



Republic of the Philippines
Department of Agriculture
AGRICULTURAL TRAINING INSTITUTE

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**BIDDING DOCUMENTS
FOR THE REHABILITATION
AND IMPROVEMENT OF DRAINAGE
SYSTEM AND EMBANKMENT
OF THE AREA ALONG GUEST HOUSE
BUILDING (*LOT 1*), AND REPAIR
WORKS (PHASE 4) AT RDEC, GUEST
HOUSE, STAFF HOUSE AND MESS HALL
(*LOT 2*)**

**ITB NO. ATI-CO-2024-16
JUNE 20 2024**

**Reference:
GPPB Philippine Bidding Documents
Sixth Edition, July 2020**

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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



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INVITATION TO BID FOR THE REHABILITATION AND IMPROVEMENT OF DRAINAGE SYSTEM AND EMBANKMENT OF THE AREA ALONG GUEST HOUSE BUILDING (Lot 1), AND REPAIR WORKS (Phase 4) AT RDEC, GUEST HOUSE, STAFF HOUSE AND MESS HALL (Lot 2)

1. The *Agricultural Training Institute* through the *FY 2024 General Appropriations Act* intends to apply the sum of **LOT 1 - One Million Nine Hundred Sixty Thousand Pesos only (Php 1,960,000.00)** and **LOT 2 - One Million Five Hundred Thousand Pesos only (Php 1,500,000.00)** being the Approved Budget for the Contract (ABC) to payments under the contract for **INVITATION TO BID FOR THE REHABILITATION & IMPROVEMENT OF DRAINAGE SYSTEM AND EMBANKMENT OF THE AREA ALONG GUEST HOUSE BUILDING – LOT 1, AND REPAIR WORKS (Phase 4) AT RDEC, GUEST HOUSE, STAFF HOUSE AND MESS HALL – LOT 2 (ITB-ATI-CO-2024-16)**. Bids received in excess of the ABC shall be automatically rejected at bid opening.
2. The *Agricultural Training Institute* now invites bids for the above Procurement Projects. Completion of the Works is required within **seventy-five (75) Calendar Days for LOT 1 and fifty (50) Calendar Days for LOT 2.** Bidders should have completed, within **five (5) years** from the date of submission and receipt of bids, a contract similar to the Project. The description of an eligible bidder is contained in the Bidding Documents, particularly, in Section II (Instructions to Bidders).
3. Bidding will be conducted through open competitive bidding procedures using non-discretionary “*pass/fail*” criterion as specified in the 2016 revised Implementing Rules and Regulations (IRR) of Republic Act (RA) No. 9184.
4. Interested bidders may obtain further information from the *Agricultural Training Institute* and inspect the Bidding Documents at the address given below from **8:00am to 5:00pm**.
5. A complete set of Bidding Documents may be acquired by interested bidders on **June 20, 2024** from the given address and website/s below and upon payment of the applicable fee for the Bidding Documents, pursuant to the latest Guidelines issued by the GPPB, in the amount of Php 5,000.00. The Procuring Entity allows the bidder to present its proof of payment for the fees in person, by facsimile, or through electronic means.
6. The *Agricultural Training Institute* will hold a Pre-Bid Conference on **June 28, 2024, 2:30pm** through videoconferencing/webcasting *via Google Meet* which shall be open to prospective bidders through this link: <https://tinyurl.com/PrebidConfVarious>.

7. Bids must be duly received by the BAC Secretariat through (i) manual submission at the office address as indicated below on or before **July 12, 2024 at 8:30 am at ATI BAC Secretariat located at the Basement**. Late bids shall not be accepted.
8. All bids must be accompanied by a bid security in any of the acceptable forms and in the amount stated in **ITB** Clause 14.
9. Bid opening shall be on **July 12, 2024, 10:30 am at Board Room of ATI-CO Main Building, Elliptical Road, Diliman, Quezon City** and/or through google meet. Bids will be opened in the presence of the bidders' representatives who choose to attend the activity.
10. In compliance to the Memorandum of the Department of Agriculture (DA) dated December 18, 2020, the public, especially the prospective suppliers/service providers are hereby informed that DA 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 Secretary or the National Bureau of Investigation (NBI) for entrapment and proper investigation.
11. The **Agricultural Training Institute** 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 Sections 35.6 and 41 of the 2016 revised Implementing Rules and Regulations (IRR) of RA No. 9184, without thereby incurring any liability to the affected bidder or bidders.
12. For further information, please refer to:

Roy Son R. Dela Cruz
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13. You may visit the following websites:

For downloading of Bidding Documents: <https://ati2.da.gov.ph/ati-main/content/bids>

June 20, 2024


MILAGROS C. URBANO
BAC Chairperson

Section II. Instructions to Bidders

1. Scope of Bid

The Procuring Entity, *Agricultural Training Institute* invites Bids for the **INVITATION TO BID FOR THE REHABILITATION AND IMPROVEMENT OF DRAINAGE SYSTEM AND EMBANKMENT OF THE AREA ALONG GUEST HOUSE BUILDING (LOT 1), AND REPAIR WORKS (Phase 4) AT RDEC, GUEST HOUSE, STAFF HOUSE AND MESS HALL (LOT 2)** with Project Identification Number *ITB-ATI-CO-2024-16*.

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 source of funding as indicated below for 2024 in the amount of **LOT 1 - One Million and Nine Hundred Sixty Thousand Pesos (P1,960,000.00) & LOT 2 - One Million and Five Hundred Thousand Pesos (P1,500,000.00)**.

2.2. The source of funding is:

- a. NGA, the General Appropriations Act (GAA).

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. 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**.

8. 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.

9. Documents Comprising the Bid: Eligibility and Technical Components

- 9.1. The first envelope shall contain the eligibility and technical documents of the Bid as specified in **Section IX. Checklist of Technical and Financial Documents**.
- 9.2. 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.

- 9.3. 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**.
- 9.4. 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**.
- 9.5. 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**.

10. Documents Comprising the Bid: Financial Component

- 10.1. The second bid envelope shall contain the financial documents for the Bid as specified in **Section IX. Checklist of Technical and Financial Documents**.
- 10.2. Any bid exceeding the ABC indicated in paragraph 1 of the **IB** shall not be accepted.
- 10.3. 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.

11. 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.

12. 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.

13. Bid and Payment Currencies

- 13.1. 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.
- 13.2. *Payment of the contract price shall be made in:*
 - a. Philippine Pesos.

14. Bid Security

- 14.1. 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**.
- 14.2. The Bid and bid security shall be valid until 120 Calendar Days. Any bid not accompanied by an acceptable bid security shall be rejected by the Procuring Entity as non-responsive.

15. Sealing and Marking of Bids

Each Bidder shall submit one copy of the first and second components of its Bid.

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

If the Procuring Entity allows the submission of bids through online submission to the given website or any other electronic means, the Bidder shall submit an electronic copy of its Bid, which must be digitally signed. An electronic copy that cannot be opened or is corrupted shall be considered non-responsive and, thus, automatically disqualified.

16. Deadline for Submission of Bids

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

17. Opening and Preliminary Examination of Bids

- 17.1. 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.

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

18. Detailed Evaluation and Comparison of Bids

- 18.1. 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.
- 18.2. 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.
- 18.3. 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.

19. 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**.

20. 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

ITB Clause				
5.2	For this purpose, contracts similar to the Project refer to contracts which have the same major categories of work, which shall be: <i>Civil/Repair Works</i>			
7.1				
9.3	<i>PCAB License: License Category C&D (General Building), Size Range – Small B for both LOT</i>			
9.4	The key personnel must meet the required minimum years of experience set below: Same for both LOT			
	<u>Key Personnel</u>	<u>General Experience</u>	<u>Relevant Experience</u>	
	Project Manager	15 years	15 years	
	Project Engineer	10 years	10 years	
	Material Engineer	5 years	5 years	
	Foreman	10 years	5 years	
	Construction safety			
	Health	5 years	5 years	
9.5	The minimum major equipment requirements are the following:			
	<u>Equipment</u>	<u>Capacity</u>	<u>Number of Units</u>	<u>Remarks</u>
	LOT 1			
	Mini Backhoe/Loader		1	Rental/Owned
	Compactor		2	Rental/Owned
	Bagger Mixer		1	Owned Jack
	Hammer		2	Owned
	Mini-Dump Truck		1	Rental/Owned
	LOT 2			
	Grinder		2	Owned
	Drill		2	Owned
	Scaffolding		10	Owned
	Chipping Gun		1	Owned
12	<i>Not allowed</i>			
14	The bid security shall be in the form of a Bid Securing Declaration or any of the following forms and amounts:			
	LOT	Approved Budget for the Contract (ABC)	Cash, Cashier's/ Managers Check, Bank Draft/Guarantee or Irrevocable Letter of Credit (2% of ABC)	Surety Bond (5% of ABC)
	1	<i>Php 1,960,000.00</i>	<i>Php 39,200.00</i>	<i>Php 98,000.00</i>
	2	<i>1,500,000.00</i>	<i>30,000.00</i>	<i>75,000.00</i>

18.2	Partial bids are not allowed
20	Additional contract documents relevant to the Project that are required by existing laws and/or the Procuring Entity, such as Construction All Risk Insurance (CARI), construction schedule/S-curve/PERT-CPM, manpower schedule, construction methods, equipment utilization schedule, Detailed Unit Price Analysis or its equivalent and other acceptable tools of project scheduling.

Section IV. 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

4.1. 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.

4.2. 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 9.4 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

GCC Clause	
2	The Intended Completion Date is: <u>Seventy-Five (75) calendar days – for LOT 1 and Fifty (50) Calendar Days for LOT 2</u>
4.1	<i>Within seven (7) days after issuance of Notice to Proceed.</i>
6	The site investigation reports are: <i>Certificate of Site Inspection issued by authorized representative of the Procuring Entity</i>
7.2	<i>Duration of warranty is for Five (5) years for each Lot</i>
10	a. Dayworks are applicable at the rate shown in the Contractor’s original Bid.
11.1	The Contractor shall submit the Program of Work to the Procuring Entity’s Representative within <i>Seven (7) days</i> of delivery of the Notice of Award for each lot
11.2	The amount to be withheld for late submission of an updated Program of Work is 1% of the contract price.
13	The amount of the advance payment is <i>amount as percentage of the contract price that shall not exceed 15% of the total contract price and schedule of payment for each lot</i>
14	Materials and equipment delivered on the site but not completely put in place shall be included for payment.
15.1	The date by which operating and maintenance manuals are required before issuance of final payment. The date by which “as built” drawings are required before issuance of final payment.

