POLOMOLOK WATER DISTRICT

Polomolok South Cotabato

BIDDING DOCUMENTS

For the

CONSTRUCTION OF STOREROOM, PIPEROOM AND GUARD HOUSE

JUNE 2024

Preface

These Philippine Bidding Documents (PBDs) for the procurement of Infrastructure Projects (hereinafter referred to also as the "Works") through Competitive Bidding have been prepared by the Government of the Philippines for use by all branches, agencies, departments, bureaus, offices, or instrumentalities of the government, including government-owned and/or -controlled corporations, government financial institutions, state universities and colleges, local government units, and autonomous regional government. The procedures and practices presented in this document have been developed through broad experience, and are for mandatory use in projects that are financed in whole or in part by the Government of the Philippines or any foreign government/foreign or international financing institution in accordance with the provisions of the 2016 revised Implementing Rules and Regulations (IRR) of Republic Act (RA) No. 9184.

The PBDs are intended as a model for admeasurements (unit prices or unit rates in a bill of quantities) types of contract, which are the most common in Works contracting.

The Bidding Documents shall clearly and adequately define, among others: (i) the objectives, scope, and expected outputs and/or results of the proposed contract; (ii) the eligibility requirements of Bidders; (iii) the expected contract duration; and (iv)the obligations, duties, and/or functions of the winning Bidder.

Care should be taken to check the relevance of the provisions of the PBDs against the requirements of the specific Works to be procured. If duplication of a subject is inevitable in other sections of the document prepared by the Procuring Entity, care must be exercised to avoid contradictions between clauses dealing with the same matter.

Moreover, each section is prepared with notes intended only as information for the Procuring Entity or the person drafting the Bidding Documents. They shall not be included in the final documents. The following general directions should be observed when using the documents:

a. All the documents listed in the Table of Contents are normally required for the procurement of Infrastructure Projects. However, they should be adapted as necessary to the circumstances of the particular Project.

b. Specific details, such as the "*name of the Procuring Entity*" and "*address for bid submission*," should be furnished in the Instructions to Bidders, Bid Data Sheet, and Special Conditions of Contract. The final documents should contain neither blank spaces nor options.

c. This Preface and the footnotes or notes in italics included in the Invitation to Bid, BDS, General Conditions of Contract, Special Conditions of Contract, Specifications, Drawings, and Bill of Quantities are not part of the text of the final document, although they contain instructions that the Procuring Entity should strictly follow.

d. The cover should be modified as required to identify the Bidding Documents as to the names of the Project, Contract, and Procuring Entity, in addition to date of issue.

e. Modifications for specific Procurement Project details should be provided in the Special Conditions of Contract as amendments to the Conditions of Contract. For easy completion, whenever reference has to be made to specific clauses in the Bid Data Sheet or Special Conditions of Contract, these terms shall be printed in bold typeface on Sections I (Instructions to Bidders) and III (General Conditions of Contract), respectively.

f. For guidelines on the use of Bidding Forms and the procurement of Foreign-Assisted Projects, these will be covered by a separate issuance of the Government Procurement Policy Board.

TABLE OF CONTENTS

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

Notes on the Invitation to Bid

The Invitation to Bid (IB) provides information that enables potential Bidders to decide whether to participate in the procurement at hand. The IB shall be posted in accordance with Section 21.2 of the 2016 revised IRR of RA No. 9184.

Apart from the essential items listed in the Bidding Documents, the IB should also indicate the following:

a. The date of availability of the Bidding Documents, which shall be from the time the IB is first advertised/posted until the deadline for the submission and receipt of bids;

b. The place where the Bidding Documents may be acquired or the website where it may be downloaded;

c. The deadline for the submission and receipt of bids; and

d. Any important bid evaluation criteria.

The IB should be incorporated into the Bidding Documents. The information contained in the IB must conform to the Bidding Documents and in particular to the relevant information in the Bid Data Sheet.

REPUBLIC OF THE PHILIPPINES
POLOMOLOK WATER DISTRICT
National Highway, Polomolok, South Cotabato
Tel Nos. (083) 500-926/ 500-9314/500-9340 / Telefax No. (083) 500-8008

INVITATION TO BID FOR CONSTRUCTION OF STOREROOM, PIPEROOM AND GUARD HOUSE

1. The Polomolok Water District, through the Government of the Philippines under the Corporate Budget for the Contract approved by the Board for FY 2024 intends to apply the sum of **ONE MILLION SIX HUNDRED FORTY NINE THOUSAND ONE HUNDRED THIRTY EIGHT & 31/100 (PHP 1,649,138.31)**, inclusive of VAT and all other applicable government taxes, fees and other charges, being the Approved Budget for the Contract (ABC) to payments under the contract PB 24-23, **CONSTRUCTION OF STOREROOM, PIPEROOM AND GUARD HOUSE**. Bids received in excess of the ABC shall be automatically rejected on bid opening.

2. The Polomolok Water District now invites bids for the above Procurement Project. Completion of the Works is required within 60 calendar days from receipt of Notice to Proceed or Purchase Order. Bidders should have completed, within 3 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 Polomolok Water District and inspect the Bidding Documents at the address given below from 8:00 AM to 5:00 PM and/or at the PhilGEPS website and Polomolok Water District website.

5. A complete set of Bidding Documents may be acquired by interested Bidders on ***11 July 2024*** from the given address and website(s) below:

   PhilGEPS website (https://www.philgeps.gov.ph) and Polomolok Water District website (polwaterdistrict.gov.ph) *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 bidder shall present its proof of payment for the fees *by facsimile (083 – 500 – 8008), or through e-mail (bacpolwd@gmail.com) the scanned proof of the payment.*

6. The Polomolok Water District through its Bids and Awards Committee will hold a Pre-Bid Conference on **July 19, 2024, 2:00 PM** at the Conference Room, 2nd Floor Admin. Bldg. Polomolok Water District which shall be open to prospective bidders.

Prospective bidders can also attend **via video conferencing thru Zoom.** A link shall be provided by the BAC Secretariat.

7. Bids must be duly received by the BAC Secretariat at the address below on or before **August 6, 2024 at 2:00 PM.** If a bidder chooses to submit a soft copy of the bids online, the bidder shall send it to **a unique shared link which will be provided by the BAC Secretariat to a particular bidder**. The confidentiality of the submitted bids is protected by the bidder's password. 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 16.

9. Bid opening shall be on **August 6, 2024 at 2:00 PM** at the Conference Room, 2nd Floor Admin. Bldg. Polomolok Water District. Bids will be opened in the presence of the bidders' representatives who choose to attend the Bid Opening at the address below and at the same time.

10. For the online submission of bids, the bidders will be given a link where to submit its bids. Bidders must submit a PDF copy of the notarized Bid Securing Declaration or a scanned copy of any acceptable form of Bid Security, together with the eligibility requirements, technical and financial proposals, as specified in the Bidding documents. The date and time appearing in the e-mail of BAC for the bids submitted online must be on or before **August 6, 2024 at 2:00 PM** to be on time.

11. The BAC shall open the online submitted bids with the bidder's password, which is only known to the bidder, during the opening of bids. This is to maintain the integrity of the government bidding process

12. The Polomolok Water District 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 IRR of RA No. 9184, without thereby incurring any liability to the affected bidder or bidders.

13. For further information, please refer to:

    BAC - Secretariat
    Polomolok Water District
    TeleFax No. : (083) 500-8008
    E-mail address : **bacpolwd@gmail.com**

14. You may visit the following websites:

    https://www.philgeps.gov.ph - PhilGEPS
    polwaterdistrict.gov.ph - Polomolok Water District

ENGR. NICASIO B. ESPESOR
BAC Chairman

Section II. Instructions to Bidders

Notes on the Instructions to Bidders

This Section on the Instruction to Bidders (ITB) provides the information necessary for bidders to prepare responsive bids, in accordance with the requirements of the Procuring Entity. It also provides information on bid submission, eligibility check, opening and evaluation of bids, post-qualification, and on the award of contract.

1. Scope of Bid

The Procuring Entity, *POLOMOLOK WATER DISTRICT* wishes to receive Bids for the **CONSTRUCTION OF STOREROOM, PIPEROOM AND GUARD HOUSE** with identification number *PB 24-23*.

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 *FY 2024* in the amount of **ONE MILLION SIX HUNDRED FORTY NINE THOUSAND ONE HUNDRED THIRTY EIGHT & 31/100 (PHP 1,649,138.31).**

2.2. The source of funding is:

a. GOCC and GFIs, the Corporate Operating Budget.

3. Bidding Requirements

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

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

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

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

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

5. Eligible Bidders

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

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

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

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

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

6. Origin of Associated Goods

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

7. Subcontracts

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

The Procuring Entity has prescribed that:

a. Subcontracting is not allowed.

8. Pre-Bid Conference

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

9. Clarification and Amendment of Bidding Documents

Prospective bidders may request for clarification on and/or interpretation of any part of the Bidding Documents. Such requests must be in writing and received by the Procuring Entity, either at its given address or through electronic mail indicated in the

IB, at least ten (10) calendar days before the deadline set for the submission and receipt of Bids.

10. Documents Comprising the Bid: Eligibility and Technical Components

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

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

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

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

10.5. 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**.

11. Documents Comprising the Bid: Financial Component

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

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

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

12. Alternative Bids

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

13. Bid Prices

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

14. Bid and Payment Currencies

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

14.2. *Payment of the contract price shall be made in:*

a. Philippine Pesos.

15. Bid Security

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

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

16. Sealing and Marking of Bids

Each Bidder shall submit one 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.

17. 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.**

18. Opening and Preliminary Examination of Bids

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

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

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

19. Detailed Evaluation and Comparison of Bids

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

19.2. If the Project allows partial bids, all Bids and combinations of Bids as indicated in the **BDS** shall be received by the same deadline and opened and evaluated simultaneously so as to determine the Bid or combination of Bids offering the lowest calculated cost to the Procuring Entity. Bid Security as required by **ITB** Clause 15 shall be submitted for each contract (lot) separately.

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

20. Post Qualification

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

21. Signing of the Contract

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

Section III. Bid Data Sheet

Notes on the Bid Data Sheet (BDS)

The Bid Data Sheet (BDS) consists of provisions that supplement, amend, or specify in detail, information, or requirements included in the ITB found in Section II, which are specific to each procurement.

This Section is intended to assist the Procuring Entity in providing the specific information in relation to corresponding clauses in the ITB and has to be prepared for each specific procurement.

The Procuring Entity should specify in the BDS information and requirements specific to the circumstances of the Procuring Entity, the processing of the procurement, and the bid evaluation criteria that will apply to the Bids. In preparing the BDS, the following aspects should be checked:

a. Information that specifies and complements provisions of the ITB must be incorporated.

b. Amendments and/or supplements, if any, to provisions of the ITB as necessitated by the circumstances of the specific procurement, must also be incorporated.

Bid Data Sheet

<table>
<tr><th>ITB Clause</th><th></th></tr>
<tr><td>5.2</td><td>For this purpose, contracts similar to the Project refer to contracts which have the same major categories of work, which shall be:

Building Construction</td></tr>
<tr><td>7.1</td><td>Not Applicable</td></tr>
<tr><td>10.3</td><td>PCAB License – Small A – Category Trade to (PCAB License Small B, C & D)</td></tr>
<tr><td>10.4</td><td>The following key personnel shall be present during the implementation of the project and must meet the required minimum years of experience set below:

<table>
<tr><th>Key Personnel</th><th>Relevant Experience</th></tr>
<tr><td>Project Engineer/Manager</td><td>minimum of 5 years</td></tr>
<tr><td>Materials Engineer</td><td>minimum of 5 years</td></tr>
<tr><td>Safety Officer</td><td>minimum of 5 years</td></tr>
<tr><td>Foreman</td><td>minimum of 5 years</td></tr>
<tr><td>Mason</td><td>minimum of 5 years</td></tr>
<tr><td>Carpenter</td><td>minimum of 5 years</td></tr>
<tr><td>Laborer (skilled)</td><td>minimum of 5 years</td></tr>
<tr><td>Laborer (unskilled)</td><td>minimum of 5 years</td></tr>
<tr><td>First Aider</td><td>minimum of 5 years</td></tr>
</table></td></tr>
<tr><td>10.5</td><td>The minimum major equipment requirements are the following:

<table>
<tr><th>Equipment</th><th>No.</th></tr>
<tr><td>Concrete Vibrator</td><td>1</td></tr>
<tr><td>Bar Cutter</td><td>1</td></tr>
<tr><td>Bar Bender</td><td>1</td></tr>
<tr><td>Plate Compactor</td><td>1</td></tr>
<tr><td>Welding Machine with Genset</td><td>1</td></tr>
<tr><td>Concrete Mixer (1bagger)</td><td>1</td></tr>
</table></td></tr>
<tr><td>12</td><td>Not allowed</td></tr>
<tr><td>15.1</td><td>The bid security shall be in the form of a Bid Securing Declaration or any of the following forms and amounts:

a. The amount of not less than PHP 32,982.76, if bid security is in cash, cashier’s/manager’s check, bank draft/guarantee or irrevocable letter of credit; or
b. The amount of not less than PHP 82,456.92 if bid security is in Surety Bond.3</td></tr>
</table>

16	Each Bidder shall submit 1 original of the first and second components of its bid or two (2) password-protected Bidding Documents in compressed archive folders, in case of electronic bid submission, and which shall be submitted simultaneously. The first shall contain the technical component of the bid, including the eligibility requirements under Section 23.1 of this IRR For authentication purposes, all pages of the bidding documents for submission must be certified by the authorized signatory of the participating Bidder/Company. The bidders are also reminded to **PUT PROPER TAB ON EACH BIDDING DOCUMENTS**. Unsealed or unmarked bid envelopes, or in case of electronic bid submission, Bidding Documents not in compressed archive folders and are not password protected, shall be rejected. However, bid envelopes that are not properly sealed and marked shall be accepted, provided that the bidder or its duly authorized representative shall acknowledge such condition of the bid as submitted. The BAC shall assume no responsibility for the misplacement of the contents of the improperly sealed bid envelopes or improperly compressed or password-protected folder, or for its premature opening.
19.2	Partial bids are not allowed.
20	No further instructions
21	The winning bidder shall submit the following additional documents relevant to the Project ten (10) calendar days from the receipt of the Notice of Award: - construction schedule and S-curve, manpower schedule, construction methods, equipment utilization schedule, construction safety and health program approved by the Department of Labor and Employment, and PERT/CPM or other acceptable tools of project scheduling. - Contractor's All Risk Insurance (CARI)p

Section IV. General Conditions of Contract

Notes on the General Conditions of Contract

The General Conditions of Contract (GCC) in this Section, read in conjunction with the Special Conditions of Contract in Section V and other documents listed therein, should be a complete document expressing all the rights and obligations of the parties.

Matters governing performance of the Contractor, payments under the contract, or matters affecting the risks, rights, and obligations of the parties under the contract are included in the GCC and Special Conditions of Contract.

Any complementary information, which may be needed, shall be introduced only through the Special Conditions of Contract.

1. Scope of Contract

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

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

2. Sectional Completion of Works

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

3. Possession of Site

3.1 The Procuring Entity shall give possession of all or parts of the Site to the Contractor based on the schedule of delivery indicated in the **SCC,** which corresponds to the execution of the Works. If the Contractor suffers delay or incurs cost from failure on the part of the Procuring Entity to give possession in accordance with the terms of this clause, the Procuring Entity's Representative shall give the Contractor a Contract Time Extension and certify such sum as fair to cover the cost incurred, which sum shall be paid by Procuring Entity.

3.2 If possession of a portion is not given by the above date, the Procuring Entity will be deemed to have delayed the start of the relevant activities. The resulting adjustments in contract time to address such delay may be addressed through contract extension provided under Annex "E" of the 2016 revised IRR of RA No. 9184.

4. The Contractor's Obligations

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

The Procuring Entity will approve any proposed replacement of key personnel only if their relevant qualifications and abilities are equal to or better than those of the personnel listed in the Schedule.

5. Performance Security

5.1. Within ten (10) calendar days from receipt of the Notice of Award from the Procuring Entity but in no case later than the signing of the contract by both parties, the successful Bidder shall furnish the performance security in any of the forms prescribed in Section 39 of the 2016 revised IRR.

5.2. The Contractor, by entering into the Contract with the Procuring Entity, acknowledges the right of the Procuring Entity to institute action pursuant to RA No. 3688 against any subcontractor be they an individual, firm, partnership, corporation, or association supplying the Contractor with labor, materials and/or equipment for the performance of this Contract.

