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 LAOAG 3 MT ICE PLANT & COLD STORAGE

Brgy. 2, Laoag City, Ilocos Norte

NOVEMBER 2022

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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

Construction of Laoag 3 MT Ice Plant & Cold Storage

1. The Philippine Fisheries Development Authority (PFDA), through the National Government Subsidy intends to apply the sum of **₱19,062,334.08** being the Approved Budget for the Contract (ABC) to payments under the contract for the **Construction of Laoag 3MT Ice Plant and Cold Storage** located at Laoag City, Ilocos Norte.

2. The PFDA now invites bids for the above Procurement Project. Completion of the work is **309 calendar days**. Bidders should have completed a contract similar to the Project. The description of an eligible bidder is contained in the 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 18 – December 8, 2022	PFDA - Central Office, Diliman, Quezon City
December 9, 2022	Navotas Fish Port Complex (NFPC), Navotas City

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

5. Bids must be duly received by the BAC Secretariat through manual submission at the NFPC - Conference Room, GAD Center, Navotas City on or before **December 9, 2022; 8:00 AM**. **Late bids shall not be accepted**.

6. The PFDA will hold a Pre-Bid Conference **November 25, 2022; 10:00 AM** onwards at the **NFPC Conference Room - GAD Center, Navotas City** which shall be open to prospective bidders.

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

8. Bid opening shall be on **December 9, 2022; 10:00 AM** onwards at the given address above. Bids will be opened in the presence of the bidders' 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 General

Manager or the National Bureau of Investigation for entrapment and proper investigation.

11. For further information, please refer below within official business hours:

    Mr. Ernest Carlo DC. Garcia
    Head, PFDA-BAC Secretariat
    PCA Annex Bldg.
    Elliptical Road, Diliman, Quezon City
    bac.co@pfda.gov.ph
    (02) 8925-7850
    (02) 8925-6146

12. 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

November 18, 2022

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

Section II. Instructions to Bidders

Instructions to Bidders

1. Scope of Bid

The Procuring Entity, Philippine Fisheries Development Authority (PFDA) invites Bids for the **Construction of Laoag 3 MT Ice Plant & Cold Storage, Brgy. 2, Laoag City, Ilocos Norte**.

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

2. Funding Information

2.1. The GOP through the General Appropriations Act for CY 2022 in the total amount of **₱ 19,062,334.08**.

2.2. The source of funding is:

a. GAA for CY 2022

3. Bidding Requirements

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

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

The Bidder, by the act of submitting its Bid, shall be deemed to have inspected the site, determined the general characteristics of the contracted Works and the conditions for this Project, such as the location and the nature of the work; (b) climatic conditions; (c) transportation facilities; (c) nature and condition of the terrain, geological conditions at the site communication facilities, requirements, location and availability of construction aggregates and other materials, labor, water, electric power and access roads; and (d) other factors that may affect the cost, duration and execution or implementation of the contract, project, or work and examine all instructions, forms, terms, and project requirements in the Bidding Documents.

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

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

5. Eligible Bidders

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

5.2. The Bidder must have an experience of having completed a Single Largest Completed Contract (SLCC) that is similar to this Project, equivalent to at least fifty percent (50%) of the ABC adjusted, if necessary, by the Bidder to current prices using the PSA's CPI, except under conditions provided for in Section 23.4.2.4 of the 2016 revised IRR of RA No. 9184.

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

5.3. For Foreign-funded Procurement, the Procuring Entity and the foreign government/foreign or international financing institution may agree on another track record requirement, as specified in the Bidding Document prepared for this purpose.

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

6. Origin of Associated Goods

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

7. Subcontracts

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

The Procuring Entity has prescribed that:

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

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

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

7.1. Subcontracting of any portion of the Project does not relieve the Contractor of any liability or obligation under the Contract. The Supplier will be responsible for the acts, defaults, and negligence of any subcontractor, its agents, servants,

or workmen as fully as if these were the Contractor's own acts, defaults, or negligence, or those of its agents, servants, or workmen.

8. Pre-Bid Conference

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

9. Clarification and Amendment of Bidding Documents

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

10. Documents Comprising the Bid: Eligibility and Technical Components

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

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

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

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

A List of Contractor's major equipment units, which are owned, leased, and/or under purchase agreements, supported by proof of ownership, certification of availability of equipment from the equipment lessor/vendor for the duration of the project, as the case may be, must meet the minimum requirements for the contract set in the **BDS**.

11. Documents Comprising the Bid: Financial Component

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

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

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

12. Alternative Bids

Bidders shall submit offers that comply with the requirements of the Bidding Documents, including the basic technical design as indicated in the drawings and specifications. Unless there is a value engineering clause in the **BDS**, alternative Bids shall not be accepted.

13. Bid Prices

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

14. Bid and Payment Currencies

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

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

15. Bid Security

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

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

16. Sealing and Marking of Bids

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

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

17. Deadline for Submission of Bids

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

18. Opening and Preliminary Examination of Bids

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

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

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

19. Detailed Evaluation and Comparison of Bids

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

19.2. If the Project allows partial bids, all Bids and combinations of Bids as indicated in the **BDS** shall be received by the same deadline and opened and evaluated simultaneously so as to determine the Bid or combination of Bids offering the lowest calculated cost to the Procuring Entity. Bid Security as required by **ITB** Clause 16 shall be submitted for each contract (lot) separately.

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

20. Post Qualification

Within a non-extendible period of five (5) calendar days from receipt by the Bidder of the notice from the BAC that it submitted the Lowest Calculated Bid, the Bidder shall submit its latest income and business tax returns filed and paid through the BIR Electronic Filing and Payment System (eFPS), and other appropriate licenses and permits required by law and stated in the **BDS**.

21. Signing of the Contract

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

Section III. Bid Data Sheet

Bid Data Sheet

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

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

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

a. Size Range – Small B for Building & Industrial Plant
b. License Category – C for Building & Industrial Plant

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

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

Key Staff Requirement for Construction Works

<table>
<tr><th>Position</th><th>No.</th><th>Minimum Total Work Experience (years)</th><th>Minimum Total Similar Work Experience (years)</th><th>Type of Experience</th></tr>
<tr><td>Project Manager</td><td>1</td><td>10</td><td>5</td><td>A licensed Mechanical Engineer with experience in Civil Works and must managed or supervised at least ₱ 10 Million worth of project of similar nature.</td></tr>
<tr><td>Project Engineer</td><td>1</td><td>5</td><td>3</td><td>A licensed Civil Engineer with experience in the construction of refrigeration</td></tr>
</table>
</td></tr>
</table>

					building and must have managed at least ₱ 5 Million worth of project of similar nature.
	Registered Electrical Engineer	1	5	3	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 Engineer	1	5	3	A DPWH Accredited Materials Engineer I and a licensed Civil Engineer.
	Safety Officer	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).
	Construction Foreman	1	10	8	With experience as Foreman of at least 5 Building Construction 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	Roller Compactor, 10T
1	unit	Backhoe, 1 cu.m. cap
1	unit	Grader, 140 HP
1	unit	Truck Mounted Crane, 41-45 MT Cap.
1	unit	Vibro Hammer, 272 HP
1	unit	Plate Compactor
1	unit	Generator Set (700W)
1	unit	Transit Mixer, 5 cu.m.
1	unit	Jackhammer

	<table><tr><td>1</td><td>unit</td><td>Concrete Screeder</td></tr><tr><td>1</td><td>unit</td><td>Concrete Cutter</td></tr></table>
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 **₱ 381,246.88***,* 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 **₱ 953,117.20** if bid security is in Surety Bond.
16	Each Bidder shall submit one (1) original and two (2) copies of its first and second components (Technical and Financial components) of its bid. Failure to comply with this requirement will result in the rejection of the bidder's bid.
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 Three Hundred Nine (309) calendar days.

The breakdown of the computation for the total contract time is as follows:
<table>
<tr><td>1</td><td>Total actual number of working days (Counted six (6) days a week)</td><td>223</td></tr>
<tr><td>2</td><td>Allowance for Holidays & Sundays</td><td>56</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>309 calendar days</td></tr>
</table>
NOTE: The contract duration shall be reckoned from the start date and not from contract effectivity date.</td></tr>
<tr><td>4.1</td><td>The Procuring Entity shall give possession of all parts of the Site to the Contractor beginning on the date of effectivity of contract until the date of its termination and/or project completion.</td></tr>
<tr><td>6</td><td>The site investigation reports are: none</td></tr>
<tr><td>7.2</td><td>In case of permanent structures, such as buildings of types 4 and 5 as classified under the National Building Code of the Philippines and other structures made of steel, iron, or concrete which comply with relevant structural codes (e.g., DPWH Standard Specifications), such as, but not limited to, steel/concrete bridges, flyovers, aircraft movement areas, ports, dams, tunnels, filtration and treatment plants, sewerage systems, power plants, transmission and communication towers, railway system, and other similar permanent structures: Fifteen (15) years.

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

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

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

ANNEX “A”
Special Conditions of Contract

Republic of the Philippines
gppb
Government Procurement Policy Board

ANNEX "A"

CIRCULAR 03-2019
8 March 2019

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

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

1.0 PURPOSE

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

2.0 SCOPE

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

3.0 CONTRACT TERMINATION DUE TO DEFAULT BY CONTRACTORS IN INFRASTRUCTURE PROJECTS

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

"2. In contracts for Infrastructure Projects:

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

a) Due to the Contractor's fault and while the project is on-going, it has incurred negative slippage of fifteen percent (15%) or more in accordance with Presidential Decree 1870;[1]

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

4.0 GUIDELINES

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

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

4.2.1 Negative slippage of five percent (5%) –

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

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

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

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

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

4.2.2 Negative slippage of ten percent (10%) –

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

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

4.2.3 Negative slippage of fifteen percent (15%) –

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

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

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

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

7.0 For guidance and compliance.

SGD

LAURA B. PASCUA
Alternate Chairperson

Section VI. Specifications

TECHNICAL SPECIFICATION

PART I – GENERAL EXPENSES AND PREPARATION OF WORKS

A. MOBILIZATION AND DEMOBILIZATION

A.01 SCOPE OF WORK

The contractor shall mobilize and demobilize all equipment necessary to complete all work items of the project.

Mobilization and demobilization shall be treated as separate items. It shall be computed based on the cost of transportation of all equipment of the contractor to complete the project.

Covers the topographic survey including the layout and installation of markers.

A.02 TOPOGRAPHIC SURVEY

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

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

Prior to commencement of the work, the Contractor shall carry out the pre-construction topographic 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.03 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.04 LAYOUT AND INSTALLATION OF MARKERS

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.05 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. PROVISION OF RESIDENT ENGINEER'S OFFICE

B.01 OFFICE SUPPLIES / OFFICE EQUIPMENT

1. 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 one (1) Free Standing Water Dispenser, one (1) unit 2HP Aircon, two (2) Office Clerical Chair, two (2) Office Table, and four (4) units of Fire Extinguisher. All above-mentioned shall be turned over to the PFDA/recipient LGU upon completion of the project.

2. The field office shall be maintained by the Contractor throughout the construction period (including electric & water expenses).
3. The Contractor shall provide office supplies to be used in preparation of correspondence and progress reports. Likewise, the same shall be responsible for the reproduction of pictures and communication expenses (pre-paid cellular card at least P5,000.00/month) borne by the PFDA personnel during the project implementation.

B.02 PROJECT SIGNBOARD

The Contractor shall provide project signboard (1.20m x 2.40m) at the construction site bearing the name of the project, location, project cost, starting date and completion date, name of implementing agency, the name of the contractor and the other information that shall be required by the PFDA.

The signboard shall be made of tarpaulin in wood framing. It shall be erected with necessary wooden support and bracing. The signboard shall be erected by the contractor within two (2) weeks after the project commence.

