conform to the composition of given Table 606.1, Item 606 – Pavement Markings of DPWH Standard Specifications 2010.

C.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.

D. DRAINAGE AND SEWERAGE SYSTEM

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.

Work Included

a. Excavation and Backfilling

All excavation shall conform to the requirements of **Part 5.4-B-EXCAVATION AND BACKFILLING FOR BUILDINGS.**

b. Construction of Drainage Canals, Storm Drain Manholes, R.C Pipes

Drainage canal shall be constructed in accordance with the plans and shall conform to the requirement of **Part 5.4-E CEMENT AND MANSONRY**

c. All pipes shall conform to the requirement of **Part 5.4-J –PLUMBING WORKS.**

E. OUTSIDE WATER DISTRIBUTION SYSTEM

E.01 Scope of Work

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

E.02 Work Included

a. Outside Water Distribution System line from existing water supply line of the municipality to Main meter of the proposed fish port.

b. Supply and installation of all pipes and fittings as indicated in the Plan and Specifications.

c. Supply and installation of fiber glass water tank, 5 cu.m. capacity

d. Supply and installation of 1 unit (2 Hp) jet pump and its accessories.

e. Furnishing and installation of valves, water meters, stand pipes, water meter boxes and accessories.

f. Hydrostatic pressure testing of pipelines.

g. All works guarantee.

Specifications for inside water distribution system, please refer to provision of ***Part 5.4.J-PLUMBING WORKS.***

E.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 pipeline, 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.

E.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 pipes shall also be supported and anchored whenever necessary.

E.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 thrust blocks and pressure testing.

E.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.

E.07 Galvanized Pipes and Fittings

Galvanized steel pipes shall conform to the requirements of “ASTM A-120” and shall be Schedule 40. Fittings pipe shall be galvanized malleable iron.

E.08 uPVC Pipes and Fittings

Pipes shall conform to the requirements of uPVC Potable Water Pipes stated in ***Part 5.4.J- PLUMBING WORKS*** of this specification.

E.09 Fiberglass Water Tank

Water Tank shall be Fresh/Brackish Water System shall be fiber glass reinforced plastic, spherical shape, 5000 liters capacity, complete with inlet/outlet pipe connector, drain and overflow pipe, steel base, steel service ladder and manhole cover. Water tank must be “RTL” brand or approved equal.

E.10 Valves

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

E.11 Pumps and Control for Fresh Water Systems

Pump shall be jet booster pump, stainless steel construction, capable of sucking water from the underground water reservoir, directly coupled to a TEFC electric motor, 220V, 3600 RPM, 60HZ, single phase with built in motor protector complete with liquid level control with electrode for elevated tank and underground reservoir.

Electrical control shall be direct on line circuit breaker with manual switch and automatic switch in single enclosure

E.12 Anti-Corrosion Painting

All expose metal surface such as G.I. Pipes, pipe clamps, steel ladder, water tank steel base, metal box covers etc. must be applied with two (2) coats of anti-corrosion paint.

For galvanized metals - apply one coat zinc-chromate primer and one (1) coat silver chrome finish.

For other metal surfaces - apply one (1) coat of red lead primer and one (1) coat silver chrome finish.

E.13 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 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.

E.14 Water Supply pits, Drains Box and Valve Manholes

Concrete to be used shall develop 20.70MPa strength after 28 days. Dimension and other data are indicated in the Plans. Concrete covers shall conform to MWSS/LWUA Standard.

E.15 General Requirements for Mechanical Works

1.0 Supervision of Mechanical Works (Water Supply)

a. General Work Furnish full time services of one or more experienced supervisor (master plumber) well qualified in directing, overseeing all phases of works of this nature.

b. Equipment Installation Work

Furnish services of manufacturer's representative to supervise equipment installation when regular full time supervisor are not otherwise qualified.

2.0 Review of the Water Supply System

a. Before procurement of the pumps and controls, the contractor shall review and evaluate the systems provided herein. In case the Contractor has no expertise in such works, it shall avail the services of the manufacturer's authorized representative.

b. If any discrepancy, which needs necessary corrections, the matter shall be brought to the Owner's attention for proper action.

3.0 Approval of Materials and Equipment

All materials and equipment shall be new. Before procurement and delivery to project site, the contractor shall submit to the Owner the technical data indicating the rated capacities and performance curve related to the equipment/material for evaluation and approval.

For pumps and controls, a performance test is required at the supplier shop to prove that they operate and function satisfactorily based on the technical data submitted before procurement.

4.0 Maintenance Services, Warranty and Reliability Trial Testing

a. The Contractor shall assume the responsibility to provide warranty to all equipment, machinery and system so as to function not only as a part but also as a whole intended and installed under the Contract as assurance against any defects due.

b. The material, manufacturing, fabrication and installation that may occur during normal operation with appropriate maintenance for a period of twelve (12) months reckoned from the date of issuance of Certificate of Acceptance.

c. The Contractor shall provide reliability, trial test for a period of two (2) weeks from the date of project completion at no additional cost to the Owner. During this test period, the Contractor shall provide at least one (1) qualified technician to oversee the testing.

d. Emergency services shall be available when called for at no additional cost to the Owner where it is attributable to the Contractor and/or Manufacturer.

F. OUTSIDE ELECTRICAL LIGHTING AND POWER SYSTEM

All works shall conform to the applicable provision of ***PART 5.5 –ELECTRICAL WORKS.***

G. MISCELLANEOUS

G.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.

G.02 SIGNBOARD/SIGNAGE

Text made of computer cut engineering grade reflective sheeting on a Ga. 22 Aluminum Sheet substrate panel. Hi-intensity Prismatic Grade Background bearing the name of the port owner, location, logo of DA/PFDA and LGU to be marked at R.C. parapet wall as indicated in the plan.

5.4 BUILDING FACILITIES

A. SURVEY AND LAYOUT WORK

Description: This item shall consist of furnishing the necessary equipment and material to survey, stake, calculate and record data for the control of work in accordance with this Specification and in conformity with the lines, grades and dimensions shown on the Plan or as established by the Engineer.

A.01 Construction Requirements

The Engineer shall set initial reference lines, horizontal and vertical control points, and shall furnish the data for use in establishing control for the completion of each element of the work. Data relating to horizontal and vertical alignments and other design data shall be furnished.

The Contractor shall be responsible for the true settling of the works or improvements and for correctness of positions, levels, dimensions and alignments of all parts of the works. He shall provide all necessary instruments, appliances, materials and supplies, and labor in connection therewith.

Prior to construction, the Engineer shall be notified of any missing initial reference lines, control points or stakes.

All initial reference and control points shall be preserved. At the start of construction, all destroyed or disturbed initial reference or control points necessary to the work shall be replaced.

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 commence 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 approved 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, Bridges and Airports revised 2012 Edition 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 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 or surfaced lumber forms shall be used for all exposed concrete works.

Column forms shall be 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.

C.05 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.06 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 be 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. The Owner for meeting strength level requirements for each cylinder with CONCRETE QUALITY of ACI 318 will evaluate test specimens separately. 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 7day 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.07 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 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.08 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 Wall, Column and girder, beam, 25 cm maximum thickness	50 mm	70 mm
	50 mm	70 mm
All other concrete	50 mm	100 mm

C.09 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 C.13 – 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 5.4.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 handspading, 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 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

Slab 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° C throughout the specified curing period and until remedied work started under ***Part C.16 – CONCRETE WORKS/FINISHES OF CONCRETE***. 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 by any 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 General Requirements

Provide heavy-duty Hydrophobic Pore-blocking Ingredient (HPI) as permanent waterproofing system, damp-proofing and corrosion-proofing of for structural concrete, without further application of membrane, polyurethane, c apillary(crystallization) or any other separate surface-treatments. Screed protection and wall plaster are not required. Double slab for suspended swimming pool is not required. The HPI Waterproofing System should be suitable for use in each concrete structure's conditions such as hydrostatic pressure, thickness, function, location, exposure to corrosive liquids. HPI concrete is certified non-toxic.

HPI Waterproofing System should be a complete system so that HPI System concrete can be more workable to minimize voids and honeycombs and should be able to significantly reduce concrete shrinkage crack, thus it should be combined with other admixture (Superplasticiser) from the concrete supplier. HPI REINFORCED concrete for Roof deck and other exposed and suspended superstructures shall be further combined with crack resisting material from the HPI Waterproofing System manufacturer to further reduce cracking caused by combination of other factors aside from concrete shrinkage. The placed HPI waterproof concrete shall be treated with a compound from the HPI Waterproofing System manufacturer to resist surface plastic shrinkage crack.

All Construction Joints, Pipe Projections, Floor Drains and Tie Rod Points shall be using a delayed expansion butyl rubber based waterstop from the HPI Waterproofing System manufacturer.

D.03 REFERENCE STANDARD:

Hydrophobic Pore-blocking Ingredient(HPI) waterproofing admixture when mixed with concrete shall comply with the corrected 30-minute Water Absorption requirements as specified in Article 3.4 and measured according to BS 1881: Part 122: 1983, except that the age at test shall be at 7 days or at 28 days when silt/clay content of sand is more than 5%.

Additional other admixture (Superplasticiser) to greatly reduce shrinkage crack and voids from the concrete supplier shall comply with the requirements of ASTM C 494 and BS 5075.
Crack resisting material to minimize cracks due to combination of other factors aside from concrete shrinkage shall comply with the standard specification from the HPI Waterproofing System manufacturer

The compound which should be applied to the surface of the completed HPI waterproof concrete in order to reduce plastic shrinkage crack shall comply with the standard specification from the HPI Waterproofing System manufacturer

The butyl rubber based delayed expansion waterstop shall comply with ASTM D-71, ASTM D-297 and ASTM D-6

D.04 SUBMITTALS

A. GENERAL: Submit all the items listed below in compliance with the contract conditions

B. Product information: Submit Product Technical Specification and HPI Waterproofing System manufacturer's minimum requirements. Submit manufacturer's instructions on dosing, batching and mixing of waterproofing system including other concrete enhancing materials from HPI Waterproofing System manufacturer. Submit manufacturer's instructions on placing, compaction, curing and protection of HPI waterproof concrete. Submit manufacturer's recommended waterproof concrete Water Absorption sampling and testing procedures according to BS 1881: Part 122: 1983.

C. Shop Drawings: Submit plans and sections showing the grade of HPI Waterproofing System at each areas/locations, including manufacturer's recommended Construction Joint, Pipe Projection and Tie Rod points Details using delayed expansion butyl rubber based waterstop from HPI waterproofing manufacturer.

D. Submit previous HPI Waterproof concrete Water Absorption Test Results conducted by a qualified and independent laboratory to prove that the proposed grade of HPI Waterproofing admixture complies with the manufacturer's specifications as stipulated in Article 3.4.

E. Submit Sample or Specimen Performance Warranty direct from the Manufacturer indicating the extent or coverage, responsibilities, remedial measures when required and exclusions prior to waterproofing works implementation.

D.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: The Manufacturer must have a long experience in manufacturing HPI Waterproofing admixture of at least 15 years. Manufacturer's product to be used must be proven by an independent authority to have had no reduction in waterproofing quality or performance after field exposure of at least 15 years.

B. Product Source Limits: To protect Owner's interest and to obtain full warranty, source of HPI Waterproofing System Product should be from one manufacturer only.

C. Trial Mix:

To prove good and acceptable quality of the HPI Waterproofing System to be used and to demonstrate that the HPI Waterproofing System admixtures will not have any detrimental effect on the compressive strength of concrete, a trial mix of normal concrete (using its normal w/c ratio and slump) and HPI waterproof concrete must be conducted. Conduct Water Absorption sampling and testing of the normal and HPI waterproof concrete according to BS 1881: Part 122: 1983, except that the age at test shall be at 7 days or at 28 days when silt/clay content of sand is more than 5%. Compressive Strength tests shall also be conducted for normal and HPI waterproof concrete. Testing should be conducted at an independent laboratory as directed by the client's representative. The trial mix of HPI concrete must comply with slump requirement according to HPI Waterproofing System admixture manufacturer's specification (Article 3.4).

D.06 DELIVERY, STORAGE AND HANDLING

A. Deliver HPI materials and other concrete enhancing materials from the HPI Waterproofing System manufacturer to concrete supplier's batching plant in original containers with seals unbroken, labeled with manufacturer's name, product brand name and class/grade/type, manufacture date, batch number, shelf life and manufacturer's storing and dosing instructions.

B. Deliver to Project Site manufacturer's butyl rubber based waterstop and its adhesive, in original containers with seals unbroken, labeled with manufacturer's name, product brand name and grade/type, manufacture date, batch number, shelf life and manufacturer's storing and dosing instructions.

C. Remove and replace materials which can be proven not fit for use or those with manufacturing defects.

D.07 PROJECT CONDITIONS

A. Do not cast HPI waterproof concrete during heavy rainfall or seek approval from the Engineer. When rain falls during HPI waterproof concrete placing, make sure that the rain water will not be mixed into the placed HPI waterproof concrete.

B. Do not place HPI waterproof concrete when there is water ponding or running water going to the pour location as it will cause multiple amount of voids and leakages. Prior dewatering and water-plugging or diversion of water should be conducted by the main contractor.

D.08 WARRANTY

A. General Warranty: The Product Warranty and Performance Warranty direct from the HPI Waterproofing System manufacturer as specified in item B and C below, shall not deprive the Owner of other rights as the

Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

B. Product Warranty: A Product Warranty signed by the HPI waterproofing Manufacturer shall be submitted to the Contractor and the Owner, stating a condition that materials will be replaced if proven having manufacturing defects and not fit for use prior to its use.

C. Performance Warranty: A back to back(to be submitted to both Contractor and Owner) 10 year Performance Warranty direct from the manufacturer or its distributor stating specific areas where HPI Waterproofing System were used, stating the responsibility of the manufacturer or its distributor to rectify running water leakage which may come from the properly compacted HPI waterproof concrete. The Performance Warranty should include Construction Joints, Pipe Projections and Tie Rod points which were properly completed using HPI Waterproofing System manufacturer's butyl rubber delayed expansion waterstop and adhesive. That the warranty should cover leaking shrinkage cracks except structural cracks. That should there be waterproofing failure in the areas covered by the Performance Warranty, the manufacturer or its distributor should rectify the waterproof material itself or the waterproof concrete and should not rectify nor damage any other parts of the structures without the HPI waterproofing system material. That the responsibility of the HPI Waterproofing System manufacturer or its distributor shall be to shoulder all the cost of repair (according to the Performance Warranty conditions) up to a maximum amount equivalent to the waterproofing contract value.

D. Performance Warranty Period: Ten (10) years after the date of HPI waterproof concrete placing completion.

D.09 MANUFACTURERS

A. Available Products: Should comply with the specifications and minimum requirements, the product should not have any property which may cause detrimental effect on the compressive strength of concrete. Products and grade of products which can be used include, but are not limited to, the following:

1. Hydrophobic Pore-blocking Ingredient (HPI) Waterproofing System

A manufacturer approved by the Structural Engineer, Architect and Owner producing and supplying Hydrophobic Pore-blocking Ingredient (HPI) Permanent Waterproofing System, combined with a) Concrete enhancing admixture (Superplasticiser from the concrete supplier) to greatly reduce voids and shrinkage crack, b) A compound which can

substantially reduce surface plastic shrinkage crack and c) For superstructures only, a Crack resisting material to greatly reduce possible cracking of concrete due to other factors aside from concrete shrinkage shall be used. All these complementing parts of the system shall be from the HPI System manufacturer, except item (a) above. The Manufacturer or its distributor should provide direct Product Warranty and 10 year Performance Warranty to the contractor and owner.

B. MATERIALS

For Superstructures: Use Hydrophobic Pore-blocking Ingredient (HPI) REINFORCED Systems:

HPI REINFORCED System Class A:

The Hydrophobic Pore-blocking Ingredients (HPI) REINFORCED Class A should be using **3CC PB(B) REINFORCED System or approved equal**. This HPI REINFORCED Class A material should be in liquid form and should comply with the following waterproof concrete specifications and properties:

During the concrete hydration process, the Hydrophobic component of (HPI) REINFORCED Class A admixture should react with the cement to produce a water-repellent material which should coat the capillary walls serving as an internal membrane which fundamentally reverses concrete's normal capillary "wicking" or absorptive action, producing instead concrete with a uniformly Hydrophobic Matrix or concrete which is intrinsically water-repellent throughout its entire mass. This HPI REINFORCED System concrete should be completely dry, non-absorptive, permanently waterproof and able to protect concrete against deterioration and steel reinforcement against corrosion

Furthermore, the HPI REINFORCED Class A material should contain extra PORE-BLOCKING INGREDIENTS or include a discrete polymer globule which should move together with the bleed water and collect inside the capillaries; that when hardened concrete is subjected to water pressure, the globules should coalesce to form a physical plug to totally block water entry.

The dosage of the main ingredient of HPI REINFORCED System Class A should be 15 liters per m3 of concrete. To complete the system, this should be combined with 3 other complementing materials as stated in article 2.1.A.1 above(items a, b & c). HPI REINFORCED System Class A resulting (water+15)/cement ratio shall not be more than 0.36 and the slump at site should be 7 to 8 inches. This HPI REINFORCED System Class A should achieve a Water Absorption of not greater than 1.50 % as measured by BS 1881: Part 122:1983 except that the age at test shall be 7 days or at 28 days when silt/clay content of sand is more than 5%.

HPI REINFORCED System Class B:

The Hydrophobic Pore-blocking Ingredients (HPI) REINFORCED Class B should be using AQUAPEL10 **PB REINFORCED System or approved equal**.

This HPI REINFORCED Class B material should be in liquid form and should comply with the following waterproof concrete specifications and properties:

During the concrete hydration process, the Hydrophobic component of (HPI) REINFORCED Class B admixture should react with the cement to produce a water-repellent material which should coat the capillary walls serving as an internal membrane which fundamentally reverses concrete's normal capillary "wicking" or absorptive action, producing instead concrete with a uniformly Hydrophobic Matrix or concrete which is intrinsically water-repellent throughout its entire mass. This HPI REINFORCED System concrete should be completely dry, non-absorptive, permanently waterproof and able to protect concrete against deterioration and steel reinforcement against corrosion.

Furthermore, the HPI REINFORCED Class B material should contain extra PORE-BLOCKING INGREDIENTS or include a discrete polymer globule which should move together with the bleed water and collect inside the capillaries; that when hardened concrete is subjected to water pressure, the globules should coalesce to form a physical plug to totally block water entry.

The dosage of the main ingredient of HPI REINFORCED System Class B should be 10 liters per m3 of concrete. To complete the system, this should be combined with 3 other complementing materials as stated in article 2.1.A.1 above (items a, b & c). HPI REINFORCED System Class B resulting (water+10)/cement ratio shall not be more than 0.36 and the slump at site should be 7 to 8 inches. This HPI REINFORCED System Class B should achieve a Water Absorption of not greater than 1.75 % as measured by BS 1881: Part 122:1983 except that the age at test shall be 7 days or at 28 days when silt/clay content of sand is more than 5%.

OTHER REQUIREMENTS:

- HPI waterproofing/corrosion resistant admixtures should be able to protect the concrete itself against deterioration even those exposed to water containing sulphate, acid and other aggressive chemicals and protect the steel reinforcement against corrosion even those exposed to liquid containing chloride and other corrosive chemicals. As a guide, HPI Systems can be used even if concrete will be exposed to ph value of less than 3 for Class 1, ph value of 3 to 5 for Class A and ph value of 5 to 7 for Classes 2 to 4 and Class B.

- HPI waterproof concrete should be non-toxic and suitable for use in Ground Water Tank, Potable Water Tank, Swimming Pool and Fish Pond.

- HPI waterproof concrete quality should not deteriorate over at least 70 years

- HPI waterproof concrete should be durable, permanent and sustainable

- HPI waterproofing admixtures should be Green Certified by Ecospecifier Pty Ltd and Singapore Green Building Council or Equivalent Green Building Certifying Body.

All Construction Joints, Pipe Projections, Floor Drains and Tie Rod Points shall be using a delayed expansion butyl rubber based waterstop from the waterproofing manufacturer. Waterstop expansion should start to activate after approximately 5 - 10 days of constant exposure to water. The waterstop material should not expand prematurely and should not absorb water from the fresh concrete poured against it. The waterstop shall be installed by the manufacturer or its distributor using its own water-based epoxy adhesive. When water pressure is more than 10 meters, use 18mmx25mm size butyl rubber Waterstop and 15mmx20mm when water pressure is 10 meters and below.

D.10 EXECUTION

TECHNICAL MEETING

A Technical coordination meeting must be conducted between the contractor and HPI waterproofing manufacturer to discuss and agree on site preparation, HPI waterproof admixture batching, dosing and mixing, HPI waterproof concrete transportation, placing, compaction and curing. HPI concrete protection against premature loading and other external force which may affect the HPI waterproof concrete structural stability, particularly those exposed Ground Floor and other suspended structures, shall be included in the agenda. Construction Joint, Pipe Projection and tie rod point details and work procedure must be discussed and agreed upon. HPI waterproof admixture manufacturer's Pouring Request, Batching Plant Monitoring and Site Monitoring checklists must be reviewed and agreed upon during the Technical Meeting.

SITE PREPARATION

a. Using manufacturer's Pouring Request Checklist, a joint inspection 2 days prior to each HPI waterproof concrete casting must be conducted to make sure that the preparation complies with the HPI manufacturer's specifications and requirements. Items to be inspected include steel reinforcement (size, spacing, steel cover and if installed firmly), formworks (if installed firmly), Construction Joints(if clean, rough, damp and the butyl rubber waterstop is installed firmly) and Equipment(if proper size and sufficient number of concrete vibrators are ready including back-up units and if sample molds are ready).

b. The contractor should follow all the requirements and should rectify those which will be found non-complying and the Pouring Request Checklist must be signed by the manufacturer or its distributor, contractor and owner's representative prior to HPI System concrete casting.

HPI CONCRETE SLUMP AT SITE

HPI concrete slump at site shall be from 6 to 7 inches for sub-structures and from 7 to 8 inches for superstructures. Should there be a slump of HPI concrete which is less than the requirement, water should not be used to increase the slump, the concrete supplier can add or re-dose their Superplasticiser according to the recommended rate. Re-dosing at site is allowed twice only.

D.11 APPLICATION

3.4.2 Exposed Superstructures:

A. Use HPI REINFORCED Class A for structures such as slab, beam and wall of all superstructures above habitable areas(i.e. above Bed Room, Offices, Hotel Room, Function Room, Electrical Room, etc.) and exposed to weather which requires waterproofing such as exposed ground floor (podium area above retail/other habitable area), podium deck, roof garden, suspended swimming pool/Jacuzzi/balancing tank/water ponds/fountain, pool deck, roof deck(including at least 10cmx10cm kicker wall along roof deck perimeter and openings), helipad and other structures as may be required by the Architect, Project Management and the Owner.

B. Use HPI REINFORCED Class B for structures such as slab, beam and wall of all superstructures above non-habitable areas(i.e. above Car Park) and exposed to weather which requires waterproofing such as exposed ground floor (podium area above the basement Car Park), podium deck, roof garden, suspended swimming pool/Jacuzzi/balancing tanks/water ponds/fountain, pool deck, roof deck(including at least 10cmx10cm kicker wall along roof deck perimeter and openings) and other structures as may be required by the Architect, Project Management and the Owner.