Section VI. Specifications

SPECIFICATIONS

I. GENERAL REQUIREMENTS

SECTION 1.1 Summary of Works

This includes the furnishing of all materials, labor, tools, and equipment and the performance of all operations necessary for the **REHABILITATION AND IMPROVEMENT OF DRAINAGE SYSTEM AND EMBANKMENT OF THE AREA ALONG THE GUEST HOUSE BUILDING, AND REPAIR WORKS (Phase 4) AT RDEC, GUEST HOUSE, STAFF HOUSE AND MESS HALL** which are all in accordance with the plans and specifications, and subject to the terms and conditions of the contract documents.

SECTION 1.2 Mobilization and Mobilization

The contractor upon receipt of the Notice to Proceed shall immediately mobilize and transport his equipment, materials, and employees to the site within (7) calendar days and demobilize or remove the same at the completion of the project.

SECTION 1.3 Contractor's Facilities & Utilities

1.3a Field Office

During the performance of the contract, the Contractor shall construct and maintain a field office and facilities at the site of the work at which he or his authorized agent shall be holding office at all times, while the work is in progress. The dimensions of the Field Office including its storage should be at least thirty **(30) square meters** and will coordinate the location with the ATI staff. This Field Office and Storage will be turned over to ATI after completion of the project

The contractor shall be responsible for the maintenance and protection of all facilities to be provided during the entire duration of the Contract including the provision of adequate stock of all expendable items, such as light bulbs, light tubes, equipment, and supplies, etc. at all times to ensure proper and continuous functioning of all the facilities.

Construction shanties, sheds, and temporary facilities provided as required for the Contractor's convenience shall be maintained in good condition and neat appearance including finishes as required by the ATI Representative.

1.3b Temporary light and power

The Contractor shall provide and maintain temporary electrical services including installation of temporary power & lighting within the construction site. The electrical services shall be adequate in capacity to supply power to construction tools and

equipment without overloading the temporary facilities and shall be made available to supply power, lighting, and construction operation of all trades. All temporary equipment and wiring for power and lighting shall be in accordance with the applicable provisions of the local governing codes. After the construction works, all temporary wiring, lighting, equipment, and devices shall be removed.

1.3c Temporary toilet

The contractor shall provide (if not available) and maintain in sanitary condition an enclosed toilet for the use of all construction personnel located within the contract limits, complete fixtures, water and sewer connections, and appurtenance.

1.3d Temporary water supply

The contractor shall provide and maintain water supply service, complete with necessary connections and appurtenances. Installed water supply shall be used as a source of water for construction purposes subject to the approval of the ATI Representative/Engineer/Architect.

1.3e Project Identification and Signage

The contractor shall provide and maintain a tarpaulin signboard which must be suitably framed for outdoor display at the project location and shall be posted as soon as the award has been made.

1.3f First Aid

The contractor shall provide and maintain first aid kits available on-site office. The location of the kit must be accessible. The contractor shall have a trained and knowledgeable employee to give first aid to workers.

1.3g Disposal area

The proposed location of the disposal area shall be at the site designated by the ATI Representative. It is the responsibility of the contractor to dispose off-site all construction debris and consider it in the preparation of his proposal.

SECTION 1.4

Temporary works & Services

1.4a Security

An efficient watchman shall be provided for watching over the site and on the works from the theft, day and night. Temporary lighting shall be provided to light up hoarding and scaffoldings. Erect a complete fence around the perimeter of construction sites to shield them from view and prevent unauthorized access.

1.4b Screens

Where work is carried out in or adjacent to existing buildings, protection shall be provided against the spread of dust and other nuisances using dust sheets, tarpaulins, boards, and the like.

Safety screen nets and scaffolding should protect/prevent people from falling, or avoid hurting people of property from falling debris from on-going construction.

1.4c **Scaffolding**

All scaffolding, screens, covering, screen framings, and the like shall be properly constructed, wedged, braced, secured, and maintained in accordance with the best local practice. All materials shall be of good quality and of adequate strength and stability to carry the loads to be sustained.

Metal scaffold system shall be a scaffold system constructed, as required, with a working platform adequately supported and other ancillary members including guardrails, toe boards, access ladders, **slope catch-fans**, safety screen, anchors, support brackets, foundation, and the like; and all the structural members of the scaffolding system shall be metal.

The scaffold system shall provide a suitable and sufficient safe means of access and workplace for carrying out work that cannot be conveniently executed from the ground or a floor in a building, or from a ladder, etc. The scaffold system shall be used for all construction, alteration, repair, and maintenance works. Unless other specified, other alternative scaffolding may be used for screening purposes.

The contractor shall be responsible for the design, planning and coordination, transportation, fabrication, erection, maintenance alteration, and dismantling of the scaffold system. Scaffolding shall be inspected regularly, with the submission of an inspection form and certification by the competent and qualified person as per the statutory requirements.

SECTION 1.5 **Coordination**

1.5a **Supervision**

The contractor must employ only **competent and efficient key personnel** experienced in their specialization.

All personnel/laborers shall wear **proper uniforms and IDs** when entering and within ATI premises.

1.5b **Construction Safety and Health / Safety Management**

The contractor shall put up and continuously maintain **adequate safety measures** that shall prevent undue loss, damages, and injury of workers, or loss of properties.

Sufficient safety helmets, rubber boots, safety shoes, safety belt/harness, lifeline, umbrella, protective and waterproof clothing, personal protective devices such as ear muffs and glasses, and other safety equipment necessary because of hazardous work process or environment, chemical or radiological or other mechanical irritants of hazard capable causing injury or impairment in the function of any part of the body through absorption, inhalation or physical agent shall be provided by the contractor for the use of workers, the ATI representatives and other authorized persons visiting the site.

1.5c **Parking and loading/unloading**

Availability, locations, and time of use of parking and loading/unloading shall be agreed with and approved by the ATI representatives.

SECTION 1.6

Regulatory and Other Requirements

1.6a **Other Requirements**

All requirements described in detail in the General Requirements shall be provided and shall be the sole responsibility of the Contractor in the execution of the work. These are, among others:

- a. Permits and Fees
- b. Materials Testing
- c. Project / Technical Meetings and Conferences

The Contractor and others working under his jurisdiction shall perform work in compliance with the rules, regulations and ordinances of any kind required by the governmental authority or other agency having jurisdiction over his work.

1.6b **Project / Technical Meetings**

• Pre-Construction Conferences

A pre-construction meeting between the Implementing Office, or ATI representatives, and the Contractor shall be held at the site prior to the commencement of works.

The meeting shall be for:

1. Resolving current problems;
2. Further orienting the contractor to the requirements of the Drawings and Specifications;
3. Working out with the contractor a general schedule of supervision.

• Progress Meeting

The contractor shall meet with the Implementing Office weekly or as required to verify the progress of the work.

1.6c **Progress Report**

The Contractor shall prepare and submit progress reports to the Implementing Office every **30 days (1 month)** after the start of the project up to its completion, showing the work completed, work remaining to be done, and status of construction equipment and materials at the site.

1.6d **Survey Data**

The Contractor shall layout his work from established baselines and benchmarks indicated in the drawing and shall be responsible for all measurements in connection therewith. The Contractor shall furnish, at his own expense, all stakes, templates, platforms, equipment, tools, materials, and labor as may be required in laying out any

part of the work, out of established based lines and bench mark. If shall be the responsibility of the Contractor to maintain and preserve all stakes and other marks until he is authorized to remove them.

1.6e Cleaning-up

The Contractor shall at all times keep the construction area including the storage area used by him free from accumulations of waste materials material or rubbish. Upon completion of the construction, the Contractor shall leave the work and premises in clean, neat womanlike conditions satisfactory to the Implementing Office or its representative.

Demobilization

1.6g Document to be submitted

- **Construction Schedule**

The Contractor shall contact the Implementing Office before covering up any work so that proper inspection may be made.

- **Network Analysis Schedules**

The Contractor shall prepare a PERT-CPM Construction Schedule to indicate the following:

- a. All activities necessary to complete the project;
- b. Monthly value of each activity.

- **Close-Out Report**

Upon completion of the works, the Contractor shall furnish ATI (Agricultural Training Institute) the required Close-Out Report shall be as prerequisite for the processing of the final payment.

The Close-Out Report shall include, but not be limited to, the following:

- a. "As-Built" Plans – three (3) copies in print (A1-size) and USB for AutoCAD file;

The "As-Built" Plans shall reflect all pertinent information, complete in all aspects of the actual installation, and all new information not originally shown in the contract drawings.

- b. Material Book containing Materials Sample Approval Form, and list of all materials used, with corresponding pictures and description;

Provide a Table of Contents neatly typed, in complete and orderly sequence. Include complete information for each of the following:

- Product or work item;
- Firm, with name of principal, address, and telephone number;
- Scope;
- Date of beginning of warranty or service and maintenance contract;
- Duration of warranty or service maintenance contract;

- Proper procedure in case of failure;
- Instances which might affect the validity of warranty or bond; and
- Contractor, name or responsible principal, address, and telephone number.
 - a. Copy of equipment and material brochures;
 - b. Pictures of Work Progress
 - c. Report of the result of all conducted test

II. EARTH AND SITE WORKS

SECTION 2.1

Clearing and Grubbing

2.1a General

Consist of clearing, grubbing, removing, and disposing of all vegetation and debris as designated in the contract, except those objects that are designated to remain in place or are to be removed in consonance with other provisions of this specification.

All surface objects and all trees, stumps, roots, and other protruding obstructions, not designated to remain, shall be cleared and/or grubbed, including mowing as required.

SECTION 2.2

Removal of Structure and Obstruction

2.2a General

Consist of the removal wholly or in part, and satisfactory disposal of all buildings, fences, structures, old pavements, abandoned pipe lines, and any other obstructions which are not designated or permitted to remain, except for the obstruction to be removed and disposed of off-under other items in the contract.

