

**PHILIPPINE BIDDING DOCUMENTS**

**Procurement of  
INFRASTRUCTURE  
PROJECTS**

Government of the Republic of the Philippines

**CONSTRUCTION OF COVERED COURT, #21-  
QUIOM, CITY OF BATAAC, ILOCOS NORTE**

**Sixth Edition  
July 2020**

# 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 contracts, 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 note 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.

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# *Glossary of Terms, Abbreviations, and Acronyms*

**ABC** – Approved Budget for the Contract.

**ARCC** – Allowable Range of Contract Cost.

**BAC** – Bids and Awards Committee.

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

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

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

**BIR** – Bureau of Internal Revenue.

**BSP** – Bangko Sentral ng Pilipinas.

**CDA** – Cooperative Development Authority.

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

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

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

**CPI** – Consumer Price Index.

**DOLE** – Department of Labor and Employment.

**DTI** – Department of Trade and Industry.

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

**GFI** – Government Financial Institution.

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

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

**GOP** – Government of the Philippines.

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

**LGUs** – Local Government Units.

**NFCC** – Net Financial Contracting Capacity.

**NGA** – National Government Agency.

**PCAB** – Philippine Contractors Accreditation Board.

**PhilGEPS** - Philippine Government Electronic Procurement System.

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

**PSA** – Philippine Statistics Authority.

**SEC** – Securities and Exchange Commission.

**SLCC** – Single Largest Completed Contract.

**UN** – United Nations.

## ***Section I. Invitation to Bid***

### **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*  
*Province of Ilocos Norte*  
**CITY GOVERNMENT OF BATAC**

**Invitation to Bid for *Construction of Covered Court, #21-Quiom, City of Batac, Ilocos Norte***

1. The *City Government of Batac*, through the *Supplemental Budget No. 3 CY-2023-Special Purpose Appropriation-20% Development Fund & Supplemental Budget No. 2 CY-2022-Special Purpose Appropriation-20% Development Fund* intends to apply the sum of **Four Million Four Hundred Ninety-Seven Thousand Nine Hundred Forty-Five Pesos and Thirty-Seven Centavos (4,497,945.37)** being the Approved Budget for the Contract (ABC) to payments under the contract for *Construction of Covered Court, #21-Quiom, City of Batac, Ilocos Norte with Project Identification Number: CGB-2024-PB-01-004*. Bids received in excess of the ABC shall be automatically rejected at bid opening.
2. The *City Government of Batac* now invites bids for the above Procurement Project. Completion of the Works is required **Ninety-five (95) calendar days**. Bidders should have completed 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 *City Government of Batac* and inspect the Bidding Documents at the address given below from **8:00am to 5:00pm**.
5. A complete set of Bidding Documents may be acquired by interested bidders on **January 17, 2024 (8:00AM to 5:00 PM) to February 07, 2024 (8:00 AM to 12:00 NN)** from given address and website/s below *and upon payment of the applicable fee for the Bidding Documents, pursuant to the latest Guidelines issued by the GPPB, in the amount of Php 5,000.00*. The Procuring Entity shall allow the bidder to present its proof of payment for the fees in person, by facsimile, or through electronic means.
6. The *City Government of Batac* will hold a Pre-Bid Conference<sup>1</sup> on **January 26, 2024 at 3:30** in the afternoon at the BAC Office, 3<sup>rd</sup> Floor City Hall Building, which shall be open to prospective bidders.
7. Bids must be duly received by the BAC Secretariat through manual submission at the office address as indicated below on or before **February 07, 2024 at 12:00 NN**. 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.

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<sup>1</sup> May be deleted in case the ABC is less than One Million Pesos (PhP1,000,000) where the Procuring Entity may not hold a pre-bid conference.

9. Bid opening shall be on **February 07, 2024** at BAC Office 3<sup>rd</sup> Floor City Hall Building. Bids will be opened in the presence of the or its authorized representatives (with his/her authorization) who choose to attend the activity.
10. The *City Government of Batac* reserves the right to reject any and all bids, declare a failure of bidding, or not award the contract at any time prior to contract award in accordance with Sections 35.6 and 41 of the 2016 revised Implementing Rules and Regulations (IRR) of RA No. 9184, without thereby incurring any liability to the affected bidder or bidders.
11. For further information, please refer to:

**ENGR. MICHELLE G. MANUEL**  
*BAC Secretariat Head - Infrastructure*  
*BAC Office 3<sup>rd</sup> Floor, City Hall Building*  
*City Government of Batac*  
*Washington Street, Brgy. #1-S Valdez*  
*City of Batac, Ilocos Norte 2906*  
*Email: [bacbatacity@gmail.com](mailto:bacbatacity@gmail.com)*  
*Tel.No.: (077) 792-2060*

12. You may visit the following websites:

For downloading of Bidding Documents: *you may visit [www.batac.gov.ph](http://www.batac.gov.ph)*

**MR. MARLON F. SORIA**  
*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, *City Government of Batac* invites Bids for the **Construction of Covered Court, #21-Quiom, City of Batac, Ilocos Norte**, with **Identification Number: CGB-2024-PB-01-004**.

The Procurement Project (“**Construction of Covered Court**”) 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 in the amount of **Php 4,497,945.37**.

2.2. The source of funding is:

*Supplemental Budget No. 3 CY-2023-Special Purpose Appropriation-20% Development Fund & Supplemental Budget No. 2 CY-2022-Special Purpose Appropriation-20% Development Fund*

## 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 **January 26, 2024** at 3:00 in the afternoon at BAC Office 3<sup>rd</sup> Floor, City Hall Building, City Government of Batac and/or through videoconferencing/webcasting as indicated in paragraph 6 of the **IB**.

## **9. Clarification and Amendment of Bidding Documents**

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

## **10. Documents Comprising the Bid: Eligibility and Technical Components**

- 10.1. The first envelope shall contain the eligibility and technical documents of the Bid as specified in **Section IX. Checklist of Technical and Financial Documents**.
- 10.2. If the eligibility requirements or statements, the bids, and all other documents for submission to the BAC are in foreign language other than English, it must be accompanied by a translation in English, which shall be authenticated by the appropriate Philippine foreign service establishment, post, or the equivalent office having jurisdiction over the foreign bidder's affairs in the Philippines.

For Contracting Parties to the Apostille Convention, only the translated documents shall be authenticated through an apostille pursuant to GPPB Resolution No. 13-2019 dated 23 May 2019. The English translation shall govern, for purposes of interpretation of the bid.

- 10.3. A valid PCAB License is required, and in case of joint ventures, a valid special PCAB License, and registration for the type and cost of the contract for this Project. Any additional type of Contractor license or permit shall be indicated in the **BDS**.
- 10.4. A List of Contractor's key personnel (e.g., Project Manager, Project Engineers, Materials Engineers, and Foremen) assigned to the contract to be bid, with their complete qualification and experience data shall be provided. These key personnel must meet the required minimum years of experience set in the **BDS**.
- 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 *120 days*. 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