Furthermore, concrete containing HPI waterproofing admixture shall strictly comply with the following minimum requirements:

1. The concrete cement(OPC) content shall not be less than 370 kg per cubic meter or minimum of 317 kg per cubic meter of OPC and 85 kg per cubic meter of Fly Ash (if using Fly Ash) or at cement/(cement+fly Ash) content which can achieve the specified water absorption or minimum design compressive strength of Fc' 30 MPa or 4,500 psi

2. The water content shall be reduced to adjust for the HPI usage and other admixtures to maintain the required workability; however, the (water+HPI)/cement ratio must not exceed 0.39 for Classes 1 to 4 and (water+HPI)/cement ratio must not exceed 0.36 for Classes A and B

3. Minimum slab/wall thickness for sub-structures is 200 mm and minimum slab/wall thickness for superstructures is 150 mm

4. Steel Reinforcement shall be using hard rib deformed bars
5. Other details of HPI concrete shall be conforming to current recommendations and requirements of the HPI waterproofing admixture manufacturer.

6. A trial mix must be conducted prior to construction and the cement content is to be stated on the premix concrete dockets

7. For Roof/Ramp above basement, Podium Deck, Suspended Swimming Pool, Jacuzzi, Pool Deck, Roof Garden, Roof Deck and Helipad, the minimum top steel ("temperature grid") reinforcement shall be complied with. Top steel reinforcement shall be continuous in both directions; spacing should not be more than 20 cm if using 10 mm diameter bars or spacing should not be more than 30 cm if using 12 mm diameter bars

3.5 FIELD QUALITY CONTROL

A. Random Water Absorption Testing by HPI Manufacturer: A random Water Absorption sampling must be taken at site from the start of HPI waterproof concrete placing until its completion. Testing can be conducted at Manufacturer's laboratory. The Architect, Engineer and Owner reserve the right to witness the test and require copy of the test results.

B. Random Water Absorption Testing by the Contractor: The Architect, Engineer and Owner reserve the right to require the concrete as placed and cured in the actual structure to comply with the Water Absorption limit within 7 days of placement. The Contractor shall provide costing for water absorption testing by an independent laboratory, and if so required, samples shall be taken during construction as directed by the Architect, Engineer and Owner. These samples shall be tested according to BS 1881: Part 122:1983 and shall comply with the specified Water Absorption requirement. The Engineer further reserves the right to take cores from the structure to confirm compliance to be shouldered by the contractor

C. Holes can be drilled into HPI concrete provided that the remaining undrilled section shall not be less than 8 cm

D.12 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 WORKS

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 5.4.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 each 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 day's 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 ceramic 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 Requirements

Glazed tiles and trims shall have an impervious face of ceramic materials fused onto the body of tiles and trims. The glazes shall be semi matte or crystalline depending on the color scheme approved by the Engineer. Glazed tiles are used principally for walls.

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 the color and characteristics. It is used primarily for floors.

Trims are manufactured to match the wall tile color, texture and to coordinate with it in dimension. These are shape in various ceramic trim units that are necessary for edging or making transition between intersecting planes.

Cement shall be portland conforming to the specification requirements defined in Item 700, Hydraulic Cement of *DPWH Standard Specifications for Highways, Bridges and Airports 2012 revised edition.*

Sand shall be well-graded fine aggregate clean river sand, free from soluble salts and organic impurities.

E.06.3 Construction Requirements

Tile work shall not be started until roughing-ins for plumbing, electrical and other trades have been completed and tested. The work of all other trades shall be protected from damage.

E.06.4 Surface Preparation

a. Mortar mix for scratch coat and setting bed shall consist of one part portland cement and three parts sand by volume. Surface to receive tile must be level, true to elevation, dry, free from dirt, oil and other ointments. Allow at least seven days curing of scratch coat and setting bed.

Installation work shall not be allowed to proceed until unsatisfactory conditions are corrected.

b. Bond coat shall be portland cement paste.

c. Thoroughly dampen surfaces of masonry or concrete walls before scratch coat is applied.

d. On masonry or concrete surface, first apply a thin coat with pressure, then bring it out sufficiently to compensate for the major irregularities of the surface to a thickness not less than 10 mm at any point.

e. Evenly scratch coat to provide good mechanical key before the mortar mix has fully hardened.

E.06.5 Installation Procedure

Vitrified tiles shall be soaked in clean water prior to installation for a minimum of one hour.

E.06.5.1 Vitrified Glazed Wall Tiles

a. Determine and mark layout of ceramic tiles, joint location, position of trims and fixture so as to minimized cut less than one-half tile in size.

b. Thoroughly dampen surface of wall but do not saturate surface.

c. Apply a bond coat mix with consistency of cream paste 1.5 mm thick to the wall surface or back of the tile to be laid.

d. Lay the tiles true to profile then exert pressure and tamp tile surface before the bond coat mix has initially set.

e. Continue with the next full tile to be laid and press firmly upon the setting bed tamped until flush and in place of other tiles.

d. Intersections and returns shall be formed accurately using the appropriate trims.

e. All tiles shall be kept straight and true to profiles, plumbed and internal corners rounded using the appropriate trims.

E.06.5.2 Grouting and Pointing

Tiles shall have laid in place for at least 24 hours before grouting of the joints is started. Grouting mortar shall be white portland cement or blended with pigments to acquire the color appropriate for the ceramic tile.

Grouting mortar shall be applied over the tile by float or squeegee stroke diagonally across the joints. Remove excess mortar with a wet sponge stoke diagonally or in a circular motion after 12 – 15 minutes. Follow with a barely damp or dry sponge to remove remaining haze while smoothing all grouted joints.

E.06.5.3 Cleaning

a. Clean Vitrified tile surfaces thoroughly as possible upon completion of grouting.

b. Remove all grout haze, observing tile manufacturer's recommendation as to use of acid or chemical cleaners.

c. Rinse tile thoroughly with clean water before and after using chemical cleaners.

d. Polish surface of tile with soft cloth.

E.06.5.4 Protection from Construction Dirt

a. Apply a protective coat of neutral cleanser solution diluted with water in the proportion of 1:4 or 1 liter cleanser concentrate to 1 gallon water.

b. In addition, cover tile flooring with heavy-duty non-staining construction paper, tape in place.

c. Just before final acceptance of the work, remove paper and rinse protective coat of neutral cleaner from tile surface. Do not let protective paper get torn or removed.

F. CARPENTRY WORKS

F.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.

F.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.

NOTE:

All painting works shall conform to the provision of ***PART 5.4.I-PAINTING.***

F.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.

F.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 form 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.

F.05 Wooden Materials

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

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

b. 6mm thk. Marine Plywood for ceiling board.

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

G. ALUMINUM WINDOWS

G.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.

G.02 Materials Requirements (POWDER COATED FINISH)

a. 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.

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

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

d. Weather strips shall be provided with good quality.

e. For Aluminum Glass Windows use 6mm thick “colored” glass.

G.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 hardwares shall be accurately made and properly reinforced when necessary.

G.03.1 Installation procedure:

a. 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.

b. Frame sill shall be stepped and sloped with offset weep holes for efficient drainage to the exterior.

c. Panel shall be accurately joined at corners assembled and fixed rigidly to ensure weather tightness.

d. 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.

e. Casement window type shall be provided with two hinges fabricated from extruded aluminum alloy. They shall open on stay arms having adjustable sliding friction shoes to control window panel operations. Locking device shall be one arm action handle for manual operations complete with strike plate.

f. Weatherstrip shall be furnished on edges at the meeting stiles. All joints between metal surface and masonry shall be fully caulked to ensure weather tightness.

G.04 Protection

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

G.05 Cleaning

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

Aluminum shall be thoroughly cleaned with kerosene or gasoline diluted with water and then wipes surface using clean cloth rugs.

No abrasive cleaning materials shall be permitted in cleaning surface.

G.06 Provision of Aluminum Screen and Iron Grills

Aluminum sliding/awning windows as shown in the plan shall be provided with aluminum screen/protector.

Aluminum windows and cashier window as shown in the plan shall be provided with 10 mm square bar iron grills.

H. WOODEN DOORS

H.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.

H.02 Material Requirements

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.

H.03 Construction Requirements

Stiles and rails of panel doors shall have a minimum thickness of 44 mm and a width of 140 mm. Rails shall be frame to stiles by mortise and tenon joints. Rabbets or grooves of stiles by mortise or tenon joints. Rabbets or grooves of stiles and rails to receive panels shall be 6.5 mm wide by 20mm deep. Integral mouldings formed on both faces of stiles and framing the panel shall be true to shape and well defined. Intersection of mouldings shall be mitered and closely fitted.

Panels of the same species and having a minimum thickness of 20 mm shall be beveled around its edges up to a minimum width of 50 mm, both faces. The beveled edges shall closely fit into the grooves of stiles and rails, but free to move to prevent splitting when shrinkage occurs.

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 aluminum screen doors to be installed together with wooden panel/flush doors as shown in the plan shall be provided with complete accessories such as door closer, locking mechanism, door bumper and other necessary materials to complete the work.

Framing of the specie(s) under Item G shall be fabricated in conformity with the profile and sizes shown on the Plans. Frames shall be assembled with tightly fitted tongue and groove joint mittered at both sides, and nailed. The assembled frames shall be finished square and flat on the same plane. Assembled frames shall be braced temporarily to prevent the distortion during delivery to the site and installation.

H.04 Installation

Frame shall be set plumb and square in concrete/masonry work or framework of walls and partitions. Frames set in concrete or masonry shall be painted with hot asphalt at its contact surface and provided with two rows of common wire nails 100 mm long for anchorage. The nails shall be staggered and spaced at 300 mm on center along each row. Frame set in concrete shall be installed in place prior to concrete work.

Frame set in masonry work may be installed after laying of concrete hollow blocks. Space between frames and masonry shall be fully filled with cement mortar proportion 1:3.

I. PAINTING

I.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.

I.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. The Contractor to the Owner for approval shall submit color scheme samples required by these Specifications. Expenses for sample of color schemes shall be at Contractor's expense.

All exposed work shall be protected while the building is being painted. The Contractor to the satisfaction of the Owner shall remove any dirt, smears, etc.

I.03 Material Requirements

I.03.1 Paint Materials

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 that 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.

I.03.2 Tinting Colors

Tinting colors shall be first grade quality, pigment ground in alkyd resin that disperses and mixes easily with paint to produce the color desired. Use the same brand of paint and tinting color to effect good paint body.

I.03.3 Concrete Neutralizer

Concrete neutralizer shall be first grade quality concentrate diluted with clean water and applied as surface conditioner of new interior and exterior walls thus improving paint adhesion and durability.

I.03.4 Silicon Water Repellant

Silicon water repellant shall be transparent water shield especially formulated to repel rain and moisture on exterior masonry surfaces.

I.03.5 Patching Compound

Patching compound shall be fine powder type material like calciumine that can be mixed into putty consistency, with oil base primers and paints to fill minor surface dents and imperfections.

I.03.6 Sanding Sealer

Sanding sealer shall be a quick drying lacquer, formulated to provide quick dry, good holdout of succeeding coats, and containing sanding agents such as zinc stearate to allow to dry sanding of sealer.

I.03.7 Glazing Putty

Glazing putty shall be alkyd-type product for filling minor surface unevenness.

I.03.8 Natural Wood Paste Filler

Wood paste filler shall be quality filler for filing and sealing open grain of interior wood. It shall produce a level finish for following coats of paint and other related products

I.03.9 Wood Preservative

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

I.04 Schedule

Exterior

a. Plain cement plastered finish to be painted	-	3 coats Acrylic base masonry paint
b. Concrete exposed aggregate and/or tool finish	-	1 coat water repellant
c. Ferrous metal	-	1 coat primer and 2 coats enamel paint
d. Woodwork painted finish	-	3 coats oil based paint

Interior

a. Plain cement plastered finish to be painted	-	3 coats Acrylic base masonry paint
b. Concrete exposed aggregate and/or tool finish	-	1 coat water repellant
c. Ferrous metal	-	1 coat primer and 2 coats enamel paint
d. Woodwork painted finish	-	3 coats oil base paint
e. Ceiling boards textured finish	-	1 coat oil base paint allow to dry then patch

surfaces unevenness and apply 2 coats textured paint.

I.05 Construction Requirements

The Contractor, prior to commencement of the painting and other related work should examine the surfaces to be applied in order not to jeopardize the quality and appearances of the painting and other related works.

I.05.1 Surface Preparation

All surfaces shall be in proper condition to receive the finish. Woodworks shall be hand-sanded smooth and dusted clean. All knotholes pitch pocket or sappy portions shall be sealed with natural wood filler. Nail holes, cracks or defects shall be carefully puttied after the first coat, matching the color of paint.

Interior woodworks shall be sandpapered between coats. Cracks, hole of imperfections in plaster shall be filled with patching compound and smoothed off to match adjoining surfaces.

Concrete and masonry surfaces shall be coated with concrete neutralizer and allowed to dry before any painting primer coat is applied. When surface is dried, apply first coating. Hairline cracks and unevenness shall be patched and sealed with approved putty or patching compound. After all defects are corrected, apply the finish coats as specified on the specifications.

Metal shall be clean, dry and free from mill scale and rust. Remove all grease and oil from surfaces. Wash, unprimed galvanized metal with etching solution and allow to dry. Where required to prime coat surface with Red Lead Primer, same shall be approved by the Owner.

In addition, the Contractor shall undertake the following:

1. Voids, cracks, nick etc. will be repaired with proper patching material and finished flush with surrounding surfaces.

2. Marred or damaged shop coats on metal shall be spot primed with appropriate metal primer.

3. Painting works shall not be commenced when it is too hot or cold.

4. Allow appropriate ventilation during application and drying period.

5. All hardware will be fitted and removed or protected prior to painting works.

I.05.2 Application

Paints when applied by brush shall become non-fluid, thick enough to lay down as adequate film of wet paint. Brush mark shall flawed out after application of paint.

Paints made for application by roller must be similar to brushing paint. It must be non-sticky when thinned to spraying viscosity so that it will break up easily in droplets.

Paint is atomized by high pressure pumping rather than broken up by the large volume of air mixed with it. This procedure changes the required properties of paint.

I.05.3 Mixing and Thinning

At the time of application paint shall show sign of deterioration. Paint shall be thoroughly stirred, strained and kept at a uniform consistency during application. Paints of different manufacturer shall not be mixed together. When thinning is necessary, this may be done immediately prior to application in accordance with the manufacturer's directions, but not to excess 1 pint of suitable thinner per gallon of the paint.

I.05.4 Storage

All material to be used under this Item shall be stored in a single place to be designated by the Engineer and such place shall be kept neat and clean at all time. Necessary precaution to avoid fire must be observed by removing oily rags, waste, etc. at the end of daily work.

I.05.5 Cleaning

All cloths and cotton waste that constitute fire hazards shall be placed in metal containers or destroyed at the end of daily works. Upon completion of the work, all staging, scaffolding and paint containers shall be removed. Paint drips, oil, or stains on adjacent surfaces shall be removed and the entire job left clean and acceptable to the Owner.

I.05.6 Workmanship

a. All paint shall be evenly applied. Coats shall be of proper consistency and well brushed out so as to show a minimum of brush marks.

b. All coats shall be thoroughly dry before the succeeding coat is applied.

c. When surfaces are not fully covered or cannot be satisfactorily finished in the number of coats specified such preparatory coats and subsequent coats as may be required shall be applied to attain the desired evenness of surface without extra cost to the Owner.

d. Where surface is not in proper condition to receive the coat the Owner shall be notified immediately. Work on the questioned portion(s) shall not start until clearance be proceed is ordered by the Owner.

e. Hardware, lighting fixture and other similar items shall be removed or protected during the painting and related work operations and re-installed after completion of the work.

J. PLUMBING WORKS

J.01 General

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.

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

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.

Intent – It is not intended that the drawings shall show 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.

J.02 Work Included

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.

a. Supply and installation of pressure tank, pump and accessories. Sanitary sewers from the building and their connections to the point of discharge including septic vault as shown in the plans.

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

c. Soil, waste and vent pipe system within the building

d. Plumbing fixtures, trims and accessories.

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

Hydrostatic testing and reliability testing.

All works guarantee.

(Note: Expenses for application for permanent water connection to local water cooperative shall be shouldered by the LGU)

J.03 Materials

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

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

Fittings shall be injection molded compression type. Installation shall be as per manufacturer's specification.
Galvanized steel pipe shall conform to the requirements of "ASTM A – 120" and shall be Schedule 40. Fittings for galvanized pipe shall be galvanized malleable iron.

For Sewer and Drainage Line

Orange uPVC Sanitary Pipe (for 100mm Diameter and below) uPVC Pipe shall conform with 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.

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.

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.

J.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 is completed.

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.

J.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.

J.06 Valves and Faucets

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.

J.07 Make of Fixtures

Unless otherwise indicated, water closet (model: C54337, close coupled, jupiter savi type) and lavatory (single hole, 480mm. x 480mm. x 225mm., jupiter savi type) including soap and tissue holders shall be HCG brand or equivalent complete with accessories.

Lavatory (single hole) for Administration Office shall be pedestal type.

Urinals shall be done as shown on the plan. HCG brand "U-999 Model" or equivalent, Push Valve Type.

Shower head shall be telephone handheld type.

Lavatory, faucet shall be, knob type, LF3184 Px, Amazona Model, HCG or equivalent.

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

J.08 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.

J.09 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.

J.10 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.

J.11 Drains and Floor Sinks

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

J.12 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.

J.13 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.

J.14 Septic Vault/Screening Tank/Catch Basin

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 drainage system.

The work shall conform to the applicable provision of *PART 4.4.C – CONCRETE WORKS AND PART 4.4.E – CEMENT AND MASONRY WORKS*.

J.15 Anti-Corrosion Painting

All exposed metal surface such as G.I. Pipes, pipe clamps, steel ladder, water tank steel base, meter box covers etc., must be applied with two (2) coats of anti-corrosion paint.

For galvanized metals
- apply one coat zinc-chromate primer and one coat silver chrome finish

For other metal surface
- apply one coat red lead primer and one coat silver chrome finish

J.16S 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 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 should be removed and replaced by the Contractor at his own expense

5.5 ELECTROMECHANICAL AND OTHER RELATED WORKS

A. SCOPE OF WORK

The scope of work covers the supply of materials, labor, tools and supervision to satisfactorily complete the work specified herein and as shown in the drawings. The work shall include but not limited to the following:

1.0 Design, fabrication and assembly of the block ice plant and ice storage facility, complete with the required accessories and plant tested to meet the desired capacity.

2.0 Supply and installation of generator set including accessories and day tank.

3.0 Delivery of equipment to the project site, erection, and installation including supervision.

4.0 Commissioning of all equipment and accessories into normal operating condition in accordance with the desired capacity and system operation stipulated under this specification.

5.0 Reliability trial testing for seven (7) days including training of personnel and warranty of one (1) year against defects/ deficiencies in workmanship, equipment, materials and components.

6.0 Installation of power and water supply system at site

B. GENERAL EQUIPMENT SPECIFICATIONS:

1.0 ICE MAKING UNIT

1.1	Refrigeration System	:	Ammonia System
1.2	Ice Making Capacity	:	10 tons/day

1.3	No. of desired harvest:		One (1) per day
1.4	Control System	:	Semi-automatic operation

2.0 WALK IN ICE STORAGE FACILITY

2.1	Refrigeration System	:	Freon Type
2.2	Capacity	:	10 to 15 tons/day
2.3	Room Temperature	:	-5 Deg. Celcius
2.4	Control System	:	Semi-automatic operation

3.0 COLD STORAGE FOR FISH/MEAT

3.1	Refrigeration System	:	Freon Type
3.2	Capacity	:	50 tons
3.3	Room Temperature	:	-25 Deg. Celcius
3.4	Control System	:	Semi-automatic operation

4.0 BLAST FREEZER

4.1	Freezing Time	:	3-4 hours
4.2	Capacity	:	1 ton / cycle
4.3	Room Temperature	:	-35 Deg. Celcius
4.4	Control System	:	Semi-automatic operation

C. BASIC COMPONENTS SPECIFICATIONS:

1.0 ICE MAKING UNIT

1.1 Mechanical Component

a. Ammonia open type refrigeration compressor imported, brand new, evaporating temperature 0f -15 deg C and condensing temp of +40 deg C driven by brand new TEFC electric motor, 230v, 3 phase, 60 Hz, US, European of Japanese brands, 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 necessary for

efficient operation of the unit.

b. One (1) unit – Suction accumulator, vertical cylindrical type with a design pressure of 1.4 MPa complete with stub ends and steel support.

c. 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., US,

European, Japanese brands

d. Horizontal type liquid receiver, complete with accessories such as sight glass, pressure gauge etc., with stub connections and steel support.

e. Suction Accumulator, vertical type complete with steel support and stub end connection

f. Cooling pump for compressor jacket water cooling, centrifugal type, cast iron construction, with capacities and heads appropriate for its purpose driven by electric motor, 3 phase, 230 V, 60 Hz.

g. All materials for pressure vessels such as liquid receiver, oil separator etc., shall have a thickness not lower than 3/8".

1.0.1 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 PU foam, 100 mm thick with gauge 18 stainless steel sheet cladding complete with ice cans, can grids, can guides, fiberglass laminated wood cover.

b. Ice cans made of gauge 16 GI sheet, 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 at least 500 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 (please refer to plans) suitably designed for 50 KG ice blocks, locally fabricated/assembled.

g. Auxiliary equipment and materials for brine tank (please refer to plans):

1. Dip tank shall be made of 6 mm thk MS plate complete with drain, wood can rest and bar stiffener.

2. 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.

3. 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.

4. 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.

2.0 Electrical component

2.2.1 Electrical Switchboard

Electrical switchboard shall be suitable for 1-phase, 60Hz, 230 volts power supply and shall be factory fabricated and tested.

Switchboard shall be of the dead front cubicle type, Gauge 16 furnished with lockable front door with chrome plated handles and shall have removable steel plate panels on all sides. Ventilating

louvers shall be provided on the doors, panels or where required for air circulation to prevent undue rise of temperature inside the cubicle.

All protective devices shall meet NEMA and Underwritten Laboratories Inc. Specifications.

All current carrying parts shall be high conducting copper of sufficient capacity in accordance with the load.

All instrument switches and control switches shall be provided with labels or engraving indicating clearly the operating positions. All contractors, relays and instruments shall be mounted in approved manner arranged such as to facilitate easy installation/maintenance.

Switchboard shall be provided with monitoring instrument such as Ammeter/s and Voltmeter.

Terminal blocks for power and control wires shall be provided with disconnect switch for testing purposes.

Materials and devices under this Section shall be as manufactured by General Electronics, Square D or equivalent in terms of durability and purposes.

Switchboards shall be painted with a coat of anti rust primer and finish coat of baked enamel paint preferably colored munsell or gray.

Before purchase, the supplier shall submit brochure/catalogue for the Owner/Implementing Agency approval.

Lighting Fixtures

The supplier shall provide labor and materials for the complete internal lighting system of the ice plant shed.

Lighting fixtures shall be waterproof and shall be suitable for humid and dusty areas.

Wires and Cables

All wires to be used shall be copper, hard drawn and annealed and shall be 98% conductivity.

Wire or cable for lighting and power systems shall be plastic insulated type THW.

All wires shall be color coded and shall be as manufactured by Philflex, Columbia or its approved equal.