2.2b Protection

- a. Barricades: Furnish and install any necessary barricades to protect the public or workmen during the demolition and dismantling of each structure or part thereof. Barricades to keep the public out of demolition areas shall be left in place until removed by the Contractor after they are no longer required for protection.
- b. Sidewalk overhead protection: The contractor must provide overhead protection around the building, while working is occurring, to protect pedestrians from falling debris.
- c. Warning Signs: Provide necessary warning signs and lights.

2.2c Execution

1. Demolish and dismantle structures into sections and dispose them properly and promptly at designated areas or as directed.
2. Avoid accumulation of dismantled materials and work demolished on the area that will create a heavy load to carry to any structure members.

3. Care should be taken to protect and maintain all materials and other existing parts such as walls and utilities like conduits, drains, sewers, pipes, and wires that are to remain in place. Any damage done in the performance of the work shall be replaced and corrected at the expense of the Contractor.
 4. Execute demolition and dismantling works in an orderly manner with due consideration to neighbors and the public.
 5. All usable materials taken from the demolition shall be turned over to the Implementing Office.
- Structure(s) to be retained
 -Parts of the existing structure(s) which are to be kept in place shall be adequately protected.
 -Debris shall not overload any part of the structure which is not to be demolished.
 - Partly demolished structure(s)
 -Partly demolished structure(s) shall be kept in a stable condition, with adequate temporary support at each stage to prevent the risk of uncontrollable collapse. Debris shall not overhead scaffolding platforms. Access of unauthorized persons to partly demolished structure(s) shall be prevented.
 -Partly demolished structures shall be left safe outside working hours.
 - Clean up
 Remove from the project site all rubbish and debris found thereon and all materials and debris resulting from dismantling and demolition. Leave the site in safe and clean condition.

SECTION 2.3 Earthworks & Site Preparation

2.3a **General**

- Scope
 Consist of furnishing all labor, materials, equipment, plant, and other facilities and the satisfactory performance of all work necessary to complete dismantling, clearing, stripping, and all site preparation as indicated on drawing and specification.

2.3b **Protection**

- Workmen
 Provide adequate measures to protect workmen and the public on site.
- Surrounding Area
 Protect other structures from damage, and repair damage caused by this work at no additional cost to ATI.
- Utility Lines
 Existing utility lines indicated or the location of which are made known to the Contractor prior to execution of works, and that which area indicated to be retained,

as well as utility lines constructed during operations, shall be protected from damage during the execution of work, and if damaged, shall be repaired at no extra cost. A site survey shall be conducted by the Contractor to acquaint with the existing utility line. Proper measures shall be taken and immediate information forwarded to the Implementing Office when utility lines are encountered within the area of operation.

- Survey and Grades

The drawings indicated layout of existing building components. Contractors shall be responsible for verifying the actual and the proposed setting in complete conformity with the drawings.

- Disposal of Cleared Materials

Dismantled refuse materials resulting from the clearing operations shall be disposed of by removing from the site at the Contractor's expense. Materials shall be disposed outside the perimeters of the project site.

- Dismantled Materials

Shall be stored above the ground upon flat forms, skids, or other supports. It shall be kept free from dirt, grease, or other foreign matter, and shall be covered to protect against damages.

SECTION 2.4 Earthworks

2.4a General

- Scope

This work consists of furnishing all materials, labor, equipment, and the performances of all operations in connection with the excavation, filling, backfilling, and compaction complete in accordance with the drawings and specifications stated herein. Also includes trenching and backfilling for underground sanitary lines.

Earthworks consist of excavation, backfilling, and disposal of surplus materials. Work of this section includes all measures and materials required to complete the design supply, support, use, and construction removal of earthworks.

- Protection

- a. Existing Structures

Protect existing buildings, streets, and other structures, which are indicated to remain, from damage and repair damage caused by this work at no additional cost to the ATI.

- b. Utility Lines

Where utility lines area encountered within the area of operations, the Contractor shall notify the Implementing Office in ample time for the necessary measures to be taken interruption of the service.

2.4b Materials

- Barrow materials shall be selected, laboratory-approved materials obtained from off-site sources and having a 3.5 percent liquid limit, and 4 to 12 percent plasticity index.
- Granular fill to form a capillary water barrier shall be clean, crushed non-uniformly graded, and of a size which will pass a 25-millimeter mesh screen and be retained on a No. 4 mesh screen.
- Excavated materials approved for use as backfill shall be free of fibers, vegetables or organic materials, boulders, large rocks or pockets, lumps, or other concentrations of silt, debris, or cinders.
- No fill materials shall be placed when free water is standing in the area where the fill is to be placed.

2.4c Execution

- Preparation
 - a. Stakes and Batter Board
 - Stake out the building accurately and establish grades. Secure the approval of the Implementing office and/or ATI.
 - Erect batter boards and reference marks where they will not be disturbed during construction.
 - Store the materials and conduct work in such a manner as to preserve all reference marks.
 - Re-establishment of lines and grades where necessary shall be done at the Contractor's expense.
 - b. Rough Grading
 - Cut and fill and grade the site area
 - Deposit materials in horizontal layers not exceeding 0.20 meters (8 inches) in depth and compact 95 of maximum density.
- Excavation
 - c. Foundations
 - Excavate to the grade indicated
 - Excavate trenches to a neat size, leveled to line at the bottom ready to receive the foundation.
- Dewatering
 - Water encountered during the excavation shall be removed by pail or pump; care being taken that the surrounding particles of soil are not disturbed or removed.
 - Pump water out of excavated areas throughout the construction
- Trenching for Sub-Drainage

Excavated trenches for underground utility system and drain lines. Grade and tamp to provide firm bed trenches for the drain line
- Soil Compaction

All existing earth within the building lines that has been disturbed should be placed in 15-centimeter layers and compacted 95% of the maximum density required for fill.

- Disposal of Excavated Materials
Surplus materials resulting from the site excavating and grading operations shall be removed from the site and disposed properly if not needed.
- Backfilling and Grading
 - a. Backfilling
 - Commence after approval of construction below finish grade, underground utility systems inspected and tested, forms removed, and the excavation cleaned of trash and debris.
 - Place in layers not more than 15 centimeters thick and evenly compact and ram by wetting, tamping, or rolling until the correct grade.
 - b. Finish Grade
 - Place filling materials in horizontal loose layers not exceeding 15 centimeters in thickness and spread, mix, and place in such a manner as to produce a uniform thickness of material.
 - Start in the deepest area and progress approximately parallel to the finished grade.
 - Grade finish surface to drain water from the building.

III. CONCRETE FORMWORKS

SECTION 3.1

General

3.1a Scope

- This work includes furnishing all labor, materials, equipment, and satisfactory performance of all operations necessary to complete the setting of all concrete formworks and other related works in accordance with the Contract Document.

3.1b Protection

- Provide forms that will produce correctly aligned concrete.
- The choice of fitting shall be done correctly.
- Support of forms shall be done rigid and extra care must be exercised in considering weight and side pressure.

SECTION 3.2

Materials

3.2a Product

- Form Lumber
Shall be stress graded or merchantable; shall be non-staining species and dressed on concrete forming side if to be for exposed surfaces.
- Phenolic board
Shall be commercial standard, moisture resistant, at least 12mm thk.
- Form Oil
Use colorless mineral oil, required viscosity is equal to 70 seconds but not more than 110 seconds at 38C.
- Shoring & scaffolding
Shall be at least galvanized iron 2" dia. shed 40.

SECTION 3.3

Execution

3.3a Construction of Form

Formworks shall have adequate cleanest openings to permit inspection and cleaning. Joints shall be located at the junction of formworks panels where feasible. Formwork joints shall be solidly backed and leakproof. The form surface on the concrete side shall be given one coat of form oil after fabrication or cleaning and a second coat just before rebar placement. Excess oil shall be wiped off. Form oil shall be kept off from the reinforcement and embedded items. Forms shall be properly maintained throughout the concrete works to accommodate the rate and methods of placing concrete; to support load of wet concrete, and vertical, horizontal, and impact loads during construction, and to minimize abnormal deflections during and after concrete placement. Forms shall be provided with positive means of adjustment to permit realignment or readjustment of shores.

3.3b Removal of Forms

- Forms shall not be removed without the consent of the Engineer/Architect of the Implementing Office. Blocks and bracing shall not be removed at the time the forms are removed and in no case shall any portion of wood forms be left in the concrete.
- Forms shall be removed in planned and sequences to ensure the complete safety of the structure and without damage to concrete surfaces. Forms and shoring shall not be removed until the concrete is adequately set and strong enough to withstand anticipated loadings.
- Time of Removal

Part of Structure	Minimum Time
Sides of beams, walls, and columns	1 day
Suspended Slab	14 days
Beams or Girder Soffit	14 days

IV. CONCRETE AND REINFORCED CONCRETE

SECTION 4.1

General

4.1a Scope

This work includes the furnishing, bending, placing, and finishing of concrete in accordance with the plans and specifications.

Unless otherwise specified herein, concrete works shall conform to the requirements of the ACI Building Code. Full cooperation shall be given to other trades to install embedded items. Provisions shall be made for setting items not placed in the forms. Before concrete is placed, embedded items shall have been inspected and tested for concrete aggregates and other materials shall have been done.