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

C. RENTAL OF SERVICE VEHICLE FOR PFDA CONSTRUCTION MANAGEMENT GROUP

The Contractor shall within seven (7) days after the receipt of Notice to Proceed shall provide a utility/service vehicle for the Resident Engineer/Inspector use during the contract duration. The vehicle shall comply with respect to all relevant National or Local Laws. The vehicle shall be a well-kept, brand-new crew cab pick-up type, which is acceptable to the PFDA, in perfect running condition and shall be provided by the Contractor with a competent qualified and experienced driver who shall be in direct order of the PFDA's Resident Engineer/Inspectors.

The Contractor shall properly maintain the vehicle in first class condition with fuel allocation, including regular service maintenance, up to the completion of the project.

The Contractor shall provide equivalent substitute vehicle during such period when the specified vehicle is taken out of service for maintenance, repair or any other reason.

D. BUDGETARY AMOUNT FOR PERMITS AND CLEARANCES

D.01 GENERAL CONDITIONS

In relation to the provisions of existing laws, codes and regulations, there is a need to comply with necessary Permits and Clearances upon the commencement and closing of the project. Permits and Clearances are in the form of budgetary amount intended to cover work which is not defined at the time that the contract is executed. It shall be utilized only at the direction of PFDA.

The contractor shall, upon authorization by PFDA, make representation with the concerned government agencies to expedite the release of the required Permits and Clearances.

The Contractor shall not be entitled to any portion of the budgetary amount which Permits and Clearances remain unspent nor for any compensation because of a decrease in the total value of the contract due on portions of this budgetary amount, remaining unspent.

All expenditures under this shall be in accordance with the procedures and guidelines set out for valuation of Variation Orders as per Revised IRR of RA 9184 (Government Procurement Reform Act) and DPWH Department Order No. 197, s. 2016 (Revised Guidelines in the Preparation of Approved Budget For The Contract).

D.02 SCOPE OF WORK

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 Provincial Local Government Unit of Ilocos Norte, upon the commencement and closing of the project. It shall not be limited to following, to wit:

1. Sign-and-Seal services of required Permits, Plans (For Construction Drawings and As-Built Plans) and Clearances from the competent Professionals, as stated in the National Building Code;
2. Building Permit and other related permits from the local Office of the Building Official and other concerned government agencies;
3. Environmental Compliance Certificate/Certificate of Non-Coverage from the Department of Environment and Natural Resources – Environment Management Bureau;
4. Other Permits, Clearances, and other related documents, which found deemed necessary, for the completion of the project.

TECHNICAL SPECIFICATION

Part II - CONSTRUCTION SAFETY AND HEALTH PROGRAM

A. SCOPE OF WORK

A.01 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.

A.02 The contractor shall provide construction safety materials to be used by construction personnel for the entire duration of the project. These include safety shoes, helmets (hard hats), rubber boots, raincoats, safety dust masks, and, first aid kit.

The contractor shall also hire one (1) safety officer for the whole duration and one (1) first aider for the entire duration. Category and quantity of safety personnel shall be based on the requirement of OSH Law.

A.03 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.

TECHNICAL SPECIFICATIONS

PART III – CIVIL/STRUCTURAL AND SANITARY/PLUMBING WORKS

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.

I. 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.

II. A.02 Interior Layout Work

The Contractor shall establish the following:

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

III. 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.

IV. 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.

V. 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.

VI. 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 III.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 III.C – CONCRETE WORKS/SLABS ON GRADE.***

C.10 Placing Concrete

Concrete shall be transport from mixer to the place of final deposit in a continuous manner, as rapidly as practicable without segregation or loss of

ingredient until the approved unit of work is completed. Placing will not be permitted when the sun, heat, wind or limitations of facilities furnished by the Contractor, prevent proper finishing and curing of the concrete. Concrete shall be placed in the forms, as closed as possible in the final position, in uniform approximately horizontal layers not over 300 mm deep. Forms splashed with concrete of form coating shall be cleaned in advance of placing subsequent lifts. Concrete shall not be allowed to drop freely more than 10 m in unexposed work not more than 1.0 m in exposed work; where greater drops are required, tremie or other approved means shall be employed. The discharge of the tremies shall be controlled so that the concrete may be effectively compacted into horizontal layers no more than 300 mm thick, and spacing o the tremies shall be such that segregation does not occur. Concrete to receive other construction shall be screeded to the proper level to avoid excessive skimming or grouting. Conduits and pipes shall not be embedded in concrete unless specifically indicated or as directed by the Owner.

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

Earth – foundation Placement: Leveling concrete for concrete foundations, exterior slabs and exterior foundations receiving equipment or machinery shall be placed upon undisturbed surfaces conforming to ***Part III.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 III.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 III.C – 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 WATERPROOFING

D.01 Scope of Work

This item shall consist of furnishing all waterproofing 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 requirements 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 waterproofing 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 III.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.

F. PAINTING

F.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.

F.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.

F.03 Material Requirements

F.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.

F.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.

F.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.

F.03.4 Silicon Water Repellant

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

F.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.

F.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.

F.03.7 Glazing Putty

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

F.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

F.03.9 Wood Preservative

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

F.04 Schedule

Exterior

a. Plain cement plastered finish to be painted	-	3 coats Acrylic base masonry paint
b. Concrete exposed aggregate	-	1 coat water repellant and/or tool finish
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	-	3 coats Acrylic base

		to be painted masonry paint
b. Concrete exposed aggregate	-	1 coat water repellant and/or tool finish
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.

F.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.

F.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.

F.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.

F.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.

F.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.

F.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.

F.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.

e. G. STEEL AND METAL WORKS

G.01 GENERAL

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

G.01.1 Scope of Work

The work includes the furnishing of all labor, materials, equipment, and other incidentals necessary for the fabrication and installation of structural steel and

miscellaneous metal works as specified in relevant items of these specifications and as indicated on the drawings.

G.01.2 Submittal

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

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

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

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

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

2. Include sample of typical welded connection.

G.01.3. Storage of Materials

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

G.02 MATERIAL REQUIREMENTS

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

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

for Structural Steel Shapes. Shapes shall be as given in AISC, Manual of Steel Construction.

Purlins shall be light gage steel conforming to ASTM A500.

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

All anchor bolts shall conform to ASTM A325. All bolts and threaded fasteners shall conform to ASTM A307 Carbon Steel Externally Threaded Standard Fasteners.

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

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

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

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

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

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

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

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

G.03 EXECUTION

G.03.1 Qualification

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

G.03.2 Fabrication Requirements

a) Workmanship

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

b) Cutting

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

c) Contact Faces

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

d) Bolt Holes

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

e) High Strength Bolt Assembly Preparation

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

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

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

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

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

f) Welding

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

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

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

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

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

g) Shop Assembly

Structural units furnished shall be assembled in the shop.

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

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

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

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

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

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

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

G.03.3 Fabrication Tolerances

a) Dimensional Tolerances for Structural Work

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

b) Camber

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

G.03.4 Inspection and Test of Welding

a) Inspection of Welding

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

1) Before Welding

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

2) During Welding

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

3) After Execution of Welding

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

b) Testing of Welding

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

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

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

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

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

G.03.5 Corrections

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

a) Excessive convexity or overlap shall be reduced by grinding

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

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

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

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

G.03.6 Installation

a) Installation Program

1) Prerequisite Condition

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

2) Special Technical Engineering

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

b) Installation Requirement

Setting of Anchor Bolt and Others

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

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

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

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

c) Temporary Bracing

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

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

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

d) Adequacy of Temporary Connections

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

e) Alignment

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

f) Field Welding

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

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

g) High Strength Bolts

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

h) Correction of Errors

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

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

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

i) Erection

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

2. Each structural unit shall be accurately aligned by the use of steel shims, or

other approved methods so that no binding in any moving parts or distortion of any members occurs before it is finally fastened in place.

3. Operations, procedures of erection and bracing shall not cause any damage

to works previously placed nor make overstress to any of the building parts or components. Damage caused by such operations shall be repaired as directed by the Engineer at no extra cost to the Employer.

G.04 GALVANIZING

G.04.1 Preparation

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

G.04.2 Coating

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

G.05 PAINTING

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

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

G.05.1 Shop Painting

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

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

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

G.05.2 Field Painting

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

G.05.3 Materials

a) Structural Steel Work

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

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

b) Galvanized Steelwork

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

c) Miscellaneous Metal Work

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

G.05.4 Construction Methods

a) Cleaning of Surfaces

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

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

b) Hand Cleaning

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

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

c) Sandblasting

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

d) Flame Cleansing

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

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

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

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

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

e) Weather Conditions

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

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

f) Application

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

1. Field Painting

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

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

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

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

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

2. General Manners

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

3. Brushing

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

4. Spraying

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

5. Removal of Paint

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

H. ROOFING AND TINSMITHRY

H.01 SCOPE OF WORK

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

H.02 MATERIAL REQUIREMENT

H.02.1. Metal Roofing

a) Metal Roofing Panel

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

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

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

b) Accessories

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

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

c) Screws

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

d) Blind Rivets

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

e) Bolts

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

f) Joint Sealing Materials

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

H.03 INSTALLATION

H.03.1 Metal Roofing

a) Installation

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

b) Roof Sheets

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

closure strips, flashing, and sealing material in an approved manner that will assume complete weather tightness.

c) Flashing

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

d) Fasteners

Fastener spacing shall be in accordance with the manufacturer's recommendations and as necessary to withstand the design loads indicated. Install fasteners in valleys or crowns as recommended by the manufacturer of the sheet being used. Install fasteners in straight lines within a tolerance of 12 mm in the length of a bay. Drive exposed penetrating type fasteners normal to the surface and to a uniform depth to seat gasket washers properly and drive so as not to damage factory-applied coating. Exercise extreme care in drilling pilot holes for fastenings to keep drills perpendicular and centered in valleys or crowns, as applicable. After drilling, remove metal fillings and burrs from holes prior to installing fasteners and washers. Torque used in applying fasteners shall not exceed that recommended by the manufacturer. Remove sheets deformed or otherwise damaged by over-torqued fastenings, and provide new sheets.

I. SCAFFOLDING

I.02.1 General Requirements

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

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

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

I.02.3 Design and Stability

Design

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

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

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

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

Strength and Stability of Scaffolds

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

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

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

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

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

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

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

I.02.4 Scaffold Erection

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

All posts shall be maintained plumb regardless of connection.

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

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

Diagonal brace shall extend from one connection to another. It shall be connected to the post within 150 millimeters from the point of connection. Diagonal braces shall not exceed an angle of 60 degrees from horizontal.Diagonal braces shall be installed immediately as the scaffold rises to maintain plumbness of the system.

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

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

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

I.02.5 Scaffold Dismantling

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

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

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

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

Progressive Dismantling:

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

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

I.02.6 Maintenance and Storage

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

I.02.7 Protection from Falling Objects

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

TECHNICAL SPECIFICATIONS

PART IV - ELECTROMECHANICAL AND OTHER RELATED WORKS

1.0 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 to the project site.

4.0 Erection and installation at site including supervision.

5.0 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.

6.0 Warranty

B. GENERAL EQUIPMENT SPECIFICATIONS:

1.0 ICE MAKING UNIT

1.1	Refrigeration System	:	Ammonia system
1.2	Ice Making Capacity	:	5 tons/day
1.3	Number of desired Harvest per day	:	one (1) harvest 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 metric tons
2.3	Room Temperature	:	-5 deg. C
2.4	Control System	:	semi-automatic Operation

3.0 COLD STORAGE FOR FISH/MEAT

3.1	Refrigeration System	:	Freon type
3.2	Capacity	:	10 to 15 metric tons
3.3	Room Temperature	:	-25 deg. C
3.4	Control System	:	semi-automatic Operation

4.0 CHILLER ROOM FOR VEGATABLE/FRUITS

4.1	Refrigeration System	:	Freon type
4.2	Capacity	:	10 to 15 metric tons
4.3	Room Temperature	:	+ 5 to -5 deg. C
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".