Ungrounded conductors shall have distinct insulation color from grounded and grounding wires.

Conduits

All conduits shall be liquid tight flexible metallic conduits, Matsushita brand or its approved equal.

Conduits shall be installed and supported in a rigid and satisfactory manner.

No conduit shall be used in any system smaller than 15mm. diameter trade sized, nor shall have more than four quarter bends in any one run between outlets and/or fittings.

All cut ends of conduit shall be reamed to remove rough edges. Where a conduit enters a box or fittings, bushing shall be provided to protect wire from abrasion, unless design of box or fitting is such as to afford equivalent protections.

3.0 ICE STORAGE, COLD STORAGE, AND BLAST FREEZER

1.1 Mechanical Components

1.1.1 Outdoor type condensing unit and standard accessories.

a. R 404A or 507, Semi-Hermetic type refrigeration compressor, imported, brand new, directly driven by brand new electric motor, 230V 3- phase 60 Hz. US or European brand new, 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
- Other standard accessories necessary for efficient operation of the unit.

b. Air cooled blower type condenser complete with air blower motor, fan blade , steel base and stub end

c. Horizontal type liquid receiver, complete with accessories such as sight glass, pressure gauge etc., with stub connections and steel support.

d. Vertical type oil separator complete with steel support and stub end connection.

1.1.2 Unit Cooler for Ice Storage, Cold Storage, and Blastfreezer:

Unit cooler shall be brand new complete with fan blower TEFC motor, brand new, 3 phase, 60 Hz, 230V and provided with electric defrost equipment and thermostat, US, European or Japanese brands.

1.2 Electrical Component

1.2.1 Electrical Switchboard

Electrical switchboard shall be suitable for 3-phase, 60 Hz, 230 volts power supply and shall be factory fabricated and tested.

Switchboard shall be of the dead front cubicle types, furnished with lockable front door with chrome plated handles and shall have removable steel plate panels on all sides. Ventilating louvers shall be provided on the doors, panels or where required for air circulation to prevent undue rise of temperature inside the cubicle.

All protective devices shall meet NEMA and Underwritten Laboratories Inc. Specifications.

All current carrying parts shall be high conducting copper of sufficient capacity in accordance with the load.

All instrument switches and control switches shall be provided with labels or engraving indicating clearly the operating positions. All contractors, relays and instruments shall be mounted in approved manner arranged such as to facilitate easy installation/maintenance.

Switchboard shall be provided with monitoring instrument such as Ammeter/s and Voltmeter.

Terminal blocks for power and control wires shall be provided with disconnect switch for testing purposes.

Materials and devices under this Section shall be as manufactured by General Electric, Square D or equivalent in terms of durability and purposes.

Switchboards shall be painted with coat of anti rust primer and finish coat of baked enamel paint preferably colored munsell or gray.

1.2.2 Lighting Fixtures

The supplier shall provide labor and materials for the complete internal lighting system of the walk in ice storage.

Lighting fixtures shall be waterproof and shall be suitable for humid and dusty areas.

1.2.3 Wires and Cables

All wires to be used shall be copper, hard drawn and annealed and shall be 98% conductivity.
Wire or cable for lighting and power systems shall be plastic insulated type THW.

All wires shall be color coded and shall be as manufactured by Philflex, Columbia or its approved equal.

Ungrounded conductors shall have district insulation color from grounded and grounding wires.

2.2.4 Conduits

All conduits shall be liquid tight flexible metallic conduit, Matsushita Brand or its approved equal.

Conduits shall be installed and supported in a rigid and satisfactory manner.

No conduit shall be used in any system smaller than 15mm. diameter trade sized, nor shall have more than four quarter bends in any one run between outlets and /or fittings.

All cut ends of conduit shall be reamed to remove rough edges. Where a conduit enters a box or fittings, bushing shall be provided to protect wire from abrasion, unless design of box or fitting is such as to afford equivalent protections.

1.3 Insulated Rooms

1.3.1 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.

1.3.2 The walls and ceiling shall be made of pre-fabricated insulated panels manufactured from pre-painted galvanized iron (PPGI) sheet, 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: cold storage room – 125 mm; ice storage room and chiller rooms – 100 mm ; Loading platform and ante rooms – 75 mm thick. 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.

1.3.3 Floor insulation shall be insitu type using polyurethane foam 125 mm for cold storage rooms; 100 mm for ice storage and chiller 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.

1.3.4 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.

1.3.5 All doors shall have the following schedules:

Ice Storage – All insulated doors shall have 0.6 mm thick outer skin, SS 304: 1,000 mm W x 1200 mm H

Ice Storage (ice sliding area) – 800 mm H x 1800 mm L complete with door latch, counter weight and accessories

1.3.6 Loading dock doors for typical sized of the trailer wherein variety of vehicles are being serviced, with accessories as follows:

- Dock Lights
- Stop and go lights
- Trailer Jacks
- Bumpers
- Metal Canopies
- Wheel Chocks
- Other standard accessories necessary for efficient operation of the unit.

4.0 MISCELLANEOUS MATERIALS FOR ICE MAKING AND STORAGE

4.1 Assorted refrigerant valves, and controls for high pressure side both for ice plant and ice/cold storage room facilities.
4.2 Refrigerant piping materials, and necessary fittings for both high and low pressure sides for ice plant and ice/cold storage room facilities.
4.3 Assorted refrigerant valves, and controls for low pressure side both for ice plant and ice/cold storage room facilities.
4.4 Initial charge of refrigerant and compressor oil for both ice plant and cold/ice storage room facilities.
4.5 Insulation materials for low pressure side pipes and vessels.

5.0 SUPPLY OF TOOLS, SPARE PARTS AND CONSUMABLES:

The supplier/manufacturer shall provide the following and turnover to the end user:

A. Tools:

a.	Charging Manifold	-	it shall be of U.S made complete with dial type compound gauge for LS and HS gauge. Suction discharge and suction hoses shall be of Goulds brand or approved equal.
b.	Adjustable Wrenches	-	8", 10" and 12", U.S, Germany or Equivalent
c.	Clamp Meter	-	0-300 Amp, 0-600 volts, analog type, National Panasonic brand or Equivalent
d.	Long nose plier	-	1 pc., 6", U.S made or equivalent.
e.	Lineman's side cutting plier	-	1 pc., 8" Stanley brand or equivalent
f.	Flaring Tools	-	1 set, U.S made or equivalent.
g.	Tube Cutter	-	1 set, U.S made or equivalent.
h.	Open Wrench	-	1 set, 6mm – 22mm, U.S or Germany made or equivalent.
i.	Socket Wrench	-	1 set, 9mm –32mm, kokeu brand or equivalent.
j.	Screw Driver	-	1 set, stanley brand or equivalent.
k.	Hacksaw with 10 pieces blade.		
l.	Pipe Wrench	-	2" diameter Rigid brand or equivalent
m.	Gloves for ice storage	-	2 sets, local brand
n.	ice clamp	-	1 pc, locally fabricated

B. Spare Parts:

a. Suction filter and filter dryer for ice making and storage, one (1) piece each.

b. Ten (10) pcs. ice cans

C. Consumables:

a. Freon – 1 tank with content, 22.7 kg.

b. Refrigeration oil, 20 liters

6.0 Supply, Installation, testing, and commissioning of brand new one (1) 300 kVa Diesel Generator set, Similar to approved brand or equivalent, (Incl. Foundation and 1000L Day tank)

The generator set shall be brand new, powered by Diesel Engine, direct injection, electric starting, six (6) cylinder in line, 4 stroke turbocharged and after cooled. The generator shall be capable of supplying 100 KVA on standby application, 1800 RPM, 0.8 power factor, three (3) phase, 60 HZ, 230 V with complete standard accessories such as digital controller, shutdown functions, electric starter, battery charging alternator, etc. After sales service must be available in the Philippines, US, European or Japanese brands only.

6.0 GENERAL REQUIREMENTS FOR MECHANICAL WORKS

A. SUBMITTALS BEFORE FINAL PAYMENT

1.1 The Supplier shall submit the following documents before final payment

1.1.1 Operating and Maintenance Manual (3 sets)

1.1.2 As built drawings of whole facility including Variation Orders, if any. (one set original, 2 sets blue print)

B. QUALIFICATION OF REFRIGERATION EQUIPMENT SUPPLIER, MANUFACTURER AND INSTALLER.

4.1 Company should be regularly providing work of types required for not less than 3 years from date of bidding.

4.2 Workmen shall be well trained and experienced in the trade for this type of work.

C. MAINTENANCE SERVICES, WARRANTY AND RELIABILITY TRIAL TESTING AND TRAINING OF PLANT PERSONNEL

1.1 The Supplier 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 Owner/Implementing Agency.

1.2 The Supplier shall also assume the responsibility to conduct a reliability trial test and training of personnel for the plant for a period of 15 days from the date of project completion.

During this test period, the Contractor shall provide at least one (1) refrigeration technician to oversee the operation of the plant.

D. SUPERVISION OF MECHANICAL WORKS

1.1 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.

E. EXECUTION REQUIREMENT

1.1 Prior to starting work, review details of work with Owner/Implementing Agency Engineer and incorporate adjustments deemed necessary and as indicated.

1.2 The work shall not proceed until the supplier/manufacturer has verified that the supporting construction is in proper condition, improper construction have been corrected and layout and tolerance are correct for this work.

F. COMPLETION REQUIREMENTS

1.1 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.

1.2 When Completed

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.

d. Each item, unit or assembly must be tightly and rigidly in place and free from unnecessary movement, squeaks or rattles.

e. Each item, unit or assembly must be set straight, plumb and level accurately and positioned at locations required; adjacent like units accurately aligned.

f. Movable or mechanical items or devices must be serviced and adjusted to operate smoothly, quietly and free from binding or super flows or unwanted noises.

g. Electrical devices assemblies or system must be properly connected and grounded and must operate in compliance with performance requirements shown or specified.

G. CORRELATION AND COOPERATION

1.1 General

1.1.1 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.

1.1.2 Correlation includes consideration or locations, sizes, capacities and performance characteristics of equipment furnished and installed under the works.

1.1.3 Correlation further includes adjustments to meet the needs of said equipment; and cooperation with other works as may be necessary to make determination required.

1.1.4 Provide minor adjustments as and were necessary as directed by Owner/Implementing Agency.

1.1.5 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 supplier/manufacturer and duly processed in accordance with provision for changes condition as labels or signs other than as particularly shown, specified and approved.

1.2 General Construction

1.2.1 Review drawings for opening and access provision to be provided under this Section.

1.2.2 Verify sizes and location if adequate and proper.

1.2.3 Supply drawings, instructions or information necessary thereof.

1.3 Painting Procedure

1.3.1 One (1) coat unless otherwise specified is required for:

a. Black iron or steel items inaccessible after installation.

b. Black pipe, including valves and other appurtenances, within 7 days after installation.

c. Hanger rods and devices and other items not galvanized.

1.3.2 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 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.

1.3.3 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 maybe required.

H. PROTECTIVE PAINTING

1.1 General

1.1.1 Materials and equipment not otherwise galvanized pre-finished, or protected shall be painted with at least two (2) coat of painting media appropriate to the kind of materials/equipment.

1.2 Preparation

1.2.1 Surfaces to be painted shall be cleaned free from dirt, dust, rust, grease or coatings of foreign matter.

1.2.2 Thoroughly wiped clean, using suitable solvent where necessary and dried.

5.6 ELECTRICAL WORKS

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 distribution materials and accessories necessary for the energization of the project shall be provided by the contractor with the assistance of the Philippine Fisheries Development Authority and/or the concerned Local Government Unit.*

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.04.6 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.04.7 Routine Test

All routine tests required by the relevant standards shall be carried out even though they are not listed in this specification, at the expense of the Contractor and these tests shall be carried out at the manufacturer's works. The Contractor shall submit full details of the proposed methods of testing, including connection diagrams to the Employer for approval, at least one month before testing. The Contractor shall submit to the Employer signed copies of the test certificates, giving results of the prescribed tests. Equipment shall not be dispatched until the Employer has received the test certificates and the Contractor has been informed that they are acceptable. The Employer reserves the right to reject any item of the equipment if the test results do not comply with the values specified or with the data given in the Schedule of Technical Data

A.04.8 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

- 36 watts LED luminaire, highly efficient built-in LED chip, made with polycarbonate diffuser and housing material, IP65, 1220x85x80 mm, 4700 lumens, 50000 hours (expected life), 6500K CCT with 80 CRI, with Internal Surge Immunity up to 2kV, 220-240V MVolt LED driver, 60Hz, -25°C to 35°C operating temperature, 120° beam angle similar or approved equivalent of *Britetech model Halver WP36 LED Weatherproof Luminaire* (valid LED Chip and LED Driver Brand technical description sheet and LED Fixtures Photometric and/or IES file) with minimum 2 years warranty period

- 15 watts LED recessed mounted round downlight, matte white finish, frosted cover, IP20, 175x30 mm, 1080 lumens, 15000 hours (expected life), similar or approved equivalent of *Megaman model MQTL1119-Y-15W65K*

- Recessed mounted luminaire with mirrorized aluminum reflector and multi-lined satin louvers, 1200x300 mm, 3000K CCT with 80 CRI, similar or approved equivalent of *Fumaco model Modena (fixture) and Philips brand (lamp)*

- 75 watts LED floodlight made with solid construction die-cast aluminum body, UV Stabilized powder coating bronze finish, multi-volt LED driver 120-277V, 50/60 Hz, IP65, 306x221x74mm, 5000K CCT with 70 CRI, with Internal Surge Immunity up to 6kV, 50000h, 8645lm output similar or approved equivalent of *Britetech model Munich F75 LED Floodlight* (valid LED Chip and LED Driver Brand technical description sheet and LED

Fixtures Photometric and/or IES file) with minimum 2 years warranty period

- 150 watts LED All-In-One Solar Streetlight in aluminum alloy material with IP65 built-in motion sensor, atleast 50000h lifetime, LED chip, 100lm/W, 6000-6500K color temperature, 6-8h charging time, 120° beam angle and high efficiency mono-crystalline silicon solar panel complete with 8" dia., 3 mm thick, 7600 mm high single arm hot dipped galvanized steel tapered lamp post, 1651 mm long double arm bracket and accessories (anchor bolts, nuts and washers) with minimum 2 years over-all warranty period

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* brand or approved equivalent. 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* brand or approved 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 or approved equivalent. 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* or its approved equivalent. 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-2 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-2, 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 8.0mm² 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.

G. 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 directory card shall be provided with transparent protective cover, mounted behind panelboard door.

Panelboards shall be supplied and installed by Contractor as specified in the plan.

Provide laser etched metallic panel labels.

H. 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 *Eaton (Cutler Hammer), Schneider Electric (Square-D/Merlin Gerin), ABB,* or its approved equivalent.

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.

I. TRANSFORMERS

Supply and installation of complete designed and manufactured product for the system consisting of three(3) 100 kVA, 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 for both primary side and 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.6 STANDARD TESTS

Minimum required standard tests must be performed by a third party witnessed by the contractor and Agency's technical representative such as but not limited to: routine tests, i.e. turns ratio test, voltage ratio test, no load loss and load loss test, impedance voltage test, applied and induced potential test and type tests, i.e. impulse test and temperature rise test. The hired third party must submit test reports and remarks signed by licensed PEE.

The Contractor shall also acquire a test report after performing standard tests from the Local Electric Cooperative.

5.7 GENERAL ITEMS

A. SCOPE OF WORK

A.01 This section includes the Provision of Land Transportation and Office rental including provision of office equipment/furniture for PFDA Resident Engineers/Field Inspectors.

B. PROVISION OF FIELD OFFICE FOR TECHNICAL INSPECTORS

B.01 The Contractor shall lease an office space to be used by the Engineer and another government representative near the site. The office shall be properly ventilated, lighted, and with a toilet/comfort room. The overall size of the office shall be approximately 25 sq. meters and to be provided with three (3) office table and chair, four (4) stacking chairs (monoblock), one (1) unit 18" electric stand fan, one (1) unit 2HP Aircon, one (1) uni freestanding water dispenser and one (1) unit – two-door refrigerator, 8.3 cu.ft. The contractor shall provide the owner one (1) unit laptop computer complete with accessories and one (1) unit Desktop with printer and accessories. All above-mentioned shall be turned over to the PFDA upon completion of the project.

B.02 The field office shall be maintained by the Contractor throughout the construction period (including electric & water expenses).

B.03 The Contractor shall provide office supplies to be use in preparation of correspondence and progress reports. Likewise, he shall be responsible for the reproduction of pictures and communication expenses (pre-paid cellular card at least P 5,000.00/month) borne by the PFDA personnel during the project implementation.

B.04 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.

B.05 The Contractor shall provide inauguration brass marker with the following requirement:

Material : Imported Brass
Approx. Size 20” x 30”
Thickness : 1/16
Sunk Lettering with Black Color
With Bolts and Screws
Complete with curtain and rod for unveiling
As per specifications and inscription submitted
With acrylic glass cover

B.06 The contractor shall submit the following upon completion of the project:

2 sets	Operating and Maintenance Manual
1 set	As Built Plan at Original Mylar Tracing Paper
3 sets	Blue Print Copy

Specification of Laptop Computer
Under Part 5.7 – General Items

One (1) LAPTOP COMPUTER

2.1 PROCESSOR	: AT LEAST AMD RYZEN 7 (OR EQUIVALENT) 5825U (UP TO 4.5 GHZ MAX BOOST CLOCK, 16 MB L3 CACHE, 8 CORES, 16 THREADS)	
2.2 MEMORY	: AT LEAST 16 GB DDR4 RAM (ONBOARD)	
2.3 STORAGE	: AT LEAST 512 GB PCIE® NVME M.2 SSD	
2.4 VIDEO GRAPHICS	: AT LEAST AMD RADEON GRAPHICS (OR EQUIVALENT)	
2.5 DISPLAY	: AT LEAST 33.8 CM (13.3") DIAGONAL, WQXGA (2560 X 1600), IPS, MICRO-EDGE, ANTI-GLARE, 400 NITS, 100% SRGB	
2.6 WIRELESS CONNECTIVITY	: AT LEAST REALTEK WI-FI 6 (2X2) AND BLUETOOTH® 5.2 COMBO (SUPPORTING GIGABIT DATA RATE)	
2.7 PORTS	: AT LEAST 1 SUPERSPEED USB TYPE-C® 10GBPS SIGNALING RATE (USB POWER DELIVERY, DISPLAYPORT 1.4, HP SLEEP AND CHARGE); 2 SUPERSPEED USB TYPE-A 5GBPS SIGNALING RATE; 1 HDMI 2.1; 1 AC SMART PIN; 1 HEADPHONE/MICROPHONE COMBO	
2.8 KEYBOARD	: AT LEAST FULL-SIZE, BACKLIT, CERAMIC WHITE KEYBOARD	
2.9 WEBCAM	: AT LEAST WIDE VISION 720P HD CAMERA WITH TEMPORAL	

	NOISE REDUCTION AND INTEGRATED DUAL ARRAY DIGITAL MICROPHONES	
2.10 OPERATING SYSTEM	: AT LEAST MICROSOFT WINDOWS 11 PROFESSIONAL OR HIGHER (LICENSE: LIFETIME/TRANSFERABLE)	
2.11 PRODUCTIVITY TOOL	: AT LEAST MICROSOFT OFFICE 2019 PRO OR HIGHER (LICENSE: LIFETIME/TRANSFERABLE)	
2.12 ACCESSORIES/ BUNDLES PER UNIT	: AC ADAPTER AND POWER CORD BATTERY: 3 CELL, 52WHR ONE (1) CARRYING BAG (BACKPACK) ONE (1) WIRED USB MOUSE	
2.13 WARRANTY	: AT LEAST 2-YEAR WARRANTY	

Specification of Desktop Computer
Under Part 5.7 – General Items

One (1) DESKTOP COMPUTER

ALL-IN-ONE COMPUTER		**85,000.00**
1.1 Operating System	: at least Windows 11 Pro 64-bit or higher (License: Lifetime & Transferable)	
1.2 CPU and Chipset	: at least 13th Gen and i7 processor or equivalent	
1.3 Memory	: at least 16 GB DDR4 3200 MHz soDIMM	
1.4 Storage	: at least 512 GB M.2 2280 PCI-E Gen 4 SSD	
1.5 Graphics	: at least NVIDIA® GeForce® MX550 with 2 GB of GDDR6	
1.6 Display	: Non-touch Size (inches): at least 27" Display max resolution: 1920 x 1080 Backlight: LED Brightness (cd/m2): 250nits Aspect ratio: 16:9	
1.7 Audio	: DTS® Audio Built-in stereo speakers	
1.8 Webcam	: Integrated 5.0 MP webcam with 2 stereo Microphones	
1.9 Communication	: WLAN: with at least 802.11ax/ac/a/b/g/n, Wi-Fi 6 And Bluetooth® 5.0 Ethernet (RJ-45) Port	
1.10 Dimensions	: 612.5 (W) x 37.3 (D) x 445.52 (H) mm (24.11 x 1.47 x 17.54 inches) – Non-Touch	
1.11 Hinge	: Panel Tiltable from -5° to 25°	
1.12 Power Supply and Adapter	: 3-pin 135 W AC adapter	
1.13 Accessories	: Cable management USB keyboard and mouse	
1.14 Bundles	: Microsoft 2019 Pro or higher (License: Lifetime & Transferable : UPS 650VA/390 WATTS	
1.15 Warranty	: 2-year parts and labor warranty	

One (1) PRINTER

Epson Ecotank L15160 A3 WI-FI Duplex All in One Tank Printer		
1.0 Printer type	: at least Windows 11 Pro 64-bit or higher (License: Lifetime & Transferable)	
1.1 Print Speed	: **Photo Default - 10 x 15 cm / 4 x 6 ":** Approx. 26 sec per photo (Border) / 27 sec per photo (Borderless) **Draft, A4 (Black / Colour):** Up to 32.0 ppm / 32.0 ppm **ISO 24734, A4 Simplex (Black / Colour):** Up to 25.0 ipm / 25.0 ipm **ISO 24734, A4 Duplex (Black / Colour):** Up to 21.0 ipm / 21.0 ipm **ISO 24734, A3 Simplex (Black / Colour):** Up to 13.5 ipm / 13.5 ipm **ISO 24734, A3 Duplex (Black / Colour):** Up to 10.0 ipm / 10.0 ipm *2	
1.2 Copying	: **ISO 29183, A4 Simplex Flatbed (Black / Colour):** Up to 23.0 ipm / 23.0 ipm **ISO 24735, A4 Simplex ADF (Black / Colour):** Up to 22.5 ipm / 22.5 ipm **ISO 24735, A4 Duplex ADF (Black / Colour):** Up to 19.0 ipm / 19.0 ipm	
1.3 Copy Function	: **Reduction / Enlargement:** 25 - 400% **Maximum Copy Size:**A3**Copy Resolution:** 600 x 600 dpi **Max Copies:** 999 copies	
1.4 Scanning	: **Scanner Type:** Flatbed colour image scanner **Sensor Type:** CIS**O** **ptical Resolution:** 1200 x 2400 dpi **Maximum Scan Area:** 297 x 431.8 (mm) **Scanner Bit Depth (Colour):** 48-bit input, 24-bit output **Scanner Bit Depth (Grayscale):** 16-bit input, 8-bit output **Scanner Bit Depth (Black & White):** 16-bit input, 1-bit output	
1.5 Scan Speed	: **Scan Speed (Flatbed / ADF (Simplex | Duplex)):** 200dpi, Black: 5 sec / Up to 26.0 ipm | 11.5 ipm 200dpi, Colour: 10 sec / Up to 9.0 ipm | 6.0 ipm	
1.6 Fax Function	: **Type Of Fax:** Walk-up Black-and-white and Colour Fax Capability **Receive Memory / Page Memory:** 6MB, Page memory Up to 550 pages	