SECTION 4.2

Materials

4.2a Products

- Portland Cement
Cement for the concrete shall conform to the requirements of specifications for Portland Cement (ASTM C-150, Type I) by Union, Republic, and Pacific Cement only
- Water
Water used in mixing concrete shall be clean and free from other injurious amounts of oils, acids, alkaline, organic materials, or other substances that may be deleterious to concrete or steel.
- Fine Aggregates/ Sand
Fine Aggregates/Sand shall consist of hard, tough, durable, uncoated, and clean particles or S-1. The shape of the particles shall be generally rounded or cubicle and reasonably free from flat or elongated particles. The stipulated percentages of fines in the sand shall be obtained either by the processing of natural sand or by the production of suitably graded manufactured sand. Signs of more than 10% soil content for every delivery shall be rejected.
- Fine Aggregates/Gravel
Coarse Aggregates shall consist of WASHED AGGREGATES. Coarse aggregates shall consist of hard, tough, durable, clean particles. The size of coarse aggregates to be used in the various parts of the work shall be ¾" for all concreting work.
- Reinforcing Steel Bar
Reinforcing Bars shall conform to the requirements of the ASTM standard specifications ASTM-1562-2T, for Billet Steel Bars for concrete reinforcement (A15-625) and to specifications for minimum requirements for the deformed steel bars for concrete reinforcement (A 305-56). For passing and acceptable standard of structural steel.
Reinforcing steel bars to be used shall bear the distinctive markings identifying the manufacturer by their initials, bar size number, including the type of steel such as:

N	= for Billet
A	= for Axial
R	= for rail steel

The reinforcing bar shall have structural steel grade, as follows;

10mm in diameter & below - A36, F's 33KSI
12 - 16mm in diameter - A441, F's 40KSI
20mm in diameter & above - A572, F's 60KSI

- Other Materials
Provide other materials, not specified described but required for the complete and proper installation, as selected by the contractor subject to the approval of the Implementing Office.

4.2b Proportioning and Mixing of Concrete

- Proportion

Proportions of all materials entering into the concrete shall be as follows:

MIX	CEMENT	SAND	GRAVEL
Class AA	1	1-1/2	3
Class A	1	2	4
Class B	1	2-1/2	5
Class C	1	3	6

- Design of Concrete

Unless otherwise specified/indicated in the plans, concrete mix shall be Class A and shall have a 28-day strength of 3000psi, for all concrete work (with “fly ash” additive).

Structure	Concrete Design
Cast against earth	3000 PSI
Foundation / Footing tie beam	3000 PSI
Slab on fill	3000 PSI
Suspended Slab	3000 PSI
Beams and Girder	3000 PSI
Column	3000 PSI

- Mixing

Concrete shall be machine mixed. Mixing shall begin 30 minutes after the cement has been added to the aggregates. In the absence of the concrete mixer, manual mixing is allowed, provided sampling shall be done 3 days before pouring (to attain a good result).

SECTION 4.3

Execution

4.3a Placing of Reinforcement

Steel reinforcement shall be provided as indicated, together with all necessary wire ties, chairs, spacers, supports, and other devices necessary to install and secure the reinforcement properly. All reinforcement, when placed, shall be free from loose, flaky-rust and scale, oil, grease, clay, and other coating and foreign substances that would reduce or reduce its bond with concrete.

- Bar Spacing

The ACI Code on bar spacing specifically provides that:

- The minimum clear distances between the adjacent steel bars shall not be less than the normal diameter of the bars or 25 mm for the column. This requirement was increased to 1-1/2 bar diameter or 4 centimeters.
- Where beam reinforcements are placed in 2 or more layers, the clear distance between layers must not be less than 25 mm or 1 inch and the bars in the upper layer should be placed directly above those in the bottom layers.
- In walls and slabs, other than the concrete joist construction, the principal reinforcement shall be spaced not farther apart than three times the wall or slab thickness nor more than 45 cm.
- Shrinkage and temperature reinforcement shall not be placed farther apart than 5 times the slab thickness nor more than 45 cm.

Minimum covering of bars

For concrete slabs permanently in contact with the earth

-75mm min; 80mm max

Exposed to earth or weather
Not exposed to weather nor in contact with the ground
Slab, walls, and joist

- 40mm min; 50mm max
- 20 mm min; 40mm max

Beams, girders, and columns

- 40mm min

Refer to the structural schedule of reinforcements and slabs.

As a rule, the ground floor concrete slab shall be reinforced with 10 mm - de-formed bars spaced at 400 mm on the center both ways. It shall be connected to the walls with 10 mm dowels spaced at 600 mm in the center.

4.3b Conveying and Placing of Concrete

- Conveying Concrete

Concrete shall be conveyed from mixer to form as rapidly as practicable by methods, which will prevent segregation or loss of ingredients. There will be no vertical drop greater than 1.5 meters except where suitable equipment is provided to prevent segregation and where specifically authorized.

- Placing

Placing concrete shall be worked readily into the corners and angles of the forms and around all reinforcement and embedded items permitting the material to segregate. Concrete shall be deposited as close as possible to its final position in the forms so that flow within the mass does not exceed two (2) meters and consequent segregation is reduced to a minimum near forms or embedded items, or elsewhere as directed. The discharge shall be so controlled that the concrete may be effectively

compacted into horizontal layers not exceeding 30 centimeters in depth within the maximum lateral movement specified.

- Time Interval between Mixing and Placing
Concrete shall be placed before the initial set has occurred and before it has contained its water content for more than 45 minutes.
- Consolidation of Concrete
Concrete shall be consolidated with the aid of mechanical vibrating equipment and supplemented by hand spading and tamping. Vibrators shall not be inserted into lower courses that have commenced the initial set, and reinforcement embedded in the concrete beginning to set or already set shall not be disturbed by vibrators. Consolidation around major embedded parts shall be by hand spading, tamping, and vibrators shall not be used.
- Placing Concrete
Through reinforcement in placing concrete through reinforcement, care shall be taken that no segregation of the coarse aggregate occurs. On the bottom of beams and slabs, where the congestion of steel near the form
- Concrete Vibrator
The contractor shall provide at least two (2) concrete vibrators always available on site.

4.3c **Curing of Concrete**

- General
All concrete shall be moist cured for a period not less than 7 consecutive days by an approved method or combination applicable to local conditions.
- Moist Curing
The surface of the concrete shall be kept continuously wet by covering it with burlap, plastic, or other approved materials thoroughly saturated with water and covering wet spraying or intermittent hosing.

4.3d **Finishing**

- Concrete Slab on Fill
Shall be laid on a prepared foundation consisting of subgrade and granular fill with a thickness equal to the thickness of the overlaying slab except as otherwise indicated.

Pour water-cement grout on backfilled sand before pouring concrete on the slab on fill.

4.3e **Pouring Permit Required**

All concrete pouring shall be approved by the Project Engineer. The Contractor must accomplish the prescribed form indicating the details of the pouring, date, time, duration, list of manpower, engineer in charge, psi requirement, quantity and position of rebars, etc. The pouring permit must be approved by the Project Engineer before any pouring activity is made. No permit, no pouring.

SECTION 4.4
Material Testing

4.4a **Material Testing**

- Slump Test and Cylindrical Samples

The test shall be conducted before pouring mixed concrete. Use standard slump mold, taken in 3 layers, rodded separately by 6mm rod 25 times. Slump should be within 15 cm (max) and 7.5 cm (min). Concrete samples in cylinders shall be taken for every batch of concrete mix (footings, columns, beams, and slabs) taken in three (3) samples each. Sampling shall be taken by trained engineers and subsequently cured and dried properly (in moist atmosphere at not more than 21°C to attain accurate results).

The test should be done at **14- and 28-day periods**.

- Material Testing for Reinforcing Bar

All structural steel reinforcement shall be taken every batch of delivery and shall be subject to tensile strength by Government Testing Laboratories or from private testing laboratories (Geotechnics, etc.) accredited by the DPWH.

Steel bars must pass the standard test before any steel works shall be commenced.
All billings submitted by the Contractor for all civil works must be accompanied by a certificate of laboratory test for all structural steel, with a passing mark.

V. STEEL / METALWORKS

SECTION 5.1
General

5.1a **Scope**

The works consist of all materials and labor, tools and equipment, and all necessary services. This includes furnishing, fabricating, hauling, erecting, welding, and painting of all structural metals in accordance with this specification and conformance with the approved plans.

5.1b **Shop Drawing**

Shop drawings shall be made in conformity with the best modern practice with regard to speed and economy in fabrication and erection.

5.1c **Storage**

Shall be stored above the ground upon flatforms, skids, or other supports. It shall be kept free from dirt, grease, or other foreign matter, and shall be covered to protect from rain and other materials/liquids, which may cause rust and corrosion.

SECTION 5.2
Materials & Workmanship

5.2a General

Certified mill tests report or certified report tests made by fabricators in accordance with ASTM A6 and governing specifications shall constitute sufficient evidence of conformity with ASTM specifications. Additionally, the fabricator shall, if requested, provide an affidavit stating that the structural steel furnished meets the requirements of the grade specified.

5.2b Product and Execution

- Certified mill tests report or certified reports of tests made by the fabricators in accordance with ASTM A6 and the governing specifications shall constitute sufficient evidence of conformity with ATSM specifications. Additionally, the fabricator shall, if requested, provide an affidavit stating that the structural steel furnished meets the requirements of the grade specified.
- All materials shall conform to the requirement in terms of size, mill test reports, and quality test certificate issued by the materials testing laboratories accredited by the Bureau of Standards and the DPWH.
- Welds shall be made only by welders and tackers who have been previously qualified by the tester code for welding and building construction.
- Fabricator-erector shall provide quality control procedure to the extent deemed necessary to ensure that all works are performed per specification.
- Unless otherwise specified, the use of an automatic welding mechanism is mandatory in the fabrication of the built-up section.
- All materials shall conform to ASTM A-36 steel unless specified.
- All metal parts shall be properly cleaned and rough welding marks must be removed by grinding to remove rough and uneven surfaces. Primer painting shall follow using epoxy paint.
- Accessories, incidentals, fastenings, and anchorages, such as miscellaneous items not specifically mentioned herein or in other sections are required to complete the work, and for which there are no detailed drawings. Shall be provided and installed in accordance with the best standard practice of trades.
- The work shall be well-formed to the shape and size shown and assembled as detailed. Steel members shall be fabricated and assembled in the shop to the greatest extent possible.
- Shearing and punching shall produce clean, pure lines and surface with burrs removed. The connection shall be welded or bolted as indicated. Unless otherwise shown, screws in exposed works shall be countersunk. Joints, which are t o\\o be exposed to the weather shall be weathertight. Nuts shall be drawn up tight.

- Holes shall be cut, drilled, or punched at a right angle to the surface of the metal and shall not be made to enlarge by burning.
- Welding shall be in accordance with the standard code of Arc and Gas Welding in Building Construction of the American Welding Society.
- Introduce bracing and supports to take care of all the loads to which the structure may be subjected. Provide steel edges or shims as support to base plates and large bearing plates until the supported members have been plumbed. The surface of the received grouting mortar shall be cleaned and moistened thoroughly immediately before placing the grout.