6. Site Investigation Reports

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

7. Warranty

7.1. In case the Contractor fails to undertake the repair works under Section 62.2.2 of the 2016 revised IRR, the Procuring Entity shall forfeit its performance security, subject its property(ies) to attachment or garnishment proceedings, and perpetually disqualify it from participating in any public bidding. All payables of the GOP in his favor shall be offset to recover the costs.

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

8. Liability of the Contractor

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

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

9. Termination for Other Causes

Contract termination shall be initiated in case it is determined *prima facie* by the Procuring Entity that the Contractor has engaged, before, or during the implementation of the contract, in unlawful deeds and behaviors relative to contract acquisition and implementation, such as, but not limited to corrupt, fraudulent, collusive, coercive, and obstructive practices as stated in **ITB** Clause 4.

10. Dayworks

Subject to the guidelines on Variation Order in Annex "E" of the 2016 revised IRR of RA No. 9184, and if applicable as indicated in the **SCC**, the Dayworks rates in the Contractor's Bid shall be used for small additional amounts of work only when the Procuring Entity's Representative has given written instructions in advance for additional work to be paid for in that way.

11. Program of Work

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

11.2. The Contractor shall submit to the Procuring Entity's Representative for approval an updated Program of Work at intervals no longer than the period stated in the **SCC.** If the Contractor does not submit an updated Program of Work within this period, the Procuring Entity's Representative may withhold the amount stated in the **SCC** from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue Program of Work has been submitted.

12. Instructions, Inspections and Audits

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

13. Advance Payment

The Procuring Entity shall, upon a written request of the Contractor which shall be submitted as a Contract document, make an advance payment to the Contractor in an amount not exceeding fifteen percent (15%) of the total contract price, to be made in lump sum, or at the most two installments according to a schedule specified in the **SCC**, subject to the requirements in Annex "E" of the 2016 revised IRR of RA No. 9184.

14. Progress Payments

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

15. Operating and Maintenance Manuals

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

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

Section V. Special Conditions of Contract

Notes on the Special Conditions of Contract

Similar to the BDS, the clauses in this Section are intended to assist the Procuring Entity in providing contract-specific information in relation to corresponding clauses in the GCC found in Section IV.

The Special Conditions of Contract (SCC) complement the GCC, specifying contractual requirements linked to the special circumstances of the Procuring Entity, the Procuring Entity's country, the sector, and the Works procured. In preparing this Section, the following aspects should be checked:

a. Information that complements provisions of the GCC must be incorporated.

b. Amendments and/or supplements to provisions of the GCC as necessitated by the circumstances of the specific purchase, must also be incorporated.

However, no special condition which defeats or negates the general intent and purpose of the provisions of the GCC should be incorporated herein.

Special Conditions of Contract

GCC Clause	
2	No sectional completion of Works
4.1	The schedule of delivery of the possession of the site to the Contractor, shall be in full to carry out the projects on its intended completion of date which is one hundred twenty (120) calendar days.
6	No further instructions.
7.2	Five years (semi – permanent structures)
10	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 *ten (10) calendar* days of delivery of the Notice of Award.
11.2	The amount to be withheld for late submission of an updated Program of Work is **5% of the contract amount**.
13	The amount of the advance payment *shall not exceed 15% of the total contract price and schedule of payment.*
14	Materials and equipment delivered on the site but not completely put in place shall not be included for payment.
15.1	The date by which operating and maintenance manuals are required: Not applicable. The date by which "as built" drawings are required is ***fifteen (15) calendar days after project completion***.
15.2	The amount to be withheld for failing to produce "as built" drawings and/or operating and maintenance manuals by the date required is **5% of the contract amount**.

Section VI. Specifications

Notes on Specifications

A set of precise and clear specifications is a prerequisite for Bidders to respond realistically and competitively to the requirements of the Procuring Entity without qualifying or conditioning their Bids. In the context of international competitive bidding, the specifications must be drafted to permit the widest possible competition and, at the same time, present a clear statement of the required standards of workmanship, materials, and performance of the goods and services to be procured. Only if this is done will the objectives of economy, efficiency, and fairness in procurement be realized, responsiveness of Bids be ensured, and the subsequent task of bid evaluation facilitated. The specifications should require that all goods and materials to be incorporated in the Works be new, unused, of the most recent or current models, and incorporate all recent improvements in design and materials unless provided otherwise in the Contract.

Samples of specifications from previous similar projects are useful in this respect. The use of metric units is mandatory. Most specifications are normally written specially by the Procuring Entity or its representative to suit the Works at hand. There is no standard set of Specifications for universal application in all sectors in all regions, but there are established principles and practices, which are reflected in these PBDs.

There are considerable advantages in standardizing General Specifications for repetitive Works in recognized public sectors, such as highways, ports, railways, urban housing, irrigation, and water supply, in the same country or region where similar conditions prevail. The General Specifications should cover all classes of workmanship, materials, and equipment commonly involved in construction, although not necessarily to be used in a particular Works Contract. Deletions or addenda should then adapt the General Specifications to the particular Works.

Care must be taken in drafting specifications to ensure that they are not restrictive. In the specification of standards for goods, materials, and workmanship, recognized international standards should be used as much as possible. Where other particular standards are used, whether national standards or other standards, the specifications should state that goods, materials, and workmanship that meet other authoritative standards, and which ensure substantially equal or higher quality than the standards mentioned, will also be acceptable. The following clause may be inserted in the SCC.

Sample Clause: Equivalency of Standards and Codes

Wherever reference is made in the Contract to specific standards and codes to be met by the goods and materials to be furnished, and work performed or tested, the provisions of the latest current edition or revision of the relevant standards and codes in effect shall apply, unless otherwise expressly stated in the Contract. Where such standards and codes are national, or relate to a particular country or region, other authoritative standards that ensure a substantially equal or higher quality than the standards and codes specified will be accepted

subject to the Procuring Entity's Representative's prior review and written consent. Differences between the standards specified and the proposed alternative standards shall be fully described in writing by the Contractor and submitted to the Procuring Entity's Representative at least twenty-eight (28) days prior to the date when the Contractor desires the Procuring Entity's Representative's consent. In the event the Procuring Entity's Representative determines that such proposed deviations do not ensure substantially equal or higher quality, the Contractor shall comply with the standards specified in the documents.

These notes are intended only as information for the Procuring Entity or the person drafting the Bidding Documents. They should not be included in the final Bidding Documents.

TECHNICAL SPECIFICATIONS FOR GUARD HOUSE

1.0 GENERAL

The works shall be carried out according to the Technical Specifications and shall govern the methods of construction and the kind of materials to be used for the proposed building as shown in the plans and detailed drawings.

The plans, detailed drawings, and technical specifications shall be considered as completing each other, so that what is mentioned or shown in one, although not mentioned or shown in the other, shall be considered as appearing on both. In case of conflict between the two, the same shall be referred to the Polomolok Water District-General Manager for resolution.

All works shall be carried simultaneously with electrical, plumbing, sanitary, and other services. Materials not conforming to Specifications shall be rejected.

1.1 PLANS AND SPECIFICATIONS

The plans and specifications shall be considered as binding and all times of work mentioned in one but not mentioned or indicated in the other or vice-versa, shall be considered as if these are duly mentioned in both.

Where no numerical indications appear on the plans, all drawings shall be carefully followed according to the scale indicated; such numerical notation shall be followed.

No changes in the drawings, specifications shall be made by the Owner, Contractor, or workmen without prior approval of the Architect/Engineer.

1. **1.2 GENERAL CONDITIONS**

The Contractor shall verify the existing condition of the structural and lot boundaries. The total demolition of the existing structure (if any) within the proposed project site is required.

2. **1.3 CONTRACTOR'S OFFICE & ACCOMMODATION**

A Temporary Facility is required and shall be adequate, rainproof, spacious, airy, and hygienic with proper lighting and toilet facilities. The area shall be kept neat and clean. Any garbage or sewage shall be disposed at a location and in a manner approved by the Engineer.

Space allocated for storage of various materials such as cement, reinforcement steel, and petroleum products, etc, shall be separated to avoid contamination. Petroleum products shall be stored and handled in a way that avoids contamination of groundwater. Workshops shall be installed with oil and grease traps for the same purpose.

The Contractor shall provide, at his own expense, adequate temporary accommodation and toilet facilities for his Workmen and keep the same in good conditions. Proper methods of sanitation and hygiene should be employed during the whole project duration. The above-mentioned temporary structures shall be removed on the completion of the Works at Contractor's own cost. All materials shall belong to the Contractor.

The Contractor shall make his arrangement for the supply of electric power and lighting as required for construction purposes.

3. **1.4 SAFETY MEASURES**

The Contractor shall be responsible for the safety of all workmen and other persons entering the Works and shall at his own expense take all measures, subject to the Engineer's approval, necessary to ensure their safety. Such measures shall include but not limited to:

- Appropriate personal protective equipment (helmet, dust mask, safety shoes, and hand gloves) must be provided and worn by Workmen;
- First Aid Cabinet must be fully equipped and readily available for the treatment of sickness and injuries;
- Provide safety and emergency regulations for fire and electric shock prevention; Safe control of flowing water; and
- Must be compliant with the set standards and regulations by the concerned government agency for Covid 19
- Conduct regular safety meetings.

4. **1.5 NOTICE BOARD**

The Contractor shall erect notice board (4'x8') at the site giving details of the Contract in the format provided by COA. It shall be removed upon receipt of Certificate of Completion.

5. **1.6 ENVIRONMENTAL PROTECTION WORKS**

The environment means the surrounding area including human and natural resources to be affected by execution and after completion of works. The Contractor shall take all precautions for safeguarding the environment during the construction of the works. He shall abide by all prevalent laws, rules, and regulations governing pollution and environmental protection. The Contractor shall prohibit employees from cutting of trees and the former shall be responsible for the action of the latter.

Waste materials must be collected, stored, and transported to an approved dump/disposal area.

The PolWD Engineer shall have the power to disallow the method of construction and/or the use of any burrow/quarry area if the stability and safety of the works or any adjacent structure are endangered, or there is undue interference with the natural or artificial drainage, or the method of use of the area will promote undue erosion.

2. SITE DIARY OR MANUAL FIELD BOOK

The Contractor shall keep Site Diary or Manual Field Book wherein full details of the work carried out during each day shall be fully recorded. The Site Diary or Manual Field Book shall be available for inspection by the Engineer any time during normal office hours. It shall include:

- Project Name;
- Date
- Contractor's Name;
- Contractor's Representative;
- Weather Conditions, rainfall and river water level (indicate "NO WORK", if unworkable days);
- Description, quantity, and location of work performed;
- Shift and working hours;
- Worker's attendance
- Equipments used
- Number and category of workers working at site;
- Test carried out and results;
- Inspection carried out by the Engineer;
- Problems or abnormal occurrence;
- Defective/Non-Compliant Work & Corrective Action;
- Site Instructions;
- Visitors; and
- Accident (if any)

3. SITE PREPARATION WORKS

Clearing and grubbing and cutting of trees shall include handling, salvaging, piling, and disposing of the cleared materials with all leads and lifts. Trees shall be cut in sections from the top downwards. All timber shall not be used by the Contractor for any purpose and shall remain the property of the PolWD.

Clearing shall consist of the cutting, removing, and disposal of all trees, bushes, shrubs, grass, weeds, other vegetation, anthills, rubbish, fences, top organic soil and rocks, and boulders exposed or lying on the surface.

The construction site shall be leveled according to the plans and cleared of rubbish, roots, and other perishable and objectionable matters to a suitable subgrade. All such unsuitable materials shall be removed from the construction site and spread uniformly over the areas adjacent to the proposed building, or otherwise disposed of as may be directed by the PolWD Engineer in-charge of the construction.

Materials obtained from clearing and grubbing shall be disposed of in borrow pits or other suitable places and be covered up with soil or gravel as directed by the PolWD Engineer. The burning of combustible materials shall not be permitted.

4. STAKING OUT THE BUILDING LINES

The building lines shall be staked out on the lines and grades shown in the drawings established before any excavation is started. Batter boards and reference marks shall be erected at such a place where they will not be disturbed during the excavation of the building.

During the period of the commencement of works, the Contractor shall survey the construction area and confirm the levels. He shall immediately notify the PolWD Engineer of any discrepancies and shall agree with the Engineer any amended values on the plan. All stations and reference points shall be marked and protected to the satisfaction of the PolWD Engineer. All working benchmarks shall be near major/medium structure sites. Accurate establishment of the centerlines based on the Drawing is required. The existing profile and cross-section shall be jointly taken with the Engineer.

5. EXCAVATION

Foundation trench shall be dug to the exact width and depth and levels as indicated in the drawings. Sides of the trenches shall be vertical. In case soil does not permit vertical sides, the Contractor shall protect the sides with timber shoring. Excavated earth shall not be placed within 1.5 meters of the edge of the trench. The Project Engineer may direct the Contractor to place excavated earth at a particular site up to 30 meters away from the proposed building. After completion of the foundation masonry, the remaining portion of the trench not filled by masonry shall be filled up with earth in layers of 115 cm, watered, and well-rammed.

No excavation or foundation work shall be filled in or covered up before the inspection and approval of the Project Engineer.

6. BACKFILLS

The work shall consist of filling for construction of embankment for plinth of building and include furnishing, placing, compacting and shaping suitable materials obtained from approved sources in accordance to lines, levels, grades, dimensions shown on the drawings. The preparation of the surface is by layer. Each layer shall not exceed 300 mm in thickness before compaction. Each layer of material shall then be watered and compacted to 95% dry density at optimum moisture content.

7. TERMITE CONTROL

Termite control is a method to prolong and protect structures from termite infestation. Soil poisoning is the process wherein the soil is treated with chemical solutions to

control and prevent the entry of termite into the structure. After excavation, soil treatment must be done. The bottom surface and the sides of the excavation made from masonry foundation and basements shall be treated with termite concentrate at a rate of 5 L/sq.m. a surface area or as specified by the product data.

8. MASONRY WORKS

Masonry works is a form of construction work equipped with stone, bricks, concrete, hollow clay tile, concrete block or tile, or other similar building units or material or a combination of these materials laid up the unit and set in mortar. Concrete hollow blocks are classified as load-bearing and non-load bearing blocks. Installation of Concrete Hollow Blocks is done either block laying after the concreting of tied columns or concreting of columns after block laying of walls.

6. 8.1 CONCRETE HOLLOW BLOCK WALLS

All exterior concrete hollow blocks to be used for first floor walls shall be at least 150 mm thick, while concrete hollow blocks for interior walls unless otherwise indicated, shall be 100 mm thick. For interior CHB walls were plumbing pipes and fittings shall be located, the thickness shall be at least 150 mm. Concrete Hollow Blocks as indicated on the drawings shall conform to ASTM C- 129 (non- load bearing). The nominal thickness of the blocks shall be 4” and 6” as required.

7. All CHB Walls have a minimum compressive strength of 450PSI and shall be reinforced as presented in Table 1.
8. The minimum lap length of splice shall be 250mm.
9. Provide right-angled reinforcement at corners, 900mm long.
10. Where CHB walls adjoin columns, RC beams, and RC walls. Dowel with the same size as the vertical or horizontal reinforcements shall be provided.

TABLE 1. SCHEDULE OF CHB REQUIREMENTS

BLOCK THICKNESS	HORIZONTAL REINFORCEMENTS	VERTICAL REINFORCEMENTS
100mm	10mmø @ 400mm O.C	10mmø @ 400mm O.C
150mm	10mmø @ 400mm O.C	10mmø @ 400mm O.C

Concrete Hollow Blocks shall be wet thoroughly with water before laying. Blocks shall be laid in running bond with the vertical faces truly vertical and with clean-cut joints.

11. 8.2 CEMENT MORTAR

The concrete hollow block walls shall be filled with cement mortar consisting of 1 part Portland cement and 3 parts sand by the volume. They shall be reinforced with round deformed bars, a 10 mm diameter spaced not more than 600mm on both vertical and horizontal bars.

Cement and sand are mixed in a specified proportion. The mixing shall be done in a mechanical mixer unless hand mixing is permitted by the PolWD Engineer. If hand mixing is allowed, the operation shall be carried out on a clear watertight platform. In the required proportion, cement and sand shall be first mixed dry to obtain a uniform color. Then the required quantity of water shall be added and the mortar shall be mixed to produce workable consistency. The mortar shall be mixed for at least three minutes after the addition of water in the case of mechanical mixing. In the case of hand mixing, the mortar shall be hoed back and forth for about 10 minutes after the addition of water to obtain a uniform consistency.