	Error Correction Mode:ITU-T T.30**Fax Speed (Data Transfer Rate):** Up to 33.6 kbps, Approx. 3 sec/page **Fax Resolution:** Up to 200 x 200 dpi **Transmission Paper Size (Flatbed):** A5, A4, A3, B5, B4, Half Letter, Letter, Legal, 11 x 17" **Transmission Paper Size (ADF):** A5, A4, A3, B5, B4, Half Letter, Letter, Legal, 11 x 17"**Receiving Paper Size:** Half Letter, A5, B5, A4, Letter, Legal, B4, 11 x 17", A3, A3+ **Speed Dial / Group Dial:** Up to 200 numbers, 199 groups **Fax Features:** PC Fax (Transmission/Receive), Automatic Redial, Address book, Broadcast Fax (Mono Only), Transmit Reservation, Polling Reception, Fax Preview, Memory reception, Fax to Email, Fax to Folder, Automatic 2-sided Fax	
1.7 Card Slot/USB Host Function	: **Type of Direct Printing:** USB Memory	
1.8 Paper Handling	: **Paper Feed Method:** Friction feed **Number of Paper Trays:** 3 (Front 2, Rear 1) **Standard Paper Input Capacity:** Rear Slot: 50 sheets for A4 Plain paper (80 g/m^2), 20 sheets for Premium Glossy Photo Paper Cassette 1: 250 sheets for A4 Plain paper (80g/m^2) Cassette 2: 250 sheets for A4 Plain paper (80 g/m^2) 50 sheets for Premium Glossy Photo Paper **Output Capacity:** 125 sheets for A4 Plain paper (80 g/m^2), 20 sheets for Premium Glossy Photo Paper **Maximum Paper Size:** 329 x 6000 mm **Paper Sizes:** A3, Super B (13 x 19"), Indian Legal, Letter, A4, 16K (195 x 270mm), 8K (270 x 390mm), Executive (7.25 x 10.5"), B4, B5, A5, B6, A6, 8.5 x 13", 5 x 7", 4 x 6", 8 x 10", Legal (8.5 x 14"), 16:9 wide, Envelopes: #10, DL, C6, C4 **Print Margin:** 3mm top, left, right, bottom via custom settings in printer driver	
1.9 Interface	: **USB:**USB 2.0**Network:** Ethernet, Wi-Fi IEEE 802.11 b/g/n, Wi-Fi Direct **Network Protocol:** TCP/IPv4, TCP/IPv6 **Network Management Protocols:** SNMP, HTTP, DHCP, BOOTP, APIPA, PING, DDNS, mDNS, SNTP, SLP, WSD, LLTD	
1.10 Mobile and Cloud Solutions	: **Epson Connect Features:** Epson iPrint, Epson Email Print, Remote Print Driver, Scan to Cloud **Other Mobile Solutions:** Apple AirPrint, Mopria Print Service	
1.11 Control Panel	: **LCD Screen:** 4.3" Colour LCD Touch Screen	

1.12 Printer Software	: **Software Support:** Epson ScanSmart	
1.13 Power	: **Rated Voltage:** AC 220 - 240 V **Rated Frequency:** 50 - 60 Hz **Power Consumption:** Sleep: 0.9 W Operating: 18.0 W Power off: 0.2 W Standby: 9.7 W: UPS 650VA/390 WATTS	
1.14 Noise Level	: **PC Printing / Plain Paper Default :** Sound Power (Black / Colour) 6.8 B(A) / 6.7 B(A), Sound Pressure (Black / Colour) 52 dB(A)	
1.15 Consumables	: **Maintenance Box:** C12C934591 **Pigment Black Ink Bottle:** 7,500 pages *4 - 008 (C13T06G100 / C13T06G199 (Indonesia)) **Pigment Cyan Ink Bottle:** 6000 pages (Composite Yield) *4 - 008 (C13T06G200 / C13T06G299 (Indonesia)) **Pigment Magenta Ink Bottle:** 6000 pages (Composite Yield) *4 - 008 (C13T06G300 / C13T06G399 (Indonesia)) **Pigment Yellow Ink Bottle :**6000 pages (Composite Yield) *4 - 008 (C13T06G400 / C13T06G499 (Indonesia))	
1.16 Dimension and Weight	: **Dimensions (W x D x H):** 515 x 500 x 350mm **Weight:** 21.0kg	
1.17 Printing Technology	: **Print Method:** PrecisionCore™ Printhead **Minimum Ink Droplet Volume:** 3.8 pl **Print Direction:** Bi-directional printing **Nozzle Configuration:** 800 x 1 nozzles each (Black, Cyan, Magenta, Yellow) **Maximum Resolution:** 4800 x 1200 dpi **Automatic 2-sided Printing:** Yes (up to A3)	
1.18 ADF Specifications	: **Support Paper Thickness:** 64-95 g/m^2 **Paper Capacity:** 50 sheets	
1.19 Supported OS and Applications	: **Supported OS:** Windows XP / Vista / 7 / 8 / 8.1 / 10, Windows Server 2003 / 2008 / 2012 / 2016 / 2019 Mac OS X 10.6.8 or later	

Specification of Satellite Broadband Internet
Under Part 5.7 – General Items

SATELLITE BROADBAND INTERNET
3.1 1-year subscription of unlimited high-speed, low-latency internet
3.2 Standard Actuated Antenna 3.2.1 Electronic Phased Array 3.2.2 Motorized Self Orienting 3.2.3 IP54 Environmental Rating 3.2.4 Up to 40mm / hour (1.5in / hour) Snow Melt Capability 3.2.5 Operating Temperature: -30°C to 50°C (-22°F to 122°F) 3.2.6 100° Field of View 3.2.7 50-75W Average Power Usage
3.3 WIFI Router 3.3.1 Wi-Fi Technology: IEEE 802.11a/b/g/n/ac standards 3.3.2 Wi-Fi 5 3.3.3 Radio: Dual Band - 3 x 3 MIMO 3.3.4 Security: WPA2 3.3.5 Environmental Rating: IP54, configured for indoor use. 3.3.6 Range: Up to 185m² (2000sqft) 3.3.7 Operating Temperature: -30°C to 50°C (-22°F to 122°F)

Specification of Drone
Under Part 5.7 – General Items

DRONE FOR PROJECT INFRASTRUCTURE MONITORING	
1.1 AIRCRAFT SPECIFICATIONS	
1.1.1 Weight (with propellers, without accessories): 915 g 1.1.2 Max Takeoff Weight: 1,050 g 1.1.3 Dimensions: 1.1.3.1 Folded (without propellers): 221×96.3×90.3 mm (L×W×H) 1.1.3.2 Unfolded (without propellers): 347.5×283×107.7 mm (L×W×H) 1.1.4 Diagonal Distance: 380.1 mm 1.1.5 Max Ascent Speed: 6 m/s (Normal Mode), 8 m/s (Sport Mode) 1.1.6 Max Descent Speed: 6 m/s (Normal Mode), 6 m/s (Sport Mode) 1.1.7 Max Flight Speed (at sea level, no wind): 15 m/s (Normal Mode) Forward: 21 m/s, Side: 20 m/s, Backward: 19 m/s (Sport Mode) 1.1.8 Max Wind Speed Resistance: 12 m/s 1.1.9 Max Take-off Altitude Above Sea Level: 6000 m (without payload) 1.1.10 Max Flight Time (no wind): 45 mins 1.1.11 Max Hover Time (no wind): 38 mins 1.1.12 Max Flight Distance: 32 km (Rated) 1.1.13 Max Pitch Angle 1.1.14 30° (Normal Mode) 1.1.15 35° (Sport Mode) 1.1.16 Max Angular Velocity: 200°/s 1.1.17 GNSS: GPS+Galileo+BeiDou+GLONASS (GLONASS is supported only when the RTK module is enabled) 1.1.18 Hovering Accuracy 1.1.18.1 Vertical: ±0.1 m (with Vision System); ±0.5 m (with GNSS); ±0.1 m (with RTK)	

1.1.18.2 Horizontal: ±0.3 m (with Vision System); ±0.5 m (with High-Precision 1.1.18.3 Positioning System); ±0.1 m (with RTK) 1.1.19 Operating Temperature Range: -10° to 40° C (14° to 104° F) 1.1.20 Internal Storage: N/A 1.1.21 Motor Model: 2008 1.1.22 Propeller Model: 9453F Propellers for Enterprise 1.1.23 Beacon: Built into the aircraft	
1.2 WIDE CAMERA SPECIFICATIONS	
1.2.1 Sensor: 4/3 CMOS, Effective pixels: 20 MP 1.2.2 Lens: FOV: 84°, Format Equivalent: 24 mm: Sheetfed Scanner, Aperture: f/2.8-f/11, Focus: 1 m to ∞ 1.2.3 ISO Range: 100-6400 1.2.4 Shutter Speed: Electronic Shutter: 8-1/8000 s, Mechanical Shutter: 8-1/2000 s 1.2.5 Max Image Size: 5280×3956 1.2.6 Still Photography Modes: Single: 20 MP, Timed: 20 MP, JPEG: 0.7/1/2/3/5/7/10/15/20/30/60 s, JPEG+RAW:, 3/5/7/10/15/20/30/60 s, Smart Low-light Shooting: 20 MP, Panorama: 20 MP (raw image) 1.2.7 Video Resolution: H.264, 4K: 3840×2160@30fps, FHD: 1920×1080@30fps 1.2.8 Bitrate: 4K: 130 Mbps, FHD: 70 Mbps 1.2.9 Supported File Formats: exFAT 1.2.10 Photo Format: JPEG/DNG (RAW) 1.2.11 Video Format: MP4 (MPEG-4 AVC/H.264)	
1.3 TELECAMERA SPECIFICATIONS	
1.3.1 Sensor: 1/2-inch CMOS, Effective pixels: 12 MP 1.3.2 Lens: FOV: 15°, Format Equivalent: 162 mm, Aperture: f/4.4, Focus: 3 m to ∞ 1.3.3 ISO Range: 100-6400 1.3.4 Shutter Speed: Electronic Shutter: 8-1/8000 s 1.3.5 Max Image Size: 4000×3000 1.3.6 Photo Format: JPEG	

1.3.7 Video Format: MP4 (MPEG-4 AVC/H.264) 1.3.8 Still Photography Modes 1.3.8.1 Single: 12 MP 1.3.8.2 Timed: 12 MP 1.3.8.3 JPEG: 0.7/1/2/3/5/7/10/15/20/30/60 s 1.3.8.4 Smart Low-light Shooting: 12 MP 1.3.9 Video Resolution: H.264, 4K: 3840×2160@30fps, FHD: 1920×1080@30fps 1.3.10 Bitrate: 4K: 130 Mbps, FHD: 70 Mbps 1.3.11 Digital Zoom: 8x (56x hybrid zoom)	
1.4 GIMBAL	
1.4.1 Stabilization: 3-axis (tilt, roll, pan) 1.4.2 Mechanical Range: Tilt: -135° to 100°, Roll: -45° to 45°, Pan: -27° to 27° 1.4.3 Controllable Range: Tilt: -90° to 35°, Pan: Not controllable 1.4.4 Max Control Speed (tilt): 100°/s 1.4.5 Angular Vibration Range: ±0.007°	
1.5 SENSING SPECIFICATIONS	
1.5.1 Type: Omnidirectional binocular vision system, supplemented with an infrared sensor at the bottom of the aircraft. 1.5.2 Forward: Measurement Range: 0.5-20 m, Detection Range: 0.5-200 m, Effective Sensing Speed: Flight Speed ≤15 m/s, FOV: Horizontal 90°, Vertical 103° 1.5.3 Backward: Measurement Range: 0.5-16 m, Effective Sensing Speed: Flight Speed ≤12 m/s, FOV: Horizontal 90°, Vertical 103° 1.5.4 Lateral: Measurement Range: 0.5-25 m, Effective Sensing Speed: Flight Speed ≤15 m/s, FOV: Horizontal 90°, Vertical 85° 1.5.5 Upward: Measurement Range: 0.2-10 m, Effective Sensing Speed: Flight Speed ≤6 m/s, FOV: Front and Back 100°, Left and Right 90° 1.5.6 Downward: Measurement Range: 0.3-18 m, Effective Sensing Speed: Flight Speed ≤6 m/s, FOV: Front and Back 130°, Left and Right 160°	

1.5.7	Operating Environment: Forward, Backward, Lateral, and Upward: Surface with a clear pattern and adequate lighting (lux >15), Downward: Diffuse reflective surface with diffuse reflectivity>20% (e.g. walls, trees, people) and adequate lighting (lux >15)	
1.6 VIDEO TRANSMISSION SPECIFICATIONS		
1.6.1	Video Transmission System: Enterprise Transmission	
1.6.2	Live View Quality: Remote Controller: 1080p/30fps	
1.6.3	Operating Frequency: 2.400-2.4835 GHz, 5.725-5.850 GHz	
1.6.4	Max Transmission Distance (unobstructed, free of interference) [7], FCC: 15 km, CE: 8 km, SRRC: 8 km, MIC: 8 km	
1.6.5	Max Transmission Distance (Obstructed): Strong Interference (dense buildings, residential areas, etc.): 1.5-3 km (FCC/CE/SRRC/MIC)	
1.6.6	Medium Interference (suburban areas, city parks, etc.): 3-9 km (FCC), 3- 6 km (CE/SRRC/MIC), Low Interference (open spaces, remote areas, etc.): 9-15 km (FCC), 6-8 km (CE/SRRC/MIC)	
1.6.7	Max Download Speed: 15 MB/s (with Remote Controller Pro Enterprise)	
1.6.8	Latency (depending on environmental conditions and mobile device): Approx. 200 ms	
1.6.9	Antenna: 4 Antennas, 2T4R	
1.6.10	Transmission Power (EIRP): 2.4 GHz: <33 dBm (FCC), <20 dBm (CE/SRRC/MIC), 5.8 GHz: <33 dBm (FCC), ＜30 dBm (SRRC), <14 dBm (CE)	
1.7 REMOTE CONTROL (RC) PRO ENTERPRISE		
1.7.1	Video Transmission System: Enterprise Transmission	
1.7.2	Max Transmission Distance (unobstructed, free of interference): FCC: 15 km, CE/SRRC/MIC: 8 km	
1.7.3	Video Transmission Operating Frequency: 2.400-2.4835 GHz, 5.725-5.850 GHz	
1.7.4	Antenna: 4 Antennas, 2T4R	

1.7.5	Video Transmission Transmitter Power (EIRP), 2.4 GHz: <33 dBm (FCC), <20 dBm (CE/SRRC/MIC), 5.8 GHz: <33 dBm (FCC), <14 dBm (CE), ＜23 dBm (SRRC)	
1.7.6	Wi-Fi Protocol: 802.11 a/b/g/n/ac/ax, Support 2×2 MIMO Wi-Fi	
1.7.7	Wi-Fi Operating Frequency: 2.400-2.4835 GHz, 5.150-5.250 GHz, 5.725-5.850 GHz	
1.7.8	Wi-Fi Transmitter Power (EIRP): 2.4 GHz: <26 dBm (FCC), <20 dBm (CE/SRRC/MIC), 5.1 GHz: <26 dBm (FCC), <23 dBm (CE/SRRC/MIC), 5.8 GHz: <26 dBm (FCC/SRRC), <14 dBm (CE)	
1.7.9	Bluetooth Protocol: Bluetooth 5.1	
1.7.10	Bluetooth Operating Frequency: 2.400-2.4835 GHz	
1.7.11	Bluetooth Transmitter Power (EIRP): < 10 dBm	
1.7.12	Screen Resolution: 1920×1080	
1.7.13	Screen Size: 5.5 inches	
1.7.14	Screen: 60 fps	
1.7.15	Brightness: 1,000 nits	
1.7.16	Touchscreen Control: 10-point multi-touch	
1.7.17	Battery: Li-ion (5000 mAh @ 7.2 V)	
1.7.18	Charging Type: Recommended to be charged with the included USB-C Power, Adapter (100W) or USB charger at 12 V or 15 V	
1.7.19	Rated Power: 12 W	
1.7.20	Storage Capacity: Internal Storage (ROM): 64 GB, Supports a microSD card for expanded capacity.	
1.7.21	Charging Time: Approx. 1 hour 30 minutes (with the included USB-C Power Adapter (100W) only charging the remote controller or a USB charger at 15 V), Approx. 2 hours (with a USB charger at 12 V), Approx. 2 hours 50 minutes (with the included USB-C Power, Adapter (100W) charging the aircraft and remote controller simultaneously)	
1.7.22	Operating Time: Approx. 3 hours	
1.7.23	Video Output Port: Mini-HDMI port	
1.7.24	Operating Temperature Range: -10° to 40° C (14° to 104° F)	

1.7.25 Storage Temperature: -30° to 60° C (-22° to 140° F) (within one month), -30° to 45° C (-22° to 113° F) (one to three months), -30° to 35° C (-22° to 95° F) (three to six months), -30° to 25° C (-22° to 77° F) (more than six months)	
1.7.26 Charging Temperature: 5° to 40° C (41° to 104° F)	
1.7.27 GNSS: GPS+Galileo+GLONASS	
1.7.28 Dimensions: Antennas folded and controller sticks unmounted: 183.27×137.41×47.6 mm (L×W×H), Antennas unfolded and controller sticks mounted: 183.27×203.35×59.84 mm (L×W×H)	
1.7.29 Weight: Approx. 680 g	
1.7.30 Supported Memory Cards	
1.7.30.1 Aircraft:	
1.7.30.1.1 U3/Class10/V30 or above is required.	
1.7.31 Recommended microSD Cards	
1.7.31.1 Remote Controller:	
1.7.31.1.1 SanDisk Extreme PRO 64GB V30 A2 microSDXC	
1.7.31.1.2 SanDisk High Endurance 64GB V30 microSDXC	
1.7.31.1.3 SanDisk Extreme 128GB V30 A2 microSDXC	
1.7.31.1.4 SanDisk Extreme 256GB V30 A2 microSDXC	
1.7.31.1.5 SanDisk Extreme 512GB V30 A2 microSDXC	
1.7.31.1.6 Lexar 667x 64GB V30 A2 microSDXC	
1.7.31.1.7 Lexar High-Endurance 64GB V30 microSDXC	
1.7.31.1.8 Lexar High-Endurance 128GB V30 microSDXC	
1.7.31.1.9 Lexar 667x 256GB V30 A2 microSDXC	
1.7.31.1.10 Lexar 512GB V30 A2 microSDXC	
1.7.31.1.11 Samsung EVO Plus 64GB V30 microSDXC	
1.7.31.1.12 Samsung EVO Plus 128GB V30 microSDXC	
1.7.31.1.13 Samsung EVO Plus 256GB V30 microSDXC	
1.7.31.1.14 Samsung EVO Plus 512GB V30 microSDXC	
1.7.31.1.15 Kingston Canvas Go! Plus 128GB V30 A2 microSDXC	
1.7.31.1.16 Kingston Canvas React Plus 128GB V90 A1 microSDXC	
1.7.31.2 Aircraft:	
1.7.31.2.1 SanDisk Extreme 32GB V30 A1 microSDHC	
1.7.31.2.2 SanDisk Extreme PRO 32GB V30 A1 microSDHC	

1.7.31.2.3 SanDisk Extreme 512GB V30 A2 microSDXC 1.7.31.2.4 Lexar 1066x 64GB V30 A2 microSDXC 1.7.31.2.5 Kingston Canvas Go! Plus 64GB V30 A2 microSDXC 1.7.31.2.6 Kingston Canvas React Plus 64GB V90 A1 microSDXC 1.7.31.2.7 Kingston Canvas Go! Plus 128GB V30 A2 microSDXC 1.7.31.2.8 Kingston Canvas React Plus 128GB V90 A1 microSDXC 1.7.31.2.9 Kingston Canvas React Plus 256GB V90 A2 microSDXC 1.7.31.2.10 Samsung PRO Plus 256GB V30 A2 microSDXC	
1.8 BATTERY SPECIFICATIONS	
1.8.1 Capacity: 5000 mAh 1.8.2 Standard Voltage: 15.4 V 1.8.3 Max Charging Voltage: 17.6 V 1.8.4 Type: LiPo 4S 1.8.5 Chemical System: LiCoO2 1.8.6 Energy: 77 Wh 1.8.7 Weight: 335.5 g 1.8.8 Charging Temperature: 5° to 40° C (41° to 104° F)	
1.9 CHARGER	
1.9.1 Input: 100-240 V (AC Power), 50-60 Hz, 2.5 A 1.9.2 Output Power: 100 W 1.9.3 Output: Max. 100 W (total) When both ports are used, the maximum output power of each interface is 82 W, and the charger will dynamically allocate the output power of the two ports according to the load power.	
1.10 INCLUSIONS	
1.10.1 1 x 9 – Aircraft 1.10.2 1 x 9 - Intelligent Flight Battery 1.10.3 1 x 9 - microSD Card 64GB 1.10.4 1 x 9 - Gimbal Protector 1.10.5 3pairs x 9 -Enterprise Series Propellers 1.10.6 1 x 9 - RC Pro Enterprise 1.10.7 1 x 9 - Screwdriver 1.10.8 1 x 9 - USB-C Power Adapter (100W) 1.10.9 1 x 9 - 100W Power Adaptor AC Cable	

1.10.10	1 x 9 - USB-C Cable	
1.10.11	1 x 9 - USB-C to USB-C Cable and Protector Case	
1.10.12	3 x 9 - Extra Battery	
1.10.13	1 x 9 - Battery Charging Hub	
1.10.14	1 x 9 - Enterprise Series Battery Kit	
1.10.15	FREE: 128gb Memory Card & Shirt 1 is to 1	

5.8 MOBILIZATION/DEMOBILIZATION OF EQUIPMENT

A. SCOPE OF WORK

A.01 The contractor shall have mobilized and demobilized all equipment necessary to complete all work items of the project.

A.02 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.

6. SCOPE OF CONSTRUCTION

The Contractor shall undertake the Construction of the Project in accordance with the DED.

The Contractor shall undertake the construction of the Project in accordance with the certified /approved DED. The Contractor shall also carry out in accordance with all relevant regulatory and statutory instrument including complying with the pertinent provisions of the DPWH Standard Specifications ("Blue Book"), particularly;

- Volume II: Highways, Bridges and Airports, 2013 and
- Volume III: Public Works Structures, 1995
- D.O. 143, series of 2017, Revised Standardized Pay Items of Work for Infrastructure Projects

The Blue Book prescribes, among other things, the material requirements and construction requirements for different items of work, including the tests to be conducted during Construction by the Contractor. The Blue Book incorporates provisions of the AASHTO, ASTM, and ACI, pertaining to construction.

7. CONSTRUCTION GUIDELINES

Construction of the Project shall be in accordance with the relevant sections of the Blue Book. Attention shall be given to the relevant items of work in the Blue Book, Volume III specifically on Buildings, Ports & Harbor, Flood Control and Drainage Structure and Water Supply System.