ITB Clause																																		
5.2	For this purpose, contracts similar to the Project refer to contracts which have the same major categories of work, which shall be: <i>Construction of Covered Court</i>																																	
7.1	<i>Sub-contracting is not allowed.</i>																																	
10.3	<i>None</i>																																	
10.4	The key personnel must meet the required minimum years of experience set below: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Key Personnel</u></th> <th style="text-align: left;"><u>General Experience</u></th> <th style="text-align: left;"><u>Relevant Experience</u></th> </tr> </thead> <tbody> <tr> <td>Project Engineer</td> <td>General Construction</td> <td>5 years</td> </tr> <tr> <td>Materials Engineer</td> <td>General Construction</td> <td>1 year</td> </tr> <tr> <td>Construction Foreman</td> <td>General Construction</td> <td>5 years</td> </tr> <tr> <td>Skilled Worker</td> <td>General Construction</td> <td>5 years</td> </tr> <tr> <td>Unskilled Laborer</td> <td>General Construction</td> <td>3 years</td> </tr> <tr> <td>Safety Officer II</td> <td>General Construction</td> <td>1 year</td> </tr> </tbody> </table>	<u>Key Personnel</u>	<u>General Experience</u>	<u>Relevant Experience</u>	Project Engineer	General Construction	5 years	Materials Engineer	General Construction	1 year	Construction Foreman	General Construction	5 years	Skilled Worker	General Construction	5 years	Unskilled Laborer	General Construction	3 years	Safety Officer II	General Construction	1 year												
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Unskilled Laborer	General Construction	3 years																																
Safety Officer II	General Construction	1 year																																
10.5	The minimum major equipment requirements are the following: <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="text-align: center;"><u>Equipment</u></th> <th style="text-align: center;"><u>Capacity</u></th> <th style="text-align: center;"><u>Number of Units</u></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Dump truck</td> <td style="text-align: center;">12 cu.yd</td> <td style="text-align: center;">2</td> </tr> <tr> <td style="text-align: center;">Backhoe</td> <td style="text-align: center;">0.80 cu.m.</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">Bar cutter</td> <td></td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">One Bagger Mixer</td> <td style="text-align: center;">4-6 cu. ft/min</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">Oxygen/Acetylene Cutter</td> <td></td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">Cutting Outfit</td> <td></td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">Welding Machine</td> <td style="text-align: center;">500 amp</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">Concrete Vibrator</td> <td></td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">Concrete Chipper/Jack Hammer</td> <td></td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">Plate Compactor</td> <td style="text-align: center;">5 hp</td> <td style="text-align: center;">1</td> </tr> </tbody> </table>	<u>Equipment</u>	<u>Capacity</u>	<u>Number of Units</u>	Dump truck	12 cu.yd	2	Backhoe	0.80 cu.m.	1	Bar cutter		1	One Bagger Mixer	4-6 cu. ft/min	1	Oxygen/Acetylene Cutter		1	Cutting Outfit		1	Welding Machine	500 amp	1	Concrete Vibrator		1	Concrete Chipper/Jack Hammer		1	Plate Compactor	5 hp	1
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12	<i>Value Engineering not allowed.</i>																																	
15.1	The bid security shall be in the form of a Bid Securing Declaration or any of the following forms and amounts: <ul style="list-style-type: none"> <li>a. The amount of not less than 89,958.91, if bid security is in cash, cashier's/manager's check, bank draft/guarantee or irrevocable letter of credit;</li> <li>b. The amount of not less than 224,897.27 if bid security is in Surety Bond.</li> </ul>																																	
19.2	Partial bids are allowed not allowed.																																	
20	<i>None</i>																																	
21	Additional contract documents relevant to the Project that may be required by existing laws and/or the Procuring Entity, such as construction schedule and S-curve, manpower schedule, construction methods, equipment utilization schedule, construction safety and health program approved by the DOLE, and other acceptable tools of project scheduling.																																	

## ***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	<i>The intended completion date is Ninety-five (95) calendar days from the Effective Date of the Contract.</i>
4.1	N/A
6	N/A
7.2	Fifteen (15) years.
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 <b><i>Seven (7)</i></b> days of delivery of the Notice of Award.
11.2	N/A
13	The amount of the advance payment <b><i>shall not exceed 15% of the total contract price and schedule of payment.</i></b>
14	<i>Not Allowed</i>
15.1	N/A
15.2	N/A



## *Section VI. Specifications*







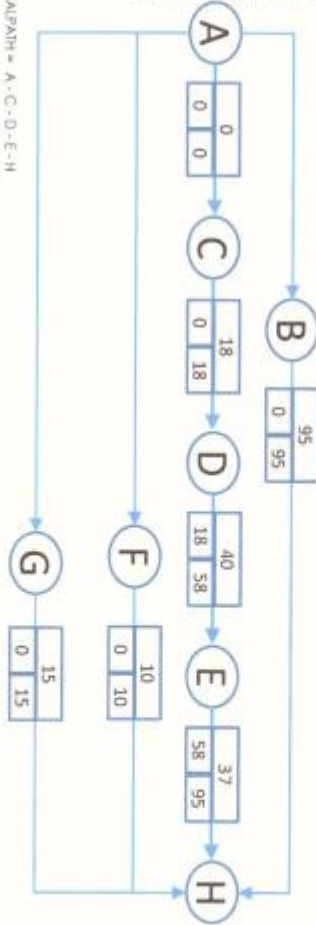


Republic of the Philippines  
 City Government of Sorsogon  
 Province of Ilocos Norte  
 City Engineering Office  
 Washington St., Brgy. Velder City of Sorsogon, Ilocos Norte

**PERT/CPM**

PROJECT: CONSTRUCTION OF COVERED COURT  
 LOCATION: Brgy. Quilom City of Sorsogon, Ilocos Norte

ITEM DESCRIPTION	SYMBOL	DAYS
START	A	0
OTHER GENERAL REQUIREMENTS	B	76
EARTHWORKS	C	18
PLAIN AND REINFORCED CONCRETE WORKS	D	40
FINISHING	E	37
ELECTRICAL	F	10
SANITARY/PLUMBING	G	15
END	H	0



CRITICAL PATH = A - C - D - E - H  
 $= 0 + 18 + 40 + 37$   
 $= 95 \text{ Calendar Days}$

Prepared by:

ZHERLAND P. ALBERICAL  
 ENGINEER II

Checked/Submitted by:

JOAN T. ASIAL  
 ENGINEER III

Evaluated by:

HILANON S. NAUJUPITA  
 CITY ENGINEER

# CONSTRUCTION METHODOLOGY

CONSTRUCTION OF COVERED COURT  
BRGY. QUIOM CITY OF BATAAC, ILOCOS NORTE

## TABLE OF CONTENTS

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1	Purpose
2	Scope
3	Roles & Responsibilities
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10	Housekeeping
11	Quality Assurance & Control
12	Materials
13	Manpower
14	Work procedure
15	Health & safety

### 1.0 PURPOSE

To specify the requirements of civil construction including excavation, filling, and allied activities complying with the contract document, specification, and scope of work and approved drawings/documents. It also includes earthworks associated with trenches for pipelines or service ducts.

### 2.0 SCOPE

This Method Statement applies to all the civil works - Excavation including ground preparation, setting out, backfilling, soil compaction, concreting, waterproofing, masonry, plastering, joinery and painting works - related to the construction of building as per project requirements, referring with approved Civil and MEP drawing.

### 3.0 ROLES & RESPONSIBILITY

The primary responsibility of carrying out all the activities mentioned in this procedure rests with the site-in-charge unless mentioned otherwise.

#### **Project Leader:**

Overall execution and administration of the project as per contract requirements, specifications and the Project Quality Plan (PQP). Liaise with the Head (Quality & HSE) for preparation and updating of PQP. Directly control the Site Engineers and Supervisors. He is responsible to ensure that all the correct procedures are followed and all necessary permits for the works are obtained in advance.

#### **Site Engineer:**

Assess manpower, equipment or other resources required to ensure timely completion of the project. Monitor availability of all materials as per schedule. Inform the Project Leader for any non-availability of materials to take proper action. Carry out receiving inspection in coordination with the QA/QC Engineer. Ensure that the drawings and documents are up to date and the latest drawing is available and is being utilized in the project site works. Filled-up the check-sheet and submit the necessary IR to the QA/QC function when the work is ready for inspection.

#### **QA/QC Engineer:**

Responsible for the monitoring and implementing of quality related matters and ensure the works are being executed with the approved Project Quality Plan and requirements of the Contract Documents, approved method statement and Inspection Test Plans.

#### **Safety Officer:**

Responsible for monitoring and implementation of safety related matters such as work permits, First Aid, PPE, approval of diversions, follow the safety and traffic regulations by all the workmen during the construction, according to the approved project HSE plan. First Aid boxes are readily available with HSE officer and other two numbers at site personnel's vehicles for site requirements.

#### **Supervisor/Foreman:**

Plan and obtain required manpower and resources in coordination with the Site Engineer. Carry out all activities as per the planned schedule to achieve target dates. Coordinate with respective disciplines of work and liaise with the site engineer for day to day activities. Inform Discipline Engineer regarding site inspections when it is ready. Ensure pre task briefing is to be conducted prior to start of work at each session.

#### **Charge hand:**

Works shall be executed as per direction of Supervisors/Foremen for all activities as per the planned schedule to achieve target. Coordinate with respective disciplines of work and liaise with the Supervisors/Foremen for day to day activities. Ensure pre task briefing is conducted prior to start of work at each session.