Any mortar that has become unworkable due to loss of water before elapsing the initial setting time of cement shall be rewet to make it workable and shall be used in the works. On no account, mortar shall be used after elapsing the initial setting of cement.

9. CONCRETE WORKS

12. 9.1 PROPORTIONING OF CONCRETE

All concrete works shall be done in accordance with the standard specifications for plain and reinforced concrete. Cement to be used shall be Portland cement, or other equivalent brands more readily available on the locality. Alternative cement so selected must meet the requirement of Portland and Pozzolan types of cement, and approved by the PolWD Engineer in-charge of the construction.

The following proportion of concrete mixtures shall be used for the various parts of the building:

Columns, footing and Hanging slab	-	Class A	(1:2:4) / Premix (3000 psi)
Concrete, Hollow block footings	-	Class B	(1:2.5:5)
Reinf. Conc. Beams and slabs	-	Class A	(1:2:4)
Concrete slabs floor on fill	-	Class B	(1:2.5:5)
Septic vault cover	-	Class A	(1:2:4)

Cement and aggregates shall be stored in such a manner as to prevent their deterioration or the intrusion of foreign matter. Cement shall be stored immediately upon arrival on the site of the work, insubstantial, waterproof bodegas. The floor must be sufficiently elevated to deter dampness. Aggregates shall be stored separately from other foreign materials.

Water to be used for mixing the concrete shall be clean and free from injuries, amount of oil acids, alkaline, salt, and other organic materials. Mixers, which have been out of use for more than 30 minutes, shall be thoroughly cleaned before fresh concrete is mixed. Mixers shall be cleaned out before changing to another type of cement.

13. **9.2 MIXING AND PLACING CONCRETE**

All concrete shall be mixed thoroughly and should be deposited as nearly as practicable. Make sure that the concrete is of the required workability at the point and time of placing. The mixing time of concrete is not less than 60 seconds for 1.5 cu.m. mixer capacity and not less than 90 seconds for more than 1.5 cu.m. mixer capacity. Interval of placing the concrete shall not be so long allowing the concrete in place to harden partially. The time elapsing between mixing, transporting, placing, and compaction altogether of a batch of concrete shall not be longer than the initial setting time of the concrete. Waterproofing compounds shall be added to the concrete mix in areas of the structure where it will be with the weather for this project (Phase 1). Retempering of concrete will not be permitted.

- Unless otherwise indicated in plans or noted in the structural specification, the minimum 28 days compressive cylinder strength shall be as follows:

    1. Suspended slabs, beams, and girders – 21MPA (3000PSI)
    2. Columns and pedestal – 21MPA (3000PSI)
    3. Retaining walls – 21MPA (3000PSI)
    4. Footing Tie beams – 21MPA (3000PSI)
    5. Parapet walls and Gutter – 21MPA (3000PSI)
    6. Other Structural Elements – 21MPA (3000PSI)
    7. Slab on grade, Curtain walls – 17MPA (3000PSI)
    8. Bedded slab, Sidewalks - 17MPA (3000PSI)
    9. Non- Structural Elements - 17MPA (3000PSI)

- Concrete shall be deposited in its final position without segregation, rehandling, or flowing. Placing shall be done properly with buggies, bucket, or wheel – borrows, no chutes shall exceed six (6) meter aggregate length.
- No depositing of concrete shall be allowed without the use of vibrators unless authorized by the Architect/Engineer in charge of the project.

14. **9.3 PLACING PROCEDURES**

The concrete shall be deposited as nearly as possible in its final position. It shall be placed to avoid segregation of the concrete and displacement of the reinforcement, other embedded items, or formworks. When placing on a nearly horizontal surface, placing shall start at the lower end of the surface to avoid decompaction of concrete.

For the pouring of concrete for columns, the Contractor shall use drop chute with a maximum drop height of 1.50 meters or less. For the pouring of concrete for the slab, the Contractor shall execute the placing direction with a backward movement. Concrete slab on fill with 100 mm thick shall be poured on the gravel bed and shall be placed with the 10mm diameter Reinforcement Steel Bar (RSB) spaced at 400mm both ways.

Layers shall not be placed so that they form featheredge, nor shall they be placed on a previous layer, which has taken its initial set. To comply with this requirement, another layer may be started before the initial set of the preceding layer.

Concrete shall not be placed during rain, which is sufficiently heavy or prolonged to wash mortar from coarse aggregate on the exposed faces of fresh concrete. Means shall be provided to remove any water accumulating on the surface of the placed concrete. Concrete shall not be deposited into such accumulations of water.

In dry weather, covers shall be provided for all fresh concrete surfaces, which are not being worked on. Water shall not be added to concrete for any reason.

In MIS Server Room, polythelene Sheets shall be placed on top of the gravel bedding before the placing of concrete for slab in fill.

15. **9.4 INTERRUPTIONS TO PLACING**

If the concrete placing is interrupted for any reason and the duration of the interruption cannot be forecast or is likely to be prolonged, the Contractor shall immediately take the necessary action to form a construction joint to eliminate as far as possible featheredge and sloping top surfaces and shall thoroughly compact the concrete. All work on the concrete shall be completed before elapse of initial setting time and it shall not thereafter be disturbed until it is hard enough to resist damage.

Before concreting is resumed after such an interruption, the Contractor shall cut out and remedy all damaged or un-compacted concrete featheredge or any undesirable features and shall leave a clean sound surface against which the fresh concrete may be placed.

16. **9.5 DIMENSIONS OF POUR**

Pours shall not be more than two meters high and shall as far as possible have a uniform thickness over the plan area of the pour. The Contractor shall plan the dimensions and sequence of pours in such a way that cracking of the concrete does not take place due to thermal or shrinkage stresses.

17. **9.6 COMPACTION OF CONCRETE**

Concrete shall be fully compacted throughout the full extent of the placed layer. It shall be thoroughly worked against the formwork and around any reinforcement and other

embedded items, without displacing them. Care shall be taken at arises or other confined spaces. Successive layers of the same pour shall be thoroughly worked together.

Concrete shall be compacted with the assistance of mechanical immersion vibrators. Immersion and surface vibrators shall operate at a frequency of between 70 to 200 hertz. The Contractor shall ensure that vibrators are operated at pressures and voltages not less than those recommended by the manufacturer so that the compaction effort is not reduced.

Vibrators shall be continued at each point until the concrete ceases to contract, air bubbles have ceased to appear, and a thin layer of mortar has appeared on the surface. Vibrators shall not be used to move concrete laterally and shall be withdrawn slowly to prevent the formation of voids.

The vibrator shall be inserted vertically into the concrete to penetrate the layer underneath at regular spacing, which shall not exceed the distance from the vibrator over which vibration is visibly effective and some extent of vibration is overlapped.

Vibration shall not be applied by way of reinforcement nor shall the vibrators be allowed to touch reinforcement, sheathing ducts, or other embedded items.

The intensity of vibration shall be such as to visibly affect a mass of concrete with a 3 cm slump over a radius of at least 50 cm. Regular slump tests should be carried out to control the addition of water and to maintain the required consistency.

18. **9.7 CURING OF CONCRETE**

Concrete shall be protected during the first stage of hardening from loss of moisture and from the development of temperature differentials within the concrete sufficient to cause cracking. The methods used for curing shall not cause damage of any kind to the concrete.

Curing shall be continued for as long as it may be necessary to achieve the above objectives but not less than 14 days until the concrete is covered by successive construction whichever is the shortest period. The curing process shall commence as soon as the concrete is hard enough to resist damage from the process.

Exposed concrete surfaces shall be closely covered with impermeable sheeting, properly secured to prevent its removal by wind, and the development of air spaces beneath it. If it is not possible to use impermeable sheeting, the Contractor shall keep the exposed surfaces continuously wet using water spray or by covering with a water-absorbent material, which shall be kept wet.

The contractor shall provide a suitable form of shading to prevent the direct rays of the sun reaching the concrete surfaces for at least the first four days of the curing period.

19. **9.8 CONSTRUCTION JOINTS**

Whenever concrete is to be bonded to other concrete which has hardened, the surface of contact between the sections shall be deemed a construction joint. It shall be thoroughly cleaned of foreign matter and laitance.

Construction joints shall be arranged as to reduce to a minimum the effects of shrinkage in the concrete after placing and shall be placed in the most advantageous positions concerning stresses in the structures and the desirability of staggering joints.

Featheredge of concrete at joints shall be avoided. Any featheredge of concrete, which may have formed where reinforcing bars project through a joint shall be cut back until sound concrete has been reached.

The surface of the concrete shall be thoroughly brushed with a thin layer of mortar composed of one part of cement and two parts of sand by weight immediately before the deposition of fresh concrete. The mortar shall be kept just ahead of the fresh concrete being placed and the fresh layer of concrete shall be thoroughly and systematically vibrated to full depth to ensure complete bond with the adjacent layer. No mortar or concrete shall be placed until the joint has been inspected and approved by the Engineer.

10.0 STEEL REINFORCING BARS

Grade 40 Steel shall be used for 16mm, 12mm, and 10mm DRSB, Steel is considered as an excellent partner of concrete in resisting tension and compression. The design of reinforced concrete assumes that concrete and steel acts together in carrying the load in the state of simultaneous deformation.

The Contractor shall furnish all information as manufacturer's certificate, invoice and other related details of all reinforcing steel bars to be used and shall be of round deformed bars with lugs or projection on their sides. The reinforcements shall have no crack, scale or rust or foreign particles that will destroy or reduce the bond.

All reinforcing steel bars shall be accurately bent and formed to the dimension indicated in the Drawings. The binding wire used to bind reinforcements shall be annealed galvanized binding wire of Gauge #16.

Reinforcement shall not be welded except where required by the contract or agreed by the PolWD Engineer.

20. **10.1 STORAGE OF REINFORCEMENT**

All reinforcement shall be delivered to the site either in straight lengths or cut and bent. No reinforcement shall be accepted in long lengths, which have been transported bent over double.

Any reinforcement, which is likely to remain in storage for a long period, shall be protected from the weather to avoid corrosion and pitting. All reinforcement which has become corroded or pitted to an extent which, in the opinion of the Engineer, will affect its properties, shall either be removed from the site or maybe tested for compliance at the Contractor's expense.

Reinforcement shall be stored at least 150 mm above the ground on a clean area free of mud and dirt and sorted according to a category, quality, and diameter.

21. 10.2 BENDING REINFORCEMENT

Unless otherwise shown on the Drawing, bending, and cutting shall comply with ASTM Standards.

The Contractor shall satisfy himself as to the accuracy of any bar bending schedules supplied and shall be responsible for cutting, bending, and fixing reinforcement per the Drawing. Bars shall be bent mechanically using appropriate bar benders. Bars shall be bent cold by the application of slow steady pressure. At temperatures below 5 degrees Celsius the rate of bending shall be reduced if necessary to prevent fracture in the steel.

The minimum bending of bars for 10mm to 25 mm is bend plus 5 times the bar diameter, for 180 degrees bend and bend plus 6 times the bar diameter, and for 90 degrees bend extended up to 12 times bar diameter. For stirrups and tie hooks, the minimum bending of bars is bend plus 10 times the bar diameter.

Bending reinforcement inside the forms shall not be permitted except for mild steel bars of diameter less or equal to 12 mm, when it is necessary. After bending, bars shall be securely tied together in bundles or groups.

The Contractor shall ensure that reinforcement left exposed in the works shall not suffer distortion, displacement, or other damage. When it is necessary to bend protruding reinforcement aside temporarily, the radius of the bend shall not be less than four times the bar diameter for mild steel bars or six times the bar diameter for high yield bars. Such bends shall be carefully straightened without leaving residual kinks or damaging the concrete around them before concrete placing.

22. 10.3 BAR SPLICING

No splices shall be made in the reinforcement except where shown on the Drawing or agreed by the Engineer. For suspended slab and continuous beams, bottom bar splices shall be located at supports while top bar splices shall be located at mid-span. For cantilever beams, bottom bar splices shall be located at support while top bar splices away from support. Splices for columns shall be located within middle thirds but preferably not to terminate all reinforcing bars for splicing at the same location.

Lap splice shall be 40 times the bar diameter but not less than 600 mm in length.

23. 10.4 BAR SPACING

Bar spacing shall not be less than the normal diameter of bars or 40mm for the column, or as specified in the structural design notes.

24. 10.5 FIXING REINFORCEMENT

The minimum concrete cover to protect all reinforcements for each different structure is as follows:

1. Footing, footing tie beams – 75 mm
2. Beams and columns (to stirrups & ties) – 40 mm
3. Suspended slab -- 20 mm

Spacer blocks shall be used for ensuring that the correct cover is maintained on the reinforcement. Blocks shall be as small as practicable and of a shape agreed by the Engineer. They shall be made of mortar mixed in the proportions of one part of cement to two parts of sand by weight. Wires cast into the block for tying into the reinforcement shall have not less than 50mm or any long enough to attached and fix spacer block on the reinforcing bars and shall be soft annealed iron.

All reinforcement shall be checked of shape, size, diameter, and number where necessary. Reinforcement shall be rigidly fixed so that it remains intact during the placing of concrete. Any fixers made to the formwork shall not remain within the space to be occupied by the concrete being placed.

25. 11.0 FORMS FOR CONCRETE WORKS

Formworks shall include all temporary or permanent forms required for forming the concrete together with all temporary construction for their support. It shall be as specified in the plan.

26. 11.1 CONSTRUCTION OF FORMWORKS

All forms for concrete works shall be properly braced or tied together to have sufficient strength, rigidity, shape, and surface smoothness. Concrete forms shall be mortar-tight or sufficiently tight to prevent seepage of water.

All joints in formwork shall be water-tight. Where reinforcement projects through formworks, the form shall fit closely around the bars. Formwork shall be so designed that it may be easily removed from the work without damage to the faces of the concrete.

Form fasteners consisting of form bolts, clamps, or other devices shall be used as necessary to prevent wrecking the forms during concrete placement. The use of ties consisting of twisted wire loops to hold forms in position will not be permitted.

Formworks shall not be reused after it has suffered damage, which is sufficient to impair the finished surfaces of the concrete.

27. 11.2 PREPARATION OF FORMWORKS

Before each concrete operation commences, formworks shall be cleaned of all rubbish and other foreign particles. The Contractor shall not use an emulsion of oil suspended in water nor any release agent, which causes staining or discoloration of the concrete or affect the strength of the concrete.

In cases, where it is necessary to fix reinforcement before placing formwork, all surface preparation of formworks shall be carried out before it is placed into position.

Special care shall be taken to maintain the stability of the form works and the tightness of the joints, particularly during concrete vibrating operations. The Contractor shall maintain a watch on the formworks during placement to ensure that no movement occurs. If any movement noticed, the formwork shall be set right immediately.

28. 11.3 REMOVAL OF FORMWORKS

Formworks shall be carefully removed without shock or disturbance to the concrete. No formworks shall be removed until the concrete has attained sufficient strength to support its weight and any loads that may be placed on it. Side forms of beams and girder may be removed earlier than the bottom forms but the additional posts or shoring must be placed under the beam or girder until it attains sufficient strength.

The minimum periods, which shall elapse between completion of placing concrete and removal of forms, are given below:

	Minimum Time	**Minimum % Design Strength**
Beams	14 days	80%
Slab	14 days	70%
Walls	1 day	70%
Columns	2 days	70%
Sides of beams	1 day	70%

12. ROOFING WORKS

29. 12.1 ROOF FRAMING WORKS

Steel frames are attached through a rivet, a bolt, or by welding. Before assembling, a sample of all the steel members shall be tested if they conform to the desired strength specified in the plans and specifications.

When punching and drilling steel, make sure that the hole drilled or punched is 1.5 to 3 mm greater than the diameter of the bolt to make it easy in inserting the bolts through it.

Verify if the welding work needs a partial or complete penetration. The metal surface is set following the shape needed in welding. Be sure that the metals are in their proper position before welding.

When the work is completed, inspect if it is welded following the penetration length and thickness needed in the construction.

Purlins are then placed equidistantly as specified in the plans. Purlins should have an angled strap and a sag rod to prevent lateral buckling. It should be placed properly to fit the length o the roofing sheets. The top of the purlins should be at the same plane.

If all works are done per plans and specifications, paint all metals with metallic paint for rust protection.