8. CONSTRUCTION PLAN

The Construction Plan, which forms part of the DED, shall be based on the Preliminary Engineering Design Plan (PEDP) submitted as part of the Contractor's bid and updated and detailed to be consistent with the elements of the DED. The Construction Plan must identify the procedures, processes and management systems that the Contractor will apply to ensure the implementation of the Construction of the Project.

As a minimum, the Construction Plan must present the following outputs:

8.1 Mobilization Plan – human resource and equipment that demonstrates that the use of local labor is maximized.
8.2 Construction organization and management structures for the Construction, identifying key personnel and positions, and sub-contractors.
8.3 Construction, methodology and procedures.
8.4 Quality control and assurance system.
8.5 Construction Schedule, milestones, and S-curve covering all components of the Construction.
8.6 Major construction equipment to be used for each major stage of the work.
8.7 Updated traffic management plan during construction.
8.8 Periods for review of specific outputs and any other submissions and approvals.
8.9 Sequence of timing for inspections and tests proposed.
8.10 Construction health, safety, and security program in accordance with the guidelines of the Department of Labor and Employment.
8.11 Proposed system of work types and locations that will be used to identify each Construction package.
8.12 Environmental monitoring and management process.
8.13 Measures and procedures for:

A. control and monitoring of the Construction Schedule as against actual Construction;
B. supervision and monitoring of the quality control and assurance system for the Project, including the integrity of tests conducted;
C. monthly updating of the Construction Plan and the Monthly Progress Reports;
D. development and approval of Construction documentation; and
E. survey and condition monitoring.

8.14 Strategies for:

A. managing risks;
B. obtaining all necessary approvals permits and licenses necessary for the Project; and
C. Details of records management and indexing protocols that will enable referencing of all design and construction records back to the DED and DFC.

9. TRAFFIC MANAGEMENT PLAN DURING CONSTRUCTION

1.1 Obligations to Minimize Disruption

During Construction, the Contractor shall carry out the following obligations to ensure that traffic disruption is minimized in the construction area and its immediate surrounding area:

A. Safe, efficient and continuous passage of the vehicle is provided.

B. The traffic carrying capacity of the immediate surrounding roads is maintained.

C. Traffic congestion and disruption to public transport is minimized.

D. Pedestrian Safety and as required, alternative means of walking within or near the Construction Area is provided.

1.2 Traffic Management Plan for Construction

The Contractor must submit to the PFDA, for approval, an updated and detailed Traffic Management Plan for Construction based on the preliminary Traffic Management plan submitted as part of the Technical Proposal in its Bid. The updated/detailed Traffic Management Plan must provide the following:

A. The minimum disruption obligation set out in clause above.

B. The roads in and around the construction area that are proposed to be used as alternate or detour routes by motor vehicles during construction to reduce traffic congestion.

C. The proposed timing of road or lane closures for existing roads to facilitate the construction of the Project, having regard to the minimum disruption

obligations. Construction activities shall be so scheduled as to cause the least congestion during peak hours.

D. The personnel of the Contractor will be managing and providing the traffic enforcement and management services.

E. The information, education and communication program to advise the motorists, residents, business, and the general public on the above. This program shall involve the use of media – print, radio and TV, including billboards to inform the public on the updated/detailed Traffic Management Plan before and during Construction. It shall include a mechanism to give updates on the traffic situation, to receive complaints on traffic and road condition, accidents, and emergencies and to respond to these incidents so as to ease traffic congestion in the Construction Area and on the alternate routes.

10. TEST REQUIREMENTS

The Contractor shall undertake tests during Construction in accordance with the schedule of minimum testing requirements for items of work and materials covered by the Blue Book, as shown in **APPENDIX A of Section VI (MPSS)**.

In cases wherein the material or items of Work proposed by the Contractor are not covered by the DPWH Standard Specifications (Volume II and III) or Special Items of Works (SPL) that is required to be utilized in the project, the Contractor shall obtain the prior approval for its use from the DPWH-Bureau of Research and Standards (BRS) submitting the Generic Technical Specifications of such with the corresponding references as per Department Order No. 143, Series of 2017.

11. PROJECT COMPLETION

a. The PFDA shall determine if the Contractor has fully complied with the following requirements:

   i. All tests for construction with the pertinent provisions of the DPWH Blue Book and other test requirements of the MPSS for Construction.

   ii. All parts of the project have been completed in accordance with the approved plans and specifications for the project, including the rectification of all defects, if any.

   iii. The Project can be safely and reliably open to business operation.

b. For this purpose, the PFDA shall determine and certify that the requirements in MPSS are fully met by the Contractor.

c. Contractor must submit one (1) softcopy (in CAD File) and five (5) hard copies of all as-built drawings and other supporting documents to the PFDA not later than two (2) months after the date of Final Completion.

d. Considering that this is a priority project that needs to be completed on a tight schedule, the Contractor shall complete this project with 480 calendar days.

12. WARRANTY

The Contractor shall warrant the completed structure against structural defects and failure for its satisfactory performance vis-à-vis the prescribed MPSS during the lifetime of the structure, pursuant to the Revised Implementing Rules and Regulations of R.A. 9184.

APPENDIX A of Section VI (MPSS).

Schedule of Minimum Test Requirements for Construction

For the information of the Bidders and the Winning Bidder, below is the schedule of minimum test requirements of the DPWH Bureau of Research and Standards based on the DPWH Standard Specifications for Highways, Bridges and Airports, Volume II, 2004, otherwise known as the Blue Book. These test requirements will be used for the applicable items of work and materials in the Winning Bidder's Construction Works under the Design and Build services for the construction of Naval Refrigeration Facilities, Brgy. Santissimo Rosario, Naval, Biliran.

If any Construction items of work or materials proposed by the Winning Bidder are not covered by the Blue Book, these items of work or materials, together with the corresponding technical test requirements, must first be certified by the PFDA-TSD before they are used in the Project.

ITEMS OF WORK	MINIMUM TEST REQUIREMENTS
PART C - EARTHWORK	
Item 100 – Clearing and Grubbing	None
Item 101 – Removal of Structure and Obstruction	None
Item 103 – Structure Excavation If excavated materials are wasted, the volume involved shall be reported so that Quality control requirements may be adjusted accordingly. Submit Project Engineer's Certificate of Waste	If excavated materials are incorporated into the work: For every 1,500 cu. m or fraction thereof: 1-G , Grading Test 1-P, Plasticity Test 1-C, Laboratory Compaction Test For every 150 mm layer in uncompacted depth: 1-D, Field Density
Item 104 – Embankment	Same test as specified in item 103 of the Specs.
Item 105 – Sub-grade Preparation	Same test as for Item 104
Item 106 – Compaction Equipment and Density Control Strips	Same test as for Item 104, 105, 200, 201, 202, 203, 204, 205, 206 and 300.
Item 107 - Overhaul	None
PART D – SUBBASE AND BASE COURSE	
Item 200 – Aggregate Subbase Course	For every 1,500 cu.m. of fraction thereof: 1-Q, Quality Test for Grading, Plasticity and Abrasion For every 300 cu. m or fraction thereof: 1-G, Grading Test 1-P, Plasticity Test For every 1,500 cu. m or fraction thereof: 1-C, Laboratory Compaction Test For every 2,500 cu. m or fraction thereof: 1-CBR, California Bearing Ratio Test For every layer of 150 mm of compacted depth/based on the result of compaction trials: At least one group of three in-situ density test for each 500 sq. m. of fraction thereof.
ITEMS OF WORK	**MINIMUM TEST REQUIREMENTS**
Item 201 – Aggregate Base Course	For every 300 cu. m or fraction thereof: 1-G, Grading test 1-P, Plasticity Test (LL, PL, PI) For every 1,500 cu. m or fraction thereof: 1-Q, Quality Test for Grading, Plasticity and Abrasion 1-C, Laboratory Compaction Test For every 2,500 cu. m or fraction thereof: 1-CBR, California Bearing Ratio Test For every layer of 150 mm of compacted depth/based on the results of compaction trials: At least one group of three in-situ density tests from each 500 sq. m or fraction thereof.
Item 202 – Crushed Aggregate Base Course	Same test as for Item 201. For every 1,500 cu. m or fraction thereof:

	1-F, fractured face
Item 203 – Lime Stabilized Road Mix Base Course	A. Soil Aggregate For every 300 cu. m or fraction thereof: 1-G, Grading test 1-P, Plasticity Test (LL, PL, PI) For every 1,500 cu. m or fraction thereof: 1-Q, Quality Test for Grading, Plasticity and Abrasion B. Mix For every 300 cu. m or fraction thereof: 1-C, Laboratory Compaction Test 1-UC, Unconfined Compression Test 1-CBR, California Bearing Ratio Test C. Compacted Base Course For every layer of 150 mm of compacted depth: 1-D, Field Density Test for every 150 m or fraction thereof. D. Hydrated Lime For every 100 tons of fraction thereof 1-Q, Quality Test
Item 204 – Portland Cement Stabilized Road Mix Base Course Amount of Cement to be added : 6 to 10 mass % of dry soil aggregate	A. Soil Aggregate: Same test as for Item 203. B. Cement: 1-Q, Quality Test for every 2,000 bags or fraction thereof. C. Water 1-Q, Quality Test/Project Engineer's Certificate D. Mix

ITEMS OF WORK	MINIMUM TEST REQUIREMENTS
	For every 300 cu. m or fraction thereof: 1-C, Laboratory Compaction Test 1-UC, Unconfined Compression Test 1-CBR, California Bearing Ratio Test E. Compacted Base Course For every layer of 150 of compacted depth: 1-D, Field Density Test for every 150 m or fraction thereof. 1-T, Thickness Determination for every 150 m or fraction thereof:
Item 205 – Asphalt stabilized Road Mix Base Course	A. Soil Aggregate: Same tests as for Item 203. B. Emulsified Asphalt: 1-Q, Quality Test for every 40 to 200 drums or fraction thereof. C. Mix: Same tests as for Item 203. D. Compacted Base Course: Same tests as for Item 203.
Item 206 – Portland Cement Treated Plant Mix Base Course	A. Soil Aggregate: Same tests as for Item 203. B. Cement: For every 2,000 bags or fraction thereof: 1-Q, Quality Test

	C. Water 1-Q, Quality Test/Project Engineer's Certificate D. Mix: Same tests as for Item 204 E. Compacted Base Course For every layer of 150 mm of compacted depth: 1-D, Field Density Test for every 150 m or fraction thereof. 1-T, Thickness Determination for every 150 m or fraction thereof:
Item 207 – Aggregate Stockpile	Same tests as Specified in Item No. 207 of the Specs.
PART E – SURFACE COURSE	
Item 300 – Aggregate Surface Course	For every 1,500 cu.m. or fraction thereof: 1-Q, Quality Test for Grading, Plasticity and Abrasion For every 300 cu. m or fraction thereof: 1-G, Grading test 1-P, Plasticity Test (LL, PL, PI) For every 1,500 cu. m or fraction thereof: 1-C, Compaction Test for Grading, Plasticity and Abrasion For every layer of 150 mm of compacted depth/based on the results of compaction trials: At least one group of three in-situ density test for each 500 sq. m or fraction thereof. For Crushed Gravel or Crushed Stone, 1,500 cu. m of fraction thereof: 1-F, Fractured Face
ITEMS OF WORK	**MINIMUM TEST REQUIREMENTS**
Item 301 – Bituminous Prime Coat	Quantity: 1 to 2 liters/sq. m 1-Q, Quality Test for every 40 tons or 200 drums
Item 302 – Bituminous Tack Coat	Quantity: 0.2 to 0.7 liters/sq. m 1-Q, Quality Test for every 40 tons or 200 drums
Item 303 - Bituminous Seal Coat	A. Bituminous Materials Quantity: 0.2 to 1.5 liters/sq. m 1-Q, Quality Test for every 40 tons or 200 drums B. Cover Aggregate Quantity: From 5 to 14 kg/sq. m For every 75 cu. m /200 kg or fraction thereof: 1-G, Grading test
Item 304 – Bituminous Surface Treatment	A. Aggregates Quantity: Using Cut-Back Asphalt or Asphalt Cement – 13.6 to 38.0 kg/sq. m Using Emulsified Asphalt – 13.6 to 19.04 kg/sq. m For every 75 cu. m /200 kg or fraction thereof: 1-G, Grading test 1-P, Plasticity Test (LL, PL, PI)

	For every 1,500 cu. m or fraction thereof: 1-Q, Quality Test for Grading, Plasticity, Abrasion, Stripping and Bulk Specific Gravity 1-F, Fractured Face B. Bituminous Materials Quantity: Using Cut-Back Asphalt or Asphalt Cement – 1.58 to 2.04 kg/sq. m Using Emulsified Asphalt – 1.58 to 2.04 kg/sq. m Same test as for Item 301.
Item 305 – Bituminous Penetration Macadam Pavement	A. Aggregates Quantity: 1. Using Asphalt Cement or Rapid Curing Course (Crushed) – 90 kg/sq. m Key (Crushed) – (13 & 11) – 24 kg/sq. m Cover (Crushed & Screened) – 8 kg/sq. m 2. Using Emulsified Asphalt – 13.6 to 19.04 kg/sq. m Course (Crushed) – 90 kg/sq. m Choker (Crushed) – 10 kg/sq. m Key (Crushed) – (13 & 11) – 18 kg/sq. m Cover (Crushed & Screened) – 8 kg/sq. m Same test as for Item 304 B. Bituminous Materials Quantity: 7.2 to 11 liters/sq. m

ITEMS OF WORK	MINIMUM TEST REQUIREMENTS
Item 306 – Bituminous Road Mix Surface Course	A. Aggregates Same test as for Item 304 B. Bituminous Materials Quantity: 1. Using Cut-Back Asphalt – 4.5 to 7.0 mass % of total dry aggregate 2. Using Emulsified Asphalt – 6.0 to 10.0 mass % of total dry aggregate. Same test as for Item 301 C. Mix Test: For every 75 cu. m/130 tons or fraction thereof: 1-G, Grading test 1-Extr, Extraction 1-Sty, Stability 1-C, Laboratory Compaction D. Hydrated Lime For every 100 tons or fraction thereof: Tests: 1-Q, Quality Test E. Compacted Pavement

	For every full day's operation: Test: D & T, Density and Thickness Tests – at least 1 but not more than 3 samples shall be taken.
Item 307 – Bituminous Plant Mix Surface Course General	A. Aggregates For every 75 cu. m/200 tons or fraction thereof: 1-G & P, Grading and Plasticity Tests For every 1,500 cu. m or fraction thereof: 1-Q, Quality Test for Grading, Plasticity, Abrasion, Stripping and Bulk Specific Gravity 1-F, Fractured Face B. Bituminous Materials Quantity: 5.0 to 8.0 mass % of total dry aggregate Test: 1-Q, Quality Test for each 40 tons or fraction thereof. C. Mix For every 75 cu. m/130 tons or fraction thereof: 1-G, Grading test 1-Extr, Extraction 1-Sty, Stability 1-C, Laboratory Compaction D. Hydrated Lime For every 100 tons or fraction thereof: Tests: 1-Q, Quality Test

ITEMS OF WORK	MINIMUM TEST REQUIREMENTS
	E. Mineral Filler For every 75 cu. m or fraction thereof: 1-G & P, Grading and Plasticity Tests (LL, PL, PI) For each full day's operation: D & T, Density and Thickness Tests – at least 1 but not more than 3 samples shall be taken.
Item 308 – Cold Asphalt Plant Mix	A. Aggregates Same Tests as for Item 307 B. Bituminous Materials Quantity: 1. Using Cut-Back Asphalt – 4.5 to 7.0 mass % of total dry aggregate 2. Using Emulsified Asphalt – 6.0 to 10.0 mass % of total dry aggregate. Test: 1-Q, Quality Test for each 40 tons or 200 drums or fraction thereof. C. Mix Same test as for Item 307 D. Hydrated Lime Same test as for Item 307 E. Mineral Filler

	For every 75 cu. m or fraction thereof: 1-G & P, Grading and Plasticity Tests (LL, PL, PI) F. Compacted Pavement Same test as for Item 307
Item 309 – Bituminous Plant Mix (Stockpile Maintenance Mixture)	A. Aggregates Same test as for Item 307 B. Bituminous Materials Quantity: 4 to 10 mass % of total mix Test: 1-Q, Quality Test for each 40 tons or 200 drums or fraction thereof. C. Mix Same test as for Item 307 D. Hydrated Lime Same test as for Item 307 E. Mineral Filler Same test as for Item 307 F. Compacted Pavement Same test as for Item 307
Item 310 – Bituminous Concrete Surface Course, Hot Laid	A. Aggregates Same test as for Item 307 B. Bituminous Materials Quantity: 5 to 8 mass % of total dry aggregates Test: 1-Q, Quality Test for each 40 tons or 200 drums or fraction thereof.

ITEMS OF WORK	MINIMUM TEST REQUIREMENTS
	C. Mix Same test as for Item 307 D. Hydrated Lime Same test as for Item 307 E. Mineral Filler Same test as for Item 307 F. Compacted Pavement Same test as for Item 307
Item 311 – Portland Cement Concrete Pavement	A. Cement Quantity: 9.00 bags/cu. m (40 kg/bag) Test: For every 2,000 bags or fraction thereof 1-Q, Quality Test B. Fine Aggregate Quantity: 1. 0.5 cu. m/cu. m of concrete if rounded coarse aggregate is used. 2. 0.54 cu. m/cu. m of concrete if angular coarse aggregate id used. Tests: for every 1,500 cu. m or fraction thereof a. For a source not yet tested or that failed in

	previous quality tests: 1-Q, Quality Test for Grading, Elutriation (Wash), Bulk Specific Gravity, Absorption, Mortar Strength, Soundness, Organic Impurities, Unit Weight, %Clay Lumps and Shale. b. For a source previously tested and that passed quality test: 1-Q, Quality Test for Grading, Elutriation (Wash), Bulk Specific Gravity, Absorption, Mortar Strength For every 75 cu. m or fraction thereof: 1-G, Grading test C. Coarse Aggregate Quantity: 1. 0.77 cu. m/cu. m of concrete if rounded coarse aggregate is used. 2. 0.68 cu. m/cu. m of concrete if angular coarse aggregate is used. Tests: for every 1,500 cu. m or fraction thereof a. For a source not yet tested or that failed in previous quality test: 1-Q, Quality Test for Grading, Bulk Specific Gravity, Absorption, Abrasion and Unit Weight

ITEMS OF WORK	MINIMUM TEST REQUIREMENTS
	b. For a source previously tested and that passed quality test: 1-Q, Quality Test for Grading, Absorption, Bulk Specific Gravity and Abrasion. For every 75 cu. m or fraction thereof: 1-G, Grading test D. Water Tests: 1-Certificate from Project Engineer 1-Q, Quality Test, if source is questionable. E. Joint Filler 1. Poured Joint Filler 1-Q, Quality Test on each type of ingredient for each shipment. 2. Premolded Joint Filler 1-Q, Quality Test on each thickness of filler for each shipment F. Special Curing Agents 1-Q, Quality Test for each shipment G. Steel Bars For every 10,000 kg or fraction thereof for each size:

	1-Q, Quality Test for Bending, Tension and Chemical Analysis. H. Concrete Flexural Strength Test on Concrete Beam Sample 1-set consisting of 3 beam samples shall represent a 330 sq. m. of pavement, 230 mm depth or fraction thereof placed each day. Volume of concrete not more than 75 cu. m I. Completed Pavement Thickness determination by concrete core drilling on a lot basis. 5 holes per km per lane or 5 holes per 500 m when 2 lanes are poured concurrently.
PART F – BRIDGE CONSTRUCTION	
Item 400 - Piling	A. Concrete Piles 1. Concrete: Same tests as for Item 405. 2. Reinforcement Steel: Same tests as for Item 404. B. Structural Piles 1-Q, Quality Test/Mill Test Certificate 1-IR, Inspection Report
Item 401 - Railings	A. Concrete: Same tests as for Item, 405, Class C B. Reinforcement Steel: same tests as for Item 404.
Item 403 – Metal Structures	1-Q, Quality Test/Mill Test Certificate for each type of material used.

ITEMS OF WORK	MINIMUM TEST REQUIREMENTS
	1-IR, Inspection Report for each type and shipment of Metal used
Item 404 – Reinforcement Steel	A. Bar Reinforcement for Concrete for every 10,000 kg or fraction thereof for each size: 1-Q, Quality Test for Bending, Tension and Chemical Analysis B. Wire and Wire Mesh 1-Q, Quality Test
Item 405 – Structural Concrete	A. Cement Quantity: (40 kg/bag) Class A --------- 9.0 bags/cu. m of concrete Class B --------- 8.0 bags/cu. m of concrete Class C --------- 9.5 bags/cu. m of concrete Class P --------- 11.0 bags/cu. m of concrete Tests: for every 2,000 bags or fraction thereof 1-Q, Quality Test B. Fine Aggregate Quantity: cu. m/cu. m of concrete

	For Rounded For Angular Class A --------- 0.50 ---------- 0.54 Class B --------- 0.45 ---------- 0.52 Class C --------- 0.53 ---------- 0.50 Class P --------- 0.44 ---------- 0.47 Tests: for every 1,500 cu. m or fraction thereof a. For a source not yet tested or that failed in previous quality tests: 1-Q, Quality Test for Grading, Elutriation (Wash), Bulk Specific Gravity, Absorption, Mortar Strength, Soundness, Organic Impurities, Unit Weight, %Clay Lumps and Shale. b. For a source previously tested and that passed quality test: 1-Q, Quality Test for Grading, Elutriation (Wash), Bulk Specific Gravity, Absorption and Mortar Strength. For every 75 cu. m or fraction thereof: 1-G, Grading Test C. Coarse Aggregate Quantity: cu. m/cu. m of concrete For Rounded For Angular Class A --------- 0.77 ---------- 0.68 Class B --------- 0.82 ---------- 0.73 Class C --------- 0.70 ---------- 0.68 Class P --------- 0.68 ---------- 0.65

ITEMS OF WORK	MINIMUM TEST REQUIREMENTS
	Tests: for every 1,500 cu. m or fraction thereof a. For a source not yet tested or that failed in previous quality tests: 1-Q, Quality Test for Grading, Bulk Specific Gravity, Absorption, Abrasion and Unit Weight. c. For a source previously tested and that passed quality test: 1-Q, Quality Test for Grading, Absorption, Bulk Specific Gravity and Abrasion. For every 75 cu. m or fraction thereof: 1-G, Grading Test D. Water 1-Certificate from Project Engineer 1-Q, Quality Test, if source is questionable. E. Premolded Filler for expansion joints 1-Q, Quality Test on each thickness of filler for

	each shipment F. Steel Reinforcement 1-Q, Quality Test for every 10,000 kg or fraction thereof. G. Concrete Compressive strength on concrete cylinder samples. 1 set consisting of 3 concrete cylinder samples shall be taken from each day's pouring and to represent not more than 75 cu. m or fraction thereof.
Item 406 – Prestressed Concrete Structures	A. Concrete : Same tests as Item 405, Class P B. Reinforcing Steel: Same tests as Item 404 C. Wire Strand 1-Q, for every 20 tons or fraction thereof.
Item 407 – Concrete Structures	Same tests as for Items 403, 404, 405 and 411. Elastomeric Bearing Pad will be tested to determine its quality.
Item 408 – Steel Bridges	Same tests as for Items 403 and 411. Painting: 1-Q, One 20-liter can for every 100 cans or fraction thereof, or 1-Q, One 4-liter can for every 100 cans or fraction thereof.
Item 409 – Welded Structural Steel	Same tests as for Item 403 and Inspection Report.
Item 411 - Paint	1-Q, One 20-liter can for every 100 cans or fraction thereof, or 1-Q, One 4-liter can for every 100 cans or fraction thereof.