#### 4.0 REFERENCE DOCUMENTS

Contract Document & Bill of Quantities.  
Civil structural and architectural drawing issued for construction.  
Construction Occupational Safety and Health and Project Specifications.

#### 5.0 ABBREVIATIONS

Main Contractor	To be filled
Consultant	To be filled
Client or Customer	To be filled
Site-in-charge	For the purpose of this procedure, the term Site-In-charge shall mean Project/Site Engineer.

#### 6.0 INSPECTION & TESTING

Site inspection/approval shall be in accordance with the approved Inspection and Test Plan for all activities in addition to the Quality Control Procedure and Project Quality Plan for the Project. All the required site test shall be conducted with the Project Engineer.

#### 7.0 WORK PERMITS

All necessary work permits shall be obtained prior to the commencement of any activity at site and shall remain valid throughout the entire duration of the operation. Safety Barriers and Site sign boards will be installed prior to the work commencement.

#### 8.0 HEALTH, SAFETY AND ENVIRONMENTAL PROCEDURES

Requirements of Health, Safety and Environmental for the project shall be in accordance with approved Project Health and Safety Plan.

Before commencing of any work, the required and applicable work permits shall be checked and ensure all requirements of WP are complied. And they are valid until completion of the activity and as per approved HSE plan.

All personnel accessing their site will wear the mandatory PPE. All workmen and staff shall wear the mandatory and job specific Personnel Protective Equipment. Pre-task briefing shall be conducted on every day before starting the work. Experienced and HSE inducted workmen shall be deployed for the work. All personnel shall be cautioned while working near any live lines such as power cable, water lines, drainage lines, telecom etc.

Prior to commencement of work all workers shall be given pre-task briefing. Hazards identified for the activity shall be disseminated during pre-task briefing, especially for underground services, slip & trip, improper access, excavation tools handling, no access or aggress, vehicle collision, heat exhaustion, which shall be identified and documented separately by permit to work system as per approved HSE plan.

First aid stations complete with all first aid equipment and trained first aiders shall be maintained for the initial care.

Safety and security procedures shall be implemented as a minimal, warning signs and lights, barricades, railing and other safeguards shall be provided as required by the nature and location of the work.

The environmental risk assessment and environmental management plans have been reviewed for the work activities proposed in the method statement and found to be suitable and adequate.

Electrical waste will be segregated at source and transported to dedicated segregated waste storage area and not be allowed to accumulate on site in undesignated areas. Concrete waste will be removed from work areas at regular intervals to designated areas.

Construction waste will be disposed as per local laws & client guidelines by licensed carrier to a licensed facility.



## **9.0 HOUSEKEEPING**

Housekeeping is the act of keeping the working environment clean from all unnecessary waste materials. The equipment/tools/materials required for the work shall be stored /stacked in such a manner so as to give a safe working atmosphere to the workforce at site.

All workplace areas shall be maintained clear of debris, waste and other rubbish, which shall be disposed of in segregated containers for disposal. An adequate number of containers marked appropriate labels for storage and disposal of waste materials shall be strategically placed throughout the construction areas at all time.

Any spillages, such as oil or grease shall be immediately cleaned up, by absorption in inerts and or other suitable materials. The materials for the particular work shall be stored at site so that no obstructions to the work or access to the workforce.

Debris, waste oil containers etc. shall be stacked and placed in a barricaded location away from the work areas and access routes. Adequate fire precautions shall be in place. Before leaving the site, it shall be ensured by the responsible person that the site area is cleaned and no obstruction is encountered for next day work.

## **10.0 QUALITY ASSURANCE & CONTROL**

The Quality Assurance and Control for the above mentioned activities shall be exercised and recorded in accordance with the contract documents, sections 1 part 8 of QCS 2010 and the approved Project Quality Plan for the project.

The quality assurance shall be ensured for workmanship, equipment and materials conformance to the applicable standards and requirements at every stage of the construction.

This shall be monitored by quality control personnel or designated substitute on the site during the production / operation.

Quality assurance requirements shall also be imposed upon sub-contractors, suppliers, manufacturers and any other parties associated and involved in the project. Non-conforming materials shall be notified in writing to correct or remove the defective materials from the work site.

All inspections and tests shall be conducted in accordance with written test procedures as detailed in the Project Quality Plan and Inspection and Test Plan approved by the Project Engineer.

Applicable documents with latest version such as Inspection & Test Plan, Method Statements shall be readily available and used by inspection and test personnel at the time of inspection as referring documents.

## **11.0 MATERIALS**

Approval shall be obtained for all the materials with reference to Client's preferred vendor list, prior to commencement of activities.

Material Inspection Request (MIR) will be submitted to client upon material arrival to warehouse.

All materials must be stored properly as per the manufacturer's recommendations and QCS.

The Material shelf life will be monitored as per Manufacturer's data sheets.

## **12.0 MANPOWER**

Site Engineer  
Supervisor  
HSE Inspector  
QA/QC  
Inspector  
Carpenters  
Steel Fixers  
Masons  
Helpers

Painters  
Operators  
Drivers & Technicians

### **13.0 EQUIPMENT & TOOLS**

The following equipment and tools shall be used for the various activities.

Excavators  
Shovels  
Water Tankers  
Rollers/Compactors  
Transit Mixers  
Vibrators  
Dewatering pump  
Welding Machine  
Angle Grinders  
Cutters  
Wheel Barrows  
Bagger mixer  
Hand tools

### **14.0 WORK PROCEDURE FOR CONSTRUCTION OF SUBSTATIONS**

#### **14.1 Initial Survey & Site Checking**

Upon receipt of Job Instruction / Drawing from Consultant Engineer, an initial site visit to be made along with the consultant representative to confirm the site and demarcations.

Proper Safety Fencing and site sign boards will be installed prior to the construction activities.

#### **14.2 Setting Out.**

The foundation location of Substation shall be set out and elevations marked by the Land Surveyor using steel pins and paint markings.

In case of any obstruction or existing services, it shall be intimated to the Consultant and necessary modifications shall be carried out after getting approval from Consultant Engineer.

#### **14.3 Excavation for Foundations.**

Prior to commencement of excavation, the location shall be checked to ascertain the type of soil to be excavated and appropriate equipment shall be deployed.

Excavation for structures shall be as per part-2, section-12 of QCS. Excavation for building shall be carried out by using excavator and the excavated soil to be tested for suitability and shall be stock piled at convenient locations at site if suitable for back filling purpose and surplus soil to be loaded in to the tippers and unloaded at designated location later.

Battered excavation slopes greater than 1.5m height shall be supported and all locations where the excavation extends below the ground water table, a dewatering system shall be provided which will lower ambient groundwater levels. The resulting groundwater level shall be at depth which is sufficiently below the excavation level so as to allow the safe and proper execution of the work.

Excavated soil shall be piled at least 2.0m away from all the sides of the excavated area and the area shall be protected by barricading and unauthorized entry shall be restricted. For deep excavations more than 1.50m or average man height depth with loose soil, sides shall be protected by means of temporary shoring and strutting.

Excavation shall be carried out for a width of at least 500 mm beyond the horizontal outside limits of the building. In narrow spaces, due to confined space condition suitable safety measures & ventilation shall be arranged.

& Engineer's approval will be taken before concreting begins.

Before placing concrete all formwork therein will be cleaned of all extraneous material and dust and made free of any standing water.

In continuing concrete, fresh concrete will be placed before the already placed concrete is less than 20 minutes.

Concrete of specified grade will be placed & compacted in horizontal layers normally not exceeding 300mm in depth.

Concrete will not be dropped from a height greater than 1.5m to prevent segregation.

Concrete will be free of all rock pockets, honey combs & voids.

Complete Records showing the details of placing concrete in each part of the work will be maintained and will be available for inspection at the site.

#### **Compacting / vibrating of concrete**

Mechanical vibrators will be used for compaction. For this stand by units will available in the site during the period of compacting. All operators handling vibrators will be trained in their operation properly.

#### **Curing**

Continuous curing will be carried out in a moist atmosphere for a minimum period of 10days and for a further period required by engineer.

Concrete area will be kept covered with hessian clothes or Polyethylene sheets which will be kept moist throughout the curing period

#### **Construction joints.**

The surface of the hardened concrete will be cleaned and made free from laitance, and will also have an exposed aggregate finish.