VI. MASONRY WORKS

SECTION 6.1

General

6.1a Scope

The work includes all labor, materials, tools, and equipment necessary to install concrete masonry and all work in connection with the work as shown on the Drawing and Specification.

SECTION 6.2

Materials

6.2a Products

- Portland Cement
Cement for the concrete shall conform to the requirements of specifications for Portland Cement (ASTM C-150, Type I) by Union, Republic, and Pacific Cement only.
- Concrete Hollow Blocks
 - Masonry Units (CHB): 4" thick for all interior walls and 5" thick for all exterior walls unless otherwise indicated. Use 400 psi for non-load-bearing blocks and 700 psi for load-bearing blocks where required.
 - Where full-height walls are constructed with concrete hollow blocks, these shall extend up to the bottom of the beam or slab unless otherwise indicated on plans.
 - Provide stiffener columns & lintel beams as specified in the structural drawings or as specified or as deemed required to ensure a stabilized wall due to height & other considerations.
- Sand:
 - S-1, washed, clean, and greenish.
- Mortar:
 - One part "Portland" cement and two parts sand and water but not more than three parts sand and Portland.
- Water
Water used in mixing concrete shall be clean and free from other injurious amounts of oils, acids, alkaline, organic materials, or other substances that may be deleterious to concrete or steel.

- Reinforcing steel bar
Reinforcing Bars shall conform to the requirements of the ASTM standard specifications ASTM-1562-2T, for Billet Steel Bars for concrete reinforcement (A15-625) and to specifications for minimum requirements for the deformed steel bars for concrete reinforcement (A 305-56). For passing and acceptable standard of structural steel.
- Tie wire
Tie wire shall be gauge 16.
- Plain Cement Plaster Finish:
 - 10 mm. thick. on vertical, on masonry, and for all concrete hollow block surfaces, painted finish as indicated in the Drawings and for all areas not otherwise noted with other finishes.

VII. PAINTING WORKS

SECTION 7.1 General

7.1a **Scope**

This includes all materials, labor, tools and equipment, and performance of all operations to complete painting and varnishing work as indicated on the drawing and specification herein.

It covers the complete painting and finishing of wood, plasters, concrete, metal, or other surfaces, and external or internal parts of the building

7.1b **Samples**

Submit sample panels of selected color or shade on 30cm x 30cm plywood panels for the approval of implementing office. It shall be approved before ordering.

A sample panel of any finishing shall be prepared for approval if directed. The applied finish shall not vary in quality or color from the approved sample.

7.1c **Delivery and Storage**

Deliver on the job site in original containers with labels containing manufacturer's name, color of paints, and manufacturer's instruction, if any intact and seals unbroken. Storage of paints and paint materials at the site shall be restricted to locations designated by the Project Architect/Engineer or ATI's

Representative and such place shall be kept neat and clean at all times. Necessary precautions to avoid fire must be observed by removing oily rags, waste, etc. at the end of daily work.

7.1d **Protection**

Provide all drop cloth and other covering requisite to the protection of floors, walls, aluminum, glass finishes, and other works.

7.1e **General Painting**

General Painting shall be interpreted to mean and include sealers, primers, fillers, intermediate and finish coats, emulsions, varnish, shellac, stain, or enamels.

All paint and necessary materials incorporated in or forming a part thereof shall be subject to prior approval and selection for color, tint, finish, or shade by the Project Architect/Engineer or ATI 's Representative.

In connection with the Project Architect/Engineer or ATI's Representative determination of the color or tint of any particular surface, the depth of any color or tint selected or required shall in no instance be subject to an additional cost to the owner.

7.1f **Schedule**

- Interior concrete & masonry wall surfaces
Surface preparation: apply 2 coats of wall putty/skim coat
1st coat: Acrylic flat latex paint
2nd & 3rd coats: Acrylic semi-gloss latex paint
- Concrete Floor
1st coat: Epoxy Primer (white)
2nd & 3rd coats: Epoxy Enamel
- Ceiling
Apply Joint filler on the connection and location of the screw
1st coat: Acrylic flat latex paint (white)
2nd & 3rd coats: Acrylic flat latex paint
- Steel
1st coat: Red Oxide
2nd & 3rd coat: Water-based acrylic epoxy

SECTION 7.2

Materials

7.2a **Products**

- Painting Materials

All paint materials meet the requirements of paint materials under classification class "A" as prepared by the Bureau of Product Standards. Substitutes shall only be entertained once the quoted preferred brands are not available in the market.

Except for ready-mixed materials in original containers, all mixing shall be done on the job site. No materials are to be reduced, changed, or mixed except as specified by the manufacturer of said materials.

- 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.

- Concrete Neutralizer
Shall be first-grade quality concentrate diluted with clean water and applied as a surface conditioner of new interior and exterior walls thus improving paint adhesion and durability.
- Lacquer
Shall be any type of coating that dries rapidly and solely by evaporation of the solvent. Typical solvents are acetates, alcohols, and ketones. Although lacquer was generally based on nitrocellulose, manufacturers currently use vinyl resin, plasticizers, and rosin drying oils to improve adhesion and elasticity.
- Shellac
Shall be a solution of refined lac resin in denatured alcohol. It dries by evaporation of the alcohol. The resin is generally furnished in orange and bleached grades.
- Sanding Sealer
Shall be quick-drying lacquer, formulated to provide quick dry, good holdout of succeeding coats, and containing sanding agents such as zinc stearate to allow dry sanding of sealer.

SECTION 7.3 Execution

7.3a Surface Preparation

- General Requirement
All surfaces to be painted shall be examined carefully before beginning any work and see that all work of other trades or subcontractors are installed in a workmanlike manner; to receive paint, stain, or particular finish.

Before proceeding with any painting or finishing, thoroughly clean, sand, and seal, if necessary, by removing from all surfaces all dust, dirt, grease, or other foreign substances which would affect either the satisfactory execution or permanency of the work.

No work shall be done under the conditions that are unsuitable for the painting, nor at any time when the plastering is in progress or is being cured, or dried.

Finished hardware, lighting fixtures, plates, and other similar items shall be removed from all positions before painting is started. Each piece shall be installed in position once the painting is finished and dried.

Neither paint nor any other finish treatment shall be applied over damp surfaces. Allow at least two (2) days of drying time before application of the succeeding coat.

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

Painting and varnishing works shall not commence when it is too hot or cold.

Begin work only when the Project Architect/Engineer has inspected and approved the prepared surface otherwise no credit for the coat shall be given. The Contractor shall assume full responsibility to recoat the work in question. Notify the Project Architect/Engineer when the particular coat applied is complete, and ready for inspection and approval.

- Concrete and Masonry Surfaces

All loose grid or mortar, contaminants, dirt, grease, oil, dust, and other deposits must be removed from the surface. Surfaces shall be coated with concrete neutralizer, applied either with brush or spray solution of one kilogram of zinc sulfate to four and 1 half liters of water. Allow drying before any painting primer coat is applied. When the surface is dried apply one coating. Hairline cracks and unevenness shall be patched and sealed with approved putty or patching compound. After defects are corrected apply the finish coats as specified on the plans (Color scheme approved.)

- Metal

Surfaces shall be clean, dry, and free from mill scale and rust. Remove all grease and oil from surfaces. Rusty metal exposed to weathering for some time must be sanded, wire brushed, or scraped. Wash unprimed galvanized with etching solution and allow it to dry before application of applicable primer

7.3b **Workmanship**

All paints shall be evenly applied. Coats shall be of proper consistency and well brushed out to show a minimum of brush marks. All coats shall be thoroughly dry before the succeeding coat is applied. When surfaces are not fully covered or cannot be satisfactorily finished the number of coats as may be required shall be applied to attain the desired evenness of the surface. Where the surface is not in proper condition to receive the coat, the project supervisor/Owner's Representative shall be notified immediately. Hardware, lighting fixtures, and other similar items shall be removed or protected during the painting, varnishing and other related work operations and re-installed after.

VIII. ELECTRICAL WORK

SECTION 8.1

General

8.1a **Scope**

The work consists of furnishing all materials and labor, tools and equipment, and all necessary services to complete and make ready for operation electrical works as indicated on electrical plans and in accordance with the Drawing & Specification.

The work shall include the furnishing and installing of the following each complete and in proper operating condition unless otherwise stated in the Specification.

- Wiring system including respective conduits, fittings wire gutter, junction box, utility boxes, and any other type of box and support and accessories required and/ or as indicated on the Drawing;
- All the necessary feeder and branch circuits with all necessary conductors, conduits, fitting, and other items as indicated on the Drawings;
- All the necessary wiring devices, such as utilization outlets, wall switches, and receptacles all complete with their appropriate cover plates;
- All lighting fixtures and accessories including necessary supports;
- All conduits, boxes, wires, and equipment.

8.1b **Codes and Regulation**

The Electrical Works shall be done in accordance with all the requirements of the latest issue of the Building Code of the Philippines, the Philippine Electrical Code, with rules, regulations, and ordinances of the local enforcing authorities of the local electrical cooperative.

8.1c **Guarantee**

The Contractor shall guarantee that the electrical system is free from all grounds and defective material and workmanship for one (1) year from the date of acceptance of work. All defects arising within the guarantee period shall be remedied by the Contractor at their own expense.

8.1d **Drawing and Specification**

- Any apparent conflict between the Drawings and Specifications and any controversial or unclear points shall be referred to the Project Architect/Engineer for final decision.
- All dimensions and locations shown on the Plans are approximate and shall be verified in the field, as actual locations, distances, and levels are governed by actual conditions.
- No deviation from the plans shall be made unless with written consent or approval from the Project Architect/Engineer

8.1e **Samples**

The contractor shall submit a sample of any item he intends to install or use in this project to the Project Architect/Engineer for approval.

SECTION 8.2

Material

8.2a **Products**

All materials shall be unused, brand new, and shall be of the approved type meeting all the requirements of the Philippines Electrical Code.