1.1.1 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 FOR FISH/MEAT & CHILLER ROOM FOR VEGETABLE/FRUITS

1.1 Mechanical Components

1.1.1 Outdoor type condensing unit and standard accessories.

a. R 404A or 507, 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 Walk In Ice Storage:

Unit cooler shall be brand new complete with fan blower TEFC motor, brand new, 1 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. Insulated Rooms

a. 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.

b. 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.

c. 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.

d. 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.

e. All doors shall have the following schedules:

Cold Storage, Ice Storage and Chiller rooms – 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

f. Loading dock doors designed for typical sized of the trailer wherein variety of vehicle 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

1.3 Assorted refrigerant valves, and controls for high pressure side both for ice plant and ice/cold storage room facilities.

1.4 Refrigerant piping materials, and necessary fittings for both high and low pressure sides for ice plant and ice/cold storage room facilities.

1.5 Assorted refrigerant valves, and controls for low pressure side both for ice plant and ice/cold storage room facilities.

1.6 Initial charge of refrigerant and compressor oil for both ice plant and cold/ice storage room facilities.

1.7 Insulation materials for low pressure side pipes and vessels.

2.0 SUPPLY OF TOOLS, SPARE PARTS AND CONSUMABLES:

The supplier/manufacturer shall provide the following:

1. 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

2. Spare Parts:

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

b. Six (6) pcs. ice cans

3. Consumables:

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

b. Refrigeration oil, 20 liters

3.0 Supply, Installation, testing, and commissioning of new one (1) 100 kVa Diesel Generator set (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.

GENERAL REQUIREMENTS FOR MECHANICAL WORKS

1.0 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)

2.0 QUALIFICATION OF REFRIGERATION EQUIPMENT SUPPLIER, MANUFACTURER AND INSTALLER.

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

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

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

3.1 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.

3.2 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.

4.0 SUPERVISION OF MECHANICAL WORKS

5.1 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.

5.0 EXECUTION REQUIREMENT

5.1 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.

6.0 COMPLETION REQUIREMENTS

6.1 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.

6.2 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.

7.0 CORRELATION AND COOPERATION

7.1 General

a. Work under this section includes correlation with work under other division; to provide and effect a complete and operable system and equipment throughout the project as required and intended under these contract documents.

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

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

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

7.3 Substantial adjustments or changes resulting from compliance with requirements specified herein which results in substantial extra or materials and any claims on that account will be considered only when fully justified by the supplier/manufacturer and duly processed in accordance with provision for changes

condition as labels or signs other than as particularly shown, specified and approved.

7.4 General Construction

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

b. Verify sizes and location if adequate and proper.

c. Supply drawings, instructions or information necessary thereof.

7.5 Painting Procedure

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

1. Black iron or steel items inaccessible after installation.

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

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

7.6 Site Utility System

a. Review drawing of plumbing works serving system of this section.

b. Verify sizes, capacities and location if adequate for proper service.

c. Arrange for adjustments as may be necessary to meet requirement of this section.

d. Adjust work as required to correlate with utility service connection prints or types of connection necessary.

7.7 Electrical Work

a. Review drawings of electrical services and facilities to be provided under this section.

b. Compare and verify electrical work to be provided if sufficient and adequate.

c. Supply drawing, diagram or other information relative to this section.

d. Arrange for additional services, outlets or connections where and as maybe required.

8.0 PROTECTIVE PAINTING

8.1 General

a. 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.

8.2 Preparation

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

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

TECHNICAL SPECIFICATIONS

PART V- ELECTRICAL WORKS

A. GENERAL

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

A-01 SCOPE OF WORK

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

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

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

NOTE: *Expenses for the power connection/tapping from the existing Local Electric Cooperative including electric meter deposit, billing deposit, drop wires and other accessories necessary for the energization of the project shall be provided by the contractor with the assistance of the Philippine Fisheries Development Authority and/or Provincial Local Government Unit of Ilocos Norte.*

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.

1. **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 maximum watts in weatherproof and dustproof fluorescent fixture light engine, highly efficient built-in LED chip, made with polycarbonate diffuser and housing material, IP65, 1220x85x80 mm, 5000 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 to *Britetech model Halver WP36 LED Weatherproof Luminaire* (valid LED Chip and LED Driver Brand specs sheet submittal and LED Fixtures Photometric or IES file submittal) with minimum 2 years warranty period

- Recessed mounted luminaire with mirrorized aluminum reflector and multi-lined satin louvers, 1200x300 mm, complete with 2x16 watts master value LED T8 tubes similar to *Fumaco model Modena (fixture) and Philips brand (lamp)*

- Recessed mounted downlight with glass cover and plain mirrorized reflector, 200 mm dia. white powder coated flange and black gear box, complete with E27 socket and Phillips 2x18 watts essential daylight CFL similar to *Firefly model FD411WH6*

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.

1. 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.

2. 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.

3. E. RACEWAYS AND CONDUITS

2. 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.

3. 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.

4. 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.

4. 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 8.0mm^2 and larger shall be made with copper, solderless, pressure type connectors. Connection shall be done without damaging the individual cable strands. Connectors shall be provided insulators or fish paperboard separators.

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

6. 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 *Schneider, GE, ABB, Square-D* 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.

7. I. TRANSFORMERS

Supply and installation of complete designed and manufactured product for the system consisting of three(3) 37.5 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 primary side and with copper/aluminum conductors for 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.

8. J. TESTING AND COMMISSIONING

J.1 Types of testing methods

The testing of electrical power system equipment involves checking the insulation adequacy, electrical properties, protection and control, operation, and other items as they relate to the overall system. Some of these checks are accomplished using de-energized component tests, instrumentation and relay operation and calibration tests, energized functional testing of control circuits, megger testing of power circuits, phase out testing of power circuits, and service testing. A certified test report, signed and sealed by an appropriate Electrical Practitioner, shall be submitted by the Contractor to PFDA.

J.2 Testing of Transformers and Metering System

Routine and design (type) testing shall be conducted by the Contractor. A certified test report, signed and sealed by an appropriate Electrical

Practitioner, shall be submitted by the Contractor to PFDA. Calibration of meters shall be ensured in reference to the requirements of local electric cooperative.

TECHNICAL SPECIFICATIONS

PART VI - BUDGETARY AMOUNT FOR PERMANENT POWER AND WATER SUPPLY CONNECTION

A. General Conditions

Budgetary Amount for Permanent Power and Water Supply connections are intended for budgetary purposes to cover work which is not defined at the time that the contract is executed. It shall be expended only at the direction of the Owner.

The Supplier/Contractor shall not be entitled to any portion of the budgetary amount which Permanent Power and Water connections remain unspent nor for any compensation because of a decrease in the total value of the contract due on portions of this budgetary amount, remaining unspent.

All works and expenditures under this shall be in accordance with the procedures set out for valuation of Variation Orders.

The actual cost of labor, skilled and common, supplied by the Supplier/Contractor and specific for this item shall be based on hourly rates for construction trade position as negotiated, established, and agreed upon between the Supplier/Contractor and the Owner at the beginning of the contract and prior to the commencement of any work.

The establishment hourly rates shall be the reasonable cost of labor to the Supplier/Contractor, including cost of all employee benefit and subsidies paid by the Supplier/Contractor on behalf of the employee.

A.01 Scope of Work

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.

A.02 Work Included

A.02.a Power Supply System

Provide the necessary application/expenses for power connection from “Local Electric Cooperative” to include the following:

1. 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.

2. Standard testing and commissioning by the local electric cooperative, as required, prior to the installation of distribution transformers including its metering instruments and accessories.

3. 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.

A.02.b Water Supply System

The scope of work covered in the provisional sum are the following:

1. 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.

2. Supply and installation of necessary gate valves and check valve, as may necessary.

3. Supply and installation of water meter and construction of concrete valve manhole, as may necessary.

4. 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.

5. 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.

Section VII. Drawings

(See Separate Documents)

Section VIII. Bill of Quantities

BID PROPOSAL FORM

CONSTRUCTION OF LAOAG CITY 3MT ICE PLANT AND COLD STORAGE

BID PRICE SUMMARY

ITEM NO.	WORK ITEMS	BID AMOUNT EDC + VAT + Mark-up
I.	**GENERAL EXPENSES AND PREPARATORY WORK**	
A.	Mobilization/Demobilization	
B.	Provision of Resident Engineer's Office (including provision of office equipment, furnitures and communication expenses)	
C.	Rental of Service Vehicle for PFDA Construction Management Group	
D.	Budgetary amount for Permits and Clearances	150,000.00
	TOTAL OF I	P
II.	**CONSTRUCTION SAFETY AND HEALTH PROGRAM**	
	TOTAL OF II	P
III.	**CIVIL/ STRUCTURAL WORKS**	
A.	Earthworks (Site Clearing, earthfill, backfill, etc.)	
B.	Concrete and Rebar Works (incl. formworks and etc.)	
C.	Masonry Works (incl. RSB, plastering, etc.)	
D.	Cold Storage Panel, Doors & Accessories	
E.	Roofing Works (incl. steel works, tinsmith & consumables)	
F.	Painting Works and Other Related Works (including Red Oxide Primer and 2-coats of epoxy paint)	
G.	Drainage and Sewerage System	
H.	Plumbing fixtures and Fresh water Supply Works	
	TOTAL OF III	P
IV.	**ELECTRO-MECHANICAL AND OTHER RELATED WORKS**	
A.	Ice Making Equipments	
B.	Ice Storage Room	
C.	Cold Storage	
D.	Chiller Room	
E.	Supply, installation, testing and commissioning of new one (1) 100 kVa Diesel Generator set. (Inc. Foundation and 1000L Day Tank	
F.	Motor Control Center (incl. Concrete Pedestal)	
G.	Supply of tools, testing equipment, spare parts, and consumables	
H.	Reliability trial testing of whole facility, (2-Weeks)	
I.	Delivery Cost (Manila - Laoag)	
	TOTAL OF IV	P

V.	**ELECTRICAL WORKS**	
A.	Outside Power Distribution System	
B.	Ice plant and Ice Storage	
	TOTAL OF V	P
VI.	**BUDGETARY AMOUNT FOR PERMANENT POWER AND WATER SUPPLY**	
	TOTAL OF IV	P
	TOTAL ESTIMATED PROJECT COST	P

TOTAL BID PRICE (In Figure): P

In words: _____

Construction Company : _____

Contractor's Representative : _____

Signature : _____

ITEM NO.	DESCRIPTION OF WORK	PFDA QUANTITY	BIDDER QUANTITY	UNITS	UNIT COST (Estimated Direct Cost & Mark-ups & Value Added Tax)	TOTAL COST
I.	**GENERAL EXPENSES AND PREPARATORY WORK**					
A.	**Mobilization/Demobilization**	1.00		ls.		
B.	**Provision of Resident Engineer's Office (including provision of office equipment, furnitures and communication expenses)**	1.00		l.s.		
C.	**Rental of Service Vehicle for PFDA Construction Management Group**	1.00		l.s.		
D.	**Budgetary amount for Permits and Clearances**	1.00		l.s.		150,000.00
	TOTAL OF I					
II.	**CONSTRUCTION SAFETY AND HEALTH PROGRAM**	1.00		l.s.		
	TOTAL OF II					
III.	**CIVIL/ STRUCTURAL WORKS**					
A.	**Earthworks (Site Clearing, earthfill, backfill, etc.)**					
1.0	Excavation	290.00		cu.m		
2.0	Backfilling and Compaction	106.00		cu.m		
3.0	Gravel bedding	21.00		cu.m.		
	Sub-total of III.A					
B.	**Concrete and Rebar Works (incl. formworks and etc.)**					
1.0	Concrete, 20.7 Mpa. (Including lintel beams for all doors and window opening)	99.00		cu.m.		
2.0	Rebars and tie wires	9,516.00		kgs.		
3.0	Formworks and scaffoldings	1.00		l.s.		
	Sub-total of III.B					
C.	**Masonry Works (incl. RSB, plastering, etc.)**					
1.0	100mm thk. 350 psi. CHB (Include rebars in the unit cost)	383.00		sq.m.		
2.0	Plain cement plaster finish (For columns, and walls)	283.00		sq.m.		
	Sub-total of III.C					