The fresh concrete will be placed and compacted so that it bonds properly to the prepared surface of the previously laid concrete.

Laitance on the surface will be completely removed from the concrete in order to achieve a good bond with fresh concrete.

Between one and two hours after placing concrete, water will be sprayed gently and laitance will be removed with two brushes, one with soft and other with hard bristles.

After finishing this operation, just the tips of the aggregate should be showing.

If the laitance has hardened, a wire brush will be used to remove it. Clean water will be rinsed to get rid of the dust.

Water stops in construction joints will be installed & approval for this will be taken from the engineer.

#### **Checking water content & slump test**

Frequent slump test will be carried out in accordance with BS 1881 on samples of concrete taken immediately before placing to determine the consistency of concrete.

All the test reports will be maintained in the site office & will be available for the inspection whenever required.

#### 14.7 Plastering

Prepare surfaces for the smooth or non-absorbent solid surfaces that do not have the suction capability to receive a solid plaster bases by chipping, wire brushing or sand blasting, as appropriate.

Install beads at their locations plumbed and squared. And it will be best achieved by using galvanized nails or small quantities of mortar and as per manufacturer's recommendations.

Install the corner, control joints and movement beads at locations indicated in the drawings and manufacturer's instructions.

Prepare plaster in a mechanical mixer, using sufficient water to produce a workable consistency and uniform color shall be used to mix a batch containing one bag of Portland cement, 5 parts aggregate, aerating plasticizer as per manufacturer's recommendation for use over Concrete Unit Masonry.

Spray water on the wall surface and throw the spatter dash mix (scratch coat) by using as patter dash manual machine in a way to form a rough layer 3-5mm thick without any attempt to level or smooth it. The rough surface shall be kept damp with fine water spray or by covering with polyethylene sheet until it sets down.

Apply plaster/render coat after the scratch coat had hardened. Initially, a thin coat is troweled on the scratch coat to ensure a thorough bonding at the surface.

The remainder of the render coat is then built up using wooden float to receive textured finish until the required thickness met.

Apply final thin coat plastering using steel trowel on the interior surface to match with the Architect's sample as specified.

The coating thickness shall not deviate more than +/- (6.4mm in 3m) from the trueness of the plastered finish, as measured with straight edge placed on the surface. The newly applied external coatings shall be cured and protected against frost, heat, and rain for the first 48 hours using canvass, cloth or sheet, hung clear at the plaster surface. Moist curing by applying a fine fog spray of water, generally twice daily in the morning and evening.

#### 14.8 Painting

Samples of all colors/textures and finishes shall be prepared in advance of requirement so as not to delay work and shall be submitted to Engineer for approval before any work is commenced. Any work done without such approval shall be redone to the Engineer's satisfaction, without additional expense to the Employer. Manufacturer's chart showing all the variety of paint/texture coating shall be submitted for color/texture selection.

The Engineer will furnish a schedule of color/texture of each area and surface. All colors shall be mixed in accordance with the manufacturer's selection.

Approved quality Weather Shield/Weather Coat paint shall be used for painting the exteriors of the structures or other surfaces where specified on the drawings as directed by the Engineer.

The plastic emulsion paint/vinyl emulsion paint or similar as approved by the Engineer shall be used for interior surfaces.

Textured coating wherever specified shall be acrylic resin based coating composed of acrylic copolymers, natural quartz, natural marble chips, metallic oxide, antibacterial and antifungal additives, and expanders, foaming and setting agents and shall be applied in accordance with approved manufacturer's recommendations.

All material shall be delivered to site in their original unbroken containers or packages & shall bear the manufacturer's name, label, brand & formula & will be mixed and applied in accordance with his directions.

All oil, grease, dirt, dust, loose mill scale and any other foreign substance shall be removed from the substrate surface to be painted/coated, polished and white washed by the use of a solvent and clean wiping material. Following the solvent cleaning, the surface shall be cleaned by



**SECTION VI  
GENERAL SPECIFICATIONS  
CONSTRUCTION OF COVERED COURT  
Brgy. Quilom City of Batac, Ilocos Norte**

**OTHER GENERAL REQUIREMENTS**

**Offices, Shops, Stores & Workmen Accommodation for Contractor**

The contractor shall provide and maintain such offices, stores, workshops latrines, housing and messing accommodations as are necessary. These should be located in the Contractor's compound, distinct and separate from the Engineer's compound. The location, dimensions and layout of such buildings and places shall be subject to the approval of the Engineer. The Contractor shall not be permitted to erect temporary buildings or structures on the site without the specific permission in writing of the Engineer including approval of the dimensions of such buildings or structures. Before the commencement of the period of Warranty, the Contractor shall fence off the Contractor's store area from the rest of the Site. By the end of the Period of Warranty, the Contractor shall remove this fence and all buildings shall be cleared and the area shall be graded as required by the Engineer.

**MEDICAL ROOM AND FIRST AID FACILITIES**

1. The Contractor shall provide and maintain throughout the duration of the Contract, a medical room together with all necessary supplies to be sited in the Contractor's main area. The medical room shall be waterproof; it could be a building or room designated and used exclusively for the purpose and have a floor area of at least 15 square meters and a glazed window area of at least 2 square meters.

2. The Contractor shall employ permanently on the site a fully trained Medical Aide who shall be engaged solely from medical duties.

3. The location of the medical room and any other arrangements shall be made known to all employees by posting on prominent locations suitable notices in the Site.

4. The Contractor's arrangement to comply with this Section shall be subject to the approval of the Engineer and also to the approval of any qualified Medical Officer designated by the Government to supervise medical arrangements on the Site.

**MEASUREMENT AND PAYMENT**

Work prescribed for Medical Room & First aid Facility shall not be measured and paid separately, same shall be deemed to be included in pay items for other items for work.

**EARTHWORK ITEM 100 – CLEARING AND GRUBBING**

**100.1 Description**

This item shall consist of clearing, grubbing, removing and disposing all vegetation and debris as designated in the Contract, except those objects that are designated to remain in place or are to be removed in consonance with other provisions of this Specification. The work shall also include the preservation from injury or defacement of all objects designated to remain.

**100.2 Construction Requirements**

**100.2.1 General**

The Engineer will establish the limits of work and designate all trees, shrubs, plants and other things to remain. The Contractor shall preserve all objects designated to remain. Paint required for cut or scarred surface of trees or shrubs selected for retention shall be an approved asphaltum base paint prepared especially for tree surgery. Clearing shall extend one (1) meter beyond the toe of the fill slopes or beyond rounding of cut slopes as the case maybe for the entire length of the project unless otherwise shown on the plans or as directed by the Engineer and provided it is within the right of way limits of the project, with the exception of trees under the jurisdiction of the Forest Management Bureau (FMB).

**100.2.2 Clearing and Grubbing**

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

(1) Removal of undisturbed stumps and roots and nonperishable solid objects with a Minimum depth of one (1) meter below subgrade or slope of embankment will not be required.

This shall conform to the requirement of ITEM 700, Volume II (Blue Book), Hydraulic cement.

#### Concrete Aggregates

Concrete aggregate shall conform to the requirements of subsection 311.2.2 and 311.2.3 under item 311 of Volume II, (Blue Book) and ASTM C 33 for lightweight aggregates, except that aggregates failing to meet these specifications but which have been shown by special test or actual service to produce concrete of adequate strength and durability may be used under method (2) of determining the proportion of concrete, where authorized by the Engineer.

Except as permitted elsewhere in this section, the maximum size of the aggregate shall not be larger than one-fifth (1/5) of the narrowest dimensions between sides of forms of the member which the concrete is to be used nor larger than three-fourths of the minimum clear spacing between individual reinforcing bars or bundles of bars or pretensioning strands.

#### Aggregate Tests

Sample of the fine and course aggregates to be used shall be selected by the Engineer for tests at least 30 days before the actual concreting operations are to begin. It shall be the responsibility of the contractor to designate the source or sources of aggregate to give the Engineer sufficient time to obtain the necessary samples and submit them for testing.

No aggregate shall be used until official advice has been received that it has satisfactorily passed all test, at which written authority shall be given for its use.