- Conduits
 - Shall be UPVC pipes, electrical grade, must be flexible type. Conduits inside the ceiling shall be properly supported by steel braces other than the ceiling joist with spacing as specified by the Philippine Electrical Code.
- Conduits box
 - Shall be UPVC boxes, electrical grade. Utility/Octagon boxes shall be provided with adaptors to connect PVC conduits to the box. Utility/Octagon boxes shall be provided with proper cover plates.
- Wires and Cables
 - Wires should conform to the JIS and ASTM standards. No wire shall be drawn into a raceway until it is complete with all necessary fittings, boxes, and supports. Connections shall be securely fastened such as not to loosen under vibration or normal strain. All connections and splices shall be made with approved methods.
- Receptacles, Switches, Outlet
 - Shall be standard product of reputable Electrical Manufacturers and cover with proper cover plate.
- Lighting Fixtures
 - Unless otherwise specified shall be furnished and installed by the contractor. All fixtures shall be as required on Plans, of good quality materials. The contractor shall submit samples for approval of the Architect before installation.
- Insulation
 - All splices shall be properly insulated using 3M electrical type or approved equal. The application of insulation tape shall be equivalent to the insulation of the wire concerned.
- Panel board & Circuit Breaker

NEMA type/enclosure unless noted, PEC rules and regulations, circuit breaker type shall be 230V, number of poles as required.

Panelboards shall contain a single brand of circuit breakers

All circuit breakers used as main shall be "Bolt-on" type molded case, thermal magnetic protective, quick make, quick break, trip free from handle, trip indicating, number and size as shown in the schedule. Internal common trip for 2 and 3 pole breakers. Breaker minimum interrupting capacities shall be based on NEMA and UL test procedures.

 - a. 230-volt breakers - 10,000 rms. Symmetrical amperes at 240V A/C (minimum) 4.5.5 All circuit breakers used as branches rated at below 100 AT and specifically installed in lighting panel boards shall be bolt-on". 4.5.6 Word "space" indicated in the schedule shall mean that complete bus, insulators, etc. shall be included ready to accept future circuit breaker of the same frame size as the largest branch circuit breaker.

- Electric Meter
 - Shall be a standard product of reputable Electrical Manufacturers and approved EEC.

SECTION 8.3

Execution

8.3a **Workmanship**

All works throughout shall be executed in the best practice in a womanlike manner by qualified and experienced electricians under the immediate supervision of a duly licensed Electrical Engineer.

The wiring method shall be color-coded.

Line 1 – red

Line 2- yellow

Line 3- blue

Ground – green.

SECTION 8.4

Testing

8.4a **General**

Upon completion of the electrical construction work, the Contractor shall provide all test equipment and submit written copies of all test results.

IX. PLUMBING WORKS

SECTION 9.1

General

9.1a **Scope**

The work to be undertaken under this section shall consist of the furnishing of all materials, labor tools, equipment, and other facilities and the satisfactory performance of all work necessary for the complete installation, testing, and operation of the plumbing system in accordance with the applicable drawing and this section of those specifications consisting of, but not necessarily limited to the following:

- a. Soil, waste, and vents pipe system, within the building up to sewer line.
- b. Interior fire protection system consisting of combination standpipes, valves, fire hose cabinets, inlets, connectors, and portable fire extinguishers.
- c. Water service connection from the main building distribution system.
- d. Furnishing, installation, and testing of water closets, lavatories, and accessories including controls & piping works.
- e. Furnishing and installation of all plumbing fixtures, fittings, trims and accessories.
- f. All work shall be performed in accordance with the requirements of all applicable laws of the Republic of the Philippines and all local codes and ordinances.

The contractor is required to refer to all mechanical, electrical, structural, and architectural plans and specifications all shall investigate all possible interference and conditions affecting his work in this section and that of the other sections.

9.1b **Codes and Regulation**

All work performed in this section shall be done under the direct supervision of a licensed Sanitary Engineer and in strict accordance with these specifications and the methods as prescribed by the National Plumbing Code of the Philippines.

SECTION 9.2 **Materials**

9.2a **Products**

- Waterline
 - Use PPR pipes and fittings, Pipes shall conform to ISO 15874.
 - Pipes and fittings for the waterline shall be as SPECIFIED BY EPPI.
 - Valves-All valves, unless otherwise specified shall be gate valves of size as indicated in the drawings: for hot water supply, valves, and fittings shall be insulated of a thickness equal to that of the insulation on the adjoining pipe, securely fastened in place.

- Sanitary Drainage
 - a. Soil and waste Pipes and Fittings:
 - Soil and waste pipes and fittings shall be PVC pipes (POLYVINYL CHLORIDE) series 1000 Neltex or approved equal
 - b. Vent Pipes and Fittings:
 - Vent pipes and fittings shall be PVC pipes
 - c. Shower and Floor Drains:
 - Shower and floor drains shall be of high-grade, strong, tough, and even-grained metals.
 - d. Cleanouts:
 - 1. Ceiling cleanouts shall be of the same material as a pipe with a sealed screw type, raised head plug.
 - 2. Floor cleanouts shall be a cast-iron body with brass plug, colt-type or countersunk head; METMA brand or approved equal.

- HANGERS, INSERTS, AND PIPE SUPPORTS
 - A. Provide suitable and substantial hangers and supports for all piping.
 - B. Support horizontal piping in accordingly approved sizes where pipe clamps are too short to connect to the building constructions

SECTION 9.3 **Execution**

9.3a **Installation and Workmanship**

1. GENERAL INSTALLATION OF PIPES

- A. Install pipes approximately as shown on the drawings, as straight and direct as possible forming right angles parallel lines with walls and other pipes, and neatly spaced unless otherwise indicated. Care shall be taken not to weaken the structural portions of the building.
- B. Maintain a minimum slope of 3mm (1/8-inch fall per foot) on all soil, waste, and drain lines 100mm in diameter.
- C. Do not install pipes or other apparatus in a manner that will interfere with the full swing of the doors and windows.
- D. The arrangement, position, and connection of pipe fixtures, drains, valves and the like indicated on the drawings shall be followed as closely as possible, the right is reserved by the Procuring Entity to change location and elevations to accommodate conditions that may arise during the progress of the work before installation, without additional cost of the Procuring Entity for such changes. The responsibility for accurately laying out the work rests with this Contractor. Should be found that any work if laid out caused interference, the matter shall be reported to the Engineer before connecting the work.
- E. Ream all screwed pipes smoothly before installation Do not bend, flatten, split, or injure pipes in any way.
- F. Use reducing fittings, in reducing the size of the pipe. The bushing will not be allowed unless specifically approved.
- G. Where chrome plated piping is installed, cut and thread pipe. The bushing will not be allowed unless specifically approved.
- H. Carry fixture connections, concealed in building constructions, to points above the floor, break out close to the underside of the fixture, and rise exposed to the fixture.
- I. No piping shall be installed which will provide a cross or interconnection between a distribution supply of drinking water for Domestic use and pollution or waste pipe, the water line shall be placed above the waste pipe in-ground installation.

- **INSTALLATION OF WATER SUPPLY PIPES AND FITTINGS**

- A. The piping shall be extended to all fixtures, outlets, and equipment. Ends of pipes and outlets shall be capped or plugged and left ready for future connections.
- B. Branch pipe from the service line may take off of the main, bottom of the main, or side of the main, using such cross-over fittings as may be required by structural or installation conditions.
- C. All service pipes, valves, and fittings shall be kept at sufficient distance from other work to permit finished covering not less than 12.7mm (1/2") from such other work and not less than 12.7mm between finished coverings on the different services. No water piping shall be buried in floors until after they have been inspected and approved.
- D. Where the branch serves more than one fixture, the branch shall be increased in size in proportion to the sizes as shown on the drawings.
- E. Cast bronze unions shall be installed at the connection to all equipment so that they may be conveniently disassembled.
- F. Upon completion of the water system, flush out lines and all valves set to clear the system of particles and dirt.

- **INSTALLATION OF SOIL, WASTE, VENT, AND DRAINAGE PIPING**

- A. Horizontal Drainage Pipe and Vent Piping**

- Horizontal waste pipe 75mm (3") and smaller shall have a minimum grade of 6mm (1/4") per foot and for 100mm (4") and larger, 3mm (1/8") per foot. Vertical vent pipes may be connected to a vent line carrying other fixtures, the connection is to be at least 1.20m (4 feet) above the floor on which the fixtures are located to prevent the use of any vent lines as waste lines. Horizontal waste lines receiving the discharge from two (2) or more fixtures shall be provided with vents unless separate venting of fixtures is noted.

- B. Fittings**

- All changes in pipe sizes on the soil waste line shall be made with reducing fittings or recessed reducers. All changes in direction shall be made with the appropriate use of 45 wyes, half wyes, long sweep quarter bends, or elbows may be used in soil and waste lines where the change in direction of flow is from horizontal to vertical, and on the discharge from water closets. Where it becomes necessary to use short radius fittings in any other location, the approval of the Procuring Entity shall be obtained before they are installed.

- C. Traps**

- Each fixture and place of equipment connected to the drainage system except fixtures with continuous waste shall be equipped with a trap. Traps shall be placed as near to fixtures as possible.

- **FIXTURES AND EQUIPMENT SUPPORTS AND FASTENINGS**

- All fixtures and equipment shall be supported and fastened satisfactorily.

- A.** Where secured to concrete on hollow block, walls, they shall be fastened with 6mm (1/4") brass bolts with twenty threads to the inch and of sufficient length to extend at least 75mm (3") into solid concrete on hollow block work; fitted with loose tubing or sleeve inserts, shall be securely anchored and installed flush with the finished wall and shall be completely concealed when the fixtures are installed.
 - B.** Where bolts are used, they shall be provided with name plates and washers at backsets so that the head, nuts, and washer will be concealed by plaster. Bolts and nuts shall be hexagonal and screws shall be provided with chromium brass washers.
 - C.** Upon completion of work, all fixtures, trimmings, and equipment shall be thoroughly cleaned, polished, and left in first-class condition for final acceptance.

- **CLEANING AND PAINTING**

- A.** Prior to acceptance of the work, thoroughly clean all exposed metal surfaces and rid of grease, dirt, or other foreign material. Chrome or nickel-plated piping, fitting, and trimming shall be polished.
 - B.** Pipe hangers, supports, and all other ironwork in concealed spaces shall be thoroughly cleaned and painted with one coat of red lead and a finish coat of oil enamel paint.