D.	**Cold Storage Panel, Windows, Doors & Accessories**					
1.0	D-1, 0.80m x 2.10m Mahogany panel Door	2.00		set		
2.0	D-2, 1.80m x 2.10m GA 10 STD. Door, cyclone wire w/ 2 1/2" opening on a 50mmØ SCHED. 40 G.I. PIPE	1.00		set		
3.0	D-3, 0.80m x 2.10m Toilet PVC Door	1.00		set		
4.0	D-4,1.5m x 2.10m Steel louver double swing door	1.00		set		
5.0	D-5, 0.80m x 2.10m Aluminum door	1.00		set		
6.0	W-1, 1.80m x 1.20m Analok finish aluminum framed fixed and awning window	1.00		set		
7.0	W-2, 1.80m x 1.00m aluminum casement sliding window	1.00		set		
8.0	W-3, 0.64m x 0.30m Analok finish aluminum framed thk brown glass awning window with 6mm	1.00		set		
9.0	12 mm thk. Gypsum board with accessories (wall angle, double furring, J-clip, channel bar, W-clip)	15.00		sqm		
10.0	12 mm thk. Moisture resistance gypsum board with accessories (wall angle, metal furring, J-clip, channel bar and W-clip)	3.00		sqm		
	Sub-total of III.D					
E.	**Roofing Works (incl. steel works, tinsmith & consumables)**					
1.0	Steel Structures	1.00		ls.		
2.0	Tinsmithry Works	1.00		ls.		
	Sub-total of III.E					
F.	**Painting Works and Other Related Works (including Red Oxide Primer and 2-coats of epoxy paint)**	1.00		l.s		
	Sub-total of III.F					
G.	**Drainage and Sewerage System**					
1.0	catch Basin (Include concrete, strainer & rebars)	11		units		
2.0	Pipes, fittings and accessories (Include pvc pipes, downspout, fittings, strainer, etc.)	1		ls		
3.0	Septic Tank (Include rebars and formwork)	1		ls		
	Sub-total of III.G					
H.	**Plumbing fixtures and Fresh water Supply Works**					
1.0	Pipes, fittings, valves, stand pipe & accessories	1		ls		
2.0	Sanitary plumbing fixtures, (Include water closet, lavatory, bidet, soap & tissue holder , floor drain, etc.)	1		ls		
0.0	Cistern Tank (Include rebars and formwork)	1		ls		
3.0						

	Sub-total of III.H					
	TOTAL OF III					
IV.	**ELECTRO-MECHANICAL AND OTHER RELATED WORKS**					
A.	**Ice Making Equipments**					
1.0	Ammonia Compressor, condenser, receiver, accumulator oil separator, condenser pump etc.	1.00		l.s.		
2.0	Refrigerant pipes and fittings, controls and miscellaneous materials.	1.00		l.s.		
3.0	Brine tank including insulation, evaporator coils, brine agitator, can grid, cladding of brine tank.	1.00		l.s.		
4.0	Ice Cans.	60.00		pcs.		
5.0	Motorized hoist including girder assembly.	1.00		l.s		
6.0	Dip tank & ice filling tank and ice can dumper including concrete foundation.	1.00		l.s.		
7.0	Crystalizing equipment including pipelines and accessories.	1.00		l.s.		
8.0	Ice crusher including electrical control & accessories.	1.00		l.s.		
9.0	Miscellaneous materials & consumables such as refigerant and brine solution.	1.00		l.s.		
	Sub-total of IV.A					
B.	**Ice Storage Room**					
1.0	Condensing unit composed of compressor, air cooled condenser, liquid receiver, & other standard accs.	1.00		l.s.		
2.0	Refrigerant pipes & fittings, control & misc. Materials	1.00		l.s.		
3.0	Miscellaneous materials & consumables such as refrigerant, refrigeration oil, etc.	1.00		l.s.		
4.0	Pre-fabricated Insulated Panel Including doors and accessories Including floor slab	1.00		l.s.		
5.0	Unit cooler composed of standard accessories.	1.00		l.s.		
	Sub-total of IV.B					
C.	**Cold Storage**					
1.0	Ante-rooms(Insulated panels roll-up doors, strip curtains, sliding doors, and loading dock doors including standard accessories and components)	1.00		l.s.		
2.0	Pre-fabricated Insulated Pannel Including accessories Including floor slab	1.00		l.s.		
3.0	Air cooled Condensing Unit and Unit cooler composed of standard accessories and components	1.00		l.s.		
4.0	Refrigerant pipes & fittings, control & misc. Materials	1.00		l.s.		
5.0	Miscellaneous materials & consumables such as refrigerant, refrigeration oil, etc.	1.00		l.s.		
	Sub-total of IV.C					

D.	**Chiller Room**					
1.0	Pre-fabricated Insulated Pannel Including doors and accessories					
0.0	Including floor slab	1.00		l.s.		
2.0	Air cooled Condensing Unit and Unit cooler composed of standard accessories.	1.00		l.s.		
3.0	Refrigerant pipes & fittings, control & misc. Materials	1.00		l.s.		
4.0	Miscellaneous materials & consumables such as refrigerant, refrigeration oil, etc.	1.00		l.s.		
	Sub-total of IV.D					
E.	**Supply, installation, testing and commissioning of new one (1)**					
	100 kVa Diesel Generator set. (Inc. Foundation and 1000L Day Tank	1.00		l.s.		
	Sub-total of IV.E					
F.	**Motor Control Center (incl. Concrete Pedestal)**	1.00		l.s.		
	Sub-total of IV.F					
G.	**Supply of tools, testing equipment, spare parts, and consumables**					
1.0	Tools, and Other Misc. Materials wrench, pliers, and etc.	1.00		l.s.		
	Sub-total of IV.G					
H.	**Reliability trial testing of whole facility, (2-Weeks)**	1.00		l.s.		
	Sub-total of IV.H					
I.	**Delivery Cost (Manila - Laoag)**	1.00		l.s.		
	Sub-total of IV.I					
	TOTAL OF IV					
V.	**ELECTRICAL WORKS**					
A.	**Outside Power Distribution System**					
1.0	Concrete Ducts, Handholes and Transformer Concrete Platform	1.00		l.s.		
2.0	Wires	1.00		l.s.		
3.0	MCB, Conduits, Fittings and Miscellaneous (consumables)	1.00		l.s.		
4.0	Transformers, power cables, insulators, accessories, etc.	1.00		l.s.		
5.0	Testing and commissioning	1.00		l.s.		
	Sub-total of V.A					
B.	**Ice plant and Ice Storage**					
1.0	Lighting Fixtures	1.00		l.s.		
2.0	Wires and Wiring Devices	1.00		l.s.		
3.0	Panelboard, Conduits, Fittings, and Miscellaneous (consumables)	1.00		l.s.		
4.0	Testing and commissioning	1.00		l.s.		
	Sub-total of V.B					
	TOTAL OF V					

VI.	**BUDGETARY AMOUNT FOR PERMANENT POWER AND WATER SUPPLY** **TOTAL OF VI** **TOTAL DIRECT COST**	1.00	_____	l.s.	_____	_____

CONSTRUCTION OF LAOAG 3 MT ICE PLANT & COLD STORAGE

BILL OF QUANTITIES

NOTE:

1.0 The items, description and quantities given on the first three columns of this list guides only to the Bidder interpreting the plans and specifications. The PFDA is not responsible for any mistakes, inaccuracies, duplications or omissions in these list special quantities which shall never be a basis for additions nor deletions to the scope of work. Only the entries of the Bidder on the last three columns consisting of his own take off quantities from the plans and his unit cost and corresponding sums shall be considered.

2.0 These bill of quantities and costing as prepared by the Bidder cannot be used as basis for claims for any extra work, but may only be used solely by the Owner as aid in judging if bid is a responsive bid.

3.0 The unit and total bid prices must include all direct and indirect cost/expenses such as overhead, contingencies and miscellaneous (OCM); profit; value added tax, and other obligations of any kind under which the contract must be borne by the Contractor since they are necessary to install, construct and complete the whole of the contract in accordance with the bid documents.

4.0 Use the Form, “Detailed Estimates (Detailed Unit Price Analysis) in the preparation of Detailed Cost Estimate (Derivation of Unit Cost and Lump Sum Item) for every work item.

Section IX. Bidding Forms/ Contract Forms

CHECKLIST OF TECHNICAL AND FINANCIAL DOCUMENT

1. TECHNICAL COMPONENT ENVELOPE

CLASS "A" DOCUMENTS

Legal Documents	
☐	(a) Valid PhilGEPS Registration Certificate (Platinum Membership) (all pages); **or**
☐	(b) Registration certificate from Securities and Exchange Commission (SEC), Department of Trade and Industry (DTI) for sole proprietorship, or Cooperative Development Authority (CDA) for cooperatives or its equivalent document; **and**
☐	(c) Mayor's or Business permit issued by the city or municipality where the principal place of business of the prospective bidder is located, or the equivalent document for Exclusive Economic Zones or Areas; **and**
☐	(d) Tax clearance per E.O. No. 398, s. 2005, as finally reviewed and approved by the Bureau of Internal Revenue (BIR).
Technical Documents	
☐	(e) Statement of the prospective bidder of all its ongoing government and private contracts, including contracts awarded but not yet started, if any, whether similar or not similar in nature and complexity to the contract to be bid; **and**
☐	(f) Statement of the bidder's Single Largest Completed Contract (SLCC) similar to the contract to be bid, except under conditions provided under the rules; **and**
☐	(g) Philippine Contractors Accreditation Board (PCAB) License; or Special PCAB License in case of Joint Ventures; **and** registration for the type and cost of the contract to be bid; **and**
☐	(h) Original copy of Bid Security. If in the form of a Surety Bond, submit also a certification issued by the Insurance Commission; **or** Original copy of Notarized Bid Securing Declaration; **and**
	(i) Project Requirements, which shall include the following:
☐	a. Organizational chart for the contract to be bid;
☐	b. List of contractor's key personnel (*e.g.*, Project Manager, Project Engineer, Electrical Engineer, Materials Engineer I, Safety Officer 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.
Financial Documents	
☐	(n) The prospective bidder's audited financial statements, showing, among others, the prospective bidder's total and current assets and liabilities, stamped "received" by the BIR or its duly accredited and authorized institutions, for the preceding calendar year which should not be earlier than two (2) years from the date of bid submission; **and**
☐	(o) The prospective bidder's computation of Net Financial Contracting Capacity (NFCC).
CLASS "B" DOCUMENTS	
☐	(p) If applicable, duly signed joint venture agreement (JVA) in accordance with RA No. 4566 and its IRR in case the joint venture is already in existence; **or** duly notarized statements from all the potential joint venture partners stating that they will enter into and abide by the provisions of the JVA in the instance that the bid is successful.

2. FINANCIAL COMPONENT ENVELOPE

☐	(q) Original of duly signed and accomplished Financial Bid Form; **and**
Other documentary requirements under RA No. 9184	
☐	(r) Original of duly signed Bid Prices in the Bill of Quantities; **and**
☐	(s) Duly accomplished Detailed Estimates Form, including a summary sheet indicating the unit prices of construction materials, labor rates, and equipment rentals used in coming up with the Bid; **and**
☐	(t) Cash Flow by Quarter.