#### Water

Water used in mixing concrete shall conform to the requirement of subsection 311.2.4 under Item 311, Part E, OF Volume II, (Blue Book)

#### Metal Reinforcement

Reinforcing steel bars shall conform to the requirements of the following Specifications:

Deformed & Plain Billet Steel	(ASTM A 615)
Bars for Concrete Reinforcement	AASHTO M 31)
Deformed Rail - Steel and Plain	
Bars for Concrete Reinforcement	(ASTM A 616)
Deformed A x b - Steel and Plain	
Bars for Concrete Reinforcement	ASTM A 617

If reinforcing bars are to be welded, these ASTM specifications shall be supplemented by requirements assuring satisfactory weldability.

Bars and rod mats for concrete	
Reinforcement	ASTM A 187
Cold-Drawn Steel wire fabric for	(ASTM A 82)
Concrete reinforcement	AASHTO M 32
Welded steel wire fabric	(ASTM A 185)
For concrete reinforcement	AASHTO M55

Except that the weld shear strength requirement of those specification shall be extended to include a wire size differential up to and including six gages.

#### Admixtures

Air-entraining admixtures, if used, shall conform to ASTM C 260.

Water-reducing admixtures, retarding admixtures, water-reducing and retarding admixtures and water reducing and accelerating admixtures, if used, shall conform to the requirements of ASTM C 494.

#### Storage of Materials

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, in substantial, waterproof bodegas, with a floor raised from the ground sufficiently high to be free from dampness. Aggregates shall be stored in such a manner as to avoid the inclusion of foreign materials.

### 900.3 Construction Requirements

Notations: The notation used in these regulations are defined as follows:

$f_c$  = compressive strength of concrete

$F_{sp}$  = ratio of splitting tensile strength to square root of compressive strength.

Concrete Quality

All plans submitted for approval or used for any project shall clearly show the specified strength,  $f_c$ , of concrete of the specified age for which each part of the structure was designed.

Concrete that will be exposed to sulfate containing or other chemically aggressive solutions shall be proportioned in accordance with "Recommended Practice for Selecting Proportions for concrete (ACI 613)" and Recommended Practice for Selecting Proportions for Structural Lightweight Concrete (ACI 613A)."

**Methods of Determining the Proportions of Concrete**

The determination of the proportions of cement, aggregate, and water to attain the required strengths shall be made by one of the following methods, but lower water-cement ratios may be required for conformance with the quality of concrete.

**Method 1. Without preliminary test**

Where preliminary test data on the materials to be used in the concrete have not been obtained the water-cement ratio for a given strength of concrete shall not exceed the values in Table 900.1. When strengths in excess of 281 kilograms per square centimeter (4000psi) are required or when light weight aggregates or admixtures (other than those exclusively for the purpose of entraining air) are used, the required water-cement ratio shall be determined in accordance with Method 2.

**Method 2. For combination of materials previously evaluated or to be established by trial mixtures.**

Water-cement ratios for strengths greater than that shown in Table 900.1 may be used provided that the relationship between strength and water-cement ratio for the materials to be used has been previously established by reliable test data and the resulting concrete satisfies the requirements of concrete quality. Where previous data are not available. Concrete trial mixtures having proportions and consistency suitable for the work shall be made using at least three different water-cement ratios (or cement content in the case of lightweight aggregates) which will produce a range of strengths encompassing those required for the work. For each water-cement ratio (or cement content) at least three specimens for each age to be tested shall be made, cured and tested for strength in accordance with ASTM C 39 and C 192.

The strength test shall be made at 7, 14 & 28 days at which the concrete is to receive load, as indicated on the plans. A curve shall be established showing the relationship between water-cement ratio (or cement content) and compressive strength. The maximum permissible water-cement ratio for the concrete to be used in the structure shall be that shown by the curve to produce an average strength to satisfy the requirements of the strength test of concrete provided that water-cement ratio shall be no greater than that required by concrete quality when concrete that is to be subjected to the freezing temperatures which weight shall have a water-cement ratio not exceeding 6 gal per bag and it shall contain entrained air.

Where different materials are to be used for different portions of the work, each combination shall be evaluated separately.

**TABLE 900.1 MAXIMUM PERMISSIBLE WATER-CEMENT RATIOS FOR CONCRETE (METHOD NO.1)**

Specified compressive strength @ 28 days, psi / fc	Maximum Permissible water-cement ratio			
	Non air-entrained concrete		Air-entrained concrete	
	U.S. gal. per 42.6 kg. bag of cement	Absolute ratio by weight	U.S. gal. per 42.6 kg. bag of cement	Absolute ratio by weight
2500	7 1/4	0.642	6 1/4	0.554
3000	6 1/2	0.576	5 1/4	0.465
3500	5 1/2	0.510	4 1/2	0.399
4000	5	0.443	4	0.354

**Concrete Proportion & Consistency**

The proportions of aggregate to cement to any concrete shall be such as to produce a mixture which will work readily into the corners and angles of the form and around reinforcement with the method of placing employed on the work, but without permitting the materials to segregate or excess free water to collect on the surface. The methods of measuring concrete materials shall be such that the proportions can be accurately controlled and easily checked at any time during the work.

**Sampling and Testing of Structural Concrete**

As work progress, at least one (1) set of sample consisting of three (3) concrete cylinder test specimens, 150 x 150mm shall be taken from each class of concrete placed each day, and each set to represent not more 75 cu m of concrete.

**Consistency**

Concrete shall have a consistency such that it will be workable in the required position. It shall be such a consistency that it will flow around reinforcing steel but individual particles of the coarse aggregate when isolated shall show a coating or mortar containing its proportionate amount of sand. The consistency of concrete shall be gauged by the ability of equipment to properly placed it and not by the difficulty of mixing water shall be determined by the Engineer and shall not be varied without his consent. Concrete as dry as it is practical to place with the equipment specified shall be used.



#### Strength Test of Concrete

When strength is a basis of acceptance, each class of concrete shall be represented by @ least five test (10 specimens). Two specimens shall be made for each test at a given age, and not less than one test shall be made for each 150 cu yd of structural concrete, but there shall be at least one test for each days concreting. The Building Official may required a reasonable number of additional tests during the progress of the work. Samples from which compression test specimens are molded shall be secured in accordance with ASTM C 172. Specimens made to check adequacy of the proportions for strength of concrete or as a basis for acceptance of concrete shall be made and laboratory-cured in accordance with ASTM C 31. Additional test specimens cured entirely under field conditions may be required by the Building Official to check the adequacy of curing and protection of the concrete. Strength tests shall be made in accordance with ASTM C 39.

The age for strength tests shall be 28 days or, where specified, the earlier age at which the concrete is to receive its full load or maximum stress. Additional test may be made at earlier ages to obtain advance information on the adequacy of strength development where age-strength relationships have been established for the materials and proportions used.

To conform to the requirements of this item:

1. For structures designed in accordance with the working stress design method of this chapter, the average of any five consecutive strength tests of the laboratory-cured specimens representing each class of concrete shall be equal on or greater than the specified strength,  $f_c$ , and not more than 20 percent of the strength test shall have values less than that specified.
2. For structure designed in accordance with the ultimate strength design method of this chapter, and for prestressed structures the average of any three consecutive strength test of the laboratory cured specimens representing each class of concrete shall be equal to or greater than the specified strength,  $f_c$  and not more than 10 percent of the strength tests shall have values less than the specified strength. When it appears that the laboratory-cured specimens will fail to conform to the requirements for strength, the Engineer shall have the right to order changes in the concrete sufficient to increase the strength to meet these requirements. The strengths of the specimens cured on the job are intended to indicate the adequacy of protection and curing of the concrete and may be used to determine when the forms may be stripped, shoring removed, or the structure placed in service. When, in the opinion of the Building Official, the strengths of the job-cured specimens, the contractor may be required to improve the procedures for protecting and curing the concrete, or when test of field-cured cylinders indicate deficiencies in protection and curing, the Engineer may require test in accordance with ASTM Specification C 42 or order load tests as outlined in the load tests of structures for that portion of the structure where the questionable concrete has been placed.