ITEMS OF WORK	MINIMUM TEST REQUIREMENTS
DRAINAGE AND SLOPE PROTECTION	
Item 500 – Pipe Culverts and Strom Drains	A. Pipes Pipe for every 50 pieces: Strength, Absorption and Dimension. Alternative Requirements: 1-set consisting of 3 concrete cylinder samples for not more than 25 pipes cast in the field and 1-

	Inspection Report for each size for not more than 25 pipes cast in the field. B. Mortar for Joint Cement, Fine Aggregates and Water – Same tests as for Item 405.
Item 501 - Underdrains	A. Concrete Pipe (Non-Reinforced) 0.5% of the number of pipes of each size but not less than 2, for strength, Absorption and Dimension. Alternative Requirements: 1-set consisting of 3 concrete cylinder samples for not more than 25 pipes cast in the field and 1-Inspection Report for each size for not more than 25 pipes cast in the field. B. Clay Pipe I-Pipe for every 200 pieces each size, with a minimum of 2 specimens for Strength, Absorption and Dimension.
Item 502 – Manholes, Inlets and Catch Basins	A. Concrete Same tests as for item 405, Class A B. Lids, Cast Iron Frames and Grating Inspection Report
Item 503 – Cleaning and Reconditioning Existing Drainage Structures	Inspection Report
Item 504 – Riprap –Grouted Riprap	Same tests as for Item 505
Item 505 – Stone Masonry	A. Cement Quantity: 2 bags/cu. m of concrete Tests: for every 2,000 bags or fraction thereof 1-Q, Quality Tests B. Fine Aggregate Quantity: 0.17 cu. m/cu. m of concrete. Tests: for every 2,000 bags or fraction thereof. 1-Q, Quality Test – same as for Item 405. For every 75 cu. m or fraction thereof. C. Stone Inspection report D. Water 1-Certificate from Project Engineer 1-Q, Quality Test, if source is questionable.

ITEMS OF WORK	MINIMUM TEST REQUIREMENTS
Item 506 – Hand-Laid Rock Embankment	Inspection Report
Item 507 – Sheet Piles	A. Concrete Sheet Piles Same tests as for Item 404. B. Steel Sheet Piles Same tests as for Item 403.
Item 508 – Concrete Slope Protection	A. Bed Course Same tests as for Item 200. B. Steel Reinforcement Same tests as for Item 404. C. Concrete Same tests as for Item 404.
Item 509 - Gabions	1-Q, Quality Test for each shipment
PART H – MISCELLANEOUS STRUCTURES	
Item 600 – Curb and Gutter	A. Concrete Quantity: 0.078 cu. m/m (Curb only) 0.092 cu. m/m (Curb and Gutter, Type A) 0.149 cu. m/m (Curb and Gutter, Type B) 0.074 cu. m/m (Curb and Gutter, Type C) Same tests as for Item 405. B. Joint Filler Same tests as for Item 311.
Item 601 - Sidewalk	A. Concrete Same tests as for Item 405, Class A. B. Premolded Expansion Joint Filler Same tests as for Item 311.
Item 602 – Monuments, Markers and Guide Posts	A. Concrete Same tests as for Item 405. B. Reinforcement Steel Same tests as for Item 404. C. Paint Same tests as for Item 411.
Item 604 - Fencing	A. Barbed Wire, Chain Link Fabric 1-Q, Quality Test B. Concrete Post Same tests as for Item 405. Steel Reinforcement: Same tests as for Item 404.
Item 605 – Road Sign (Reflective Sheets)	Quantity: 6 pieces of 1 inch x 6 inch reflective sheets Test Perform: 1 – Adhesion Test 1 – Solvent Resistant Test Resistance to Heat Thickness of Sheeting Reflectivity

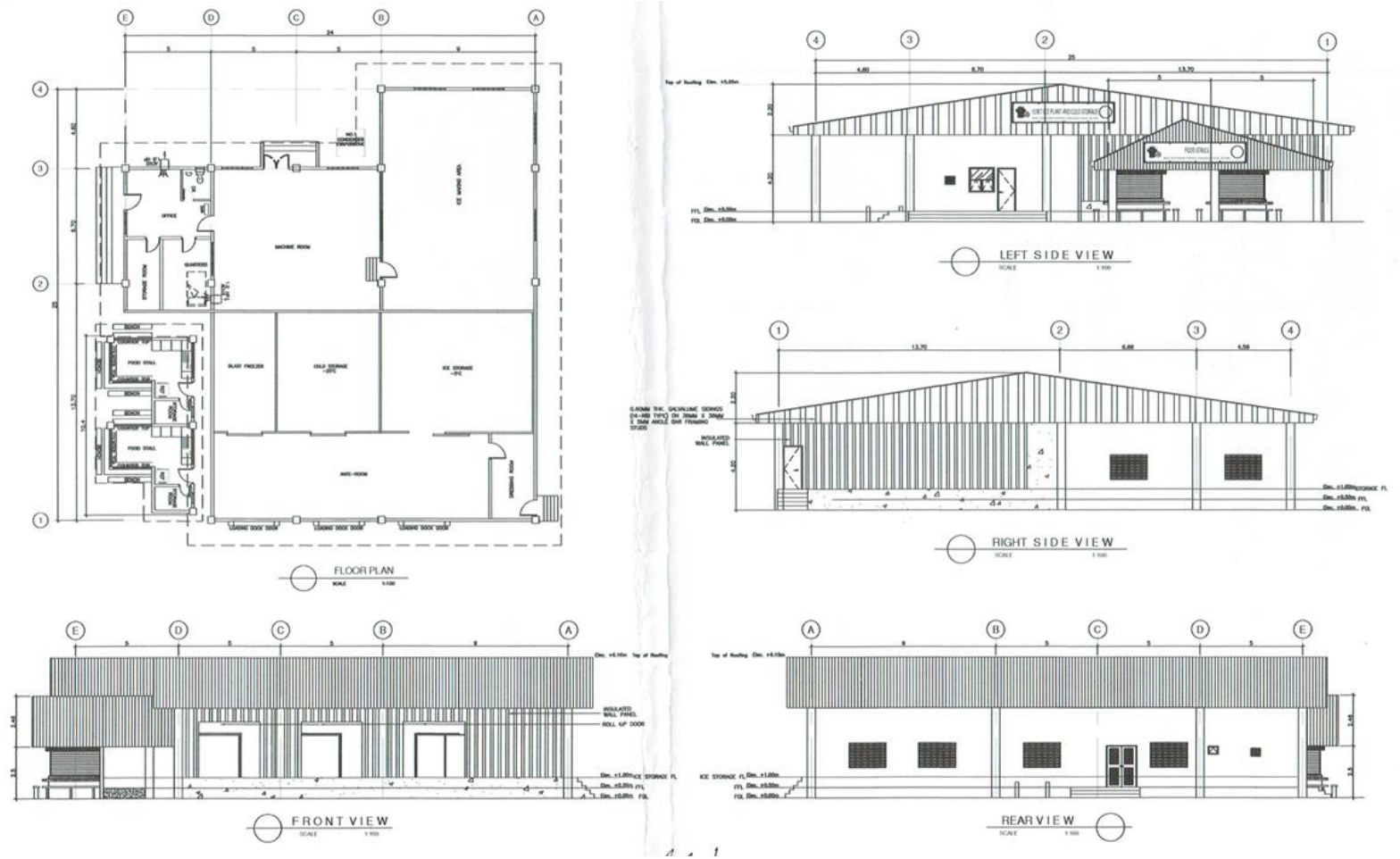
ITEMS OF WORK	MINIMUM TEST REQUIREMENTS
Item 606 – Pavement Markings (Thermoplastic Paint)	Quantity: 1 Quality Test per 100 bags or fraction thereof: A. Physical Properties

	1. Condition in Container 2. Specific Gravity 3. Drying Time (min.) 4. Softening Point B. Paint Composition 1. Total Dry Solids, % 2. Titanium Dioxide, % 3. Extenders (Fillers), % 4. Binders, % 5. Glass Beads, % 6. Grading, % Passing
Item 607 – Reflective Pavements Studs	Quantity: 3 samples per 10,000 pcs. Test: 1 Compression Test
Item 608 - Topsoil	Inspection Report
Item 609 - Sprigging	Inspection Report
Item 610 - Sodding	Inspection Report
Item 611 – Tree Planting	Inspection Report
Item SPL 614– Street Lighting including Footing, Steel poles, wires, conduits and etc.	A. Wires and Cables 1. Perform Continuity Test; 2. Perform Insulation Resistance Test. B. Molded Case Circuit Breakers Visual and Mechanical Inspection: 1. Compare nameplate data with specifications and approved shop drawings; 2. Inspect circuit breaker for correct mounting; 3. Operate circuit breaker to ensure smooth operation; 4. Inspect case for cracks or other defects; 5. Inspect all bolted electrical connections for high resistance using low resistance ohmmeter, verifying tightness of accessible bolted connections and/or cable connections by calibrated torque-wrench method, or performing thermographic survey; 6. Inspect mechanism contacts. Electrical Tests: 1. Perform contact-resistance tests; 2. Perform insulation-resistance tests. C. Time Switch and Contactors 1. Field Quality Control: Upon completion of installation, verify that equipment is properly installed, connected, and adjusted. Conduct an operating test to show that equipment operates in accordance with requirements.

ITEMS OF WORK	MINIMUM TEST REQUIREMENTS
	D. Lighting Fixtures

	Field Testing: Demonstrate that all lighting fixtures and their accessories operate satisfactorily in the presence of the Owner. Perform operational tests in accordance with referenced standards in this specifications. E. Project Engineers Inspection Report.
PART I – MATERIAL DETAILS	
Item 700 – Hydraulic Cement	Same tests as for Item 405.
Item 701 – Construction Lime (Hydrated)	1-Q, Quality Test for every 100 tons or fraction thereof.
Item 702 – Bituminous Materials	Same tests as for Items 301, 302, 303, 306, 307, 308, 309 and 310.
Item 703 - Aggregates	Same tests as for Item of work specified in the Bill of Quantities.
Item 703A – Mineral Filter	Same tests as for Item 405.
Item 704 – Masonry Units	1-Q, Quality Test for every 10,000 units or fraction thereof.
Item 705 – Joint Materials	Same tests as for Items 311 and 500.
Item 706 – Concrete, Clay, Plastic and Fiber Materials	A. Concrete Pipes Same tests as for Item 500. B. Clay and Other Types of Pipes Refer to applicable requirements of AASHTO Tests and Specifications.
Item 707 – Metal Pipe	Same tests as for Item 400.
Item 708 – Chemical Admixtures for Concrete	1-Q, Quality Test for each shipment
Item 709 - Paints	Same tests as for Item 411.
Item 710 – Reinforcing Steel and Wire Rope	A. Reinforcing Steel Same tests as for Item 404. B. Wire Rope Same tests as for Item 406.
Item 711 – Fence and Guardrail	A. Fence Same tests as for Item 604. B. Guardrail Same tests as for Item 603.
Item 712 – Structural Metal	Same tests as for Items 403 and 409
Item 713 - Water	1-Certificate from Project Engineer 1-Q, Quality Test, if source is questionable.

Section VII. Procuring Entity's Concept Design Drawings and Other Reference Data



PERSPECTIVE VIEW

CONSTRUCTION OF NAVAL 10MT ICE PLANT AND COLD STORAGE

PERSPECTIVE VIEW

CONSTRUCTION OF NAVAL 10MT ICE PLANT AND COLD STORAGE

Section VIII. Terms of Reference (TOR)

Terms of Reference (TOR)

1. PROJECT INFORMATION

1.1 Project Title: Construction of Naval Refrigeration Facilities (Design & Build)

1.2 Basic Information

The PFDA is a government owned and controlled corporation attached to the Department of Agriculture, created to promote the development of the fishing industry through the provision of post-harvest infrastructure facilities and essential services that improve efficiency in the handling and distribution of fish and fishery products and enhance their quality.

With renewed commitment to its vision of achieving effective and sustainable post-harvest facilities and infrastructure by year 2025 and beyond, PFDA continuously implementing construction, rehabilitation and improvement projects to realize this vision.

The municipality of Naval, Biliran is categorized as 2nd Class municipality of Biliran and the main source of livelihood is farming and fishing.

The construction of Naval Refrigeration Facilities (NRF) is aimed to help reduce the fish spoilage and other agricultural products to a minimum and to give chance to the fisher folks to market their products to other provinces.

1.3 Necessity of the Project

In line with the Government's thrust in reducing post-harvest losses along the food marketing chain, the construction of NRF is among the projects funded under Republic Act No. 11975 also known as the General Appropriations Act for FY 2024. After signing the 2024 national budget, the President emphasized that the budget is the instrument which tells how the taxes paid by the people will be returned to them. To spend the taxpayer's money wisely and ensure return on investment, the construction of NRF is being proposed.

The implementation of the project shall be undertaken through Design and Build Scheme to ensure obligation of the fund within the prescribed period as provided for under the cash-based budgeting system of the Department of Budget Management.

1.4 Adoption of Annex "G" or 2016 IRR or R.A. 9184

The Procurement of Design & Build and Contract Implementation of the Project shall be governed by Annex "G" Guidelines for the Procurement and Implementation of Contracts for Design and Build Infrastructure projects, the 2016 Revised Implementing Rules and Regulations of R.A. 9184

otherwise known as the Government Procurement Reform Act and all applicable building codes, regulations and Department Orders which may be issued by the DPWH.

1.5 Qualification of Bidders

Bidders should possess the necessary qualification in accordance with Bidding Documents, including Annex “G” 2016 IRR or R.A. 9184. Prospective bidders shall provide the necessary architectural, engineering and construction supervision capability for the construction of NRF.

1.6 Contractual Framework

Under the Design and Build scheme, the Procuring Entity (PFDA) awards a single contract for the architectural and detailed engineering designs and construction to a single firm, partnership, corporation, joint venture or consortium.

Figure 1. Location Map

1.7 Project Description

The Project involves the Design and Construction NRF with the following scope of works:

Table 1. Scope of the Project

Main Items	Project Scope	Description of Works
I. General Requirements	▪ Mobilization/Demobilization of Equipment	▪ Ingress & egress of equipment, materials and manpower
	▪ Provide Environmental Safety & Health Program in the execution of the project	▪ The contractor shall comply with the latest issuance of Implementing Rules and Regulations (IRR) for the implementation of Republic Act No. 11058 also known as the Occupational Safety and Health Standards (OSHS) law.
	▪ Permits (PAMB/SAPA, Comprehensive Devt & Management Plan, Foreshore Lease Agreement, Updated ECC, OBO Permits, EMB VIII Permit)	▪ The Contractor shall pay for any and all expenses necessary and incidental to be able to secure the required Permits and Clearances, in coordination with the PFDA and the Local Government Unit.
	▪ Support to PFDA's Engineers & Staff (Field Office w/. office equipment & supplies and Staff House incl. maintenance and communication)	▪ The Contractor shall lease an office space to be used by the Engineer and another government representative near the site. The office shall be properly ventilated, lighted, and with a toilet/comfort room. ▪ Provide one (unit) Drone ▪ Provide internet access (Starlink)
	▪ Provision of Temporary Facilities for Contractor (Medical Room, Staff	▪ Medical Room ▪ Staff House ▪ Office ▪ Worker's Quarters

	House, Office, Worker's Quarters)	
II. Detailed Engineering Design	• Survey Works, Soil Investigations	
III.Site Development and Utilities Works	▪ Embankment and levelling	▪ Earthworks ▪ Slope Protection (Rock Works) ▪ Portland Cement Concrete Pavement ▪ Tire guard, Curbs, Gutter, Sidewalks, and Parking Slots
	▪ Utilities (Water/Drainage/Outside Power & Lighting)	▪ Water Pipeline System (use HDPE Pipe) ▪ Outside Power Distribution System (Underground System) ▪ Street Lighting System [Hybrid System (50% Solar Powered & 50% from Grid)] ▪ Provision of Grounding & Lighting Protection System ▪ Provision of Drainage and Sewerage System
	▪ Miscellaneous Work (Signage, Painting of curbs and concrete tire guard, etc.)	▪ Computer cut engineering reflective sheeting on a GA. 22 Alum. Sheet Substrate panel high intensity prismatic grade background
IV.Refrigeration Building		
IV.A. Food stalls	▪ Food Stalls with storage room: 55 sq.m	▪ Reinforced Concrete Building ▪ Roofing Works (incl. steel works, tinsmith & consumables) ▪ Furniture ▪ Fresh Water and Drainage
	▪ Ice Plant (Ammonia System) with 10MT	▪ Reinforced Concrete Building

IV.B. Refrigeration Building (480 square meters)	capacity per day, and semi-automatic operation. ▪ Ice Storage (Freon System) with 10MT capacity per day, working temperature of at least minimum -5 deg. C, and control system of Semi-automatic operation.	▪ Ice Making Equipment (Brine Tank, Dip tanks Dumper etc), Ice Storage Room, Machine Room, Comfort Room and Cashier Room ▪ Solar power or hybrid (Lighting & Power System) ▪ Fresh Water, Sewerage and Drainage System ▪ Furniture ▪ Roofing Works (incl. steel works, tinsmith & consumables)
	• Cold Storage (Freon System) with 50 MT capacity of product per day, working temperature of at least minimum -25 deg. C, and control system of Semi-automatic operation	▪ Food grade flooring ▪ Solar powered or hybrid (Lighting and Power System)
	• Blast Freezer (1 ton per cycle), with a working room temperature of at least -35 deg.C, and freezing time of maximum 4 hrs.	▪ Design, manufacture and fabrication, assembly, factory testing of equipment, materials and component.
V.Electro-Mechanical and other related Works	▪ Ice Making Equipment ▪ Supply, Installation, Testing and Commissioning of new (1) 300kVa Deisel Generator set. Incl foundation of 1000L Fuel Day Tank, ▪ 2 Assy. of Motor Control Center (Including Concrete Pedestal) ▪ Supply of tools, testing equipment, spare parts and consumables ▪ Reliability trial testing and Commissioning into normal operating condition in accordance with the	▪ Design, manufacture and fabrication, assembly, factory testing of equipment, materials and components. ▪ Design, fabrication and assembly of the block ice plant, ice storage facility, cold storage, and blast freezer complete with the required accessories and plant tested to meet the desired capacity. ▪ Warranty

	desired capacity and systems operation and actual training of ice plant personnel for at least two (2) weeks.	
VI. Permanent Power and Water Supply Connection	▪ The Supplier/Contractor shall facilitate/furnish all labor, materials, equipment service, testing supervision for the completion of the power and water supply system of the facility and other works necessary to operationalize the ice plant facility.	▪ Provide the necessary application/expenses for power connection from "Local Electric Cooperative" to include the following: ▪ Construction and extension of 3-phase primary transmission line to the nearest tapping point which include poles, ACSR and ground wires, insulators and other accessories as may be necessary and required by the local electric cooperative. ▪ Standard testing and commissioning by the local electric cooperative, as required, prior to the installation of distribution transformers including its metering instruments and accessories. ▪ Metering instruments, billing and metering deposits, permits and other required documents, fees and equipment as may be required by the local electric cooperative to complete the power supply system. ▪ Furnishing and installation of pipes and fittings, trench

		excavation and backfilling from tapping point to the water meter at the entrance of the project site. ▪ Supply and installation of necessary gate valves and check valve, as may necessary. ▪ Supply and installation of water meter and construction of concrete valve manhole, as may necessary. ▪ Provide the necessary application/expenses for water connection from "Local Water District" including metering, deposit, permits, and other related works necessary to complete the water distribution system. ▪ The supplier shall be responsible for the layout of the system and specification of the pump and pipings. This will be submitted to PFDA, for review and approval, before installation.
VII.Auxiliary System	▪ Enhance security and surveillance through a reliable CCTV network. ▪ Design and implement auxiliary systems that optimize the primary ice-making processes. ▪ Ensure all systems comply with industry safety standards and environmental regulations.	▪ The supplier/ contractor will design, procure, and install the auxiliary systems required for an ice plant to function efficiently and safely. These auxiliary systems support the primary refrigeration units and other core plant operations. This project ensures that all secondary equipment

	▪ Minimize operational costs through energy-efficient solutions. ▪ Provide a comprehensive plan for integration, testing, and commissioning.	works in harmony with the primary system to provide operational efficiency, minimize downtime, and increase the overall plant's reliability.
VIII.Fire Protection and Suppression System	▪ Design, supply, installation, and commissioning of a comprehensive fire protection and suppression system for an ice plant, ice storage, blast freezer, and cold storage facility. The fire safety system will be compliant with local fire codes, insurance requirements, and international standards (NFPA, ISO, or equivalent). The system will ensure the safety of both personnel and the facility's critical infrastructure by mitigating the risk of fire hazards associated with electrical systems, refrigeration units, and other fire-prone elements.	▪ Design a fire detection system tailored for low-temperature and wet environments, including appropriate sensors and fire alarms. ▪ Develop a suppression system based on water mist, foam, or gaseous agents suitable for low-temperature applications. ▪ Ensure zoning and coverage to account for compartmentalized areas within the facility. ▪ Ensure fire-rated doors, ventilation control systems, and firewalls are incorporated into the design. ▪ Ensure the system complies with local fire safety codes, including integration of emergency lighting, exit signs, and egress routes. ▪ Equip the ice plant areas with manual fire extinguishers rated for electrical, liquid, and refrigerant-based fires. ▪ Use corrosion-resistant materials for piping in cold and humid environments. ▪ Select sprinkler heads rated for low-

		temperature storage facilities.

2. SCOPE OF THE CONTRACT

2.1 Major Obligations of the Contractor

a. Undertake Architectural and Engineering (A&E) Plans and Detailed Designs, Technical Specifications, Bill of Quantities, and Design Reports including Site and Landscape Development Structures and Facilities in conformance with the MPSS.

Such plans and designs, specifications, bill of quantities, and design reports shall be subject to review and approval by the PFDA. The Concept Design and Plans prepared and issued by the PFDA-TSD as part of this TOR shall be the basis for the Schematic Design, Design Development, and the Contract Documents phases of the design, which shall continue after the bid is awarded. These shall likewise be subject to review and approval of PFDA.