In the actual fabrication of steel trusses, members meeting at points shall have their gravity and intersect as nearly as practicable at a common point. The Contractor shall provide temporary erection bracings and shoring and make actual measurements in the field before the fabrication/installation of all trusses.

The Contractor shall submit detailed shop drawings before fabrication of trusses for the approval of the Engineer.

30. **12.2 ROOFING WORKS**

The Roofing Sheets shall be pre-painted long span Gauge #26. It shall be free from rust and the zinc covering the time of fixing shall be in perfect condition. Provide 10mm thick PE foam installation with (1) side aluminum foil for thermal control.

All roofing sheets adjacent to the concrete hollow block and other masonry walls such as property line for walls shall be provided with Gauge #26 Plain GI flashing to extend up to the top and over to the other side of the wall. All rivets shall be placed at the top of the corrugation of the roofing sheets.

The installation of roofing sheets with end laps shall start at the lower part of the roof. Each sheet shall be laid on steel purlins with an end overlap of 150mm minimum or as per drawing and side overlaps of 2 ½ corrugations. Succeeding upper rows of sheets shall be installed in the same manner until the entire roof area is covered. Screw holes shall be drilled using a 5mm (13/64”) diameter bit. Sheets should be handled carefully to prevent damage.

Ridge and hips shall be bolted with at least 250mm lap placed over the roofing sheets on either side to prevent the rain driving under it and together shall be riveted at every second corrugation.

Holes in sheets shall be made on the ground, the sheets shall be placed on trestles and holes punched in the ridge of corrugations from below upward. Unnecessary holes made on the roof shall be rejected.

Valley shall be bolted with at least 450 mm each way under the roofing sheets and shall be secured to the framework with galvanized nails. The nails are placed below the roofing sheet. Rivets alongside of the valley shall be fastened at every second corrugation.

Flashing of Gauge #26 Plain GI Sheets shall be installed along intersections of roofs and concrete or masonry walls. Flashing running parallel to sheet corrugations must have its edge turned down. Flashing across sheet corrugations or at an angle thereto shall lap at least 250 mm and the edge of flashing turned down at each corrugation.

Concrete gutter shall be constructed to the shape and dimensions as indicated in the plans. As for safety precaution, an overflow pipe shall be installed in the concrete gutter. The gutter shall be installed with a pitch of 1 in 100 sloped toward the downspout.

13. FLOORING WORKS

31. 13.1 WATERPROOFING WORKS

Waterproofing is the process of making a structure water-resistant so that it remains relatively unaffected by water or resisting the ingress of water under specified conditions. The purpose of the application of waterproofing is to prevent the water to percolate or penetrate any underground concrete members. When the water penetrates the concrete, the steel reinforcement that embedded in the concrete would corrode due to the chemical reaction caused by water and the structure would eventually fail.

Torch membrane waterproofing of all toilets must be applied following the procedures below:

- Any undulations or protrusions on the surface shall be removed to obtain a smooth surface. The surface must be thoroughly cleaned and free from dust, dirt loose materials, oil, or grease.

- A 50x50mm size fillet made of cement-sand (1:3) mix must be placed along with corners of walls and any other junctions.

- For horizontal waterproofing membrane application. Two layers of 4mm thick modified bituminous membrane shall be laid fully torched on blinding concrete with a minimum of 100m end laps and 150mm side laps.

- The blinding surface shall be primed with the primer recommended by the manufacturer of the membrane before placing the membrane. Before

succeeding works the applied primer shall be inspected by the Engineer 24 hours after the placement.

- Waterproofing membrane installation shall be performed using cylinder fed propane gas torch, trowel to seal the seams of the membrane and knife for cutting.

- The membrane is then placed in the correct torching on position then re-rolled for about half of its length without changing its orientation.

- The membrane is then un-rolled again and torched on pressing the melted area against the substrate.

- Repeat till the entire length of the membrane is bonded firmly onto the surface then the second membrane is laid in the same way with an overlap of 150mm at the end and 100mm at the side.

- An extra length of a minimum 300mm of the horizontal membrane shall be left to carry up the vertical surface to maintain continuity of the membrane and be protected as above.

32. **13.2 SURFACE PREPARATION**

The surface where the tile is laid must be leveled, true to elevation, dry and free from dirt, oil, and other sediments. Allow at least 7 days curing of the scratch coat and setting bed.

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

Evenly rate the scratch coat to provide good mechanical keys before the mortar mix has fully hardened.

13.3 INSTALLATION PROCEDURE

All offices, common areas, and stairs shall be finished with 24” x 24” Granite tiles for office rooms, hallways, and stairways/landings. Stair/step shall be finished with a PVC Stair nosing or its equivalent. All tiles for the wall of toilets shall be 8" x 8" unglazed synthetic granite tiles with 1.5m height or as approved by the PolWD Engineer and toilet flooring shall be 8” x 8” unglazed synthetic granite tiles. (Submit a sample of the tiles to the PolWD engineer in-charge.)

Before the tile is applied, the floor surface shall be brushed cleaned, and wetted. The surface shall be tested for levelness or conformity of slope by flooding it with water.
Ceramic or glazed tiles shall be soaked, completely immersed in clean water before installation for a maximum duration of 1 hour.

Tiles shall be installed by applying mortar and adhesive to backs of tile and firmly pressing tile into the floating coat to true plane and position. Mortar to be used in setting the tiles and moldings shall be mixed of 1 part adhesive and 2 parts sand.

Determine and mark the layout of tiles, joint location, and position of trims and fixtures to minimize the incidence of a tile being cut less than one half of its size. Spread the adhesive evenly, then using notched edge make a raking motion. Do not twist tile, simply press the tile down firmly yet softly. Set tile spacer and then continue with additional tiles. Use your level to determine the degree of level of the tiles as you go along.

Joints shall be maintained uniformly wide by aligning spacer lugs on tile edges. All lines shall be kept straight and true to profiles, plumbed and internal corners rounded using the appropriate trims. Pitch the floor to drain as shown in the plans.

All tile work finishing shall be adequately protected from damage during the progress of construction. Chipped, cracked, or broken tile shall not be used and all defective work shall be replaced and repaired to the satisfaction of the Engineer at the Contractor's expense.

33. 13.4 GROUTING AND POINTING

Tiles shall be dampened and joints grouted full with a plastic mix of neat cement by trowel, brush or finger application. The tiles shall have been laid in place for at least 24 hours before the grouting of the joints is started. During grouting, all excess grout shall be cleaned off the tile surface with damp cloth sponges.

14. CARPENTRY & JOINERY WORKS

34. 14.1 STORAGE AND PROTECTION OF MATERIALS

All materials shall be protected from dampness or bad weather conditions during and after delivery at the site. Materials shall be delivered in advance of actual use an inadequate quantity to preclude delay in the work. It shall be piled in an orderly stack at least 150 mm above the ground and at a sheltered place where it will be of least obstruction to the work.

35. 14.2 CEILING WORKS

Before enclosure of ceiling, all dimension, alignment of nailers/metal frames, material specifications, complete installation of sanitary/plumbing and electro-mechanical rough-ins and properly anchored to the carrying metal channel/wood runner have complied,

PVC Laminated Gypsum Board (12mmx0.610x1.22m) shall be used in the MIS Server Room inside ceiling and Metal Slotted Spandrel (0.2mx1mx0.4mm) for the outside

ceiling, and for the Warehouse and Comfort room ceiling boards shall be 3.5mm thick hard flex, free of damages and to be fixed to the framing in a perfect line and level. The joints are sealed with plaster of Paris and non-woven paper tapes without forming any bubble the joints shall be finished flush to make the ceiling in one piece. The finished surface shall be smooth and true to the plane and curved as required. Once laying of the ceiling is completed, the dust and floors are cleaned for the painting works.

14.3 FALSE / RISER FLOOR (MIS SERVER ROOM)

In MIS Server Room, provide a riser floor with a height of atleast 200mm from the concrete slab. Use a 2''x2''x1.5mm Square Tubing for the supports with a spacing of 400mm on both sides. For the floor support, use 2''x3''x1.5mm Square Tubing before the laying of 400mmX400mmX20mm Marine Plywood (Note that we should NOT use nails or screw on the connection of Marine Plywood and 2''x3''x1.5mm Square Tubing so that the user can easily open the floor).

15. DOORS AND WINDOWS

36. 15.1 DOORS AND DOOR FRAMES

Doors and door frames shall conform to the size, designs, and kind of materials in the details of doors, solid panel door, flush door, hollow core, PVC flush door, flush louver door, schedule of doors or as specified the schedule of Doors and windows.

The frames shall be plumb-set and squared in the frame working of walls or building partitions. Locks of doors shall be fitted at the lock block, 1,000 mm above the finished floor level. Locks shall be installed in conformity with the templates and instructions supplied with the locksets.

All toilets shall be installed with PVC Door hinge in a 2”x5” door jamb and door closer.

37. 15.2 WINDOWS

Aluminum casement and awning windows to be used in this project shall conform to the size and designs shown in the detail drawings and schedule of windows.

Windows shall be plumb-set and true in the openings. The joints between the window frames and masonry shall be carefully caulked.

Aluminum fixed glass shall be installed as shown on plans and one-way tinted mirror glass.

38. 15.3 STEEL WORKS

Provide Steel Hand Railings shall be 2” diameter x 1.2mm thick Stainless Tubes #304 on and stairs. Provide1”x1” square bar vertical railing as specified in the plans.

Provide brass stair nosing on edges of tread and riser.

Provide GI Pipe and steel landing and drop-down ladder for fire exit area.

For Truss -1 Use 3/16” thick x 2” x 2” angle bars for Top and Bottom Chord including web members spaced as shown on plans and details, 1.2mm thick x 2” x 3” CEE purlins shall be used as purlins spaced at 750mm on center.

A 16mm Plain RSB cross bracing for trusses shall be provided with the relevant size of turnbuckles and 10mm plain RSB sag rods spaced as shown on drawings

Provide ¾” Hardiflex x 10” Facia boards (See Details)

Welding works, use 6011 Welding Electrodes and 6013 to finish weld.

16. ELECTRICAL WORKS

The electrical installation shall be done following the approved plans and under the direct supervision and control of a Professional Electrical Engineer and or Registered Electrical Engineer.

All works shall be done following the latest edition of the Philippine Electrical Code (PEC). The rules and regulations of the local enforcing authorities with the enforcement of rules and regulations of the local utility company.

Branch circuit home runs shall not be combined in the same raceway and raceway for auxiliary lines shall not contain power lines.

The electrical wiring installation shall be in Unplasticized Polyvinyl Chloride (UPVC), Electrical Metallic Tubing (EMT) for branch circuit, Rigid Steel Conduit (RSC) or raceway for service entrance and power feeder.

Mounting heights of wiring devices and panelboards shall be as follows:

*Convenient Outlets ……..300mm AFFL

*Light Switches ……1400mm AFFL

*Panel Boards……1800mm AFFL

*Telephone Outlets……300mm AFFL

Whenever necessary pull boxes shall be used when applicable for easy pulling of wires and shall be in accordance with code requirements even not indicated in the plan.

All wires to be used shall be copper and thermoplastic heat-insulated type (THHN), unless noted otherwise specified.

All materials to be used shall be brand new and of an approved type for the location and purpose intended.

The minimum size of wire and conduit to be used shall be 3.5 sq.mm THHN and 20mm diameter UPVC/EMT/RSC respectively.

All service entrance equipment such as the panelboard shall be properly grounded per the provision of the Philippine Electrical Code (PEC).

The contractor shall provide all materials, labor, and equipment for the installation of complete electrical systems as shown on the plans.

Service entrance shall be over-head and provided with single phase 220 volts for the entire systems.

Installations shall only follow circuit numbers with remarks “Phase 1” from the Schedule of Loads.

Electrical lightings shall be a LED lamp and downlights/cove lights at Comfort rooms and hallway. (See Plan).

The grounding wires shall be color-coded for easy identification.

17. PLUMBING WORKS

The contractor shall furnish all materials, tools, and labor necessary for the construction including all fixtures to be installed.

All plumbing works for this project shall be done in accordance with the approved plans and under the direct supervision and control of a Licensed Sanitary Engineer or Master Plumber.

The plumbing installation shall conform with the provisions of the National Plumbing Code and the rules and regulations enforced on the locality. Install soil, waste, drain and vent pipes, install water pipes, fittings, and connection.

ROUGHING- IN for pipes fixtures shall be carried along with the building construction. Opening of proper sizes shall be correctly located for all pipes and in case of errors and omission; the contractor shall properly replace any affected work as may be required. Use White PPR PN10 Pipes and Fittings standard for all water lines.

The contractor shall make proper connections from the main of the water utility serving the locality, water supply lines to the meter to the necessary water for the building. From the water meter connection, the contractor shall connect a ¾" dia. Standard PPR Pipe water supply line and shall reduce to the different fixtures as follows.

For water closet/s …… ½" dia.
For lavatory sink …….. ½" dia.
For hose bibb/s …… ½" dia.

Use gate valves with corresponding sizes for all the necessary main and branches.

The construction of the septic wall, with all fittings, included as those shown on the drawings.

The contractor shall construct the storm drainage system as shown with catch basins to which downspouts shall terminate and discharge.

Use Orange PVC Pipes (S600) for all sanitary waste vent pipes including fittings, accessories with sizes as shown on the plumbing/ sanitary plans.

The Schedule of Plumbing fixtures and accessories are as follows.

The water closet for all toilets shall be white complete with steel braided flexible hose and d1/2 angle valve, including standard tank fittings.

Provide Paper and Soap holders color white for all toilets.

Kitchen sink shall be stainless steel single bowl, Double Drain Complete with kitchen faucet, Basket strainer, p-trap, Tailpiece, angle valves & flexible hose supply pipes. Use approved equivalent fixtures and accessories for all the above Plumbing Works.

In the absence of a sanitary sewer system of sewage disposal in the locality, a standard septic vault shall be constructed as shown in the drawings.

18. STORM DRAINAGE & SEWERAGE SYSTEM

This item is the complete installation of the storm drainage system inclusive of all pipings, gutters, canals, catch basin, junction boxes, handholes, manholes, and other appurtenant structures, as well as the sewerage system inclusive of all sanitary sewer pipings and septic vault from the building to the point of discharge. Install all pipes, sewer connections, and cleanout.

All 75mm (S600) downspout from the roof gutters shall convey to 150mm PVC (S600) and will end up to the concrete catch basin to the line canal together with Orange PVC Pipes (S600) drainage pipes leading to the street gutter fronting the building.

19. PAINTING

The contractor shall furnish all labor, tools, and materials necessary for the painting of all woodworks, concrete and masonry works, metal works, varnishing works, and all other painting work specified by the PolWD Engineer with the concurrence of the End User/Owner.

All painting materials shall be delivered on-site intact in the original drums or tins and shall be mixed and applied strictly in accordance with the manufacturer's instructions and to the approval of the Project Engineer. All latex and enamel paints shall be applied by brush and roller.
All exterior and interior wood surfaces shall be painted with three (3) coats of oil paint including a primer of either flat or semi-gloss paints.

All masonry walls shall be painted with three (3) coats of latex paint.

The Engineer shall refer the color scheme for approval to the Owner.
All Metal structure such as Trusses and steel doors for fire exit shall be painted with Two (2) coats epoxy paint primer.

39. **19.1 PREPARATION AND PRIMING SURFACES**

All paint and painting materials shall be delivered to the building with a sealed container. Storage of paints should be properly observed.

Concrete surfaces shall be smooth and free from defects and shall be allowed to dry out thoroughly. Surfaces shall be thoroughly brushed down and left free from dirt and dust. The Contractor shall perform all painting and finishing works as shown in the schedule of painting and finishing works for this project.

Metalwork generally shall be thoroughly wire brushed to remove all scale, rust, and sandpapering shall be done before any painting is done. Where severe rust exists, the special anti-rust primer must be used. Before the painting is done, all surfaces shall be cleaned, smoothed, and free from dust, dirt, grease, mortar, rust, and other foreign substances.

40. **19.2 COLOURS AND PRIMING**

The priming undercoats and finishing coats shall each be of differing tints. Sample cards and samples prepared of all paints shall be submitted to and approved by the Engineer before laying on and such samples, when approved, shall become the standard for work.

Each coat of paint shall be properly dried and shall be well rubbed down with fine glasspaper before the next coat is applied. The paintwork shall be finished smooth and free from brush marks.