#### 900.3.7 Splitting Tensile Test of Concrete

To determine the splitting ratio,  $F_{sp}$ , for a particular aggregate, test of concrete shall be made as follows:

1. Twenty four (24) 15 cm dia. x 30 cm long (6 in. dia. x 12 in. long) cylinder shall be made in accordance with ASTM C 192, twelve at a compressive strength level of approximately 210 kg/cm<sup>2</sup> (3000 psi) and twelve at approximately 280 kg/cm<sup>2</sup> (4000 psi) or 350 kg/cm<sup>2</sup> (5000 psi). After 7 days moist curing followed by 21 days drying at 23 oC (73 o F) and 50% relative humidity, eight of the test cylinders at each of the two strength levels shall be tested for splitting strength and four for compressive strength.

2. The splitting tensile strength shall be determined in accordance with ASTM C 496, and compressive strength in accordance with ASTM C 39. The ratio,  $F_{sp}$ , of splitting tensile strength to the square root of compressive strength shall be obtained by using the average of all 16 splitting tensile test and all 8 compressive tests.

Minimum Strength, Concrete other than fill, shall have a minimum compressive strength 28 days of 140 kg/cm<sup>2</sup> (2000 psi).

#### 900.3.8 Batching

Batching shall conform to the requirements of item 405, Structural Concrete.

#### 900.3.9 Mixing and Delivery

Mixing and delivery shall conform to the requirements of item 405, Structural Concrete.

#### 900.4 Concrete Surface Finishing: General

This shall be in accordance with item 405, Structural Concrete.

#### 900.5 Curling Concrete (See Subsection 407)

#### 900.6 Acceptance of Concrete



The strength of concrete shall be deemed acceptable if the average of 2 consecutive strength test results is equal to or exceed the specified strength and no individual test result falls below the specified strength by more than 15%.

Concrete deemed to be not acceptable using the above criteria may be rejected unless contractor can provide evidence, by means of core tests, that the quality of concrete represented by the failed test result is acceptable in place. Three (3) cores shall be obtain from the affected area and cured and tested in accordance with AASHTO T24. Concrete in the area represented by the core will be deemed acceptable if the average of cores is equal to or at least 85% and no sample core is less than 75% of the specified strength otherwise it shall be rejected.

**900.7 Method of Measurement**

The quantity of concrete to be paid shall be the quantity shown in the Bid Schedule will be adjusted by the amount of the change for the purpose of payment. No deduction will be made for the volume occupied by the pipe less than 101 mm (4") in diameter or for reinforcing steel, anchors, weep holes or expansion materials.

**900.8 Basis of Payment**

The accepted quantities of structural concrete complete in place will be paid for the contract unit price for cubic meter as indicated on the Bid Schedule.

Pay Item and Description	Unit of measurement
Structural Concrete	m <sup>3</sup>

Such prices and payment shall be full compensation for furnishing all materials, including metal water stops, joints, joint fillers, weep holes, and rock backing and timber bumpers; for all form and false work; for mixing, placing, furnishing, and curing the concrete; and for all labor, materials, equipment, tools and incidentals necessary to complete the item, except that reinforcing steel shall be paid for at the contract unit price per kilogram for reinforcing steel metal pipes and drains, metal conduits and ducts, and metal expansion angles shall be paid for as structural steel that when proposal does not include an item for structural steel these miscellaneous metal parts shall be paid for as reinforcing steel.

**ITEM 1000 - TERMITE CONTROL WORK**

**1000.1 Description**

This item shall consist of furnishing and applying termite control chemicals, including the use of equipment and tools in performing such operations in accordance with the Specification.

**1000.2 Materials Requirements**

Termite control chemicals or toxicants shall be able to immediately exterminate termites or create barriers to discourage entry of subterranean termites into the building areas. The toxicants may be classified into the following types and according to use.

**Type I Liquid Termiticide Concentrate**

This type of toxicant shall be specified for drenching soil beneath foundations of proposed buildings. The concentrate materials shall be diluted with water in the proportion of 1 liter of concentrate material to 65 liters of water or as specified by the Manufacturer.

**Type II Liquid Termiticide Ready Mixed Solution**

This type of toxicant which comes in ready mixed solution shall be used as wood preservative by chenching wood surfaces to the point of run-off

**Type III Power Termiticide**

This type of toxicant shall be applied visible or suspected subterranean termite mounds and tunnels where termites are exterminated through trophallaxes method (exchange or nourishment between termites while greeting each other upon meeting).

**1000.3 Construction Requirements**

Before any termite control work is stated, through examination of the site shall be undertaken so that the appropriate method of soil poisoning can be applied.

The Contractor shall coordinate with other related trades through the Engineer to avoid delay that may arise during the different phases of application of the termite chemicals.

**1000.3.1 Soil Poisoning**

There are two methods usually adopted in soil poisoning which are as follows.

1. Cordoning. This method is usually adopted when there is no visible evidence of termite infestation. Trenches in concentric circles, squares or rectangles are dug 150mm to 220mm wide and at least one meter apart and applied with Type I working solution at the rate of 8 liters per linear meter.

2. Drenching. When soil show termite infestation, this method shall be applied. The building area shall be thoroughly drenched with Type I working solution at the rate of 24 liters per square meter. When Powder Termiticide is to be applied to eradicate subterranean termites, careful application and precaution shall be given considering that this toxicant is fatal to animal and human lives.

**1000.3.2 Application**

At the time soil poisoning is to be applied, the soil to be treated shall be friable condition with low moisture content so as to allow uniform distribution of the toxicant agents. Toxicant shall be applied at least twelve (12) hours prior to placement of concrete which shall be in contact with treated materials.

Treatment of the soil on the exterior sides of the foundation walls, grade beams and similar structures shall be done prior to final grading and planting or landscaping work to avoid disturbance work to avoid disturbance of the toxicant barriers by such operations. Areas to be covered by concrete slab shall be treated before placement of granular fill used as capillary water barrier at a rate of 12 liters per square meter with Type I working solution after it has been compacted and set to required elevation. Additional treatment shall be applied as follows.

1. In critical areas such as utility openings for pipes, conduits and ducts, apply additional treatment at the rate of 6 liters per linear meter in a strip 150mm to 200mm wide.

2. Along the exterior perimeter of the slab and under expansion joint, at the rate of 2.5 liters per linear meter in a strip 150mm to 200mm wide in shallow trench.

**1000.3.3 Wood Protection** Where the application of wood preservative is necessary, the Contractor shall use Type II working solution as recommended by the manufacturer.

All wood materials not pressure treated as specified in Item 1003 – Carpentry and Joinery shall be treated with Type II ready mixed solution as herein call for or as directed by the Engineer.

**1000.4 Method of Measurement**

Liquid termite control chemicals or toxicants shall be measured by actual number of liters used in the cordoning and drenching of lot areas and soil poisoning of granular fill or actual number of liters used in drenching wood surfaces, while powder chemical/toxicant shall be measured by kilograms applied to suspected subterranean termite mounds and tunnels. The quantity to be paid for shall be determined and accepted by the Engineer.

**1000.5 Basis of Payment**

The accepted quantities, measured as prescribed in Section 10 shall be paid for at the Contract Unit Price for Termite Control Work which price and payment shall be full compensation for furnishing and applying termite control chemicals including the use of equipment and tools, labor and incidentals necessary to complete to complete the work prescribed in this item.

Payment shall be made under:

Pay Item Number	Description	Unit of Measurement
1000 (a)	Soil Poisoning	Liter
1000 (b)	Wood Preservative	Liter
1000 (c)	Powder Termiticide	Kilogram

**ITEM 1001 – STORM DRAINAGE AND SEWERAGE SYSTEM**

**1001.1 Description**

This item shall consist of furnishing all materials, equipment and labor for the complete installation of the storm drainage system to include all piping, gutters, canals, catch basins, junction boxes, hand holes, manholes and other appurtenant structures and sewerage system to include all sanitary sewer piping and septic vault where no public sewer exist from building to the point of discharge.

**1001.2 Materials Requirements**

1001.2.1 Materials for storm drainage system shall meet the requirements specified in the following standard specification.

Portland Cement	ASTM C-150
Fine and Coarse Aggregate	ASTM C-33
Reinforcing Steel	ASTM A-615
Non-reinforced Concrete Pipes	ASTM C-14
Reinforced Concrete Pipes	ASTM C-76 (AASHTO M-86)

Cast Iron Pipes (for conductors and Downspouts)	ASTM A-74
Galvanized Iron Scheduled 40 (for conductors and downspouts)	ASTM A-120
Polyvinyl Chloride (PVC) (for conductors and Downspouts)	ASTM 2729

Where the covers for such basins, junction boxes, manholes and canals for grating are required same shall be made of wrought iron and of these dimensions as shown on the Plans.