C. All exposed soil, waste, vent piping, or cast iron that are asphalt or tar-coated shall be given two (2) coats of shellac and two (2) coats of oil paint.

- **WATER SYSTEM TEST**

- A. Upon completion of the roughing-in and before fixtures, the entire water piping system shall be tested at a hydrostatic pressure of one and a half (1 1/2) times the expected working pressure in the system when in operation, and proven tight at this pressure or not less than 150 psi gauge.

- B. Where a portion of the water piping system is to be concealed before completion, this portion shall be tested separately in a manner to that described for the entire system, and in the presence of the Procuring Entity or its representative.

- **DRAINAGE SYSTEM TEST**

- A. The entire drainage and venting system shall have necessary opening which can be plugged to permit the entire system to be filled with water to the level of the highest vent stack and/or vent above the roof.

- B. The system shall hold this water for a full thirty (30) minutes during which time there shall be no drop more than four inches 100mm (4").

- C. If and when the Procuring Entity decides that an additional test is needed, such as an air or smoke test on the drainage system, the Contractor shall perform such test without additional cost to the Procuring Entity.

Protect items with approved means to maintain perfect conditions. Remove damaged or defective works and replace them with perfect work without extra cost on the part of the Owner.

X. DOORS & WINDOWS

X-A. ALUMINUM GLASS DOORS AND WINDOWS

SECTION 10A.1

General

10A.1a Scope

This section includes all labor, materials, tools, and equipment, and satisfactory performance of all operations necessary to complete the fabrication and installation of all aluminum doors and windows as indicated in the drawing and these specifications.

10A.1b General Requirements

- Storage and protection

Protects doors, windows, and frames against damage and dampness. Store them undercover in a well-ventilated place where they will not be exposed to extreme changes in temperature and humidity. Do not store doors, windows, and frames in any place under construction until concrete, masonry work and plaster are dry.

Adequately protect doors from scratches and other stains with heavy building paper.

- Design, Sizes, and Thickness

Use door and window designs, sizes, and thicknesses as indicated or scheduled. Wood doors shall have an overall thickness of 50mm unless otherwise specified by the Implementing Office.

SECTION 10A.2 Materials

10A.2a Materials

- Aluminum window and door

Shall be extruded aluminum. All aluminum sections shall be 6063-T5 alloy and all casting shall be S43 alloy. All aluminum shall be fabricated on brand approved by the Architect. This specification shall also be for the aluminum encasement for the grill works. The aluminum section shall be true to details with a clean, straight, sharply defined profile and free from defects impairing strength or durability.

- Glass

Use 10 or 16mm thk. gray glass or as specified on approved plans.

- Hardware

All aluminum doors shall be fitted with appropriate hardware including keylock, solid aluminum push and pull bar handle, and top flush bolts. Ensure rigidity of joint connections of the different parts of the structure. The contractor shall submit samples for approval of the ATI Architect or to the implementing Officer.

- Finish

Finish all aluminum doors, windows and frames shall be as approved by the Architect.

SECTION 10A.3 Execution

10A.3 Installation and Workmanship

- The window shall be installed in a neat workmanship manner to fit as indicated in the plans. After installation works are completed, they shall be protected from paints, stains, blemishes, and other damage until the work is properly turned over and accepted.
- Provide all necessary supports and fixing such as screws, strips, lugs, and dowels.
- The contractor shall be responsible for the testing of the windows. On the completion of the works, the contractor shall leave the window carried in a

clean and perfect working condition to the satisfaction of the Project Architect/Engineer or ATI's Representatives.

- The contractor shall verify the actual opening size and tolerance on site.
- Installation must comply with the requirements of the reference standards.
- All joints in the frames shall be accurately milled to hairline crack, securely reinforced, weathered, and joined by means of concealed fastenings whenever possible

SECTION 10B.1

General

10B.1a Scope

This section includes all labor, materials, tools, and equipment, and satisfactory performance of all operations necessary to complete the fabrication and installation of all wooden doors as indicated in the drawing and these specifications.

10B.2a General Requirements

- **Storage and Protection**

Protects doors, windows, and frames against damage and dampness. Store them undercover in a well-ventilated place where they will not be exposed to extreme changes in temperature and humidity. Do not store doors, windows, and frames in any place under construction until concrete, masonry work and plaster are dry. Adequately protect doors from scratches and other stains with heavy building paper.

- **Design, Sizes, and Thickness**

Use door and window designs, sizes, and thicknesses as indicated or scheduled. Wood doors shall have an overall thickness of 50mm unless otherwise specified by the Implementing Office.

SECTION 10B.2

Materials

10B.2a Products

Use door and window designs, sizes, and thicknesses as indicated or scheduled. Wood doors shall have an overall thickness of 50mm unless otherwise specified by the Implementing Office. Doors and door frames shall be manufactured of thoroughly seasoned kiln-dried wood, of grade and specie. Wood species should be selected on Taguile, Apitong, Narra, or as directed by the ATI representatives. Wood doors shall be products of reputable manufacturers approved by the Architect.

- Panel Wood doors

Lumber of doors, windows, jambs, and panels shall be kiln-dried and shall be tanguile or as indicated on plans/drawings or as approved by the Architect.

- Door Jambs

The door jamb shall be 2"x6" kiln-dried tanguile wood or approved equivalent.

- Flush doors
Framing shall be good lumber and plywood shall be good grain with a minimum thickness of 5mm, or as specified on plans/drawing or as approved by the ATI Representative.
- Hardware
 - Lockset
Heavy duty types stainless steel industrial type lockset w/ security lock by "Nippon" or approved equivalent. Tubular stainless lever handle with cylinder lock case & euro-profile cylinder (Entrance function), "TH104" model by Nippon or approved equivalent
 - Hinges
4x4 Stainless-steel heavy-duty hinges, use "Nippon" brand or approved equal.
 - Door stopper
Use a stainless-steel floor-mounted hemisphere door stopper.
 - Door closer
Use heavy-duty surface-mounted door closer with adjustable closing and latching speed with thermo-constant valve and stable hydraulic fluid low sensitivity to temperature change, "Hafele" brand "489.30.005" model or approved equal.

10B.2b **Fabrication of Doors and frames**

- Wood Doors
Shall be of the type, sizes, and thickness indicated on drawing plans. The top and bottom edges of all interior and exterior shall be given lead and oil priming paint or coat or water-resistant varnish after cutting and fitting and before installation of works. Doors shall be panel and/or glazed as indicated.
- Flush Doors
Shall be a hollow core of thickness on drawing and fabricated as such that the core and frame assembly shall be bonded to face veneers/as indicated. Flush doors shall be three (3) ply, 6mm thick marine kind of plywood as indicated in the schedule. Stiles and rails shall have mortised joints at corners. The door shall be painted or with designs as indicated on the drawings.
- Wood Door Frames
Shall be of design, sizes, and thickness indicated in the Schedule of Doors. Frames shall be set plumb and true and braced to prevent distortion. Frames in wooden walls or partitions shall be secured with finishing nails or as indicated. In concrete or masonry walls, frames shall be secured with anchor bolts or as shown on drawings.

SECTION 10B.3

Execution

10B.3a Installation

For door frames, set frames plumb and square, double wedges, and fastened with finishing nails. For doors, fit, hang, and trim as indicated and specified. Provide clearance at the side, top, and threshold. Apply hardware with fastenings of the size, quality, quantity, and finish as specified.

XI. GENERAL GUIDELINES

Equipment and materials to be used in the work shall be standard products. **Substitutes will only be resorted or considered if the preferred original is not available and must be referred to the Project Architect/Engineer or ATI's Representative for approval. If, however, the decision shall be made between two equivalent products, the one with the higher price shall be chosen.** Other brands intended for a substitute, which is not approved by the Project Architect/Engineer or ATI's Representative shall not be used. Submission of brochures and samples of materials shall be required of the Contractor (and approved by the ATI's Representative) prior to implementation.

Section VII. Drawings

A complete set of drawings could be obtained from the ATI-BAC Secretariat

Section VIII. Bill of Quantities

LOT 1

PROJECT TITLE : REHABILITATION AND IMPROVEMENT OF DRAINAGE SYSTEM AND EMBANKMENT OF THE AREA ALONG GUEST HOUSE BUILDING

LOCATION : ATI-CO COMPOUND, ELLIPTICAL ROAD, DILIMAN, QUEZON CITY

SUBJECT : QUANTITY TAKE-OFF/BILL OF QUANTITIES

CONSTRUCTION DURATION: 75 CALENDAR DAYS

ITEM NO.	DESCRIPTION	QTY	UNIT	MATERIAL COST		LABOR COST		UNIT DIRECT COST	ESTIMATED DIRECT COST (EDC)	TOTAL AMOUNT (EDC + IDC)	TOTAL UNIT COST
				UNIT MATERIAL COST	MATERIAL COST	UNIT LABOR COST	LABOR COST				
I. GENERAL REQUIREMENTS											
I.1	Temporary Facilities (including temporary field office, workers quarters, and Warehouse)										
I.2	Safety and Health Requirements (PPE and Signage)										
I.3	COA & Project Bill Board										
sub-total I (GENERAL REQUIREMENTS)											
II. EARTH WORKS											
II.1	Excavation Works										
II.2	Clearing & Grubbing										
II.3	Backfilling, Compaction and Soil Treatment										
sub-total II (EARTH WORKS)											
III. NEW DRAINAGE LINE											
III.1	5" CONCRETE HOLLOW BLOCKS										
III.2	Portland Cement										
III.3	10mm Deformed Bars										
III.4	#16 G.I Tie Wires										
III.5	Wash Sand										
III.6	Gravel										
III.7	FORMWORKS										
sub-total III (NEW DRAINAGE LINE)											
IV. EXISTING DRAINAGE LINE											
IV.1	Repair the existing drainage Infront of Guest House Building & near existing motor pool a. Repair the damage steel manhole cover b. Connect to the new Drainage line c. Rehabilitate & re-level the Concrete Manhole										
IV.2	Widen the existing drainage outside the perimeter fence of ATI a. Demolition of existing drainage wall b. Installation new drainage walls										
sub-total IV (EXISTING DRAINAGE LINE)											
V. OTHER WORKS											
V. 1	Demolished Existing Flooring (see plans)										
V. 2	Stripping and leveling the ground Infront of guest house building										
V. 3	G1 - Gravel Bedding										
V. 4	Demolition of Security Quarters										
sub-total V (OTHER WORKS)											