No painting activity shall be done on outside work in extremely cold, frosty, or damp weather. This activity should be performed when the temperature is above 10 degrees Celsius. Appropriate platform, scaffolds, and supports are required while working on elevated.

Upon completion of the painting works, the painting contractor shall remove all paint spots from all finished works together with the equipment before leaving the premise

and shall present the work to the Architect/Engineer in-charge of construction free from blemishes.

20. DELIVERABLES

Fire safety provisions shall be provided to the one (1) unit a 75mm GI Dry Type Hydrant with two (2) hydrants outlet.
Smoke detectors shall also be provided as indicated on plans and connected to the existing smoke detector system of PolWD.

21. CODES, PERMITS, CERTIFICATE OF FINAL INSPECTION AND APPROVAL

The installation specified herein shall comply with all laws and regulations applying to the electrical installation in the effect of the latest approved edition of the local utility company concerned. The Owner - PolWD shall obtain at his own expense all permits required by the government approving authorities.

Likewise, Construction and safety program shall be registered with DOLE at the constructor's expense including occupancy permit shall be secured after the construction of the building has been completed or before occupying the building for its approved use. The contractor or his duly authorized representative shall secure all necessary permits and pay the corresponding fee of the same to the office of the Building Official of the locality.

A Three (3) copy of the as-built drawings for structural/architectural, plumbing, and electrical plan shall be furnished signed and sealed by the in charge of the construction including the soft copy in AutoCAD File.

NOTE: All additional activities which are not indicated or specified on the plan but related to the Scope of Works to complete the projects shall be done by the Contractor without any additional cost to PolWD.
Smoke detectors shall also be provided as indicated on plans and connected to the existing smoke detector system of PolWD.

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NOTE: All additional activities which are not indicated or specified on the plan but related to the Scope of Works to complete the projects shall be done by the Contractor without any additional cost to PolWD.

TECHNICAL SPECIFICATIONS FOR POLWD STOREROOM AND PIPEROOM

1.0 GENERAL

The works shall be carried out according to the Technical Specifications and shall govern the methods of construction and the kind of materials to be used for the proposed building as shown in the plans and detailed drawings.

The plans, detailed drawings, and technical specifications shall be considered as completing each other, so that what is mentioned or shown in one, although not mentioned or shown in the other, shall be considered as appearing on both. In case of conflict between the two, the same shall be referred to the Polomolok Water District-General Manager for resolution.

All works shall be carried simultaneously with electrical, plumbing, sanitary, and other services. Materials not conforming to Specifications shall be rejected.

1.1 PLANS AND SPECIFICATIONS

The plans and specifications shall be considered as binding and all times of work mentioned in one but not mentioned or indicated in the other or vice-versa, shall be considered as if these are duly mentioned in both.

Where no numerical indications appear on the plans, all drawings shall be carefully followed according to the scale indicated; such numerical notation shall be followed.

No changes in the drawings, specifications shall be made by the Owner, Contractor, or workmen without prior approval of the Architect/Engineer.

41. 1.2 GENERAL CONDITIONS

The Contractor shall verify the existing condition of the structural and lot boundaries. The total demolition of the existing structure (if any) within the proposed project site is required.

42. 1.3 CONTRACTOR'S OFFICE & ACCOMMODATION

A Temporary Facility is required and shall be adequate, rainproof, spacious, airy, and hygienic with proper lighting and toilet facilities. The area shall be kept neat and clean. Any garbage or sewage shall be disposed at a location and in a manner approved by the Engineer.

Space allocated for storage of various materials such as cement, reinforcement steel, and petroleum products, etc, shall be separated to avoid contamination. Petroleum products shall be stored and handled in a way that avoids contamination of

groundwater. Workshops shall be installed with oil and grease traps for the same purpose.

The Contractor shall provide, at his own expense, adequate temporary accommodation and toilet facilities for his Workmen and keep the same in good conditions. Proper methods of sanitation and hygiene should be employed during the whole project duration. The above-mentioned temporary structures shall be removed on the completion of the Works at Contractor's own cost. All materials shall belong to the Contractor.

The Contractor shall make his arrangement for the supply of electric power and lighting as required for construction purposes.

43. **1.4 SAFETY MEASURES**

The Contractor shall be responsible for the safety of all workmen and other persons entering the Works and shall at his own expense take all measures, subject to the Engineer's approval, necessary to ensure their safety. Such measures shall include but not limited to:

- Appropriate personal protective equipment (helmet, dust mask, safety shoes, and hand gloves) must be provided and worn by Workmen;
- First Aid Cabinet must be fully equipped and readily available for the treatment of sickness and injuries;
- Provide safety and emergency regulations for fire and electric shock prevention; Safe control of flowing water; and
- Must be compliant with the set standards and regulations by the concerned government agency for Covid 19
- Conduct regular safety meetings.

44. **1.5 NOTICE BOARD**

The Contractor shall erect notice board (4'x8') at the site giving details of the Contract in the format provided by COA. It shall be removed upon receipt of Certificate of Completion.

45. **1.6 ENVIRONMENTAL PROTECTION WORKS**

The environment means the surrounding area including human and natural resources to be affected by execution and after completion of works. The Contractor shall take all precautions for safeguarding the environment during the construction of the works. He shall abide by all prevalent laws, rules, and regulations governing pollution and environmental protection. The Contractor shall prohibit employees from cutting of trees and the former shall be responsible for the action of the latter.

Waste materials must be collected, stored, and transported to an approved dump/disposal area.

The PolWD Engineer shall have the power to disallow the method of construction and/or the use of any burrow/quarry area if the stability and safety of the works or any adjacent structure are endangered, or there is undue interference with the natural or artificial drainage, or the method of use of the area will promote undue erosion.

2. SITE DIARY OR MANUAL FIELD BOOK

The Contractor shall keep Site Diary or Manual Field Book wherein full details of the work carried out during each day shall be fully recorded. The Site Diary or Manual Field Book shall be available for inspection by the Engineer any time during normal office hours. It shall include:

- Project Name;
- Date
- Contractor's Name;
- Contractor's Representative;
- Weather Conditions, rainfall and river water level (indicate "NO WORK", if unworkable days);
- Description, quantity, and location of work performed;
- Shift and working hours;
- Worker's attendance
- Equipments used
- Number and category of workers working at site;
- Test carried out and results;
- Inspection carried out by the Engineer;
- Problems or abnormal occurrence;
- Defective/Non-Compliant Work & Corrective Action;
- Site Instructions;
- Visitors; and
- Accident (if any)

3. SITE PREPARATION WORKS

Clearing and grubbing and cutting of trees shall include handling, salvaging, piling, and disposing of the cleared materials with all leads and lifts. Trees shall be cut in sections from the top downwards. All timber shall not be used by the Contractor for any purpose and shall remain the property of the PolWD.

Clearing shall consist of the cutting, removing, and disposal of all trees, bushes, shrubs, grass, weeds, other vegetation, anthills, rubbish, fences, top organic soil and rocks, and boulders exposed or lying on the surface.

The construction site shall be leveled according to the plans and cleared of rubbish, roots, and other perishable and objectionable matters to a suitable subgrade. All such unsuitable materials shall be removed from the construction site and spread uniformly over the areas adjacent to the proposed building, or otherwise disposed of as may be directed by the PolWD Engineer in-charge of the construction.

Materials obtained from clearing and grubbing shall be disposed of in borrow pits or other suitable places and be covered up with soil or gravel as directed by the PolWD Engineer. The burning of combustible materials shall not be permitted.

4. STAKING OUT THE BUILDING LINES

The building lines shall be staked out on the lines and grades shown in the drawings established before any excavation is started. Batter boards and reference marks shall be erected at such a place where they will not be disturbed during the excavation of the building.

During the period of the commencement of works, the Contractor shall survey the construction area and confirm the levels. He shall immediately notify the PolWD Engineer of any discrepancies and shall agree with the Engineer any amended values on the plan. All stations and reference points shall be marked and protected to the satisfaction of the PolWD Engineer. All working benchmarks shall be near major/medium structure sites. Accurate establishment of the centerlines based on the Drawing is required. The existing profile and cross-section shall be jointly taken with the Engineer.

5. EXCAVATION

Foundation trench shall be dug to the exact width and depth and levels as indicated in the drawings. Sides of the trenches shall be vertical. In case soil does not permit vertical sides, the Contractor shall protect the sides with timber shoring. Excavated earth shall not be placed within 1.5 meters of the edge of the trench. The Project Engineer may direct the Contractor to place excavated earth at a particular site up to 30 meters away from the proposed building. After completion of the foundation masonry, the remaining portion of the trench not filled by masonry shall be filled up with earth in layers of 115 cm, watered, and well-rammed.

No excavation or foundation work shall be filled in or covered up before the inspection and approval of the Project Engineer.

6. BACKFILLS

The work shall consist of filling for construction of embankment for plinth of building and include furnishing, placing, compacting and shaping suitable materials obtained from approved sources in accordance to lines, levels, grades, dimensions shown on the drawings. The preparation of the surface is by layer. Each layer shall not exceed 300 mm in thickness before compaction. Each layer of material shall then be watered and compacted to 95% dry density at optimum moisture content.

7. TERMITE CONTROL

Termite control is a method to prolong and protect structures from termite infestation. Soil poisoning is the process wherein the soil is treated with chemical solutions to control and prevent the entry of termite into the structure. After excavation, soil treatment must be done. The bottom surface and the sides of the excavation made from masonry foundation and basements shall be treated with termite concentrate at a rate of 5 L/sq.m. a surface area or as specified by the product data.

8. MASONRY WORKS

Masonry works is a form of construction work equipped with stone, bricks, concrete, hollow clay tile, concrete block or tile, or other similar building units or material or a combination of these materials laid up the unit and set in mortar. Concrete hollow blocks are classified as load-bearing and non-load bearing blocks. Installation of Concrete Hollow Blocks is done either block laying after the concreting of tied columns or concreting of columns after block laying of walls.

46. 8.1 CONCRETE HOLLOW BLOCK WALLS

All exterior concrete hollow blocks to be used for first floor walls shall be at least 150 mm thick, while concrete hollow blocks for interior walls unless otherwise indicated, shall be 100 mm thick. For interior CHB walls were plumbing pipes and fittings shall be located, the thickness shall be at least 150 mm. Concrete Hollow Blocks as indicated on the drawings shall conform to ASTM C- 129 (non- load bearing). The nominal thickness of the blocks shall be 4” and 6” as required.

47. All CHB Walls have a minimum compressive strength of 450PSI and shall be reinforced as presented in Table 1.

48. The minimum lap length of splice shall be 250mm.

49. Provide right-angled reinforcement at corners, 900mm long.

50. Where CHB walls adjoin columns, RC beams, and RC walls. Dowel with the same size as the vertical or horizontal reinforcements shall be provided.

TABLE 1. SCHEDULE OF CHB REQUIREMENTS

BLOCK THICKNESS	HORIZONTAL REINFORCEMENTS	VERTICAL REINFORCEMENTS
100mm	10mmø @ 400mm O.C	10mmø @ 400mm O.C
150mm	10mmø @ 400mm O.C	10mmø @ 400mm O.C

Concrete Hollow Blocks shall be wet thoroughly with water before laying. Blocks shall be laid in running bond with the vertical faces truly vertical and with clean-cut joints.

51. 8.2 CEMENT MORTAR

The concrete hollow block walls shall be filled with cement mortar consisting of 1 part Portland cement and 3 parts sand by the volume. They shall be reinforced with round

deformed bars, a 10 mm diameter spaced not more than 600mm on both vertical and horizontal bars.

Cement and sand are mixed in a specified proportion. The mixing shall be done in a mechanical mixer unless hand mixing is permitted by the PolWD Engineer. If hand mixing is allowed, the operation shall be carried out on a clear watertight platform. In the required proportion, cement and sand shall be first mixed dry to obtain a uniform color. Then the required quantity of water shall be added and the mortar shall be mixed to produce workable consistency. The mortar shall be mixed for at least three minutes after the addition of water in the case of mechanical mixing. In the case of hand mixing, the mortar shall be hoed back and forth for about 10 minutes after the addition of water to obtain a uniform consistency.

Any mortar that has become unworkable due to loss of water before elapsing the initial setting time of cement shall be rewet to make it workable and shall be used in the works. On no account, mortar shall be used after elapsing the initial setting of cement.

9. CONCRETE WORKS

52. 9.1 PROPORTIONING OF CONCRETE

All concrete works shall be done in accordance with the standard specifications for plain and reinforced concrete. Cement to be used shall be Portland cement, or other equivalent brands more readily available on the locality. Alternative cement so selected must meet the requirement of Portland and Pozzolan types of cement, and approved by the PolWD Engineer in-charge of the construction.

The following proportion of concrete mixtures shall be used for the various parts of the building:

Columns, footing and Hanging slab	-	Class A	(1:2:4) / Premix (3000 psi)
Concrete, Hollow block footings	-	Class B	(1:2.5:5)
Reinf. Conc. Beams and slabs	-	Class A	(1:2:4)
Concrete slabs floor on fill	-	Class B	(1:2.5:5)
Septic vault cover	-	Class A	(1:2:4)

Cement and aggregates shall be stored in such a manner as to prevent their deterioration or the intrusion of foreign matter. Cement shall be stored immediately upon arrival on the site of the work, insubstantial, waterproof bodegas. The floor must be sufficiently elevated to deter dampness. Aggregates shall be stored separately from other foreign materials.

Water to be used for mixing the concrete shall be clean and free from injuries, amount of oil acids, alkaline, salt, and other organic materials. Mixers, which have been out of

use for more than 30 minutes, shall be thoroughly cleaned before fresh concrete is mixed. Mixers shall be cleaned out before changing to another type of cement.

53. **9.2 MIXING AND PLACING CONCRETE**

All concrete shall be mixed thoroughly and should be deposited as nearly as practicable. Make sure that the concrete is of the required workability at the point and time of placing. The mixing time of concrete is not less than 60 seconds for 1.5 cu.m. mixer capacity and not less than 90 seconds for more than 1.5 cu.m. mixer capacity. Interval of placing the concrete shall not be so long allowing the concrete in place to harden partially. The time elapsing between mixing, transporting, placing, and compaction altogether of a batch of concrete shall not be longer than the initial setting time of the concrete. Waterproofing compounds shall be added to the concrete mix in areas of the structure where it will be with the weather for this project (Phase 1). Retempering of concrete will not be permitted.

- Unless otherwise indicated in plans or noted in the structural specification, the minimum 28 days compressive cylinder strength shall be as follows:

    1. Suspended slabs, beams, and girders – 21MPA (3000PSI)
    2. Columns and pedestal – 21MPA (3000PSI)
    3. Retaining walls – 21MPA (3000PSI)
    4. Footing Tie beams – 21MPA (3000PSI)
    5. Parapet walls and Gutter – 21MPA (3000PSI)
    6. Other Structural Elements – 21MPA (3000PSI)
    7. Slab on grade, Curtain walls – 17MPA (3000PSI)
    8. Bedded slab, Sidewalks - 17MPA (3000PSI)
    9. Non- Structural Elements - 17MPA (3000PSI)

- Concrete shall be deposited in its final position without segregation, rehandling, or flowing. Placing shall be done properly with buggies, bucket, or wheel – borrows, no chutes shall exceed six (6) meter aggregate length.
- No depositing of concrete shall be allowed without the use of vibrators unless authorized by the Architect/Engineer in charge of the project.

54. **9.3 PLACING PROCEDURES**

The concrete shall be deposited as nearly as possible in its final position. It shall be placed to avoid segregation of the concrete and displacement of the reinforcement,

other embedded items, or formworks. When placing on a nearly horizontal surface, placing shall start at the lower end of the surface to avoid decompaction of concrete.

For the pouring of concrete for columns, the Contractor shall use drop chute with a maximum drop height of 1.50 meters or less. For the pouring of concrete for the slab, the Contractor shall execute the placing direction with a backward movement. Concrete slab on fill with 100 mm thick shall be poured on the gravel bed and shall be placed with the 10mm diameter Reinforcement Steel Bar (RSB) spaced at 400mm both ways.

Layers shall not be placed so that they form featheredge, nor shall they be placed on a previous layer, which has taken its initial set. To comply with this requirement, another layer may be started before the initial set of the preceding layer.

Concrete shall not be placed during rain, which is sufficiently heavy or prolonged to wash mortar from coarse aggregate on the exposed faces of fresh concrete. Means shall be provided to remove any water accumulating on the surface of the placed concrete. Concrete shall not be deposited into such accumulations of water.