1001.2.2 Materials for sewerage system shall meet the requirements specified in the following standard specifications:

Cast Iron Pipes and Fittings	ASTM A-74
Pig Lead (for securing and sealing joints)	ASTM B 22-77
PVC Pipes and Fittings (where called in Plans)	ASTM D 1784
Solvent Cement (for securing PVC joints)	ASTM D 2564

Where PVC pipes and fittings are used joints shall be secured with rubber "O" ring or solvent cement as the case maybe.

Oakum for joints in bell and spigot pipes shall be made from hemp fiber, braided or twisted and oil impregnated free from lumps, dirt and extraneous matter.

#### 1001.3 Construction Requirements

##### 1001.3.1 Installation of Pipes

Under no circumstances shall pipes be laid under water and when the trench condition or the weather is unsuitable for such work.

a. Bedding. Materials such as sand, sandy soil or any approved materials shall be used to provide a firm foundation of uniform density. The bedding shall have a minimum thickness equivalent to one-fourth (1/4) of the pipe's diameter.

b. Laying of Pipes. Proper facilities shall be provided for lowering and placing pipes into trenches in order to preclude damage. Laying of pipes has start upgrade with the spigot and end of bell-and-spigot pipe, or the tongue-and-groove pipe positioned towards the direction of the flow. The pipes shall be in accordance with the grades and alignment shown in the Plans.

The spigots or tongues shall be adjusted in bells or grooves to provide uniform space around joints to receive mortar. Blocking or wedging between spigot and bell or between tongue and groove to attain proper spacing shall be allowed provided such blocking/wedging shall not interfere with the caulking and shall not affect the water tightness of these joints.

c. Bell and Spigot Joint for Drain Pipe. The first pipe shall be properly bedded at the required grade. Just below the spigot of the first unit, a sufficient space shall be provided for engaging the bell end of the second pipe of the joints with sufficient amount of additional mortar. The mortar bead on the outside shall immediately be protected with a cover of wet burlap or wet earth for at least three (3) days for curing.

d. Tongue and Groove Joint for Concrete Pipe. The first pipe shall be properly bedded. A shallow excavation shall be made underneath the joint and filled with mortar to provide a bed second pipe. The tongue end of the first pipe shall be carefully cleaned with a wet brush and soft mortar applied around the upper half of the tongue. After cleaning and positioning the second pipe close the first, mortar shall be applied around the lower half of the groove. With just sufficient thrust, the second pipe shall be brought in close contact with the first until mortar is squeezed out of the joint. Sufficient mortar shall be used to fill the joint and to form a bead on the outside.

e. Mortar for Joint. Mortar shall be a mixture of Portland Cement, sand and water mixed in the proportion by volume of one part cement to two parts of clean sand with just sufficient amount of water for plasticity.

f. Leaded Joints of Cast Iron Pipes. Joints of cast iron pipes shall be packed with braided or twisted oilimpregnated hemp or oakum, properly caulked around the joint. The packing shall be at least 20 mm below the rim of the hub or bell and this space shall be filled with molten pig lead in one continuous pouring. The "ring" of pig lead formed around the joint shall be properly caulking tools to render the joints watertight.

1001.3.2 Concrete structures. Concrete structures such as catch basins, canal gutters, junction boxes and manholes for the drainage system, and septic vault for sewerage system shall be constructed in accordance with the Plans and Specifications on Concrete Work.

##### 1001.3.3 Sewer Connections and Clean-Outs

a. The outlet of the septic vault shall be connected to the street drain or to other discharge point where no sanitary sewer shall not be made without the permission of the proper authorities, but shall be made in such a manner that any and the service water, as well as house and other liquid wastes will flow to the sanitary sewer. Provided, that isolated faucets used exclusively for garden purposes may in the discretion of the proper authorities be allowed not to flow into the sanitary sewer.



b. Clean-Outs of rodding holes consisting of cast iron extensions with long sweep elbow fittings shall be provided at the ends of runs and at every change of directions. Clean-Outs shall be capped with cast brass ferrules with threads and screwed-on removable brass plugs. Clean-Outs extended outside the building and raised to the level of finished grade shall be terminated with the same cast brass ferrule with brass plug set into a concrete slab shall be 150 mm thick and 300 mm<sup>2</sup>, finish flush with grade.

1001.3.4 Incidental Earthwork

Incidental Earthwork for the storm drainage and sewerage system such as excavation and backfilling shall be undertaken in accordance with applicable part of Excavation, Filling and Grading.

1001.4 Method of Measurement

Pipes, culverts, gutters, canals and grating installed in place and accepted by the Engineer shall be measured by the meter along their axes. Catch basins, junction boxes, manholes and septic vault shall be measured by the number of units constructed and accepted.

1001.5 Basis of Payment

The quantities as determined in sub-section 1001.4 shall be paid at the contract unit price for each of the items which shall constitute full compensation for all materials, labor, tools, and equipment and all other incidentals necessary to complete the item. Payment shall be made under:

Pay Item	Description	Unit	Number measurement
1001.2 (a)	Pipe (kind and size)	meter	
1001.2 (b)	Fitting (king and size)	each	
1001.2 (c)	Concrete Gutter	meter	
1001.2 (d)	Concrete Canal	meter	
1001.2 (e)	W.I Grating	meter	
1001.2 (f)	Catch Basin	each	
1001.2 (g)	Junction Box	each	

**ITEM 1002 – PLUMBING**

1002.1 Description

This item shall consist of furnishing all materials, tools, equipment and fixtures required as shown on the Plans for the satisfactory performance of the entire plumbing system including installation in accordance with the latest edition of the National Plumbing Code, and this Specification.

1002.2 Material Requirements

All piping materials, fixtures and appliances fitting accessories whether specifically mentioned or not but necessary to complete this item shall be furnished and installed.

1002.2.1 Cast Iron Soil Pipes and Fittings

a. Pipes and fittings materials shall comply with the specification requirements defined in PNS/SAO 4-1:1974. The material description and standards of manufacture are herein described:

1. Cast Iron – the casting shall be made of gray iron which shall be sound, free from cracks, sand holes and blow holes. They shall be uniformly low hardness that permits drilling and cutting by ordinary methods. Pipes and fittings shall be true to pattern and of compact closed grained structure.

2. Quality of Iron – the iron shall be made by the cupola, air furnace, electric furnace or other processes which shall be checked by regular chemical and physical control test. The resultant shall be gray iron of good quality.

3. Manufacture – the pipes shall be made with hub and spigot ends or hub ends only. All hubs for pipes and fittings shall be provided with held grooves and all spigot ends shall be made with beads or plain if machine cast centrifugally. Plugs shall be wrought or cast, machined to the dimensions required and shall be free from defects.

4. Freedom from defects – pipes and fittings shall be true, smooth and cylindrical, their inner and outer surfaces being as nearly concentric as practicable. They shall be in all aspects, sound and good casting free from laps, pin holes of other imperfections and shall be neatly dressed and carefully fettled. The ends shall be finished reasonably square to their axes.

b. Clean-outs shall be made of heavy cast brass ferrule with counter sunk screw cover same diameter as the pipe except that they shall not be larger than 100mm diameter.

c. Caulking lead shall be of molten type peg lead conforming to specification requirements defined in ASTM B-29.

d. Oakum shall be twisted or braided hemp or abaca fibers slightly impregnated with oil.

1002.2.2 Water supply Pipes and Fittings

a. Pipes shall be galvanized iron pipe schedule 40 conforming to specification requirements defined in ASTM A – 120 with threaded connection. Under roads where necessary shall be suitably protected as shown on the Plans.

Fittings shall be malleable iron Type II, galvanized iron conforming to specification requirements defined in ASTM A338.

b. Valves

Valves for water supply shall be bronzed body with threaded ends rated 21.0 kgf/cm<sup>2</sup>. All valves shall be gate unless otherwise specified. Gate valves shall have solid wedge body and discs conforming to specification requirements defined in ASTM B-62. Globe valves shall have plug discs with ferrule threaded ends and bronze body.

c. Unions

Unions on ferrous pipe 50mm in diameter and smaller shall be malleable iron.

d. Water Meter

Water meter where required to be furnished by the Contractor shall be of the type tested and approved by MWSS.