TECHNICAL COMPONENT ENVELOPE
Class "A" Document

Technical Documents

LIST OF ON-GOING GOVERNMENT and PRIVATE CONSTRUCTION CONTRACTS INCLUDING CONTRACTS AWARDED BUT NOT YET STARTED

Business Name : _____

Business Address : _____

Name of Contract/Location Project Cost	a. Owner Name b. Address c. Telephone Nos.	Nature of Work	Contractor's Role		a. Date Awarded b. Date Started c. Date of Completion	% of Accomplishment		Value of Outstanding Works
			Description	%		Planned	Actual	
Government								
Private								
						Total Cost		

Note: This statement shall be supported with:

1 Notice of Award and/or Contract

2 Notice to Proceed issued by the owner

3 Certificate of Accomplishments signed by the owner or Project Engineer

Submitted by : _____
(Printed Name & Signature)

Designation : _____

Date : _____

STATEMENT SHOWING THE BIDDER'S SINGLE LARGEST COMPLETED CONTRACT WHICH IS SIMILAR IN NATURE

Business Name : _____

Business Address : _____

Name of Contract	a. Owner Name b. Address c. Telephone Nos.	Nature of Work	Contractor's Role		a. Amount at Award b. Amount at Completion c. Duration	a. Date Awarded b. Contract Effectivity c. Date Completed
			Description	%		
Government						
Private						

Note: This statement shall be supported with:

1 Owner's Certificate of Final Acceptance or the Certificate of Completion

2 Whenever applicable, the Constructor Performance Evaluation Summary (CPES) Final Rating which must be satisfactory.

3 Contract

Submitted by : _____
(Printed Name & Signature)

Designation : _____

Date : _____

Bid-Securing Declaration FORM

[shall be submitted with the Bid if bidder opts to provide this form of bid security]

REPUBLIC OF THE PHILIPPINES)
CITY OF _____) S.S.

BID SECURING DECLARATION
Project Identification No.: *[Insert number]*

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

I/We, the undersigned, declare that:

1. I/We understand that, according to your conditions, bids must be supported by a Bid Security, which may be in the form of a Bid Securing Declaration.

2. I/We accept that: (a) I/we will be automatically disqualified from bidding for any procurement contract with any procuring entity for a period of two (2) years upon receipt of your Blacklisting Order; and, (b) I/we will pay the applicable fine provided under Section 6 of the Guidelines on the Use of Bid Securing Declaration, within fifteen (15) days from receipt of the written demand by the procuring entity for the commission of acts resulting to the enforcement of the bid securing declaration under Sections 23.1(b), 34.2, 40.1 and 69.1, except 69.1(f),of the IRR of RA No. 9184; without prejudice to other legal action the government may undertake.

3. I/We understand that this Bid Securing Declaration shall cease to be valid on the following circumstances:

    a. Upon expiration of the bid validity period, or any extension thereof pursuant to your request;
    b. I am/we are declared ineligible or post-disqualified upon receipt of your notice to such effect, and (i) I/we failed to timely file a request for reconsideration or (ii) I/we filed a waiver to avail of said right; and
    c. I am/we are declared the bidder with the Lowest Calculated Responsive Bid, and I/we have furnished the performance security and signed the Contract.

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

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

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

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

NAME OF NOTARY PUBLIC

Serial No. of Commission _____
Notary Public for _____ **until** _____
Roll of Attorneys No. _____
PTR No. __**,** *[date issued], [place issued]*
IBP No. __**,** *[date issued], [place issued]*
Doc. No. ___
Page No. ___
Book No. ___
Series of ____**.**

BID SECURITY FORM (BANK GUARANTEE)

WHEREAS, __*(Name of Bidder)*__ (hereinafter called "the Bidder") has submitted his bid dated __*(Date)*__ for the __*(Name of Contract)*__ (hereinafter called "the Bid").

KNOW ALL MEN by these presents that We __*(Name of Bank)*__ of __*(Name of Country)*__ having our registered office at _____ (hereinafter called "the Bank" are bound unto __*(Name of the Procuring Entity)*__ (hereinafter called "the Employer") in the sum of _____ for which payment well and truly to be made to the said Employer the Bank binds itself, his successors and assigns by these presents.

SEALED with the Common Seal of the said Bank this _____ day of _____ 20___.

THE CONDITIONS of this obligation are:

1. If the Bidder withdraws his Bid during the period of bid validity specified in the Form of Bid; or

2. If the Bidder does not accept the correction of arithmetical errors of his bid price in accordance with the Instructions to Bidder; or

3. If the Bidder having been notified of the acceptance of his bid by the Employer during the period of bid validity:

    a) fails or refuses to execute the Form of Agreement in accordance with the Instructions to Bidders, if required; or

    b) fails or refuses to furnish the Performance Security in accordance with the Instructions to Bidders;

we undertake to pay to the Employer up to the above amount upon receipt of his first written demand, without the Employer having to substantiate his demand, provided that in his demand the Employer will note that the amount claimed by him is due to him owning to the occurrence of one or both of the two (2) conditions, specifying the occurred condition or conditions.

The Guarantee will remain in force up to and including the date _____ days after the deadline for submission of Bids as such deadline is stated in the Instructions to Bidders or as it may be extended by the Employer, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this Guarantee should reach the Bank not later than the above date.

DATE _____ SIGNATURE OF THE BANK _____

WITNESS _____ SEAL _____

** To be accompanied by a confirmation from the bank that it issued the Bank Guarantee*

BID SECURITY: SURETY BOND

BOND NO.: _____
DATE BOND EXECUTED: _____

By this bond, We __*(Name of Bidder)*__ (hereinafter called "the Principal") as Principal and __*(Name of Surety)*__ of the country of *(Name of Country of Surety)*, authorized to transact business in the country of __*(Name of Country of Employer)*__ (hereinafter called "the Surety") are held and firmly bound unto __*(Name of Employer)*__ (hereinafter called "the Employer") as Obligee, in the sum of _____, callable on demand, for the payment of which sum, well and truly to be made, we, the said Principal and Surety bind ourselves, our successors and assigns, jointly and severally, firmly by these presents.

SEALED with our seals and dated this _____ day of _____ 20 _____

WHEREAS, the Principal has submitted a written Bid to the Employer dated the _____ day of _____ 20 _____, for the _____ (hereinafter called "the Bid").

NOW, THEREFORE, the conditions of this obligation are:

1) If the Principal withdraws his Bid during the period of bid validity specified in the Form of Bid; or

2) If the Principal does not accept the correction of arithmetical errors of his bid price in accordance with the Instruction's to Bidders: or

3) If the Principal having been notified of the acceptance of his Bid by the Employer during the period of bid validity:

    a) fails or refuses to execute the Form of Agreement in accordance with the Instructions to Bidders, if required; or

    b) fails or refuses to furnish the Performance Security in accordance with the Instructions to Bidders;

then this obligation shall remain in full force and effect, otherwise it shall be null and void.

PROVIDED HOWEVER, that the Surety shall not be:

    a) liable for a greater sum than the specified penalty of this bond, nor

b) liable for a greater sum that the difference between the amount of the said Principal's Bid and the amount of the Bid that is accepted by the Employer.

This Surety executing this instrument hereby agrees that its obligation shall be valid for 120 calendar days after the deadline for submission of Bids as such deadline is stated in the Instructions to Bidders or as it may be extended by the Employer, notice of which extension(s) to the Surety is hereby waived.

PRINCIPAL _____ SURETY _____

SIGNATURE(S) _____ SIGNATURES(S) _____

NAME(S) AND TITLE(S) _____ NAME(S) _____

SEAL _____ SEAL _____

Insurance Commission Logo

Republic of the Philippines
Department of Finance
INSURANCE COMMISSION
1071 United Nations Avenue

C E R T I F I C A T I O N

This is to certify that **[NAME OF INSURANCE COMPANY]** is licensed to transact non-life insurance business in the Philippines for [state lines such as **FIRE, MARINE, CASUALTY and SURETY]** lines under **Certificate of Authority No**. _____ effective **[date: day/month/year]** until **[date: day/month/year]**, unless sooner revoked or suspended for cause.

It is certified, moreover, that **[NAME OF INSURANCE COMPANY]** is authorized under its license to issue surety bonds required by the Implementing Rules and Regulations of R.A. No. 9184, and that the insurance company had issued [state surety bond: [type of surety bond] with **[BOND NUMBER]** which **callable upon demand** together with the principal [**NAME OF THE PRINCIPAL]** in favor of the obligee [**NAME OF THE OBLIGEE]** in the amount of [**AMOUNT OF WORDS]** (Php _____) for the project: **[NAME OF THE PROJECT],** certified photocopy [or duplicate] of said bond was submitted by the company to the Insurance Commission.

This Certification is issued upon the request of [**NAME OF THE REQUESTING PERSON**], [Position] of [Name of Insurance Company], pursuant to the Revised implementing Rules and Regulations of R.A. No. 9184.

Issued on this [*day/month/year*].

City of Manila, Philippines.

For the Insurance Commissioner:

[NAME OF THE IC DIVISION MANAGER]
IC Division Manager
Regulation, Enforcement,
& Prosecution Division

** To be accompanied by a certification from the Insurance Commission stating that the Bonding Company is authorized to issue a security*

CONTRACTOR'S ORGANIZATIONAL CHART FOR THE CONTRACT

Submit Copy of the Organizational Chart that the Contractor intends to use to execute the Contract if awarded to him to include in the chart, among others, the names of the required proposed Key Personnel as indicated in ITB Clause 10.4 of the Bid Data Sheet and other Key Engineering Personnel.

Attach the required Proposed Organizational Chart for the Contract as stated above

Note: This organization chart should represent the "Contractor's Organization" required for the Project, and not the organizational chart of the entire firm.

QUALIFICATION OF KEY PERSONNEL PROPOSED TO BE ASSIGNED TO THE CONTRACT

			Project Manager (Licensed Civil Engineer)	Project Engineer (Licensed Mechanical Engineer)	Electrical Engineer (Licensed Electrical Engineer)	Materials Engineer I	Safety Officer	Foreman			
1	Name										
2	Address										
3	Date of Birth										
4	Employed Since										
5	Experience										
	Total Experience (Years)	Required	10	5	5	5	5	10			
		Actual									
	Experience in Similar Project (Years)	Required	5 (see note below)	3 (see note below)	3	3	3	8			
		Actual									
6	Previous Employment										
7	Education										
8	PRC License/Accreditation/Certification/ training (as required) Attached Supporting Documents for validation purposes										

Note: Refer to ITB Clause 10.4 of the Bid Data Sheet for the minimum work experience requirements for each key personnel.

- For the Project Manager: at least 10 years practice of the profession and 5 years experience in design and installation of refrigeration facilities/projects. In addition, has also managed/supervised a project with a minimum amount of ₱ 10 Million.
- For the Project Engineer, at least 5 years of practice of the profession and 3 years experience in refrigeration system design and installation and must have supervised at least ₱ 5 Million worth of project similar in nature.
- For the Electrical Engineer: at least 5 year experience as Electrical Engineer in Building Construction and Civil Work Projects, of which, a minimum of 3 year experience in Building Construction.

Submitted by :_____
(Printed Name & Signature)
Designation :_____
Date :_____

KEY PERSONNEL
(FORMAT OF BIO-DATA/RESUME)

Give the detailed information of the following personnel who are scheduled to be assigned as full-time field staff for the project. Fill up a form for each person.