In dry weather, covers shall be provided for all fresh concrete surfaces, which are not being worked on. Water shall not be added to concrete for any reason.

In MIS Server Room, polythelene Sheets shall be placed on top of the gravel bedding before the placing of concrete for slab in fill.

55. **9.4 INTERRUPTIONS TO PLACING**

If the concrete placing is interrupted for any reason and the duration of the interruption cannot be forecast or is likely to be prolonged, the Contractor shall immediately take the necessary action to form a construction joint to eliminate as far as possible featheredge and sloping top surfaces and shall thoroughly compact the concrete. All work on the concrete shall be completed before elapse of initial setting time and it shall not thereafter be disturbed until it is hard enough to resist damage.

Before concreting is resumed after such an interruption, the Contractor shall cut out and remedy all damaged or un-compacted concrete featheredge or any undesirable features and shall leave a clean sound surface against which the fresh concrete may be placed.

56. **9.5 DIMENSIONS OF POUR**

Pours shall not be more than two meters high and shall as far as possible have a uniform thickness over the plan area of the pour. The Contractor shall plan the dimensions and sequence of pours in such a way that cracking of the concrete does not take place due to thermal or shrinkage stresses.

57. **9.6 COMPACTION OF CONCRETE**

Concrete shall be fully compacted throughout the full extent of the placed layer. It shall be thoroughly worked against the formwork and around any reinforcement and other embedded items, without displacing them. Care shall be taken at arises or other confined spaces. Successive layers of the same pour shall be thoroughly worked together.

Concrete shall be compacted with the assistance of mechanical immersion vibrators. Immersion and surface vibrators shall operate at a frequency of between 70 to 200 hertz. The Contractor shall ensure that vibrators are operated at pressures and voltages not less than those recommended by the manufacturer so that the compaction effort is not reduced.

Vibrators shall be continued at each point until the concrete ceases to contract, air bubbles have ceased to appear, and a thin layer of mortar has appeared on the surface. Vibrators shall not be used to move concrete laterally and shall be withdrawn slowly to prevent the formation of voids.

The vibrator shall be inserted vertically into the concrete to penetrate the layer underneath at regular spacing, which shall not exceed the distance from the vibrator over which vibration is visibly effective and some extent of vibration is overlapped.

Vibration shall not be applied by way of reinforcement nor shall the vibrators be allowed to touch reinforcement, sheathing ducts, or other embedded items.

The intensity of vibration shall be such as to visibly affect a mass of concrete with a 3 cm slump over a radius of at least 50 cm. Regular slump tests should be carried out to control the addition of water and to maintain the required consistency.

58. **9.7 CURING OF CONCRETE**

Concrete shall be protected during the first stage of hardening from loss of moisture and from the development of temperature differentials within the concrete sufficient to cause cracking. The methods used for curing shall not cause damage of any kind to the concrete.

Curing shall be continued for as long as it may be necessary to achieve the above objectives but not less than 14 days until the concrete is covered by successive construction whichever is the shortest period. The curing process shall commence as soon as the concrete is hard enough to resist damage from the process.

Exposed concrete surfaces shall be closely covered with impermeable sheeting, properly secured to prevent its removal by wind, and the development of air spaces beneath it. If it is not possible to use impermeable sheeting, the Contractor shall keep the exposed surfaces continuously wet using water spray or by covering with a water-absorbent material, which shall be kept wet.

The contractor shall provide a suitable form of shading to prevent the direct rays of the sun reaching the concrete surfaces for at least the first four days of the curing period.

59. **9.8 CONSTRUCTION JOINTS**

Whenever concrete is to be bonded to other concrete which has hardened, the surface of contact between the sections shall be deemed a construction joint. It shall be thoroughly cleaned of foreign matter and laitance.

Construction joints shall be arranged as to reduce to a minimum the effects of shrinkage in the concrete after placing and shall be placed in the most advantageous positions concerning stresses in the structures and the desirability of staggering joints.

Featheredge of concrete at joints shall be avoided. Any featheredge of concrete, which may have formed where reinforcing bars project through a joint shall be cut back until sound concrete has been reached.

The surface of the concrete shall be thoroughly brushed with a thin layer of mortar composed of one part of cement and two parts of sand by weight immediately before the deposition of fresh concrete. The mortar shall be kept just ahead of the fresh concrete being placed and the fresh layer of concrete shall be thoroughly and systematically vibrated to full depth to ensure complete bond with the adjacent layer. No mortar or concrete shall be placed until the joint has been inspected and approved by the Engineer.

10.0 STEEL REINFORCING BARS

Grade 40 Steel shall be used for 16mm, 12mm, and 10mm DRSB, Steel is considered as an excellent partner of concrete in resisting tension and compression. The design of reinforced concrete assumes that concrete and steel acts together in carrying the load in the state of simultaneous deformation.

The Contractor shall furnish all information as manufacturer’s certificate, invoice and other related details of all reinforcing steel bars to be used and shall be of round deformed bars with lugs or projection on their sides. The reinforcements shall have no crack, scale or rust or foreign particles that will destroy or reduce the bond.

All reinforcing steel bars shall be accurately bent and formed to the dimension indicated in the Drawings. The binding wire used to bind reinforcements shall be annealed galvanized binding wire of Gauge #16.

Reinforcement shall not be welded except where required by the contract or agreed by the PolWD Engineer.

60. **10.1 STORAGE OF REINFORCEMENT**

All reinforcement shall be delivered to the site either in straight lengths or cut and bent. No reinforcement shall be accepted in long lengths, which have been transported bent over double.

Any reinforcement, which is likely to remain in storage for a long period, shall be protected from the weather to avoid corrosion and pitting. All reinforcement which has become corroded or pitted to an extent which, in the opinion of the Engineer, will affect its properties, shall either be removed from the site or maybe tested for compliance at the Contractor's expense.

Reinforcement shall be stored at least 150 mm above the ground on a clean area free of mud and dirt and sorted according to a category, quality, and diameter.

61. **10.2 BENDING REINFORCEMENT**

Unless otherwise shown on the Drawing, bending, and cutting shall comply with ASTM Standards.

The Contractor shall satisfy himself as to the accuracy of any bar bending schedules supplied and shall be responsible for cutting, bending, and fixing reinforcement per the Drawing. Bars shall be bent mechanically using appropriate bar benders. Bars shall be bent cold by the application of slow steady pressure. At temperatures below 5 degrees Celsius the rate of bending shall be reduced if necessary to prevent fracture in the steel.

The minimum bending of bars for 10mm to 25 mm is bend plus 5 times the bar diameter, for 180 degrees bend and bend plus 6 times the bar diameter, and for 90 degrees bend extended up to 12 times bar diameter. For stirrups and tie hooks, the minimum bending of bars is bend plus 10 times the bar diameter.

Bending reinforcement inside the forms shall not be permitted except for mild steel bars of diameter less or equal to 12 mm, when it is necessary. After bending, bars shall be securely tied together in bundles or groups.

The Contractor shall ensure that reinforcement left exposed in the works shall not suffer distortion, displacement, or other damage. When it is necessary to bend protruding reinforcement aside temporarily, the radius of the bend shall not be less than four times the bar diameter for mild steel bars or six times the bar diameter for high yield bars. Such bends shall be carefully straightened without leaving residual kinks or damaging the concrete around them before concrete placing.

62. **10.3 BAR SPLICING**

No splices shall be made in the reinforcement except where shown on the Drawing or agreed by the Engineer. For suspended slab and continuous beams, bottom bar

splices shall be located at supports while top bar splices shall be located at mid-span. For cantilever beams, bottom bar splices shall be located at support while top bar splices away from support. Splices for columns shall be located within middle thirds but preferably not to terminate all reinforcing bars for splicing at the same location.

Lap splice shall be 40 times the bar diameter but not less than 600 mm in length.

63. **10.4 BAR SPACING**

Bar spacing shall not be less than the normal diameter of bars or 40mm for the column, or as specified in the structural design notes.

64. **10.5 FIXING REINFORCEMENT**

The minimum concrete cover to protect all reinforcements for each different structure is as follows:

4. Footing, footing tie beams – 75 mm
5. Beams and columns (to stirrups & ties) – 40 mm
6. Suspended slab -- 20 mm

Spacer blocks shall be used for ensuring that the correct cover is maintained on the reinforcement. Blocks shall be as small as practicable and of a shape agreed by the Engineer. They shall be made of mortar mixed in the proportions of one part of cement to two parts of sand by weight. Wires cast into the block for tying into the reinforcement shall have not less than 50mm or any long enough to attached and fix spacer block on the reinforcing bars and shall be soft annealed iron.

All reinforcement shall be checked of shape, size, diameter, and number where necessary. Reinforcement shall be rigidly fixed so that it remains intact during the placing of concrete. Any fixers made to the formwork shall not remain within the space to be occupied by the concrete being placed.

65. **11.0 FORMS FOR CONCRETE WORKS**

Formworks shall include all temporary or permanent forms required for forming the concrete together with all temporary construction for their support. It shall be as specified in the plan.

66. **11.1 CONSTRUCTION OF FORMWORKS**

All forms for concrete works shall be properly braced or tied together to have sufficient strength, rigidity, shape, and surface smoothness. Concrete forms shall be mortar-tight or sufficiently tight to prevent seepage of water.

All joints in formwork shall be water-tight. Where reinforcement projects through formworks, the form shall fit closely around the bars. Formwork shall be so designed that it may be easily removed from the work without damage to the faces of the concrete.

Form fasteners consisting of form bolts, clamps, or other devices shall be used as necessary to prevent wrecking the forms during concrete placement. The use of ties consisting of twisted wire loops to hold forms in position will not be permitted.

Formworks shall not be reused after it has suffered damage, which is sufficient to impair the finished surfaces of the concrete.

67. **11.2 PREPARATION OF FORMWORKS**

Before each concrete operation commences, formworks shall be cleaned of all rubbish and other foreign particles. The Contractor shall not use an emulsion of oil suspended in water nor any release agent, which causes staining or discoloration of the concrete or affect the strength of the concrete.

In cases, where it is necessary to fix reinforcement before placing formwork, all surface preparation of formworks shall be carried out before it is placed into position.

Special care shall be taken to maintain the stability of the form works and the tightness of the joints, particularly during concrete vibrating operations. The Contractor shall maintain a watch on the formworks during placement to ensure that no movement occurs. If any movement noticed, the formwork shall be set right immediately.

68. **11.3 REMOVAL OF FORMWORKS**

Formworks shall be carefully removed without shock or disturbance to the concrete. No formworks shall be removed until the concrete has attained sufficient strength to support its weight and any loads that may be placed on it. Side forms of beams and girder may be removed earlier than the bottom forms but the additional posts or shoring must be placed under the beam or girder until it attains sufficient strength.

The minimum periods, which shall elapse between completion of placing concrete and removal of forms, are given below:

	Minimum Time	**Minimum % Design Strength**
Beams	14 days	80%
Slab	14 days	70%
Walls	1 day	70%
Columns	2 days	70%
Sides of beams	1 day	70%

12. ROOFING WORKS

69. **12.1 ROOF FRAMING WORKS**

Steel frames are attached through a rivet, a bolt, or by welding. Before assembling, a sample of all the steel members shall be tested if they conform to the desired strength specified in the plans and specifications.

When punching and drilling steel, make sure that the hole drilled or punched is 1.5 to 3 mm greater than the diameter of the bolt to make it easy in inserting the bolts through it.

Verify if the welding work needs a partial or complete penetration. The metal surface is set following the shape needed in welding. Be sure that the metals are in their proper position before welding.

When the work is completed, inspect if it is welded following the penetration length and thickness needed in the construction.

Purlins are then placed equidistantly as specified in the plans. Purlins should have an angled strap and a sag rod to prevent lateral buckling. It should be placed properly to fit the length o the roofing sheets. The top of the purlins should be at the same plane.

If all works are done per plans and specifications, paint all metals with metallic paint for rust protection.

In the actual fabrication of steel trusses, members meeting at points shall have their gravity and intersect as nearly as practicable at a common point. The Contractor shall provide temporary erection bracings and shoring and make actual measurements in the field before the fabrication/installation of all trusses.

The Contractor shall submit detailed shop drawings before fabrication of trusses for the approval of the Engineer.

70. **12.2 ROOFING WORKS**

The Roofing Sheets shall be pre-painted long span Gauge #26. It shall be free from rust and the zinc covering the time of fixing shall be in perfect condition. Provide 10mm thick PE foam installation with (1) side aluminum foil for thermal control.

All roofing sheets adjacent to the concrete hollow block and other masonry walls such as property line for walls shall be provided with Gauge #26 Plain GI flashing to extend up to the top and over to the other side of the wall. All rivets shall be placed at the top of the corrugation of the roofing sheets.

The installation of roofing sheets with end laps shall start at the lower part of the roof. Each sheet shall be laid on steel purlins with an end overlap of 150mm minimum or as per drawing and side overlaps of 2 ½ corrugations. Succeeding upper rows of sheets shall be installed in the same manner until the entire roof area is covered. Screw holes

shall be drilled using a 5mm (13/64”) diameter bit. Sheets should be handled carefully to prevent damage.

Ridge and hips shall be bolted with at least 250mm lap placed over the roofing sheets on either side to prevent the rain driving under it and together shall be riveted at every second corrugation.

Holes in sheets shall be made on the ground, the sheets shall be placed on trestles and holes punched in the ridge of corrugations from below upward. Unnecessary holes made on the roof shall be rejected.

Valley shall be bolted with at least 450 mm each way under the roofing sheets and shall be secured to the framework with galvanized nails. The nails are placed below the roofing sheet. Rivets alongside of the valley shall be fastened at every second corrugation.

Flashing of Gauge #26 Plain GI Sheets shall be installed along intersections of roofs and concrete or masonry walls. Flashing running parallel to sheet corrugations must have its edge turned down. Flashing across sheet corrugations or at an angle thereto shall lap at least 250 mm and the edge of flashing turned down at each corrugation.

Concrete gutter shall be constructed to the shape and dimensions as indicated in the plans. As for safety precaution, an overflow pipe shall be installed in the concrete gutter. The gutter shall be installed with a pitch of 1 in 100 sloped toward the downspout.

13. FLOORING WORKS

71. 13.1 WATERPROOFING WORKS

Waterproofing is the process of making a structure water-resistant so that it remains relatively unaffected by water or resisting the ingress of water under specified conditions. The purpose of the application of waterproofing is to prevent the water to percolate or penetrate any underground concrete members. When the water penetrates the concrete, the steel reinforcement that embedded in the concrete would corrode due to the chemical reaction caused by water and the structure would eventually fail.

Torch membrane waterproofing of all toilets must be applied following the procedures below:

- Any undulations or protrusions on the surface shall be removed to obtain a smooth surface. The surface must be thoroughly cleaned and free from dust, dirt loose materials, oil, or grease.

- A 50x50mm size fillet made of cement-sand (1:3) mix must be placed along with corners of walls and any other junctions.

- For horizontal waterproofing membrane application. Two layers of 4mm thick modified bituminous membrane shall be laid fully torched on blinding concrete with a minimum of 100m end laps and 150mm side laps.

- The blinding surface shall be primed with the primer recommended by the manufacturer of the membrane before placing the membrane. Before succeeding works the applied primer shall be inspected by the Engineer 24 hours after the placement.

- Waterproofing membrane installation shall be performed using cylinder fed propane gas torch, trowel to seal the seams of the membrane and knife for cutting.

- The membrane is then placed in the correct torching on position then re-rolled for about half of its length without changing its orientation.

- The membrane is then un-rolled again and torched on pressing the melted area against the substrate.

- Repeat till the entire length of the membrane is bonded firmly onto the surface then the second membrane is laid in the same way with an overlap of 150mm at the end and 100mm at the side.

- An extra length of a minimum 300mm of the horizontal membrane shall be left to carry up the vertical surface to maintain continuity of the membrane and be protected as above.

72. **13.2 SURFACE PREPARATION**

The surface where the tile is laid must be leveled, true to elevation, dry and free from dirt, oil, and other sediments. Allow at least 7 days curing of the scratch coat and setting bed.

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

Evenly rate the scratch coat to provide good mechanical keys before the mortar mix has fully hardened.

13.3 INSTALLATION PROCEDURE

All offices, common areas, and stairs shall be finished with 24” x 24” Granite tiles for office rooms, hallways, and stairways/landings. Stair/step shall be finished with a PVC Stair nosing or its equivalent. All tiles for the wall of toilets shall be 8" x 8" unglazed synthetic granite tiles with 1.5m height or as approved by the PolWD Engineer and toilet flooring shall be 8” x 8” unglazed synthetic granite tiles. (Submit a sample of the tiles to the PolWD engineer in-charge.)