SUMMARY OF COST:

DIRECT COST
 Material Cost:
 Labor Cost:
 INDIRECT COST
 OCM (12%)
 Profit (8%)
 Tax (5%):

GRAND TOTAL PROJECT COST:

PREPARED BY:

Project : PROPOSED REPAIR WORKS (Phase 4) AT RDEC, GUEST HOUSE, STAFF HOUSE, STAFF HOUSE AND MESS HALL

Location : ATI COMPOUND, Elliptical Road, Diliman, Quezon City

Subject : BILL OF QUANTITIES

Date : April 29, 2024

CONSTRUCTION DURATION: 50 CALENDAR DAYS

QTY	UNIT	PARTICULARS	MATERIAL COST		LABOR COST		UNIT COST	AMOUNT	INDIRECT COST	TOTAL AMOUNT
			UNIT MATERIAL COST	MATERIAL COST	UNIT LABOR COST	LABOR COST				
I. GENERAL REQUIREMENTS										
1.00	lot	Temporary construction safety screen, platform, frame for perimeter fence, scaffolding and PPE's								
1.00	lot	Hauling of debris & Site Clearing								
		sub-total I								
II. REPAIR WORKS (PHASE-4)										
RDEC BUIDLDING										
		Replace the Wood Wall cladding at the Function Hall								
85.27	sq.m	Removal of existing wood cladding								
85.27	sq.m	Installation of new wall cladding - 6mm Ficemboard, framing and accessories								
85.27	sq.m	Painting Works for the wall cladding - Wooden Finish								
1.00	lot	Repair the cladding of the Air Condition Piping at the training hall								
1.00	lot	Locate and repair the leak at the ceiling of training hall								
1.00	lot	Repair the leak on the ceiling of the linen room at 2nd floor								
1.00	lot	Replace and align the hinges of the glass door of the function hall								
1.00	lot	Replace the lighting fixture at the exit near training hall								
1.00	lot	Repair the water leak at the dormitory manager office								
1.00	lot	Repair the water leak at the linen area of 3rd floor								
3.00	sets	Replace the gate valve of room 1,2 & 3 and repair the affected area								
STAFF HOUSE										
1.00	lot	Repair the exhaust fan at Room 1 of Staff House								
2.00	lm	Reinstallation of tiles of the kitchen sink staff house 1								
1.00	lot	Repair the water leak at the lavatory and restore the affected area at Room 6 of Staff House								
1.50	sq.m	Repair and restore the damage ceiling at the toilet of Room 2 of Staff House due to the water leak at the toilet of Room 6								
GUEST HOUSE										
1.00	lot	Re-install the various damaged (kapak) wall tiles of the toilet at Room 1,5,6,7,8,9,11 &12								
1.50	lm	Re-install the floor tiles at the 2nd floor lounge								
5.00	lm	Repaint the handrail at the balcony of 2nd floor								
5.00	sq.m	Repaint the ceiling at the balcony of 2nd floor								
1.00	lot	Repair the water leak at the ceiling of the toilet of room 5								
1.00	set	Repair the clogged lavatory of the toilet of room 5								
8.00	pcs	Replace the busted lights at the lounge of ground floor 4" square compact led lights 18W warm white								
MESS HALL BUILDING										
1.00	set	Replace the patch fitting of the glass door at the main entrance of mess hall building								
10.00	sq.m	Repaint the ceiling of the 2nd floor receiving area								
		sub-total II								

QTY	UNIT	PARTICULARS	MATERIAL COST		LABOR COST		UNIT COST	AMOUNT	INDIRECT COST	TOTAL AMOUNT
			UNIT MATERIAL COST	MATERIAL COST	UNIT LABOR COST	LABOR COST				
III. FABRICATED MATERIALS										
		INSTALLATION OF MOVABLE STAGE AT TRAINING AND FUNCTION HALL								
8.00	sets	Supply and installation of Smart Stage Portable Staging System Technical Specifications: -1.20m x 1.20m x 20cm-40cm -Adjustable Height -Lightweight for easy 1 person set-up -Space-saving, compact & portable -Weight capacity 750KG per sq. meter -Aluminum Frame 85mm -Plywood thickness 18mm -Surface Non slips -Pipe thickness 50x3mm -Indoor and Outdoor Use								
		REPLACE THE DEFFECTIVE DIGITAL DOOR LOCK AT 2ND FLOOR								
20.00	sets	Digital Door lock (Mortise) with complete accessories								
		sub-total III								
IV. ADDITIONAL TOILET AT 2ND FLOOR OF DIRECTORS QUARTER										
		CIVIL WORKS								
100.00	PCS	4" CHB								
15.00	BAGS	PORTLAND CEMENT								
0.50	CUM	SAND								
15.00	PCS	10mm x 6m DEFORMED BARS								
2.00	KGS	#16 TIE WIRE								
		ARCHITECTURAL WORKS								
1.00	SETS	ANALOK AWNING WINDOW 40CM x 30CM WITH COMPLETE ACCESSORIES								
9.00	PCS	60cm x 60cm NON-SLIP FLOOR TILES								
69.00	PCS	30cm x 60cm GLAZED WALL TILES								
20.00	BAGS	HEAVY DUTY TILE ADHESIVE								
2.00	BAGS	TILE GROUT								
2.00	SETS	0.70m x 2.10m PVC DOOR WITH LOUVER WITH COMPLETE ACCESSORIES								
1.00	SET	10mm THK MIRROR GLASS 60cm x 80cm WITH ALUMINUM FRAME								
1.00	LOT	PAINTING WORKS								
		ELECTRICAL WORKS								
50.00	mts	3.5mm THHN/THWN WIRE								
2.00	PCS	ONE GANG SWITCH WIDE SERIES WITH PLATE								
1.00	PC	GFCI OUTLET								
1.00	PCS	6" 12W DAYLIGHT PINLIGHT								
1.00	LOT	CONSUMABLES (PVC PIPE, ELECTRICAL TAPE, FITTINGS ETC)								
		PLUMBING WORKS								
4.00	PCS	3" PVC PIPE								
2.00	PCS	2" PVC PIPE								
6.00	PC	1/2" PPR								
1.00	PCS	1/2" GATE VALVE PPR								
1.00	LOT	FITTINGS AND CONSUMABLES								
4.00	PCS	WATER CLOSET ONE PIECE WITH COMPLETE ACCESSORIES								
5.00	PCS	HALF-PEDESTAL LAVATORY WITH COMPLETE ACCESSORIES								

QTY	UNIT	PARTICULARS	MATERIAL COST		LABOR COST		UNIT COST	AMOUNT	INDIRECT COST	TOTAL AMOUNT
			UNIT MATERIAL COST	MATERIAL COST	UNIT LABOR COST	LABOR COST				
1.00	PCS	WATER HEATER WITH TELEPHONE SHOWER & COMPLETE ACCESSORIES								
1.00	PC	S/S LAVATORY FAUCET								
1.00	PCS	S/S SERVICE FAUCET								
1.00	SETS	S/S RAIN SHOWER HEAD THAT WILL ATTACHED TO WATER HEATER								
1.00	PCS	S/S BIDET								
1.00	PCS	S/S 4" FLOOR DRAIN								
1.00	PCS	S/S ANGLE VALVE								
1.00	PCS	3-WAY ANGLE VALVE								
1.00	LOT	CONSUMABLES (SEALANT, TAPE, OTHER CONSUMBLES)								
OTHER WORKS										
1.00	LOT	RELOCATION OF THE EXISTING AIRCONDITION INCLUDING THE ELECTRICAL SUPPLY								
1.00	LOT	REMOVAL OF AFFECTED WINDOWS								
1.00	LOT	RESTORATION OF THE AFFECTED AREAS								
3.00	SQ.M	2- COAT OF WATERPROOFING								
sub-total IV										
V. PREVENTIVE MAINTENANCE OF OVERHEAD WATER TANK										
1.00	lot	Repainting of the whole overh ead water tank								
1.00	lot	Cleaning of the inside of the tank and control room								
1.00	lot	Re-piping the water line from the tank to accommodate only staff house and guest house								
sub-total V										
SUMMARY OF COST:										
DIRECT COST										
Material Cost:										
Labor Cost :										
INDIRECT COST										
OCM (8%)										
Profit (8%)										
Tax (5%):										
GRAND TOTAL PROJECT COST:										
PREPARED BY:										

Section IX. Checklist of Technical and Financial Documents

Checklist of Technical and Financial Documents

I. TECHNICAL COMPONENT ENVELOPE

Class "A" Documents

Legal Documents

- (a) Valid PhilGEPS Registration Certificate (Platinum Membership) (all pages) in accordance with Section 8.5.2 of the IRR;

Technical Documents

- (b) 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**
- (c) 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**
- (d) Special PCAB License in case of Joint Ventures **and** registration for the type and cost of the contract to be bid; **and**
- (e) 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**
- (f) Project Requirements, which shall include the following:
- a. Organizational chart for the contract to be bid;
- b. List of contractor's key personnel (*e.g.*, Project Manager, Project Engineers, Materials Engineers, and Foremen), to be assigned to the contract to be bid, with their complete qualification and experience data;
- c. List of contractor's major equipment units, which are owned, leased, and/or under purchase agreements, supported by proof of ownership or certification of availability of equipment from the equipment lessor/vendor for the duration of the project, as the case may be; **and**
- (g) 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.
- (h) Certificate of Site Inspection.

Financial Documents

- (i) The prospective bidder's computation of Net Financial Contracting Capacity (NFCC).

Class “B” Documents

- (j) 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.

II. FINANCIAL COMPONENT ENVELOPE

- (k) Original of duly signed and accomplished Financial Bid Form; **and**

Other documentary requirements under RA No. 9184

- (l) Original of duly signed Bid Prices in the Bill of Quantities; **and**
- (m) 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**
- (n) Cash Flow by Quarter.