- Authorized Managing Officer / Representative
- Sustained Technical Employee

1. Name : _____
2. Date of Birth : _____
3. Nationality : _____
4. Education and Degrees : _____
5. Specialty : _____
6. Registration : _____
7. Length of Service with the Firm : _____ Year from ____ (months) _____ (year)
   To ____ (months) _____ (year)
8. Years of Experience : _____
9. If Item 7 is less than the required number of years, give name and length of service with previous employers. (attached additional sheet/s), if necessary:

Name and Address of Employer	Length of Service
_____	_____ year(s) from _____ to _____
_____	_____ year(s) from _____ to _____
_____	_____ year(s) from _____ to _____

10. Experience:

    This should cover the number of years of experience required under ITB Clause 12.1b (ii.2) of the Bidding Documents for each of the required key personnel (Attached as many pages as necessary to show involvement of personnel in projects using the format below).

1. Name : _____
2. Name and Address of Owner : _____
3. Name and Address of the Owner's Engineer (Consultant) : _____
4. Indicate the Features of Project (particulars of the project components and any other particular interest connected with the project) : _____
5. Contract Amount Expressed in Philippine Currency : _____
6. Position : _____

7. Structures for which the employee was responsible : _____

8. Assignment Period : from _____ (months) _____ (years)
: to _____ (months) _____ (years)

_____
Name and Signature of Employee

It is hereby certified that the above personnel can be assigned to this project, if the contract is awarded to our company.

_____ _____
(Place and Date) (The Authorized Representative)

LIST OF EQUIPMENT, OWNED OR LEASED AND/OR UNDER PURCHASE AGREEMENTS, PLEDGED TO THE PROPOSED CONTRACT

Business Name : _____

Business Address : _____

Minimum Required Equipment	No. of units	Model/ Year Manufactured	Capacity/ Performance/ Size	Plate No.	Motor No./ Body No.	Specific Location	Condition	Status		
								Owned with attached Proof	Leased with attached Proof from the Lessor	Under Purchase Agreement with attached Proof from the Vendor

This Certifies that the above list of equipment are in good working condition and will be available for use during the execution of the Project.

Submitted by : _____
(Printed Name & Signature)

Designation : _____

Date : _____

Note:

(a) if owned: Submit proof of ownership of equipment i.e. receipt, etc.

(b) If leased and/or under purchase agreement: submit proof of lease and/or under purchase agreement (with corresponding engine numbers, chassis numbers and/or serial numbers) and Certification of availability of equipment in good working condition for the duration of the Project issued by the Equipment Lessor/Vendor.

STATEMENT OF AVAILABILITY OF KEY PERSONNEL AND EQUIPMENT

[Date of Issuance]

[Name of the Head of the Procuring Entity]
[Position of the Head of the Procuring Entity]
[Name of Procuring Entity]
[Address of Procuring Entity]

Attention : The Chairman
Bids and Awards Committee

Dear Sir:

In compliance with the requirements of the Philippine Fisheries Development Authority (PFDA) for the bidding of the Construction of Laoag 3 MT Ice Plant & Cold Storage, we certify that *[Name of the Bidder]* has in its employ key personnel, such as Project Manager, Project Engineer, Electrical Engineer, Materials Engineer, Safety Officer and Foreman who may be engaged for the construction of the said contract.

Further, we likewise certify the availability of equipment that *[Name of the Bidder]* owns, has under lease, and/or has under purchase agreement that may be used for the construction contracts.

Very truly yours,

[Name of the Representative]
[Position]
[Name of Bidder]

Omnibus Sworn Statement

[shall be submitted with the Bid]

REPUBLIC OF THE PHILIPPINES)
CITY/MUNICIPALITY OF _____) S.S.

AFFIDAVIT

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

1. *[Select one, delete the other:]*

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

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

2. *[Select one, delete the other:]*

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

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

3. [*Name* of Bidder] is not "blacklisted" or barred from bidding by the Government of the Philippines or any of its agencies, offices, corporations, or Local Government Units, foreign government/foreign or international financing institution whose blacklisting rules have been recognized by the Government Procurement Policy Board, **by itself or by relation, membership, association, affiliation, or controlling interest with another blacklisted person or entity as defined and provided for in the Uniform Guidelines on Blacklisting;**

4. Each of the documents submitted in satisfaction of the bidding requirements is an authentic copy of the original, complete, and all statements and information provided therein are true and correct;

5. [Name of Bidder] is authorizing the Head of the Procuring Entity or its duly authorized representative(s) to verify all the documents submitted;

6. *[Select one, delete the rest:]*

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

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

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

7. *[Name of Bidder]* complies with existing labor laws and standards; and

8. *[Name of Bidder]* is aware of and has undertaken the responsibilities as a Bidder in compliance with the Philippine Bidding Documents, which includes:

   a. Carefully examining all of the Bidding Documents;
   b. Acknowledging all conditions, local or otherwise, affecting the implementation of the Contract;
   c. Making an estimate of the facilities available and needed for the contract to be bid, if any; and
   d. Inquiring or securing Supplemental/Bid Bulletin(s) issued for the *[Name of the Project]*.

9. *[*Name *of Bidder]* did not give or pay directly or indirectly, any commission, amount, fee, or any form of consideration, pecuniary or otherwise, to any person or official, personnel or representative of the government in relation to any procurement project or activity.

10. <u>In case advance payment was made or given, failure to perform or deliver any of the obligations and undertakings in the contract shall be sufficient grounds to constitute criminal liability for Swindling (Estafa) or the commission of fraud with unfaithfulness or abuse of confidence through misappropriating or converting any payment received by a person or entity under an obligation involving the duty to deliver certain goods or services, to the prejudice of the public and the government of the Philippines pursuant to Article 315 of Act No. 3815 s. 1930, as amended, or the Revised Penal Code.</u>

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

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

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

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

NAME OF NOTARY PUBLIC
Serial No. of Commission _____
Notary Public for _____ until _____
Roll of Attorneys No. _____
PTR No. _____ *[date issued], [place issued]*
IBP No. _____ *[date issued], [place issued]*

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

AFFIDAVIT OF SITE INSPECTION

I, ___*(Representative of the Bidder)*___, of legal age, __*(civil status)*__, Filipino and residing at ___*(Address of the Representative)*_, under oath, hereby depose and say:

1. That I am the __*(Position in the Bidder)*__ of the ___*(Name of the Bidder)*___, with office at ___*(Address of the Bidder)*___;

2. That I have inspected the site for the Construction of Laoag 3 MT Ice Plant & Cold Storage;

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 Laoag 3 MT Ice Plant & Cold Storage.

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

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

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

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

NAME OF NOTARY PUBLIC
Serial No. of Commission _____
Notary Public for _____ until _____
Roll of Attorneys No. _____
PTR No. _____ *[date issued], [place issued]*
IBP No. _____ *[date issued], [place issued]*

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

LIST OF PROPOSED Subcontractors

The Bidder is required to insert below the names of all Subcontractors (to include the Specialty Subcontractors) proposed for the Project and to indicate the specific work they will be required to undertake:

Name of Subcontractors	Elements of Work to be Undertaken

Provision of the above information shall not be taken to mean that the above-named Subcontractors will be acceptable in the event that the Bidder is awarded the Contract. Before being allowed to sublet any element of work, the selected Contractor will be required to further demonstrate the capabilities of the proposed Subcontractor and seek permission from the Engineer to sublet such work to that Subcontractor.

(Signed by Authorized Representative of the Bidder):
Date: _____

LETTER OF AUTHORITY TO VALIDATE SUBMITTED DOCUMENTS

The General Manager
Philippine Fisheries Development Authority
PCA Annex Bldg., Elliptical Rd., Diliman
Quezon City

Attention : The Chairman
Bids and Awards Committee

Dear Sir/Madame:

Reference is made to our Application for eligibility and to Bid for the hereunder contract

Name of Contract : _____
Location : _____
Brief Description : _____

In accordance with Republic Act 9184 and its Implementing rules and Regulations (IRR), we/I hereby authorize the Philippine Fisheries Development Authority or its authorized representative/s to verify the statements, documents and information submitted herewith to substantiate our eligibility to participate in the bidding for the above-mentioned contract.

You may contact the following persons to provide further information with regard to this application:

	NAME	TEL. NUMBER	FAX NUMBER
a. Technical Matters			
b. Financial Matters			
c. Personnel Matters			

Very truly yours,

_____
Name of firm/Contractor

By:

_____
Name and Signature of Authorized Representative
Position/Designation: _____
Date: _____

TECHNICAL COMPONENT ENVELOPE
Class "A" Document

Financial Documents

COMPUTATION OF NET FINANCIAL CONTRACTING CAPACITY (NFCC)

A. Summary of the Firm's/Contractor's assets and liabilities on the basis of the audited financial statement, stamped "RECEIVED" by the Bureau of Internal Revenue or BIR authorized collecting agent, for the immediately preceding year and a certified copy of Schedule of Fixed Assets particularly the list of construction equipment.

		Year 20__
1.	Total Assets	
2.	Current Assets	
3.	Total Liabilities	
4.	Current Liabilities	
5.	Total Net Worth (1-3)	
6.	Current Net Worth or Net Working Capital (2-4)	

B. The Net Financial Contracting Capacity (NFCC) based on the above data is computed as follows:

NFCC = [(current asset – current liabilities) (15)] minus value of all outstanding contracts including those awarded contracts but not yet started

NFCC = Php _____

Submitted by:

_____
Name of Firm / Contractor

_____
Signature of Authorized Representative

Date: _____

NOTE:

As per Section 23.1.b) of IRR of R.A.9184: For Joint Venture Bidder, the partner responsible to submit the NFCC shall likewise submit the Statement of all its on-going contracts and Audited Financial Statements.

FINANCIAL COMPONENT ENVELOPE

BID FORM FOR THE PROCUREMENT OF INFRASTRUCTURE PROJECTS
[shall be submitted with the Bid]

BID FORM

Date : _____
Project Identification No. : _____

To: [name and address of Procuring Entity]

Having examined the Philippine Bidding Documents (PBDs) including the Supplemental or Bid Bulletin Numbers *[insert numbers],* the receipt of which is hereby duly acknowledged, we, the undersigned, declare that:

a. We have no reservation to the PBDs, including the Supplemental or Bid Bulletins, for the Procurement Project: *[insert name of contract];*

b. We offer to execute the Works for this Contract in accordance with the PBDs;

c. The total price of our Bid in words and figures, excluding any discounts offered below is: *[insert information]*;

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

e. The total bid price includes the cost of all taxes, such as, but not limited to: *[specify the applicable taxes, e.g. (i) value added tax (VAT), (ii) income tax, (iii) local taxes, and (iv) other fiscal levies and duties],* which are itemized herein and reflected in the detailed estimates,

f. Our Bid shall be valid within the a period stated in the PBDs, and it shall remain binding upon us at any time before the expiration of that period;

g. If our Bid is accepted, we commit to obtain a Performance Security in the amount of *[insert percentage amount]* percent of the Contract Price for the due performance of the Contract, or a Performance Securing Declaration in lieu of the the allowable forms of Performance Security, subject to the terms and conditions of issued GPPB guidelines[2] for this purpose;

h. We are not participating, as Bidders, in more than one Bid in this bidding process, other than alternative offers in accordance with the Bidding Documents;

i. We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal Contract is prepared and executed; and

[2] currently based on GPPB Resolution No. 09-2020

j. We understand that you are not bound to accept the Lowest Calculated Bid or any other Bid that you may receive.

k. We likewise certify/confirm that the undersigned, is the duly authorized representative of the bidder, and granted full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for the [Name of Project] of the [Name of the Procuring Entity*].*

l. We acknowledge that failure to sign each and every page of this Bid Form, including the Bill of Quantities, shall be a ground for the rejection of our bid.