Before the tile is applied, the floor surface shall be brushed cleaned, and wetted. The surface shall be tested for levelness or conformity of slope by flooding it with water. Ceramic or glazed tiles shall be soaked, completely immersed in clean water before installation for a maximum duration of 1 hour.

Tiles shall be installed by applying mortar and adhesive to backs of tile and firmly pressing tile into the floating coat to true plane and position. Mortar to be used in setting the tiles and moldings shall be mixed of 1 part adhesive and 2 parts sand.

Determine and mark the layout of tiles, joint location, and position of trims and fixtures to minimize the incidence of a tile being cut less than one half of its size. Spread the adhesive evenly, then using notched edge make a raking motion. Do not twist tile, simply press the tile down firmly yet softly. Set tile spacer and then continue with additional tiles. Use your level to determine the degree of level of the tiles as you go along.

Joints shall be maintained uniformly wide by aligning spacer lugs on tile edges. All lines shall be kept straight and true to profiles, plumbed and internal corners rounded using the appropriate trims. Pitch the floor to drain as shown in the plans.

All tile work finishing shall be adequately protected from damage during the progress of construction. Chipped, cracked, or broken tile shall not be used and all defective work shall be replaced and repaired to the satisfaction of the Engineer at the Contractor's expense.

73. 13.4 GROUTING AND POINTING

Tiles shall be dampened and joints grouted full with a plastic mix of neat cement by trowel, brush or finger application. The tiles shall have been laid in place for at least 24 hours before the grouting of the joints is started. During grouting, all excess grout shall be cleaned off the tile surface with damp cloth sponges.

14. CARPENTRY & JOINERY WORKS

74. 14.1 STORAGE AND PROTECTION OF MATERIALS

All materials shall be protected from dampness or bad weather conditions during and after delivery at the site. Materials shall be delivered in advance of actual use an inadequate quantity to preclude delay in the work. It shall be piled in an orderly stack at least 150 mm above the ground and at a sheltered place where it will be of least obstruction to the work.

75. 14.2 CEILING WORKS

Before enclosure of ceiling, all dimension, alignment of nailers/metal frames, material specifications, complete installation of sanitary/plumbing and electro-mechanical rough-ins and properly anchored to the carrying metal channel/wood runner have complied,

PVC Laminated Gypsum Board (12mmx0.610x1.22m) shall be used in the MIS Server Room inside ceiling and Metal Slotted Spandrel (0.2mx1mx0.4mm) for the outside ceiling, and for the Warehouse and Comfort room ceiling boards shall be 3.5mm thick hard flex, free of damages and to be fixed to the framing in a perfect line and level. The joints are sealed with plaster of Paris and non-woven paper tapes without forming any bubble the joints shall be finished flush to make the ceiling in one piece. The finished surface shall be smooth and true to the plane and curved as required. Once laying of the ceiling is completed, the dust and floors are cleaned for the painting works.

14.3 FALSE / RISER FLOOR (MIS SERVER ROOM)

In MIS Server Room, provide a riser floor with a height of atleast 200mm from the concrete slab. Use a 2''x2''x1.5mm Square Tubing for the supports with a spacing of 400mm on both sides. For the floor support, use 2''x3''x1.5mm Square Tubing before the laying of 400mmX400mmX20mm Marine Plywood (Note that we should NOT use nails or screw on the connection of Marine Plywood and 2''x3''x1.5mm Square Tubing so that the user can easily open the floor).

15. DOORS AND WINDOWS

76. 15.1 DOORS AND DOOR FRAMES

Doors and door frames shall conform to the size, designs, and kind of materials in the details of doors, solid panel door, flush door, hollow core, PVC flush door, flush louver door, schedule of doors or as specified the schedule of Doors and windows.

The frames shall be plumb-set and squared in the frame working of walls or building partitions. Locks of doors shall be fitted at the lock block, 1,000 mm above the finished floor level. Locks shall be installed in conformity with the templates and instructions supplied with the locksets.

All toilets shall be installed with PVC Door hinge in a 2”x5” door jamb and door closer.

77. 15.2 WINDOWS

Aluminum casement and awning windows to be used in this project shall conform to the size and designs shown in the detail drawings and schedule of windows.

Windows shall be plumb-set and true in the openings. The joints between the window frames and masonry shall be carefully caulked.

Aluminum fixed glass shall be installed as shown on plans and one-way tinted mirror glass.

78. **15.3 STEEL WORKS**

Provide Steel Hand Railings shall be 2” diameter x 1.2mm thick Stainless Tubes #304 on and stairs. Provide1”x1” square bar vertical railing as specified in the plans.

Provide brass stair nosing on edges of tread and riser.

Provide GI Pipe and steel landing and drop-down ladder for fire exit area.

For Truss -1 Use 3/16” thick x 2” x 2” angle bars for Top and Bottom Chord including web members spaced as shown on plans and details, 1.2mm thick x 2” x 3” CEE purlins shall be used as purlins spaced at 750mm on center.

A 16mm Plain RSB cross bracing for trusses shall be provided with the relevant size of turnbuckles and 10mm plain RSB sag rods spaced as shown on drawings

Provide ¾” Hardiflex x 10” Facia boards (See Details)

Welding works, use 6011 Welding Electrodes and 6013 to finish weld.

16. ELECTRICAL WORKS

The electrical installation shall be done following the approved plans and under the direct supervision and control of a Professional Electrical Engineer and or Registered Electrical Engineer.

All works shall be done following the latest edition of the Philippine Electrical Code (PEC). The rules and regulations of the local enforcing authorities with the enforcement of rules and regulations of the local utility company.

Branch circuit home runs shall not be combined in the same raceway and raceway for auxiliary lines shall not contain power lines.

The electrical wiring installation shall be in Unplasticized Polyvinyl Chloride (UPVC), Electrical Metallic Tubing (EMT) for branch circuit, Rigid Steel Conduit (RSC) or raceway for service entrance and power feeder.

Mounting heights of wiring devices and panelboards shall be as follows:

*Convenient Outlets ……..300mm AFFL

*Light Switches …….1400mm AFFL

*Panel Boards…….1800mm AFFL

*Telephone Outlets…….300mm AFFL

Whenever necessary pull boxes shall be used when applicable for easy pulling of wires and shall be in accordance with code requirements even not indicated in the plan.

All wires to be used shall be copper and thermoplastic heat-insulated type (THHN), unless noted otherwise specified.

All materials to be used shall be brand new and of an approved type for the location and purpose intended.

The minimum size of wire and conduit to be used shall be 3.5 sq.mm THHN and 20mm diameter UPVC/EMT/RSC respectively.

All service entrance equipment such as the panelboard shall be properly grounded per the provision of the Philippine Electrical Code (PEC).

The contractor shall provide all materials, labor, and equipment for the installation of complete electrical systems as shown on the plans.

Service entrance shall be over-head and provided with single phase 220 volts for the entire systems.

Installations shall only follow circuit numbers with remarks “Phase 1” from the Schedule of Loads.

Electrical lightings shall be a LED lamp and downlights/cove lights at Comfort rooms and hallway. (See Plan).

The grounding wires shall be color-coded for easy identification.

17. PLUMBING WORKS

The contractor shall furnish all materials, tools, and labor necessary for the construction including all fixtures to be installed.

All plumbing works for this project shall be done in accordance with the approved plans and under the direct supervision and control of a Licensed Sanitary Engineer or Master Plumber.

The plumbing installation shall conform with the provisions of the National Plumbing Code and the rules and regulations enforced on the locality. Install soil, waste, drain and vent pipes, install water pipes, fittings, and connection.

ROUGHING- IN for pipes fixtures shall be carried along with the building construction. Opening of proper sizes shall be correctly located for all pipes and in case of errors and omission; the contractor shall properly replace any affected work as may be required. Use White PPR PN10 Pipes and Fittings standard for all water lines.

The contractor shall make proper connections from the main of the water utility serving the locality, water supply lines to the meter to the necessary water for the building. From the water meter connection, the contractor shall connect a ¾" dia. Standard PPR Pipe water supply line and shall reduce to the different fixtures as follows.

For water closet/s …… ½" dia.
For lavatory sink …….. ½" dia.
For hose bibb/s …… ½" dia.

Use gate valves with corresponding sizes for all the necessary main and branches.

The construction of the septic wall, with all fittings, included as those shown on the drawings.

The contractor shall construct the storm drainage system as shown with catch basins to which downspouts shall terminate and discharge.

Use Orange PVC Pipes (S600) for all sanitary waste vent pipes including fittings, accessories with sizes as shown on the plumbing/ sanitary plans.

The Schedule of Plumbing fixtures and accessories are as follows.

The water closet for all toilets shall be white complete with steel braided flexible hose and d1/2 angle valve, including standard tank fittings.

Provide Paper and Soap holders color white for all toilets.

Kitchen sink shall be stainless steel single bowl, Double Drain Complete with kitchen faucet, Basket strainer, p-trap, Tailpiece, angle valves & flexible hose supply pipes. Use approved equivalent fixtures and accessories for all the above Plumbing Works.

In the absence of a sanitary sewer system of sewage disposal in the locality, a standard septic vault shall be constructed as shown in the drawings.

18. STORM DRAINAGE & SEWERAGE SYSTEM

This item is the complete installation of the storm drainage system inclusive of all pipings, gutters, canals, catch basin, junction boxes, handholes, manholes, and other appurtenant structures, as well as the sewerage system inclusive of all sanitary sewer pipings and septic vault from the building to the point of discharge. Install all pipes, sewer connections, and cleanout.

All 75mm (S600) downspout from the roof gutters shall convey to 150mm PVC (S600) and will end up to the concrete catch basin to the line canal together with Orange PVC Pipes (S600) drainage pipes leading to the street gutter fronting the building.

19. PAINTING

The contractor shall furnish all labor, tools, and materials necessary for the painting of all woodworks, concrete and masonry works, metal works, varnishing works, and all other painting work specified by the PolWD Engineer with the concurrence of the End User/Owner.
All painting materials shall be delivered on-site intact in the original drums or tins and shall be mixed and applied strictly in accordance with the manufacturer's instructions and to the approval of the Project Engineer. All latex and enamel paints shall be applied by brush and roller.
All exterior and interior wood surfaces shall be painted with three (3) coats of oil paint including a primer of either flat or semi-gloss paints.

All masonry walls shall be painted with three (3) coats of latex paint.

The Engineer shall refer the color scheme for approval to the Owner.
All Metal structure such as Trusses and steel doors for fire exit shall be painted with Two (2) coats epoxy paint primer.

79. **19.1 PREPARATION AND PRIMING SURFACES**

All paint and painting materials shall be delivered to the building with a sealed container. Storage of paints should be properly observed.

Concrete surfaces shall be smooth and free from defects and shall be allowed to dry out thoroughly. Surfaces shall be thoroughly brushed down and left free from dirt and dust. The Contractor shall perform all painting and finishing works as shown in the schedule of painting and finishing works for this project.

Metalwork generally shall be thoroughly wire brushed to remove all scale, rust, and sandpapering shall be done before any painting is done. Where severe rust exists, the special anti-rust primer must be used. Before the painting is done, all surfaces shall be cleaned, smoothed, and free from dust, dirt, grease, mortar, rust, and other foreign substances.

80. **19.2 COLOURS AND PRIMING**

The priming undercoats and finishing coats shall each be of differing tints. Sample cards and samples prepared of all paints shall be submitted to and approved by the Engineer before laying on and such samples, when approved, shall become the standard for work.

Each coat of paint shall be properly dried and shall be well rubbed down with fine glasspaper before the next coat is applied. The paintwork shall be finished smooth and free from brush marks.

No painting activity shall be done on outside work in extremely cold, frosty, or damp weather. This activity should be performed when the temperature is above 10 degrees Celsius. Appropriate platform, scaffolds, and supports are required while working on elevated.

Upon completion of the painting works, the painting contractor shall remove all paint spots from all finished works together with the equipment before leaving the premise and shall present the work to the Architect/Engineer in-charge of construction free from blemishes.

20. DELIVERABLES

Fire safety provisions shall be provided to the one (1) unit a 75mm GI Dry Type Hydrant with two (2) hydrants outlet.
Smoke detectors shall also be provided as indicated on plans and connected to the existing smoke detector system of PolWD.

21. CODES, PERMITS, CERTIFICATE OF FINAL INSPECTION AND APPROVAL

The installation specified herein shall comply with all laws and regulations applying to the electrical installation in the effect of the latest approved edition of the local utility company concerned. The Owner - PolWD shall obtain at his own expense all permits required by the government approving authorities.

Likewise, Construction and safety program shall be registered with DOLE at the constructor's expense including occupancy permit shall be secured after the construction of the building has been completed or before occupying the building for its approved use. The contractor or his duly authorized representative shall secure all necessary permits and pay the corresponding fee of the same to the office of the Building Official of the locality.

A Three (3) copy of the as-built drawings for structural/architectural, plumbing, and electrical plan shall be furnished signed and sealed by the in charge of the construction including the soft copy in AutoCAD File.

NOTE: All additional activities which are not indicated or specified on the plan but related to the Scope of Works to complete the projects shall be done by the Contractor without any additional cost to PolWD.

Section VII. Drawings

Please see the separate file for the actual drawings.

Section VIII. Bill of Quantities

Notes on the Bill of Quantities

Objectives

The objectives of the Bill of Quantities are:

a. to provide sufficient information on the quantities of Works to be performed to enable Bids to be prepared efficiently and accurately; and

b. when a Contract has been entered into, to provide a priced Bill of Quantities for use in the periodic valuation of Works executed.

In order to attain these objectives, Works should be itemized in the Bill of Quantities in sufficient detail to distinguish between the different classes of Works, or between Works of the same nature carried out in different locations or in other circumstances which may give rise to different considerations of cost. Consistent with these requirements, the layout and content of the Bill of Quantities should be as simple and brief as possible.

Daywork Schedule

A Daywork Schedule should be included only if the probability of unforeseen work, outside the items included in the Bill of Quantities, is high. To facilitate checking by the Entity of the realism of rates quoted by the Bidders, the Daywork Schedule should normally comprise the following:

a. A list of the various classes of labor, materials, and Constructional Plant for which basic daywork rates or prices are to be inserted by the Bidder, together with a statement of the conditions under which the Contractor will be paid for work executed on a daywork basis.

b. Nominal quantities for each item of Daywork, to be priced by each Bidder at Daywork rates as Bid. The rate to be entered by the Bidder against each basic Daywork item should include the Contractor's profit, overheads, supervision, and other charges.

Provisional Sums

A general provision for physical contingencies (quantity overruns) may be made by including a provisional sum in the Summary Bill of Quantities. Similarly, a contingency allowance for possible price increases should be provided as a provisional sum in the Summary Bill of Quantities. The inclusion of such provisional sums often facilitates budgetary approval by avoiding the need to request periodic supplementary approvals as the future need arises. Where such provisional sums or contingency allowances are used, the SCC should state the manner in which they will be used, and under whose authority (usually the Procuring Entity's Representative's).

The estimated cost of specialized work to be carried out, or of special goods to be supplied, by other contractors should be indicated in the relevant part of the Bill of Quantities as a particular provisional sum with an appropriate brief description. A separate procurement procedure is normally carried out by the Procuring Entity to select such specialized contractors. To provide an element of competition among the Bidders in respect of any facilities, amenities, attendance, etc., to be provided by the successful Bidder as prime Contractor for the use and convenience of the specialist contractors, each related provisional sum should be followed by an item in the Bill of Quantities inviting the Bidder to quote a sum for such amenities, facilities, attendance, etc.

Signature Box

A signature box shall be added at the bottom of each page of the Bill of Quantities where the authorized representative of the Bidder shall affix his signature. Failure of the authorized representative to sign each and every page of the Bill of Quantities shall be a cause for rejection of his bid.

These Notes for Preparing a Bill of Quantities are intended only as information for the Procuring Entity or the person drafting the Bidding Documents. They should not be included in the final documents.