The preparation of A&E and Detailed Design shall be guided by the following requirements:

- Climate-change adaptive;
- Disaster-resilient;
- Sustainable Energy;
- Integrate social and gender safeguards;
- Provision of PWD and Elderly Facilities;
- Food Safety Requirements and
- HACCP Compliance.

b. Undertake the Construction of NRF including structures and facilities in conformance with the MPSS. The bid shall be based on the preliminary Conceptual Design and Plans prepared and issued by the PFDA-TSD, which have been pre-approved by the PFDA Top Management and supplemented by the issuance of bid bulletins, if any, from the date of original advertisement.

c. Aside from the A&E professional design fees, other incidental expenses that is also to the account of the winning bidder shall include Preliminary Survey and Mapping of the project site which shall determine the boundaries and provide stationing along control lines to establish feature and design criteria location, and identify existing future right-of-way-limits and construction easements associated with the PFDA's Conceptual Design and Plans. The winning bidder shall also conduct Preliminary Investigations including, among others, geodetic and topographic survey of the project lot, information on the soil and geotechnical investigations,

geologic and geomorphologic surveys, hydrology and hydraulic analysis, seismic tests, traffic analysis, environmental conditions of the site, and other design and construction requirements.

d. Compliance with all applicable permits/licensing and documentary requirements.

e. The Contractor shall be held liable for any additional costs that may be incurred by the Government due to major changes in plans from faulty or defective design or any aspect of the detailed engineering.

f. Be held liable for design and structural defects and/or failure of the completed project within the warranty period specified in Section 62.2 or the revised IRR or RA 9184.

g. Provide Traffic Management Plans and be responsible for traffic management during construction.

h. Conduct Value Engineering study to determine the most economical scheme during DED and Construction.

2.2 Major Obligations of PFDA

a. Provide the Contractor the area required for staging, office/bunk house and stockpiling of construction materials and debris.
b. Review and certify the Contractor's design without diminishing the Contractor's full and sole responsibility for the quality and integrity of the Project.
c. Supervise and monitor the implementation of the Project.
d. Pay the accomplishment accepted in conformance with the MPSS under the Design and Build Contract.
e. Provide assistance to the Contractor in any issues and concerns that may affect the project implementation.

3. SCOPE OF THE DESIGN

3.1 Preliminary Architectural &Engineering Design Plan (PAEDP) by Bidder

At the bidding stage, the Bidder shall prepare a PAEDP based on the PFDA MPSS for the Project as shown in Section VI and submit the PAEDP as part of the Bidder's Technical Proposal.

The Bidder shall prepare the PAEDP with a degree of accuracy of approximately plus/minus fifteen percent (+/-15%) of the final quantities, and in conformance with the MPSS.

3.2 Detailed architectural and engineering design by the Winning Bidder

During the implementation of the Project, the Winning Bidder shall prepare the Detailed architectural and engineering design (DAED) of the Project and submit the DAED to the PFDA for approval prior to the execution of the Construction works.

The Winning Bidder shall prepare the DAED based on its PEDP as accepted by the PFDA and in accordance with the MPSS. The DAED shall be undertaken with a degree of accuracy that will allow estimates to be made within approximately plus or minus five percent (+/-5%) of the final quantities.

Once approved by the PFDA, the Winning Bidder's DAED shall form part of the MPSS. The PFDA-approved DAED, together with the MPSS provisions on Construction, shall govern the actual Construction undertaken by the Winning Bidder.

The Winning Bidder shall undertake the necessary field surveys and investigation in accordance with Criteria and Standards in the preparation of detailed engineering plans.

4. PROCURING ENTITY'S CONCEPT DESIGN

The project is the Design and Build for the construction of NRF. Section VII shows the concept design of the project with its scope presented in presented in Table 1 of the MPSS.

5. MINIMUM PERFORMANCE STANDARDS AND SPECIFICATIONS (MPSS)

The Contractor shall undertake the Design and Build of the Project in conformance with the MPSS as shown in Section VI.

6. MANPOWER REQUIREMENT

Table 2

Key Staff Requirement for Detailed architectural and engineering design

Position	No.	Minimum Total Work Experience (years)	Minimum Total Similar Work Experience (years)	Type of Experience
Team Leader	1	10	5	A licensed Civil/ Mechanical Engineer with DAED experience as Team Leader preferably with Master's Degree.

Architect	1	8	5	A licensed Architect and has undertaken architectural design for commercial building/ industrial plant projects preferably a certified green building professional.
Civil Engineer	1	8	5	A licensed Civil Engineer preferably with Master's Degree in Structural Engineering and has undertaken structural designs for buildings and/or industrial plants or similar projects.
Professional Electrical Engineer	1	8	5	A license Professional Electrical Engineer with experience in planning, engineering design and/or installation of electrical systems for vertical structures as well as power supply/distribution systems and telecommunication systems.
Professional Mechanical Engineer	1	8	5	A licensed Professional Mechanical Engineer with experience in planning, engineering design, and/or installation of refrigeration facilities with knowledge in HVAC-R and fire protection and emergent alternative efficient HVAC-R technologies.
Environmental Specialist	1	8	5	A BS Environmental Engineering/ Science with experience in commercial building projects. Preferably an accredited EIA/EIS preparer.
Quantity/Cost Engineer	1	8	5	A Civil Engineer with experience as

				Estimator in at least 10 civil works projects.
Document Specialist/Specs. Engineer	1	8	5	A license Civil Engineer or Architect and should have successful track record as document specialist for at least 10 projects.

Table 3

Key Staff Requirement for Construction Works

Position	No.	Minimum Total Work Experience (years)	Minimum Total Similar Work Experience (years)	Type of Experience
Project Manager	1	10	5	A licensed Civil Engineer with construction experience as Project Manager of refrigeration building projects or similar projects.
Project Engineer	1	8	5	A licensed Mechanical Engineer with experience in construction of refrigeration buildings or similar projects with knowledge in HVAC-R and fire protection and emergent alternative efficient HVAC-R technologies.
Registered Electrical Engineer	1	8	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.

Materials/Quality Control Engineer	1	5	3	A DPWH Accredited Materials Engineer I
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	1	10	5	With experience as Foreman in the construction of buildings and industrial plants or similar projects.
Total	6			

7. APPROVED BUDGET FOR THE CONTRACT (ABC)

The Approved Budget for the Contract (ABC) is ₱ **46,807,546.75**. This is the ceiling for acceptable bids. Bids higher than the ABC shall be automatically rejected.

8. PROJECT DURATION

The project has a duration of **480 calendar days** broken down as follows; (i) Ninety (90) calendar days for the Detailed Engineering Design Phase including review and approval of PFDA, (ii) Four Hundred Five (360) calendar days for Construction Phase, and (iii) Thirty (30) calendar days allowance for Inclement Weather.

9. ELIGIBILITY CRITERIA FOR BIDDERS

9.1 General

The Eligibility Requirements for this DB Project shall adopt the provisions of Annex 'G" of the Implementing Rules and Regulations of RA 9184 (e.g. Eligibility Requirement). However, a prospective bidder who has no experience in DB project on its own may opt to enter a subcontracting agreement with a design or engineering firm for the design portion of the project.

9.2 Legal Requirements

a. Valid Contractor's License issued by the Philippine Contractor's Accreditation Board
b. Valid license of the Contractor's designer issued by the Professional

Regulation Commission.

9.3 Technical Requirements

a. The Contractor must have built one structure similar to the project at hand with a construction cost of at least 50% of the ABC.

b. The Contractor's designer must have designed one project similar to the project at hand with a construction cost of at least 50% of the ABC

9.4 Financial Requirements

a. The Contractor must have a Net Financial Contracting Capacity (NFCC) of at least the ABC of equivalent to ₱ **46,807,546.75**.

b. The Contractor must submit a written comment from a reputable bank to extend to him a credit line of at least 10% of the ABC, if the contract is awarded to him.

10. CONTENTS OF THE BID

a. Conceptual Design Plans for the Project which shall comply with the prescribed MPSS. The plans should contain the following:

General

1. Location plan/vicinity map, Index of Drawings
2. General Notes on Design Parameters and Construction Procedures
3. Legends, Symbols and Abbreviations

Site Development Plan

1. General Plan Showing Cross Sections and Elevations
2. Details of Water Supply System
3. Details of Drainage/Sewerage System including holding tank
4. Street Lighting
5. Landscaping

Refrigeration Building Design Plans

1. General Plan and Elevation
2. Architectural Plans
3. Electro-Mechanical Layout/Plans
4. Miscellaneous Details (Drainage, Roadways, etc.)
5. Summary of Quantities
6. Typical Lighting Facilities

b. Required Bid Security

c. Design and Construction Method and Schedule

d. Constructor's Organizational Chart and List of Key Personnel for the Project. The required Contractor's key staff requirement for DED and construction works is presented in Table 2 and Table 3 respectively.
e. List of Major Equipment Owned/Leased/Under Purchase for the project
f. Quality Control Program
g. Bank Commitment to provide the required Credit Line if the Contractor is awarded the contract.

11. PROCEDURE AND CRITERIA FOR BIDS EVALUATION

For the detailed evaluation of the DB proposals for the Project, a three-step procedure shall be adopted by the BAC, as follows:

a. Evaluation of Eligibility

The BAC shall evaluate the Eligibility Documents submitted by each bidder to determine compliance with the Eligibility Requirements in **ITB** Clause 5.

If the bidder meets all of the Eligibility Requirements, the BAC shall declare the bidder as "eligible" and proceed with the detailed evaluation of its Technical Proposal. If not, the BAC shall issue the Notice of Ineligibility to the bidder and return its unopened Technical and Financial Proposals to the bidder.

b. Evaluation of Technical Proposal

The BAC shall then conduct the evaluation of the Technical Proposal of each eligible bidder, particularly against the requirements in **ITB** Clause 13, using non- discretionary "pass/fail" criteria. Aside from the aspects that are evaluated in conventional (non-DB) projects, the BAC shall look into the Conceptual Design for the Project and the track record for DB projects submitted by the Contractor as indicated in the Bidding Documents. The BAC shall evaluate these aspects, using non-discretionary "pass/fail" criteria, to check for compliance with the following requirements:

(1) Concept of approach and methodology for DED and construction, with emphasis on the clarity, feasibility, innovativeness and comprehensiveness of the plan approach, and the quality of interpretation of project problems, risks, and suggested solutions.

(2) Quality of personnel to be assigned to the Project which covers suitability of key staff to perform the duties of the particular assignments and general qualifications and competence, including education and training of the key staff.

If the bidder passes and meets the Technical Proposal requirements and criteria, the BAC shall declare as "technically complying." All technically complying bidders shall be treated on the same footing for purposes of the evaluation of the Financial Proposals, i.e., no technical ranking of the bids is made.

In the event that no bidder has reach the minimum passing score, the top three bidders shall be considered to qualify for the second stage, provided, that they pass the requirements in Part I (Eligibility Criteria) and Part II (Adherence of preliminary design plans to the required performance specifications and parameters and degree of details).

c. Evaluation of Financial Proposals:

The BAC shall then open the Financial Proposal – which is simply the lump-sum bid price - of each "passed" bidder using non-discretionary criteria – including arithmetical corrections if any, and thus determine the correct total calculated bid prices. The BAC shall automatically disqualify the total calculated bid price which exceeds the ABC.

The total calculated bid prices (not exceeding the ABC) shall be ranked, in ascending order, from lowest to highest. The bid with the lowest total calculated bid price shall be identified as the Lowest Calculated Bid (LCB).

If the bidder with the LCB passes the post-qualification, his bid is declared as the Lowest Calculated Responsive Bid (LCRB) and shall be considered for award.

12. DATA TO BE PROVIDED BY PFDA

Data provided by PFDA are for reference only. The PFDA does not guarantee to the Bidders that the data provided are correct, free from error, and applicable to the Project at hand. The Bidder is responsible for the accuracy or applicability of any data that will be used in the design and build proposal and services. The following data shall be provided in electronic forms:

a. Conceptual Design Drawings
b. Pre-feasibility Study

13. REPORTS AND TIME SCHEDULES

The Contractor shall submit the following deliverable reports containing the desired outputs to the PFDA on the deadlines set with the corresponding payments upon approval by the PFDA of the corresponding deliverables:

Deliverable Report/Output	Deadline	Payment
Inception Report	Three (3) weeks after the effectivity of the contract	5 % of DAED Contract Amount **upon submission and approval by PFDA of the Inception Report*

Topographic and Hydrographic Survey Reports	End of the 1st month	15% of the DAED Amount **upon submission and approval by PFDA of Survey Reports*
Geotechnical Investigation Reports	End of the 1st month	25% of the DAED Amount **upon submission and approval by PFDA of Geotechnical Investigation Reports*
Preliminary Design Plans and Reports	End of the 2nd month	50% of the DAED Amount **upon submission and approval by PFDA of the Preliminary Design Plans and Reports*
Final Detailed architectural and engineering design (DAED) Plans and Reports	End of the 3rd month	100% of the DED Amount **upon submission and approval by PFDA of Final DED Plans and Reports*

14. DOCUMENTS TO BE PROVIDED BY THE CONTRACTOR DURING CONTRACT IMPLEMENTATION

14.1 For DAED Works

a. Detailed Architectural and Engineering Plans
b. Structural Design Analysis
c. Topographic and Boundary Surveys
d. Quantity Calculation
e. Design Report
f. Other relevant documents

14.2 For Construction Works

In accordance with the Conditions of Contract, the Contractor shall submit a fully detailed and time-related program in bar chart and critical path form, supported with equipment planning and other inputs required showing the order of procedures and method he proposes to adopt to execute the Works. The critical path shall be clearly shown on this program. The contractor shall obtain advance approval of the format and style of the bar chart from the Engineer who shall be entitled to direct changes to be made in the bar chart to his satisfaction.

The Contractor shall submit with this program a cash-flow estimate in accordance with the Conditions of the Contract. If at any time the Engineer considers that the actual progress of the Works does not

conform to the Contractor's program the contractor shall, upon request from the Engineer, prepares and submits for the Engineers Consent a revised program showing the revisions necessary to ensure completion of the Works within the time for completion as define in the Conditions of Contract.

The programme shall include, but is not limited to the following:

a. Contractor's Mobilization Plan
b. Contractor's Safety Plan
c. Drawings Schedule, Shop Drawings, as built drawings;
d. Traffic Control Plan
e. Environmental Control Plan
f. Quality Control Plan, and
g. Schedule of Materials
h. Maintenance schedule and procedures after completion
i. Other Relevant documents, such as monthly progress report, quarterly report, final Completion Report etc. as required in the Contract.

Prepared by:

Alex C. Aringino
Technical Assistant

Checked by:

Darby M. Macabata
Division Chief, Project Planning & Engineering Division

Recommending Approval:

Danilo A. Axalan
Manager, Technical Services Department

Approved by:

Atty. Glen A. Pangapalan
Acting General Manager

Section IX. Bill of Quantities

CONSTRUCTION OF NAVAL REFRIGERATION FACILITIES

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.

PROJECT : **CONSTRUCTION OF NAVAL REFRIGERATION FACILITIES**

Location : Brgy. Santissimo Rosario, Naval, Biliran

BID SUMMARY

ITEM NO.	DESCRIPTION	TOTAL BID AMOUNT
PART I.	GENERAL REQUIREMENTS	
PART II.	DETAILED ENGINEERING DESIGN (incl. topographic & relocation surveys)	
PART III.	SITE DEVELOPMENT AND UTILITIES WORKS	
PART IV.	REFRIGERATION BUILDING	
PART V.	ELECTRO-MECHANICAL AND OTHER RELATED WORKS	
PART VI.	PERMANENT POWER AND WATER CONNECTION	
PART VII.	AUXILLARY SYSTEM	
PART VIII.	FIRE PROTECTION & SUPPRESSION SYSTEM	
GRAND TOTAL		
Total Amount in Words **Pesos _____**		
and centavos		

Date : _____ day of _____

Signature _____

Printed Name : _____

In the Capacity as : _____

Duly authorized to sign Bid and on behalf of _____

PROJECT : **CONSTRUCTION OF NAVAL REFRIGERATION FACILITIES**
Location : Brgy. Santissimo Rosario, Naval, Biliran

BILL OF QUANTITIES SUMMARY

Pay Item No.	Description (Unit Price in Words)	Unit	Quantity	Unit Price (Pesos)	Amount (Pesos)
(1)	(2)	(3)	(4)	(5)	(6)
Part I.					
Part II.					
Part III.					
Part IV.					
Part V.					
Part VI.					
Part VII.					
Part VIII.					
Total Cost for this Project:				**In Figures: Php**	
In Words : Pesos _____					

Prepared by:

_____ Date : _____
Name and Signature of Bidder's Authorized Representative

_____
Position

_____
Name of Bidder

PROJECT : **CONSTRUCTION OF NAVAL REFRIGERATION FACILITIES**
Location : Brgy. Santissimo Rosario, Naval, Biliran

BILL OF QUANTITIES

Pay Item No.	Description (Unit Price in Words)	Unit	Quantity	Unit Price (Pesos)	Amount (Pesos)
(1)	(2)	(3)	(4)	(5)	(6)
Part I.	**GENERAL REQUIREMENTS**				
I.A.	Mobilization/Demobilization of Equipment	Lump Sum	1	In words: Pesos In Figure: Php	In Figure: Php
I.B.	Provide Environmental Safety & Health Program in the execution of the project	Lump Sum	1	In words: Pesos In Figure: Php	In Figure: Php
I.C.	Permits (PAMB/SAPA, Comprehensive Devt & Management Plan, Foreshore Lease Agreement, Updated ECC, OBO Permits, EMB VIII Permit)	Lump Sum	1	In words: Pesos In Figure: Php	In Figure: Php
I.D.	Support to PFDA's Engineers & Staff (Field Office w/. office equipment & supplies and Staff House incl. maintenance and communication)	Lump Sum	1	In words: Pesos In Figure: Php	In Figure: Php
I.E.	Provision of Temporary Facilities for Contractor (Medical Room, Staff House, Office, Worker's Quarters)	Lump Sum	1	In words: Pesos In Figure: Php	In Figure: Php
				Total Cost Part I:	
In Words : Pesos					
In Figures : Php					

Prepared by:

_____ Date : _____
Name and Signature of Bidder's Authorized Representative

_____
Position

_____
Name of Bidder

PROJECT : **CONSTRUCTION OF NAVAL REFRIGERATION FACILITIES**
Location : Brgy. Santissimo Rosario, Naval, Biliran

BILL OF QUANTITIES

Pay Item No.	Description (Unit Price in Words)	Unit	Quantity	Unit Price (Pesos)	Amount (Pesos)
(1)	(2)	(3)	(4)	(5)	(6)
Part II.	DETAILED ENGINEERING DESIGN (incl. topographic & relocation surveys)	Lump Sum	1	In words: Pesos In Figure: Php	In Figure: Php
				Total Cost Part II:	
In Words : Pesos					
In Figures : Php					

Prepared by:

Date : _____

Name and Signature of Bidder's Authorized Representative

Position

Name of Bidder

PROJECT : **CONSTRUCTION OF NAVAL REFRIGERATION FACILITIES**
Location : Brgy. Santissimo Rosario, Naval, Biliran

BILL OF QUANTITIES

Pay Item No.	Description (Unit Price in Words)	Unit	Quantity	Unit Price (Pesos)	Amount (Pesos)
(1)	(2)	(3)	(4)	(5)	(6)
Part III.	**SITE DEVELOPMENT AND UTILITIES WORKS**				
Part III.A.1	Filling Materials	Lump Sum	1	In words: Pesos In Figure: Php	In Figure: Php
Part III.A.2	Concrete Pavement	Lump Sum	1	In words: Pesos In Figure: Php	In Figure: Php
Part III.A.3	Gate & Fence	Lump Sum	1	In words: Pesos In Figure: Php	In Figure: Php
Part III.A.4	Drainage & Sewerage System	Lump Sum	1	In words: Pesos In Figure: Php	In Figure: Php
Part III.A.5	Outside Water Distribution System	Lump Sum	1	In words: Pesos In Figure: Php	In Figure: Php
Part III.A.6	Outside Lighting & Power Distribution System	Lump Sum	1	In words: Pesos In Figure: Php	In Figure: Php
Part III.A.7	Misc. Items (Led signages, etc.)	Lump Sum	1	In words: Pesos In Figure: Php	In Figure: Php
				In words: Pesos	In Figure: Php
				Total Cost Part III:	
	In Words : Pesos				
	In Figures : Php				

Prepared by:

Date : _____

_____
Name and Signature of Bidder's Authorized Representative

_____
Position

_____
Name of Bidder

PROJECT : **CONSTRUCTION OF NAVAL REFRIGERATION FACILITIES**
Location : Brgy. Santissimo Rosario, Naval, Biliran

BILL OF QUANTITIES

Pay Item No.	Description (Unit Price in Words)	Unit	Quantity	Unit Price (Pesos)	Amount (Pesos)
(1)	(2)	(3)	(4)	(5)	(6)
Part IV.	**REFRIGERATION BUILDING**				
Part IV.A	To house the 10 MT Ice Plant, Ice Storage, Cold Storage & Blast Freezer	Lump Sum	1	In words: Pesos _____ _____ In Figure: Php _____	In Figure: Php _____ _____ _____
Part IV.B	Food Stalls	Lump Sum	1	In words: Pesos _____ _____ In Figure: Php _____	In Figure: Php _____ _____ _____
				Total Cost Part IV:	
In Words : Pesos _____ _____					
In Figures : Php _____					

Prepared by:

_____ Date : _____
Name and Signature of Bidder's Authorized Representative

_____
Position

_____
Name of Bidder

PROJECT : **CONSTRUCTION OF NAVAL REFRIGERATION FACILITIES**
Location : Brgy. Santissimo Rosario, Naval, Biliran

BILL OF QUANTITIES

Pay Item No.	Description (Unit Price in Words)	Unit	Quantity	Unit Price (Pesos)	Amount (Pesos)
(1)	(2)	(3)	(4)	(5)	(6)
Part V.	**ELECTRO-MECHANICAL AND OTHER RELATED WORKS**				
Part V.A	10 MT Ice Plant, Ice Storage, Cold Storage & Blast Freezer	Lump Sum	1	In words: Pesos _____ _____ In Figure: Php _____	In Figure: Php _____ _____ _____
				Total Cost Part V:	
	In Words : Pesos _____ _____				
	In Figures : Php _____				

Prepared by:

_____ Date : _____
Name and Signature of Bidder's Authorized Representative

_____
Position

_____
Name of Bidder

PROJECT : **CONSTRUCTION OF NAVAL REFRIGERATION FACILITIES**
Location : Brgy. Santissimo Rosario, Naval, Biliran

BILL OF QUANTITIES

Pay Item No.	Description (Unit Price in Words)	Unit	Quantity	Unit Price (Pesos)	Amount (Pesos)
(1)	(2)	(3)	(4)	(5)	(6)
Part VI.	**PERMANENT POWER AND WATER CONNECTION**				
	PERMANENT POWER AND WATER CONNECTION	Lump Sum	1	In words: Pesos _____ In Figure: Php _____	In Figure: Php _____
				Total Cost Part VI:	
	In Words : _____ Pesos				
	In Figures : _____ Php				

Prepared by:

_____
Name and Signature of Bidder's Authorized Representative

Date : _____

_____
Position

_____
Name of Bidder

PROJECT : **CONSTRUCTION OF NAVAL REFRIGERATION FACILITIES**
Location : Brgy. Santissimo Rosario, Naval, Biliran

BILL OF QUANTITIES

Pay Item No.	Description (Unit Price in Words)	Unit	Quantity	Unit Price (Pesos)	Amount (Pesos)
(1)	(2)	(3)	(4)	(5)	(6)
Part VII.	**AUXILLARY SYSTEM**				
	AUXILLARY SYSTEM	Lump Sum	1	In words: Pesos _____ In Figure: Php _____	In Figure: Php _____
				Total Cost Part VII:	
	In Words : Pesos _____ In Figures : Php _____				

Prepared by:

_____ Date : _____
Name and Signature of Bidder's Authorized Representative

_____
Position

_____
Name of Bidder

PROJECT : **CONSTRUCTION OF NAVAL REFRIGERATION FACILITIES**
Location : Brgy. Santissimo Rosario, Naval, Biliran

BILL OF QUANTITIES

Pay Item No.	Description (Unit Price in Words)	Unit	Quantity	Unit Price (Pesos)	Amount (Pesos)
(1)	(2)	(3)	(4)	(5)	(6)
Part VIII.	**FIRE PROTECTION & SUPPRESSION SYSTEM**				
	FIRE PROTECTION & SUPPRESSION SYSTEM	Lump Sum	1	In words: Pesos _____ _____ In Figure: Php _____	In Figure: Php _____ _____ _____
				Total Cost Part VIII:	
	In Words : Pesos _____ _____				
	In Figures : Php _____				

Prepared by:

_____
Name and Signature of Bidder's Authorized Representative

Date : _____

_____
Position

_____
Name of Bidder

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 (For DED Phase *e.g.*, Team Leader, Architect, Civil Engineer, Prof. Electrical Engineer, Professional Mechanical Engineer, Environmental Specialist, Quantity/Cost Engineer, and Document Specialist/Specifications Writer; For Construction Phase e.g., Project Manager, Project Engineer, Electrical Engineer, Materials Engineer I, Safety Officer/Engineer and Foreman), 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.
☐	(n) TPF 1. Designer's References;
☐	(o) TPF 2. Comments & Suggestions of Designer on the TOR, MPSS, and Data Provided by the Procuring Entity;
☐	(p) TPF 3a. Description of Methodology & Work Plan for Performing the Project;
☐	(q) TPF 3b. Construction Management Strategy & Method Statement for Construction including PERT-CPM;
☐	(r) TPF 4. Team Composition and Tasks;
☐	(s) TPF 5. Format of Curriculum Vitae (CV) for Proposed Professional Staff;
☐	(t) TPF 6. Time Schedule for Professional Personnel;
☐	(u) TPF 7a. Activity/Work Schedule (Design);
☐	(v) TPF 7b. Activity/Work Schedule (Construction);
☐	(w) Concept/Preliminary Design;
Financial Documents	
☐	(x) 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**
☐	(y) The prospective bidder's computation of Net Financial Contracting Capacity (NFCC).
CLASS "B" DOCUMENTS	
☐	(z) 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

☐	(aa) Original of duly signed and accomplished Financial Bid Form; **and**
Other documentary requirements under RA No. 9184	
☐	(bb) Original of duly signed Bid Prices in the Bill of Quantities; **and**
☐	(cc) 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**
☐	(dd) Cash Flow by Quarter.
☐	(ee) Financial Proposal Form 1 (FPF 1).
☐	(ff) Scope of Work Summary of Cost.