Name: _____
Legal Capacity: _____
Signature: _____
Duly authorized to sign the Bid for and behalf of: _____
Date: _____

DETAILED COST ESTIMATES (DERIVATION OF UNIT COST AND LUMP SUM ITEMS)

Construction of Laoag 3 MT Ice Plant & Cold Storage

UNIT PRICE ANALYSIS

Pay Item No. : **Unit Price :** **P / UNIT**
Description : **Quantity :** **UNIT**

REF. NO.	DESCRIPTION	QTY.	UNIT	NO. OF HOURS	UNIT COST	TOTAL AMOUNT
A.	EQUIPMENT					
	TOTAL (A)					
B.	LABOR					
	TOTAL (B)					
	OUTPUT	.....	UNIT / hr			
	TOTAL (A + B)					
	UNIT COST (EQUIP. + LABOR)		P / UNIT			
C.	MATERIAL/BASIC ITEM					
	TOTAL (C)					
	UNIT COST (MATERIAL)		P / UNIT			
D.	ESTIMATED DIRECT COST (EDC)					
E.	DIRECT UNIT COST (EDC/QUANTITY)					
F.	OVERHEAD, CONTINGENCIES & MISCELLANEOUS			..... %		
G.	PROFIT			..... %		
H.	VALUE ADDED TAX			5 %		
I	TOTAL COST (D + F + G + H)					
	TOTAL UNIT PRICE (I / QTY.)		P / UNIT			

SUMMARY SHEET INDICATING THE UNIT PRICES OF CONSTRUCTION MATERIALS, LABOR RATES AND EQUIPMENT RENTALS

The Bidder shall submit Summary Sheets indicating the unit prices of construction materials, labor rates and equipment rentals/owned/leased used in coming up with the Bid.

AS ATTACHMENT

Contract Name : _____
Location : _____

CASH FLOW BY QUARTER AND PAYMENT SCHEDULE

PARTICULAR	% WT.	1ST Quarter	2nd Quarter	3rd Quarter	4th Quarter	5th Quarter	6th Quarter	7th Quarter	8th Quarter	9th Quarter	10th Quarter	11th Quarter	12th Quarter
ACCOMPLISHMENT													
CASH FLOW													
CUMULATIVE ACCOMPLISHMENT													
CUMULATIVE CASH FLOW													

Submitted by:

Name of the Representative of the Bidder Date: _____
Position
Name of the Bidder

One of the requirements from the bidder to be included in its Financial Component Envelope is the Cash Flow by Quarter and Payment Schedule.

DRAFT CONTRACT

CONTRACT AGREEMENT FORM

[not required to be submitted with the Bid, but it shall be submitted within ten (10) days after receiving the Notice of Award]

CONTRACT AGREEMENT

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

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

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this Agreement, words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.
2. The following documents as required by the 2016 revised Implementing Rules and Regulations of Republic Act No. 9184 shall be deemed to form and be read and construed as part of this Agreement, *viz*.:

    a. Philippine Bidding Documents (PBDs);
    - i. Drawings/Plans;
    - ii. Specifications;
    - iii. Bill of Quantities;
    - iv. General and Special Conditions of Contract;
    - v. Supplemental or Bid Bulletins, if any;

    b. Winning bidder's bid, including the Eligibility requirements, Technical and Financial Proposals, and all other documents or statements submitted;

    Bid form, including all the documents/statements contained in the Bidder's bidding envelopes, as annexes, and all other documents submitted (*e.g.*, Bidder's response to request for clarifications on the bid), including corrections to the bid, if any, resulting from the Procuring Entity's bid evaluation;

    c. Performance Security;

    d. Notice of Award of Contract and the Bidder's conforme thereto; and

    e. Other contract documents that may be required by existing laws and/or the Procuring Entity concerned in the PBDs. **Winning bidder agrees that additional contract documents or information prescribed by the GPPB that are subsequently required for submission after the contract execution, such as the Notice to Proceed, Variation Orders, and Warranty Security, shall likewise form part of the**

Contract.

3. In consideration for the sum of *[total contract price in words and figures]* or such other sums as may be ascertained, *[Named of the bidder]* agrees to *[state the object of the contract]* in accordance with his/her/its Bid.

4. The *[Name of the procuring entity]* agrees to pay the above-mentioned sum in accordance with the terms of the Bidding.

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

[Insert Name and Signature]
[Insert Signatory's Legal Capacity]

for:
[Insert Procuring Entity]

[Insert Name and Signature]
[Insert Signatory's Legal Capacity]
for:
[Insert Name of Supplier]

Acknowledgment

[Format shall be based on the latest Rules on Notarial Practice]

DRAFT Contract Agreement

KNOW ALL PERSONS BY THESE PRESENTS:

This Contract, made and entered into this _____ day of _____ by and between:

> The PHILIPPINE FISHERIES DEVELOPMENT AUTHORITY (PFDA), a government-owned corporation, established under Presidential Decree No. 977, with principal office address at the 2nd-4th Floors, PCA Annex Building, Elliptical Road, Diliman, Quezon City, herein represented by its General Manager, ATTY. GLEN A. PANGAPALAN and hereinafter referred as the AUTHORITY.

- AND–

Whereas, the Philippine Fisheries Development Authority (PFDA) is empowered by the Department of Agriculture (DA) to implement the Post-Harvest and other Infrastructure Component of the _____;

WHEREAS, in a public bidding conducted by the Authority, the bid of the Contractor has been determined as the lowest calculated responsive bid;

WHEREAS, under Board Resolution No. _____ dated - _____ the PFDA Board of Directors award the Contract for _____.

NOW, THEREFORE, for and in consideration of the foregoing premises and mutual covenants, stipulation and agreements herein contain, the Authority and the Contractor have agreed, as they do hereby agree and contract, as follows:

ARTICLE I

CONTRACT DOCUMENTS

The following documents, hereinafter referred to as Contract Documents, shall be deemed integral parts of this Contract, as fully as if hereto attached or herein stated, and shall continue to govern and control in full force and effects the rights and obligations of the parties as if the documents were set forth in full except as otherwise modified by mutual agreement in writing of both parties, to wit:

a) Contract Agreement

b) Conditions of Contract

c) Drawings/Plans

d) Specifications

e) Invitation to Bid

f) Instruction to Bidders

g) Addenda

h) Bid Form including the following Annexes in Two (2) Envelopes:

The First Envelope shall contain of the eligibility and technical documents:

(a) Eligibility Documents:

Class “A” Documents

1. Registration Certificate from Securities & Exchange Commission (SEC) or Department of Trade and Industry (DTI)
2. Mayor’s permit
3. Statement of all its on-going and completed government and private contracts
4. PCAB License
5. Audited financial statements
6. NFCC computation
7. Tax Clearance

Class “B” Document:

1. Joint Venture Agreement, if applicable

(b) Technical Documents

1. Bid security as to form, amount and validity period
2. Organizational chart
3. List of contractor’s personnel
4. List of contractor’s equipment units, owned or leased
5. Sworn statement in accordance with Section 25.3 of the IRR of RA 9184
6. Affidavit of Site Inspection

The Second Envelope (Financial Proposal) shall contain the following:

1. Bid prices in the bill of quantities in the prescribed bid form
2. Detailed estimates including a summary sheet indicating the unit prices of construction materials, labor rates and equipment rentals used in coming up with the bid

3. Breakdown of Lump Sum Bid items

4. Cash flow by the quarter and payment schedule

i) Performance Security

j) Notice of Award of contract and contractor's "conforme" thereto

k) Other contract documents that may be required by the Authority

The Contract Documents shall be complementary and supplementary to each other and what is called for or prescribed by one shall be considered as if called or prescribed by the other. In case of any discrepancy between, or of any defective prescription, errors, omissions, or ambiguity in any of the Contract Documents, the Contractor shall promptly submit the matter in writing. Such determination by the Authority shall be final and binding upon the Contractor and the latter shall accordingly proceed with the work strictly in accordance with such determination.

ARTICLE II

CONTRACTOR'S UNDERTAKING

The Contractor shall, in accordance with the provision and subject to the terms and conditions contained in the Contract Documents and supplied by the Authority and the Authority's written corrective determination mentioned in Article I hereof, fully and faithfully furnish to the satisfaction of the Authority all necessary labor, equipment, materials, tools, supplies, machinery and perform all operations (including mobilization, supervision and other similar or necessary acts) required for the _____ complete and ready for use and services as per plans and specifications.

ARTICLE III

CONTRACT PRICE

In consideration of the work to be performed by the Contractor as specified in Article II, the Authority shall pay the Contractor the fixed sum of _____ in the manner herein prescribed. It is understood that that all billings shall be based on work actually performed as verified by the Authority.

All payments made by the Authority to the Contractor shall be at all times subject to the usual government accounting and auditing procedures and requirements.

This amount is deemed full compensation for everything furnished and done by the Contractor under this Contract, including all works required but not specifically mentioned and also for all losses or damages arising out of the work aforesaid from the action of the elements or from any obstruction or difficulty encountered in the prosecution of this Contract, for all expenses incurred by or in consequence of the suspension or discontinuance of the Contract and the whole thereof, at the time and in the manner provided in the Contract Documents.

ARTICLE IV

MANNER OF PAYMENT

The Authority shall pay the Contractor the Price of _____ _____ subject to the following terms and conditions:

1. The CONTRACTOR, upon his request shall receive from the AUTHORITY an advance payment equivalent to fifteen percent (15%) of the total Contract Price.
2. The advance payment shall be made only upon submission to and acceptance by the AUTHORITY of an irrevocable standby letter of credit of equivalent value from a commercial bank or a guarantee payment bond, callable on demand, issued by a surety or insurance company duly licensed by the Office of the Insurance Commissioner and confirmed by the AUTHORITY.
3. The advance payments shall be repaid by the Contractor by deducting fifteen percent (15%) from its periodic progress payments.
4. The AUTHORITY shall have the right to deduct from the CONTRACTOR progress billing certain amount as may be necessary to cover third party liabilities, as well as uncorrected discovered defects in the project.
5. The CONTRACTOR, shall therefore, receive its progress payment less the retention money, 2.0% expanded withholding tax, 5% Final VAT and other deductions provided for the Contractor, if any.

ARTICLE V

WORK COMPLETION

The work called for in this Contract, as specified in Article II hereof, shall be completed within _____ calendar days. This Contract time shall commence to run after ten (10) calendar days following the receipt by the CONTRACTOR of the Notice to Proceed issued by the AUTHORITY.

The CONTRACTOR, may, however, ask for extension of the contract period through a written request submitted to the AUTHORITY prior to the expiration of the contract time and within thirty (30) calendar days after such work has been commenced or after the circumstances leading to such claim have arises.

Condition for the granting of extension of contract time shall be based on the applicable provisions of the Implementing Rules and Regulations of RA 9184.

ARTICLE VI

PERFORMANCE SECURITY

Before the signing of the Contract, the Contractor shall furnish the AUTHORITY a performance security in the form of cash, certified check, manager's check, cashier's check, bank draft, bank guarantee, letter of credit issued by a reputable bank, surety bond callable on demand, issued by the Government Service Insurance System or by

a surety or insurance companies duly accredited by the Office of the Insurance Commissioner, or a combination thereof, in accordance with the following schedule:

a. Cash, or cashier's/manager's check, bank draft/guarantee or irrevocable letter of credit issued by a Universal of Commercial Bank-ten percent (10%) of the total contract price.

b. Surety bond callable on demand issued by a surety or insurance company duly certified by the Insurance commission as authorized to issue such security-thirty percent (30%) of the contract price.

The performance security shall be posted in favor of the AUTHORITY and shall guarantee the faithful performance by the CONTRACTOR of its obligations under the contract prepared in accordance with the bidding documents.

The performance security shall be posted in favor of the AUTHORITY, and shall be forfeited in favor of the AUTHORITY in the event it is established that the CONTRACTOR is in default in its obligations in this contract.

The following provisions shall form part of the performance security: "The right to institute action on the penal bond pursuant to Act No. 3688 if any individual firm, partnership, corporation and association supplying the CONTRACTOR with labor and material for the prosecution of the work is hereby acknowledge and confirmed.