Bill of Quantities

PROJECT: Proposed Construction of Guard House
OWNER: Polomolok Water District
PolWD Annex, Brgy. Upper Klinan, Polomolok, South
LOCATION: Cotabato
SUBJECT: **ESTIMATES AND COSTING OF MATERIALS**

ITEM	DESCRIPTION	QTY	UNIT	UNIT-PRICE	AMOUNT
1.0	**EARTHWORKS**	**35.00**	**cu.m.**		
	a. Excavation	1.50	cu.m.		-
	b. Backfilling	1.00	cu.m.		-
	c. Clearing and Grubbing	16.00	sq.m.		-
	d. Item 201 & 200 Backfill Material	1.00	cu.m.		-
	e. 1''-3'' Coarse Aggregates	1.00	cu.m.		-
				Material Cost=	**-**
				Labor Cost=	**-**
				Minor Tools=	**-**
					-
2.0	**CONCRETE WORKS**	**1.00**	**cu.m.**		
	a. 40kg Portland Cement	9.00	bags		-
	b. 3/4'' Selected Gravel	1.00	cu.m.		-
	c. Fine Washed Sand	1.00	cu.m.		-
				Material Cost=	**-**
				Labor Cost=	**-**
				Minor Tools=	**-**
					-
3.0	**REINFORCEMENTS**	**1,447.00**	**kgs**		
	a. 10mm dia. RSB	5.00	pcs		-
	b. 12mm dia. RSB	3.00	pcs		-
	c. #16 Tie Wire	2.00	kgs		-

				Material Cost=	-
				Labor Cost=	-
				Minor Tools=	-
					-
4.0	**MASONRY WORKS**	**8.80**	**sq.m.**		
	a. 4'' CHB	115.00	pcs		-
	b. 40kg Portland Cement	8.00	bags		-
	c. Fine Washed Sand	1.00	cu.m.		-
	d. 10mm dia. RSB	7.00	pcs		-
				Material Cost=	-
				Labor Cost=	-
				Minor Tools=	-
					-
5.0	**DRYWALL PARTITIONS:**	**11.00**	**sq.m.**		
	a. Hardiflex Board (3.5mm x 1.22m x 2.44m)	8.00	pcs		-
	b. Metal Studs (32mm x 102mm x 0.8mm x 3m)	14.00	pcs		-
	c. Blind Rivets	154.00	pcs		-
	d. Metal Screw	44.00	pcs		-
				Material Cost=	-
				Labor Cost=	-
				Minor Tools=	-
					-
6.0	**PAINTING WORKS**	**44.00**	**sq.m.**		
	a. Concrete Neutralizer	1.00	gal		-
	b. Concrete Sealer / Primer	1.00	gal		-
	c. Patching Compound / Skim Coat	1.00	kgs		-
	d. Semi Gloss Latex Paint	1.00	gal		-
	e. Glazing Putty	1.00	gal		-

f.	Flat Wall Enamel Paint	1.00	gal		-
g.	Paint Thinner	3.00	lit		-
h.	3M Ceiling Tape	2.00	pcs		-
i.	Paint Brush	2.00	pcs		-
j.	Paint Tray	2.00	pcs		-
k.	Paint Roller	2.00	pcs		-
				Material Cost=	**-**
				Labor Cost=	**-**
				Minor Tools=	**-**
					-

7.0	**TRUSSES**	**3.00**	**unit**		
a.	2''x4''x1.5mm Square Tubing	1.00	pcs		-
b.	2''x3''x1.5mm Square Tubing	2.00	pcs		-
c.	2''x3''x1.2mm C-Purlins	6.00	pcs		-
d.	Red Oxide Primer	1.00	gal		-
e.	Welding Rod	3.00	kgs		-
f.	Paint Thinner	1.00	lit		-
				Material Cost=	**-**
				Labor Cost=	**-**
				Minor Tools=	**-**
					-

8.0	**METAL WORKS**	**1.00**	**unit**		
a.	4''x4''x1.5mm Square Tubing	3.00	pcs		-
b.	4''x2''x1.5mm Square Tubing	4.00	pcs		-
c.	2''x2''x1.0mm Square Tubing	3.00	pcs		-
d.	1''x1''x1.0mm Square Tubing	4.00	pcs		-
e.	2''x2''x3/16'' Angle Bar	1.00	pcs		-
f.	2''x3/16'' Flat Bar	1.00	pcs		-

	g.	16mm dia. RSB	2.00	pcs		-
	h.	M10 Anchor Bolts	13.00	pcs		-
	i.	Red Oxide Primer	2.00	gal		-
	j.	Welding Rod	1.00	kgs		-
	k.	Paint Thinner	2.00	lit		-
					Material Cost=	**-**
					Labor Cost=	**-**
					Minor Tools=	**-**
						-
9.0	**ROOFING WORKS**		**19.00**	**sq.m.**		
	a.	2.2m x 1.05m x 0.40mm G.I. Roof	12.00	sheets		-
	d.	2-1/2'' Tex Screw	190.00	pcs		-
	l.	Vulcaseal	2.00	pouch		-
					Material Cost=	**-**
					Labor Cost=	**-**
					Minor Tools=	**-**
						-
10.0	**FLOORING WORKS:**		**5.00**	**sq.m.**		
	a.	2''x4''x1.5mm Square Tubing	2.00	pcs		-
	b.	4'x8'x1'' Marine Plywood	2.00	pcs		-
	c.	Blind Rivets	120.00	pcs		-
					Material Cost=	**-**
					Labor Cost=	**-**
					Minor Tools=	**-**
						-
11.0	**DOORS AND WINDOWS**		**3.00**	**units**		
	a.	0.7m x 2.1m Wood Flush Door w/ jamb and accessories	1.00	set		-
	b.	0.3m x 1.2m Fixed Window w/ aluminum casement	2.00	set		-

	c.	1.9m x 1.2m Sliding Window w/ aluminum casement	1.00	set		-
					Material Cost=	**-**
					Labor Cost=	**-**
					Minor Tools=	**-**
						-
14.0	**ELECTRICAL WORKS**		**12.00**	**sq.m.**		
	a.	3.5mm^2 THHN Stranded copper wire	80.00	lm		-
	b.	5.5mm^2 THHN Stranded copper wire	15.00	lm		-
	c.	8.0mm^2 THHN Stranded copper wire	40.00	lm		-
	d.	4-Branches Panel Board	1.00	pcs		-
	f.	Two-Gang Switch	1.00	pcs		-
	g.	Triplex Universal Convenient Outlet	2.00	pcs		-
	h.	15AT 2Pole Circuit Breaker	1.00	pcs		-
	i.	20AT 2Pole Circuit Breaker	1.00	pcs		-
	j.	60AT 2Pole Circuit Breaker	1.00	pcs		-
	k.	20mmϴ Flexible Hose	70.00	lm		-
	l.	32mmϴ uPVC Conduit	55.00	lm		-
	m.	10W LED Bulb w/ holder casing	1.00	pcs		-
	n.	36W LED Lamp w/ holder casing	1.00	pcs		-
	o.	Utility Box	3.00	pcs		-
	p.	Junction Box	4.00	pcs		-
	q.	Service Cap	4.00	pc		-
	r.	Electrical Tape	3.00	pcs		-
					Material Cost=	**-**
					Labor Cost=	**-**
					Minor Tools=	**-**
						-
					Total Amount=	**-**

PROJECT: Proposed Construction of Storeroom
OWNER: Polomolok Water District
LOCATION: PolWD Annex, Brgy. Upper Klinan, Polomolok, South Cotabato
SUBJECT: **ESTIMATES AND COSTING OF MATERIALS**

ITEM		DESCRIPTION	QTY	UNIT	UNIT-PRICE	AMOUNT
1.0	**EARTHWORKS**		**60.00**	**cu.m.**		
	a.	Excavation	27.00	cu.m.		-
	b.	Backfilling	34.00	cu.m.		-
	c.	Clearing and Grubbing	183.00	sq.m.		-
	d.	Item 201 & 200 Backfill Material	34.00	cu.m.		-
	e.	1''-3'' Coarse Aggregates	14.00	cu.m.		-
					Material Cost=	**-**
					Labor Cost=	
					Minor Tools=	
						-
2.0	**SAFETY AND OCCUPATIONAL HEALTH**		**1.00**	**lot**		
	a.	Pairs, Rubber Boots men, Steel Toe, Black	7.00	pcs		-
	b.	Pairs, Working Gloves (Leather Materials)	7.00	pcs		-
	c.	Hard Hat	8.00	pcs		-
	d.	Vest	8.00	kgs		-
	e.	Medical Supplies	1.00	lot		-
					Material Cost=	**-**
					Labor Cost=	
					Minor Tools=	
						-
3.0	**FORMS AND FALSEWORKS**		**136.00**	**sq.m.**		
	a.	4'X8'X12.5mm Marine Plywood	47.00	pcs		-
	b.	2''x2''x10' Coco Lumber	1,064.00	pcs		-
	c.	2''x3''x10' Coco Lumber	180.00	pcs		-
	d.	1-1/2'' Nails	11.00	kgs		-

	e. 4'' Nails	11.00	kgs		-
				Material Cost=	**-**
				Labor Cost=	
				Minor Tools=	
					-
4.0	**CONCRETE WORKS**	**29.00**	**cu.m.**		
	a. 40kg Portland Cement	270.00	bags		-
	b. 3/4'' Selected Gravel	29.00	cu.m.		-
	c. Fine Washed Sand	15.00	cu.m.		-
				Material Cost=	**-**
				Labor Cost=	
				Minor Tools=	
					-
5.0	**REINFORCEMENTS**	**1,779.00**	**kgs**		
	a. 10mm dia. RSB	295.00	pcs		-
	b. 12mm dia. RSB	129.00	pcs		-
	c. #16 Tie Wire	39.00	kgs		-
				Material Cost=	**-**
				Labor Cost=	
				Minor Tools=	
					-
6.0	**MASONRY WORKS**	**119.00**	**sq.m.**		
	a. 4'' CHB	1,487.00	pcs		-
	b. 40kg Portland Cement	105.00	bags		-
	c. Fine Washed Sand	12.00	cu.m.		-
	d. Waterproofing Admixtures	10.00	bags		-
	e. 10mm dia. RSB	114.00	pcs		-
				Material Cost=	**-**
				Labor Cost=	
				Minor Tools=	

						-
7.0	**PAINTING WORKS**		**312.00**	**sq.m.**		
	a.	Concrete Neutralizer	5.00	gal		-
	b.	Concrete Sealer / Primer	9.00	gal		-
	c.	Patching Compound / Skim Coat	12.00	kgs		-
	d.	Semi Gloss Latex Paint	18.00	gal		-
	e.	Glazing Putty	6.00	gal		-
	f.	Flat Wall Enamel Paint	5.00	gal		-
	g.	Paint Thinner	26.00	lit		-
	h.	3M Ceiling Tape	12.00	pcs		-
	i.	Paint Brush	10.00	pcs		-
	j.	Paint Tray	8.00	pcs		-
	k.	Paint Roller	10.00	pcs		-
					Material Cost=	-
					Labor Cost=	
					Minor Tools=	
						-
8.0	**TRUSSES**		**15.00**	**unit**		
	a.	2''x4''x1.5mm G.I. Square Tubing	7.00	pcs		-
	b.	1-1/2''x1-1/2''x3/16'' Angle Bar	25.00	pcs		-
	c.	10mm dia. Plain round bar	12.00	pcs		-
	d.	2''x3''x1.2mm C-Purlins	55.00	pcs		-
	e.	Red Oxide Primer	4.00	gal		-
	f.	Welding Rod	15.00	kgs		-
	g.	Paint Thinner	5.00	lit		-
					Material Cost=	-
					Labor Cost=	
					Minor Tools=	
						-

9.0	**ROOFING WORKS**		**196.00**	**sq.m.**		
	a.	5.1m x 1.05m x 0.40mm Rib Type Pre-painted Roof	13.00	sheets		-
	b.	4.5m x 1.05m x 0.40mm Rib Type Pre-painted Roof	7.00	sheets		-
	c.	6.2m x 1.05m x 0.40mm Rib Type Pre-painted Roof	17.00	sheets		-
	d.	70m x 10mm double Sided Insulation Foam	3.00	roll		-
	e.	2-1/2'' Tex Screw	1,960.00	pcs		-
	f.	0.40mm Pre-Painted Box Gutter	36.00	lm		-
	g.	0.40mm Pre-Painted End-Wall Flashing	29.00	lm		-
	h.	0.40mm Pre-Painted Fascia Flashing	47.00	lm		-
	i.	Blind Rivets	1,835.00	pcs		-
	j.	2''x2''x3/16'' Angle Bar	30.00	pcs		-
	k.	2''x3/16'' Flat Bar	17.00	pcs		-
	l.	Welding rod	6.00	kgs		-
	m.	Vulcaseal	8.00	pouch		-
					Material Cost=	**-**
					Labor Cost=	
					Minor Tools=	**-**

10.0	**CEILING WORKS**		**82.00**	**sq.m.**		
	a.	Carrying Channel (0.8mm thk.-12mm x 38mm x 3m)	31.00	pcs		-
	b.	Metal Furring (0.8mm thk.-12mm x 38mm x 3m)	94.00	pcs		-
	c.	Channel Clip	492.00	pcs		-
	d.	Wall Angle (0.2mm Thk. - 20mm x 20mm x 2.44m)	20.00	pcs		-
	e.	Hardiflex Board (3.5mm x 1.22 x 2.44m)	31.00	pcs		-
	f.	Blind Rivets	1,148.00	pcs		-
	g.	Metal Screw	328.00	pcs		-
					Material Cost=	**-**
					Labor Cost=	
					Minor Tools=	**-**

11.0	**DOORS AND WINDOWS**		**9.00**	**units**		
	a.	3.2m x 2.1m Roll Up Door w/ accessories	9.00	pcs		-
					Material Cost=	**-**
					Labor Cost=	
					Minor Tools=	
						-
12.0	**ROOF DRAIN**		**49.00**	**lm**		
	a.	3'' dia. Sanitary Pipe	49.00	lm		-
	b.	3'' dia. Sanitary 90 deg. Elbow	30.00	pcs		-
					Material Cost=	**-**
					Labor Cost=	
					Minor Tools=	
						-
13.0	**ELECTRICAL WORKS**		**12.00**	**sq.m.**		
	a.	3.5mm^2 THHN Stranded copper wire	240.00	lm		-
	b.	5.5mm^2 THHN Stranded copper wire	65.00	lm		-
	c.	8.0mm^2 THHN Stranded copper wire	80.00	lm		-
	d.	4-Branches Panel Board	2.00	pcs		-
	e.	Three- Gang Switch	1.00	pcs		-
	f.	Two-Gang Switch	8.00	pcs		-
	g.	Triplex Convenient Outlet	10.00	pcs		-
	h.	15AT 2Pole Circuit Breaker	2.00	pcs		-
	i.	20AT 2Pole Circuit Breaker	2.00	pcs		-
	j.	60AT 2Pole Circuit Breaker	2.00	pcs		-
	k.	20mmϴ Flexible Hose	240.00	lm		-
	l.	32mmϴ uPVC Conduit	65.00	lm		-
	m.	10W LED Bulb w/ holder casing	13.00	pcs		-
	n.	36W LED Lamp w/ holder casing	16.00	pcs		-
	o.	Utility Box	22.00	pcs		-
	p.	Junction Box	24.00	pcs		-
	q.	Service Cap	29.00	pc		-
	r.	Electrical Tape	10.00	pcs		-
					Material Cost=	**-**
					Labor Cost=	
					Minor Tools=	
						-
					Total Amount=	**-**

Section IX. Checklist of Technical and Financial Documents

Notes on the Checklist of Technical and Financial Documents

The prescribed documents in the checklist are mandatory to be submitted in the Bid, but shall be subject to the following:

a. GPPB Resolution No. 09-2020 on the efficient procurement measures during a State of Calamity or other similar issuances that shall allow the use of alternate documents in lieu of the mandated requirements; or

b. any subsequent GPPB issuances adjusting the documentary requirements after the effectivity of the adoption of the PBDs.

The BAC shall be checking the submitted documents of each Bidder against this checklist to ascertain if they are all present, using a non-discretionary "pass/fail" criterion pursuant to Section 30 of the 2016 revised IRR of RA No. 9184.

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.

Financial Documents

☐ (h) The prospective bidder's computation of Net Financial Contracting Capacity (NFCC).

Class "B" Documents

☐ (i) 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

☐ (j) Original of duly signed and accomplished Financial Bid Form; **and**

Other documentary requirements under RA No. 9184

☐ (k) Original of duly signed Bid Prices in the Bill of Quantities; **and**

☐ (l) 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**

☐ (m) Cash Flow by Quarter.


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