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 (DESIGN PHASE)

			Team Leader	**Architect**	**Civil Engineer**	**Professional Mechanical Engineer**	**Professional Electrical Engineer**					Environmental Specialist	Quantity/ Cost Engineer	**Specification Writer**
1	Name													
2	Address													
3	Date of Birth													
4	Employed Since													
5	Experience													
	Total Experience (Years)	Required	10	8	8	8	8					8	8	8
		Actual												
	Experience in Similar Project (Years)	Required	5	5	5	5	5					5	5	5
		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.

Submitted by :_____
(Printed Name & Signature)

Designation :_____

Date :_____

QUALIFICATION OF KEY PERSONNEL PROPOSED TO BE ASSIGNED TO THE CONTRACT (CONSTRUCTION PHASE)

			Project Manager (Civil Engineer)	**Project Engineer (Mechanical Engineer)**		**Electrical Engineer**			**Materials Engineer I**	**Safety Officer/ Engineer**		Foreman		
1	Name													
2	Address													
3	Date of Birth													
4	Employed Since													
5	Experience													
	Total Experience (Years)	Required	8	8		8			5	5		10		
		Actual												
	Experience in Similar Project (Years)	Required	5	5		5			3	3		5		
		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.

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)

Philippine Fisheries Development Authority (PFDA)

Contract Name:
Location of the Contract:

CONTRACTOR'S CERTIFICATION ON KEY PERSONNEL FOR THE CONTRACT

Date of Issuance:
Name of Head of Procuring Entity:
Position:
Name of Procuring Entity:
Address:

Dear Sir/Madame:

Supplementing our Organizational chart for the above stated Contract, we submit, and certify as true and correct, the following information:

1. We have engaged the services of the following key personnel to perform the duties of the position indicated in the above stated Contract if it is awarded to us:

   a. For Design Services

Proposed Position	Name	Years of Experience in Similar Position
Team Leader		
Architect		
Civil Engineer		
Professional Mechanical Engineer		
Professional Electrical Engineer		
Environmental Specialist		
Quantity/Cost Engineer		
Specification Writer		

   b. Civil Works

Proposed Position	Name	Years of Experience in Similar Position
Project Manager		
Project Engineer (Mechanical Engineer)		
Electrical Engineer		
Materials/Quality Control Engineer		
Safety Officer/Engineer		
Foreman		

2. We submit the enclosed affidavits of Commitment to work on the Contract of these key personnel.

3. We ensure that the abovementioned personnel shall employ their best care, skill, and ability in performing the duties of their respective positions in accordance with the provision of the

contract, including the Conditions of Contract, specifications, and Drawings, and that they shall be personally present it the jobsite during the period of their assignment in the contract.

4. In event that we choose to replace any of the abovementioned key personnel, we shall submit to you in writing at least fourteen (14) days before making the replacement, for your approval, the name and bio data of the proposed replacement whose experience shall be equal to or better than the person to be replaced.

5. We understand that any violation of the above stated conditions shall be a sufficient ground for us to be disqualified from this Contract and future biddings of the PFDA.

Very Truly Yours,

Name and Signature of Bidder's Authorized Representative

Philippine Fisheries Development Authority (PFDA)

Contract Name:
Location of the Contract: _____

KEY PERSONNEL'S AFFIDAVIT OF COMMITMENT TO WORK ON THE CONTRACT

Date of Issuance

Name of Head of Procuring Entity
Position
Name of Procuring Entity
Address

Dear Sir/Madame:

1. I confirm that *Name of Contractor* has engaged my services for the position of _____ in the above stated Contract if it is awarded to the Contractor.

2. I, therefore, commit to assume the said position in the above stated Contract once it is awarded to the Contractor, and I shall employ the best care, skill, and ability to perform the duties of such position in accordance with the Conditions of Contract, Specifications, Drawings, and other provisions of the Contract Agreement. I am aware that I have to stay in the jobsite for the duration of my assignment.

3. I do not allow the use of my name to enable the Contractor to qualify for the above stated Contract without my commitment to assume the said position, since I understand that to do so shall be a sufficient ground for my disqualification from this Contract and future biddings of the PFDA.

1. I submit, and certify as true and correct, my bio-data as follows:

   a. Name : _____
   b. Date of Birth : _____
   c. Nationality : _____
   d. Educational Attainment : _____
   e. Specialty : _____
   f. PRC License No. and Date : _____
   g. Tax Information No. (TIN) : _____
   h. Employment Record : _____

Name & Address of Employer	Position	From Mo./Yr.	To Mo./Yr.	Total Period Yrs. & Mos.

i. Work Experience (Projects Handled):

i. Proj. Name & Location ii. Owner's Name & Address iii. My Position	i. Proj. Description ii. Total Proj. Cost	i. Part of Proj. I Handled ii. Cost of Part	i. Start Date ii. Compl. Date
Completed Projects:			
On-going Projects:			

(use another sheet, if necessary)

Very truly yours,

Name and Signature of Personnel

Noted by:

Name and Signature of Contractor's Authorized Representative

REPUBLIC OF THE PHILIPPINES)
CITY OF _____)

SUBSCRIBED and SWORN TO before me this _____ day of _____, 20 ___ at _____, affiant exhibiting to me his/her Residence Certificate No. _____ issued at _____ on _____.

_____
Notary Public

Doc. No. _____
Page No. _____
Book No. _____
Series No. _____

Until _____
PTR No. _____
Issued at _____
Issued on _____

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 Naval Refrigeration Facilities, we certify that *[Name of the Bidder]* has in its employ key personnel such as; for DED Phase Team Leader, Architect, Civil Engineer, Prof. Mechanical Engineer, Prof. Electrical Engineer, Environmental Specialist, Quantity/Cost Engineer, and Document Specialist/Specifications Writer; For Construction Phase e.g., Project Manager, Project Engineer (Mechanical Engineer), Electrical Engineer, Materials Engineer I, Safety Officer/Engineer and Foreman who may be engaged for the design and build 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. **In case advance payment was made or given, failure to perform or deliver any of the obligations and undertakings in the contract shall be sufficient grounds to constitute criminal liability for Swindling (Estafa) or the commission of fraud with unfaithfulness or abuse of confidence through misappropriating or converting any payment received by a person or entity under an obligation involving the duty to deliver certain goods or services, to the prejudice of the public and the government of the Philippines pursuant to Article 315 of Act No. 3815 s. 1930, as amended, or the Revised Penal Code.**

IN WITNESS WHEREOF, I have hereunto set my hand this __ day of ___, 20__ at _____, Philippines.

[Insert NAME OF BIDDER OR ITS AUTHORIZED REPRESENTATIVE]
[Insert signatory's legal capacity]
Affiant

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

Witness my hand and seal this ___ day of *[month] [year]*.

NAME OF NOTARY PUBLIC
Serial No. of Commission _____
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 of Naval Refrigeration Facilities in Naval, Biliran;

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 of Naval Refrigeration project.

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

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[1] 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

[1] 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: _____

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 Acting 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]*

Doc. No. _____
Page No. _____
Book No. _____
Series of _____

FOR DESIGN AND CONSTRUCTION: TECHNICAL ASPECTS

(To be included as Supporting Documents in the First Envelope)

TPF 1. DESIGNER'S REFERENCES

Relevant Services Carried Out That Best Illustrate Qualifications

Using the format below, provide information on each project for which your firm/entity, either individually, as a corporate entity, or as one of the major companies within an association, was legally contracted.

<table>
<tr><td colspan="2">Project Name:</td><td>Country:</td></tr>
<tr><td colspan="2">Location within Country:</td><td>Professional Staff Provided by Your Firm/Entity(profiles):</td></tr>
<tr><td colspan="2">Name of Client:</td><td>No. of Staff:</td></tr>
<tr><td colspan="2">Address:</td><td>No. of Staff-Months; Duration of Project:</td></tr>
<tr><td>Start Date (Month/Year):</td><td>Completion D (Month/Year):</td><td>Approx. Value of Services (in Current ₱):</td></tr>
<tr><td colspan="2">Name of Associated Consultants, if any:</td><td>No. of Months of Professional Staff Provided by Associated Consultants:</td></tr>
<tr><td colspan="3">Name of Senior Staff (Project Director/Coordinator, Team Leader) Involved and Functions Perform</td></tr>
<tr><td colspan="3">Narrative Description of Project:</td></tr>
<tr><td colspan="3">Description of Actual Services Provided by Your Staff:</td></tr>
</table>

Consultant's Name: _____

TPF 2. COMMENTS AND SUGGESTIONS OF DESIGNER ON THE TERMS OF REFERENCE, MINIMUM PERFORMANCE STANDARDS AND SPECIFICATIONS (MPSS), AND DATA PROVIDED BY THE PROCURING ENTITY

Terms of Reference

1.

2.

3.

Minimum Performance Specifications and Parameters:

1.

2.

3.

Data Provided by the Procuring Entity:

1.

2.

3.

TPF 3a. DESCRIPTION OF METHODOLOGY AND WORK PLAN FOR PERFORMING THE PROJECT (Design)

The Bidder shall submit a design methodology which addresses the key items identified in the Employer's Requirements, which include, inter alia, the following:

(a) Organizational arrangements for the design, including: team structure, roles and responsibilities, design works plan, interface arrangements, design review and approval procedures, and quality assurance arrangements;

(b) Proposed design deliverables (Per TOR requirements);

(c) Design statement to describe the approach and methodology that demonstrate the capability in the design of the Project, as described in the Employer's Requirements, which the design statement shall cover the following aspects:

i. Topographic Survey
ii. Design of Refrigeration Building
iii. Design of Electro-mechanical component of the Ice Plant & Ice Storage
iv. Design of Miscellaneous Structure
v. Design Specifications of Materials
vi. Traffic Management Plan

(d) Any added value the Bidder will bring or examples of innovative aspects of the design;

(e) Details of the approach to managing risks, stakeholder engagement, consultation, and environmental permits/consents; and

(f) Value Engineering

TPF 3b. CONSTRUCTION MANAGEMENT STRATEGY AND METHOD STATEMENT FOR CONSTRUCTION INCLUDING PERT-CPM

The Bidder shall submit a construction management strategy as per Employer's Requirements, which address, inter alia, the following:

(a) Organizational arrangements for construction management, including team structure, roles and responsibilities, interface arrangements, and quality assurance arrangements;

(b) Subcontractor selection and management;

(c) Support from the Employer in obtaining and managing consents, permits, and approvals from third parties;

(d) Site setup proposals, including access, accommodation, welfare facilities and arrangement for plant and material storage;

(e) Construction phasing proposals, including sequence of work methodology and management of conflicting activities which shall cover the following aspects:

i. Construction of Refrigeration Building and Electro-Mechanical Works
ii. Miscellaneous Structure

(f) Risk management approach for geotechnical and subsurface aspects of the Works;

(g) Quality management system, including a draft of the Quality Management Plan;

(h) Preparation, approval, and implementation for the Contractor's Environmental and Social Management Plan;

(i) Preparation, approval, and implementation for the Contractor's Health and Safety Management Plan;

(j) Reporting arrangements;

(k) Arrangements for site handover, including completion of As-Built Drawings, preparation of operating and maintenance manuals, and any other relevant aspects, and;

(l) Appreciation of any key construction constraints or difficulties of the Project and the technical solutions.

TPF 4. TEAM COMPOSITION AND TASKS

Design

1. Technical/Managerial Staff		
Name	Position	Task

2. Support Staff		
Name	Position	Task

Construction

1. Technical/Managerial Staff		
Name	Position	Task

2. Support Staff		
Name	Position	Task

TPF 5. FORMAT OF CURRICULUM VITAE (CV) FOR PROPOSED PROFESSIONAL STAFF

Proposed Position: _____

Name of Firm: _____

Name of Staff: _____

Profession: _____

Date of Birth: _____

Years with Firm/Entity: _____ Nationality: _____

Membership in Professional Societies: _____

_____

Detailed Tasks Assigned: _____

_____

Key Qualifications:

[*Give an outline of staff member's experience and training most pertinent to tasks on project. Describe degree of responsibility held by staff member on relevant previous projects and give dates and locations. Use about half a page.*] **Training should be supported with Certificate of Training or equivalent document.**

_____

Education:

[*Summarize college/university and other specialized education of staff members, giving names of schools, dates attended, and degrees obtained. Use about one quarter of a page.*] **To be supported with Diploma or equivalent document.**

_____

Employment Record:

[*Starting with present position, list in reverse order every employment held. List all positions held by staff member since graduation, giving dates, names of employing organizations, titles of positions held, and locations of projects. For experience in last ten years, also give types of activities performed and client references, where appropriate. Use about two pages.*]

_____

Languages:

[*For each language, indicate proficiency: excellent, good, fair, or poor in speaking, reading, and writing.*]

Certification:

I, the undersigned, certify that to the best of my knowledge and belief, these data correctly describe me, my qualifications, and my experience.

_____Date: _____
[Signature of staff member and authorized representative of the firm] Day/Month/Year

Full name of staff member: _____
Full name of authorized representative: _____

Commitment:

I, the undersigned, hereby confirm that I am exclusively committed with ***[Name of Consultant]***. I firmly commit to assume the post of {Propose Position] for the ***[Name of Project]***, and that I will fully be available to undertake the complete assignment in the Technical Proposal.

_____
Signature over Printed Name

SUBSCRIBED AND SWORN to before me this *[Date]* at *[Place]* affiant having exhibited to me his Community Tax No. _____ issued on *[Date]* at *[Place]*.

Doc. No_____;
Page No _____;
Book No _____;
Series_____

TPF 6. TIME SCHEDULE FOR PROFESSIONAL PERSONNEL

			Months (in the Form of a Bar Chart)												
Name	Position	Reports Due/Activities	1	2	3	4	5	6	7	8	9	10	11	12	Number of Months
Design															Subtotal (1)
Construction															Subtotal (2) Subtotal (3) Subtotal (4)

Full-time: _____ Part-time: _____
Reports Due: _____
Activities Duration: _____
Location _____ Signature:_
(Authorized representative)

Full Name:_____
Title:_____
Address**:**_____

TPF 7a. ACTIVITY (WORK) SCHEDULE (Design)

A. Field Investigation and Study Items

	[1st, 2nd, etc. are months from the start of project.]												
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	
Activity (Work)													
_____													
_____													
_____													
_____													

B. Completion and Submission of Reports

Reports	Date
1. Inception Report	
2. Interim Progress Report (a) First Status Report (b) Second Status Report	
3. Draft Report	
4. Final Report	

TPF 7b. ACTIVITY (WORK) SCHEDULE (Construction)

Bar Chart/PERT-CPM

FOR DESIGN SERVICES: FINANCIAL ASPECTS

(TO BE INCLUDED AS SUPPORTING DOCUMENTS IN THE SECOND ENVELOPE)

FPF 1. SUMMARY OF COSTS

Detailed Engineering Design	Quantity	Unit	Amount
Total Detailed Engineering Design Cost	1.00	l.s.	_____

SCOPE OF WORK SUMMARY COST

Part I: General Requirements

Scope of Work: Mobilization/Demobilization of Equipment

Quantity Unit: Lump sum

Item Spec No.	Description	Unit	Qty.	Unit Cost	Total Cost (Peso)
	Total Cost				
	Unit Cost				

SCOPE OF WORK SUMMARY COST

Part I: General Requirements

Scope of Work: Environmental Safety and Health Program

Quantity Unit: Lump sum

Item Spec No.	Description	Unit	Qty.	Unit Cost	Total Cost (Peso)
	Total Cost				
	Unit Cost				

SCOPE OF WORK SUMMARY COST

Part I: General Requirements

Scope of Work: Permits and Clearances

Quantity Unit: Lump sum

Item Spec No.	Description	Unit	Qty.	Unit Cost	Total Cost (Peso)
	Total Cost				
	Unit Cost				

SCOPE OF WORK SUMMARY COST

Part I: General Requirements

Scope of Work: Support to PFDA's Engineers & Staff

Quantity Unit: Lump sum

Item Spec No.	Description	Unit	Qty.	Unit Cost	Total Cost (Peso)
	Total Cost				
	Unit Cost				

SCOPE OF WORK SUMMARY COST

Part I: General Requirements

Scope of Work: Provision of Temporary Facility for the Contractor

Quantity Unit: Lump sum

Item Spec No.	Description	Unit	Qty.	Unit Cost	Total Cost (Peso)
	Total Cost				
	Unit Cost				

SCOPE OF WORK SUMMARY COST					
Part III: Site Development					
Scope of Work: Filling Materials					
Quantity Unit: Lump sum					
Item Spec No.	Description	Unit	Qty.	Unit Cost	Total Cost (Peso)
	Total Cost				
	Unit Cost				

SCOPE OF WORK SUMMARY COST

Part III: Site Development

Scope of Work: Concrete Pavement

Quantity Unit: Lump sum

Item Spec No.	Description	Unit	Qty.	Unit Cost	Total Cost (Peso)
	Total Cost				
	Unit Cost				

SCOPE OF WORK SUMMARY COST

Part III: Site Development

Scope of Work: Gate & Fence

Quantity Unit: Lump sum

Item Spec No.	Description	Unit	Qty.	Unit Cost	Total Cost (Peso)
	Total Cost				
	Unit Cost				

SCOPE OF WORK SUMMARY COST

Part III: Site Development

Scope of Work: Drainage & Sewerage System

Quantity Unit: Lump sum

Item Spec No.	Description	Unit	Qty.	Unit Cost	Total Cost (Peso)
	Total Cost				
	Unit Cost				

SCOPE OF WORK SUMMARY COST

Part III: Site Development

Scope of Work: Outside Water Distribution System

Quantity Unit: Lump sum

Item Spec No.	Description	Unit	Qty.	Unit Cost	Total Cost (Peso)
	Total Cost				
	Unit Cost				

SCOPE OF WORK SUMMARY COST					
Part III: Site Development					
Scope of Work: Outside Lighting & Power Distribution System					
Quantity Unit: Lump sum					
Item Spec No.	Description	Unit	Qty.	Unit Cost	Total Cost (Peso)
	Total Cost				
	Unit Cost				

SCOPE OF WORK SUMMARY COST					
Part III: Site Development					
Scope of Work: Miscellaneous Items					
Quantity Unit: Lump sum					
Item Spec No.	Description	Unit	Qty.	Unit Cost	Total Cost (Peso)
	Total Cost				
	Unit Cost				

SCOPE OF WORK SUMMARY COST

Part IV: Building

Scope of Work: Refrigeration Building (480 sq.m.) to house the 10 MT Ice Making Machine, Ice Storage, Cold Storage, Blast Freezer, and Food Stalls.

Quantity Unit: Lump sum

Item Spec No.	Description	Unit	Qty.	Unit Cost	Total Cost (Peso)
	Total Cost				
	Unit Cost				

SCOPE OF WORK SUMMARY COST

Part V: Electro-Mechanical and Other Related Works

Scope of Work: Supply, Installation and testing of 10 MT Ice Making Machine, Ice Storage Room, Cold Storage Room & Blast Freezer

Quantity Unit: Lump sum

Item Spec No.	Description	Unit	Qty.	Unit Cost	Total Cost (Peso)
	Total Cost				
	Unit Cost				

SCOPE OF WORK SUMMARY COST

Part VI: Permanent Power and Water Connection

Scope of Work: Supply, Installation and testing

Quantity Unit: Lump sum

Item Spec No.	Description	Unit	Qty.	Unit Cost	Total Cost (Peso)
	Total Cost				
	Unit Cost				

SCOPE OF WORK SUMMARY COST					
Part VII: Auxillary System					
Scope of Work: Supply, installation & testing					
Quantity Unit: Lump sum					
Item Spec No.	Description	Unit	Qty.	Unit Cost	Total Cost (Peso)
	Total Cost				
	Unit Cost				

SCOPE OF WORK SUMMARY COST

Part VIII: Fire Protection and Suppression System

Scope of Work: Supply, Installation, testing

Quantity Unit: Lump sum

Item Spec No.	Description	Unit	Qty.	Unit Cost	Total Cost (Peso)
	Total Cost				
	Unit Cost				

DETAILED COST ESTIMATES DERIVATION OF UNIT COST & LUMP SUM ITEMS

Construction of Naval Refrigeration Facilities

Unit Price Analysis

Description : **Quantity** : **UNIT**

REFERENCE 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)					
D.	ESTIMATED DIRECT COST (EDC)					
E.	DIRECT COST (EDC/QUANTITY)					
F.	OVERHEAD, CONTINGENCIES & MISCELLANEOUS				10%	
G.	PROFIT				8%	
H.	VALUE ADDED TAX				5%	
I.	TOTAL COST (D + F + G + H)					
	TOTAL UNIT PRICE (I/QUANTITY)				P / UNIT	