Subject to the conditions of the contract, the performance security may be released by the AUTHORITY after the issuance of the Certificate of Completion of the contract, provided that there are no claims for labor and materials filed against the contractor or the surety company.

The CONTRACTOR shall post an additional performance security to cover any cumulative increase of more than ten percent (10%) over the original value of the contract as a result of adjustments in unit prices, and/or change orders extra work orders, and supplemental agreements. The CONTRACTOR shall post the extension of the validity of the performance security to cover approved contract time extensions.

ARTICLE VII

RETENTIONS

The AUTHORITY shall deduct and withhold from every progress payment due to the Contractor an amount equivalent to ten percent (10%) of the amount due as retention. After fifty percent (50%) of the work shall have been completed to the satisfaction of the AUTHORITY and in accordance with the time schedule of work completion, no further amount shall be withheld or retained from any subsequent progress payments.

All amounts withheld or retained shall be paid to the Contractor upon final acceptance of the work and only after presentation to the Authority by the Contractor of a Guaranty Bond issued by the GSIS in an amount equivalent to ten percent (10%) of the total contract price including the cost of extra work if any, and affidavit executed by the Contractor stating that all wages and salaries of each employee, cost of materials and/or supplies, damages if any, or other obligations arising out this contract,

whether directly or indirectly have all been fully paid or settled, subject to No. 5 Art. Hereof.

ARTICLE VIII

OPTION TO COMPLETE WORK

In any case the CONTRACTOR, at any time before the satisfactory completion of the work and acceptance by the Authority of the project, should fail, refuse or neglect to supply the needed materials, equipment or workmen or should abandon the project, the Authority may, at its option, provide materials, equipment and all necessary labor, after giving the Contractor a written notice at least three (3) days before supplying the said materials, equipment or labor in order to complete the project.

The AUTHORITY may then proceed with the execution of the project in accordance with the plans and specifications until the same is completed. The AUTHORITY may, in the same event, engage the service of another Contractor to complete the work in accordance with the contract. In any case, the AUTHORITY shall have the right to charge the cost of completion of the project to the Contractor, directly against his performance security, if under this or if any other contract. Nothing in this Article shall relieve the Contractor or in any diminish its responsibility to the AUTHORITY for all cases, the Contractor shall be liable to the AUTHORITY for all forms of damages that may be suffered by it, by reason of the Contractor's failure, refusal or neglect to supply the necessary materials, equipment and labor or its abandonment of the project.

ARTICLE IX

DELAY AND LIQUIDATED DAMAGES

It is understood that in the execution of the work herein contracted, time is of essence. For that matter, if the Contractor refuses or fails to complete the undertaking called for within the contract period as specified herein, or any extension or extensions thereof, the Contractor shall pay the AUTHORITY the fixed and liquidated damages or to collect or charge such liquidated damages against the performance security filed by the Contractor or from the retention money, whichever is convenient and expeditious to the AUTHORITY; provided, however, that no liquidated damages or any excess cost shall be charged when the delay in the completion of the undertaking is due to unforeseeable of fortuitous events or causes beyond the control and without the fault or negligence of the Contractor, or to any cause directly attribution to the AUTHORITY.

The determination of the amount of liquidated damages shall be based on the applicable provisions of RA 9184.

ARTICLE X

LIABILITY TO THIRD PERSONS

All damages and losses of whatever nature that may be suffered by third persons as a result, directly or indirectly, of the fault or negligence of the Contractor in the execution of its work or performance of its undertaking under this contract shall be sole responsibility of the Contractor. The Contractor therefore shall save and hold the AUTHORITY free and exempt from all claims for damages, losses, penalties and liabilities of whatever kind or nature including all causes of action, suits, judgments arising from death or injury to person or damage to property resulting from the Contractor's fault or failure to exercise the diligence required in the execution of its work and in the performance of its undertakings.

It is the duty of the Contractor, in order to minimize if not eliminate the incidence of such damages or losses that may be inflicted upon third persons, to provide all necessary safeguards including the posting of warning signs strategic points of the work area and its vicinity to the end that incidents that may result in injury or death to persons and damage to property may be avoided or prevented.

ARTICLE XI

WARRANTY

The Contractor shall assume full responsibility for the contract work from the time project construction commenced up to final acceptance by the AUTHORITY and shall be held responsible for any damage or destruction of the works except those occasioned by force majeure. The Contractor shall be fully responsible for the safety, protection, security, and convenience of his personnel, third parties, and the public at large, as well as the works, equipment, installation and the like to be affected by his construction work and shall be required to put up a warranty security in accordance with the following schedule:

a. Cash or letter of credit - five percent of the contract price

b. Bank guarantee – ten percent of the contract price

c. Surety bond callable on demand – thirty percent of the contract price

The warranty security shall remain effective during the applicable warranty period in Section 62.2; specifically under sub-sections 62.2.1; 62.2.2; 62.2.3; and 62.2.4 of RA 9184 and shall be returned only after the lapse of the said warranty period.

ARTICLE XII

NO EMPLOYER-EMPLOYEE RELATIONSHIP

The Contractor is not an employee of the AUTHORITY and there is absolutely no employer employee relationship between them. All personnel, workmen and laborers hired by the Contractor, all persons contracted by its sub-contractors, if allowed under Art. XVII hereof, for the work shall be deemed employees or agents of

the Contractor solely and never that of the AUTHORITY. Hence, personal injury or death, or any other forms of damages, caused by the said employees or agents or sub-contractor.

ARTICLE XIII

SUPPLETORY USE OF CONTRACT DOCUMENTS

The contract documents shall be suppletory to this contract. Any and all deficiencies in the provision of this contract intended to be covered hereby otherwise connected with or related to the project covered hereby, but no expressly covered by the provisions of this contract, shall be supplied by the contract documents.

In case of irreconcilable conflict between the provisions of the contract documents and agreement, the latter shall prevail.

ARTICLE XIV

VALIDITY CLAUSE

If any or any condition of this contract is held invalid or contrary to law, the validity of the other terms and conditions hereof shall not be affected thereby.

ARTICLE XV

CONTRACT TERMINATION AND JURISDICTION

Should the Contractor fail to comply with any of its obligations and responsibilities or violate any of the terms and conditions hereof, the AUTHORITY may terminate this contract without need of judicial action or intervention by serving upon the Contractor a written notice to that effect at least fifteen (15) days prior to the intended date of termination; provided, that such termination shall not relieve the Contractor of its liabilities and responsibilities under this contract nor shall the AUTHORITY, by such termination be deemed to have waived any right that may have accrued in its favor and against the Contractor.

ARTICLE XVI

TAXES, DUTIES AND FEES

The Contractor shall give all necessary notice to and obtain the necessary permits and sanction of the proper government authorities in respect to the project. All taxes, duties and fees of whatever nature arising out of, or connected with this contract, execution of work contemplated herein, or which may be due and payable in all tools, equipment, labor and materials, plants, supplies and other facilities necessary for the performance and accomplishment of the project, including the transport or movement thereof, shall be for the sole account and responsibility of the Contractor. Any fee, imposition, charge, fine, penalty or loss or damage paid or incurred by the AUTHORITY by reason of any breach of this stipulation by the Contractor shall be reimbursed by the Contractor as soon as the demand therefore is made by the AUTHORITY.

The Contractor certifies under oath that is free and clear of all tax liabilities to the government and will pay the taxes in full and on time. Failure to do so will entitle the AUTHORITY to suspend payment for the work accomplished by the Contractor. Moreover, the Contractor is required to regularly present within the duration of the contract, appropriate tax clearance from the Bureau of Internal Revenue as well as a copy of its income and business tax returns duly stamped and received by the Bureau of Internal Revenue and duly validated with the tax payments made thereon.

ARTICLE XVII

ASSIGNMENT AND SUB-CONTRACTING

The Contractor shall not assign its rights or obligations under this contract, nor sub-contract any portion of the work covered by this contract, without the prior written approval of the AUTHORITY. Violation of these conditions shall be sufficient ground for the termination by the AUTHORITY of this contract.

ARTICLE XVIII

NON-WAIVER OF RIGHTS

No document, except the Certificate of Final Acceptance, shall be accepted as evidence of the satisfactory completion of the project. No proof of payment shall be taken or construed as an acceptance of satisfactory performance of the work or the good quality of the materials used, whether in whole or in part as contemplated in this contract.

ARTICLE XIX

VENUE OF ACTION

The venue of any action or suit arising out of or necessarily connected with this contract for whatever cause shall be the proper courts of Quezon City.

ARTICLE XXI

CONTRACT EFFECTIVITY

Notwithstanding, full compliance with all the legal requirements for the effectivity of this contract, no rights or obligations shall be accrues in favor of any against any party hereunder unless and until written certification to the funds cover the cost of the contract are available is issued by the Chief, Accountant of the AUTHORITY, who shall, for this purpose, affix her/his signature hereon as an instrumental witness and certify to the availability of funds pursuant to and in accordance with the existing laws.

IN WITNESS WHEREOF, the parties hereto have caused this contract to be signed in their names through their respective authorized representatives this _____ in Quezon City.

PHILIPPINE FISHERIES
DEVELOPMENT AUTHORITY

BY: BY:

_____ _____
General Manager

SIGNED IN THE PRESENCE OF:

Accounting Division _____

A C K N O W L E D G M E N T

REPUBLIC OF THE PHILIPPINES)

QUEZON CITY) S.S.

BEFORE ME, a Notary Public for and in Quezon City, personally appeared on this _____ day of _____,___ the following persons with their valid identification cards as follows:

Name	Type of I.D. & No.
_____	_____
_____	_____
_____	_____

ALL known to me and to me known as the same persons who executed the foregoing Contract consisting of _____ (__) pages including this page and they acknowledge to me that the same is their true and voluntary act and deed.

WITNESS, MY HAND AND SEAL, in the date and place, first above written.

_____

Notary Public

Doc. No. _____ Page No. _____

Book No. _____

Series of _____

PERFORMANCE SECURING DECLARATION

[if used as an alternative performance security but it is not required to be submitted with the Bid, as it shall be submitted within ten (10) days after receiving the Notice of Award]

REPUBLIC OF THE PHILIPPINES)
CITY OF _____) S.S.

PERFORMANCE SECURING DECLARATION

Invitation to Bid: [Insert Reference Number indicated in the Bidding Documents]

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

I/We, the undersigned, declare that:

1. I/We understand that, according to your conditions, to guarantee the faithful performance by the supplier/distributor/manufacturer/contractor/consultant of its obligations under the Contract, I/we shall submit a Performance Securing Declaration within a maximum period of ten (10) calendar days from the receipt of the Notice of Award prior to the signing of the Contract.

2. I/We accept that: I/we will be automatically disqualified from bidding for any procurement contract with any procuring entity for a period of one (1) year for the first offense, or two (2) years **for the second offense**, upon receipt of your Blacklisting Order if I/We have violated my/our obligations under the Contract;

3. I/We understand that this Performance Securing Declaration shall cease to be valid upon:

    a. issuance by the Procuring Entity of the Certificate of Final Acceptance, subject to the following conditions:
        i. Procuring Entity has no claims filed against the contract awardee;
        ii. It has no claims for labor and materials filed against the contractor; and
        iii. Other terms of the contract; or

    b. replacement by the winning bidder of the submitted PSD with a performance security in any of the prescribed forms under Section 39.2 of the 2016 revised IRR of RA No. 9184 as required by the end-user.

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

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

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

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

NAME OF NOTARY PUBLIC
Serial No. of Commission

Notary Public for _____ until

Roll of Attorneys No.

PTR No. _____ *[date issued], [place issued]*

IBP No. _____ *[date issued], [place issued]*

_____

_____

_____

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