1002.2.3 Approved Alternate Pipes and Fittings

Pipes and fittings for sanitary and potable water lines as approved alternate shall be Unplasticized Polyvinyl Chloride Pipes and Fittings (UPVC).

Pipes and fittings shall be made of virgin materials conforming to specification requirements defined in ASTM D-2241 and PNS 65: 1986. Fittings shall be molded type and designed for solvent cement joint connection for water lines and rubber O-ring seal joint for sanitary lines.

1002.2.4 Septic Tank

The septic tank shall be provided as shown on the Plans including all pipe vents and fittings. The various construction materials such as masonry works shall conform to the corresponding item of these specifications. Inlet and outlet pipes shall conform to the latest edition of the National Plumbing Code.

1002.2.5 Plumbing Fixtures and Fittings

All fittings and trimmings for fixtures shall be chromium-plated and polished brass unless otherwise approved. Exposed traps and supply pipes for fixtures shall be connected to the rough in, piping system at the wall unless otherwise indicated on the Plans. Built-in fixtures shall be watertight with provision of water supply and drainage outlet, fittings and trap seal. Unless otherwise specified, all plumbing fixtures shall be made of vitreous china complete with fittings.

a. Water closet shall be vitreous china, free standing toilet combination, round front bottom outlet siphonic washdown bowl with extended rear self and closed coupled tank with cover complete with fittings and mounting accessories. Model make and color shall be submitted for approval prior to delivery at jobsite by the Engineer.

b. Lavatory shall be vitreous china, wall-hung with rear overflow and cast-in soap dishes, pocket hanger with integral china brackets, complete with twin faucets, supply pipes, P-trap and mounting accessories. Where indicated on the Plans to be counter top model make and color shall be approved by the Engineer.

c. Uninal shall be vitreous china, wall-hung washout uninal with extended shields and integral flush spreader, concealed wall-hanger pockets, 19mm top spud complete with fitting and mounting accessories. Model make and color shall be approved by the Engineer.

1002.2.6 Bathroom and Toilet Accessories

a. Shower head and fittings shall be movable, cone type with excutcheon arm complete with stainless steel shower valve and control lever, all exposed surface to be chromium finish.

b. Grab bars shall be made of tubular stainless steel pipe provided with safety grip and mounting flange.

c. Floor drains shall be made of stainless steel beehive type, measuring 100mm x 100mm, and provided with detachable stainless strainer, expanded metal lath type. 15 Multipurpose Covered Court, Rehabilitation & Training Center

d. Toilet paper holder shall be vitreous china wall mounted. Color shall be reconciled with the adjacent fixture and facing tiles.

e. Soap holder shall be vitreous china wall mounted. Color shall be reconciled with the adjacent fixture and facing tiles.

f. Faucet(s) shall be made of stainless steel for interior use. g. Hose-bib(s) shall be made of bronze cast finish.

1002.2.7 Special Plumbing Fixtures

a. Kitchen sink shall be made of stainless steel self-rimming, single compartment complete with supply fittings, strainer traps, dual control lever and other accessories.

b. Lavatory sink shall be made of cast iron metal with white porcelain finish with single compartment, flat rim ledge, 762mm x 533mm complete with supply fittings, strainer, trap and other accessories.

c. Scrub-up sink shall be made of cast iron metal with white porcelain finish measuring 610 mm x 610mm complete with supply fittings, strainer, trap and wall mounting accessories.

d. X-ray developing tank shall be made of cast iron white porcelain finish with three (3) compartment x-ray processing tank, drain plug, open standing drain, 10mm IPS inlet spud complete with stand and mounting accessories.

i. Cleanouts at the bottom of each soilstack, wastestack, interior downspout and where else indicated shall be the same size as the pipe up to and including 102mm . 152mm, for larger pipes.

j. Vent pipe shall be flashed and made watertight at the roof with ferrule lead sheet. Flashing shall be turned down into pieces.

k. Each fixtures and place of equipment requiring connection to the drainage system except fixtures with continuous waste shall be equipped with a trap. Each trap shall be placed as near to the fixture as possible. Traps installed on threaded pipe shall be recessed drainage pattern.

l. Overhead horizontal runs of pipes shall be hung with adjustable wrought iron pipe hanger not over 3.04 m apart except hub and spigot soil pipe which shall have hanger spaced not over 1.50 m apart and located near a hub.

#### 1002.3.2 Water Pipes, Fittings and Connections

All water piping inside the building and underground, 100 mm diameter and smaller shall be galvanized iron threaded pipe with malleable iron fittings.

a. The water piping shall be extended to all fixtures, outlets and equipment from the gate valves installed in the branch near the riser.

b. The cold water system shall be installed with a fall towards a main shutoff valve and drain. Ends of pipes and outlets shall be capped or plugged and left ready for future connections.

##### c. Mains and Branches

1. All pipes shall be cut accurately to measurements and shall be worked into place without springing or forcing. Care shall be taken so as not to weaken the structural portions of the building.

2. All piping above the ground shall be run parallel with the lines of the building unless otherwise indicated on the Plans.

3. All service pipes, valves and fittings shall be kept at sufficient distance from other work to permit finished covering not less than 12.5mm from such work or from finished covering on the different services.

4. No water piping shall be buried in floors, unless specifically indicated on the Plans and approved by the Engineer.

5. Changes in pipes shall be made with reducing fittings.

##### d. Drain

1. Pipe drain indicated on the drawings shall consist of 12 mm globe valve with renewable disc and installed at low points on the cold water piping so that all piping shall slope 100 mm in 30.5 m.

##### e. Threaded Pipe Joints

1. All pipes shall be reamed before threading. All screw joints shall be made with graphite compound applied to make threads only. Threads shall be full cut and not more than three threads on the pipe shall remain exposed.

f. Expansion and Contraction of Pipes Accessible contraction-expansion joints shall be made whenever necessary. Horizontal runs of pipe over 15m in length shall be anchored to the wall to the supporting structure about midway on the run to force expansion and contraction equally toward the ends or as shown on the Plans.

g. Fire Standpipe System Fire standpipe system shall consist of risers and hose valve. Pipe shall be extra strong black iron. Valves to be underwriter's approval high grade cast bronze mounted.

##### h. Valves and Hose Bibs

1. Valves shall be provided on all supplied fixtures as herein specified.

2. The cold water connections to the domestic hot water heater shall be provided with gate valves and the return circulation connection shall have gate and a check valve.

3. All connection to the domestic hot water heater shall be equipped with unions between valves and tanks.

4. Valve shall not be installed with its stem below the horizontal. All valves shall be gate valves unless otherwise indicated on the Plans.

5. Valves up to and including 50 mm diameter shall be threaded ends, rough bodies and finished trimmings, except those on chromium plated brass pipe.

6. Valves 63 mm in diameters and larger shall have iron bodies, brass mounted and shall have either screws or flange ends.

7. Hose bibs shall be made of brass with 12.5mm inlet threads, hexagonal shoulders and 19mm male.

#### 1002.3.3 Fixtures, Equipment and Fastenings

a. All fixtures and equipments shall be supported and fastened in a safe and satisfactory workmanship as practiced.

b. All fixtures, where required to be wall mounted on concrete or concrete hollow block wall, fasten with brass expansion bolts. Expansion bolts shall be 6mm diameter with 20mm threads to 25mm into solid concrete, fitted with loose tubing or sleeves of proper length to acquire extreme rigidity.

c. Inserts shall be securely anchored and properly flushed into the walls. Inserts shall be concealed and rigid.

d. Bolts and nuts shall be horizontal and exposed. It shall be provided with washers and chromium plate finish.

#### 1002.3.4 Pipe Hangers, Inserts and Supports



a. Pipe hangers shall be wrought iron or malleable iron pipe spaced not more than 3m apart for horizontal runs or pipe, except hub and spigot soil pipe which shall have hanger spaced not over 1.5 m apart located near the hub.

b. Chains, straps perforated turn-buckles or other approved means of adjustment except the turnbuckles may be omitted for hangers on soil or waste lines or individual toilet rooms to maintain stacks when spaced does not permit.

c. Trapeze hangers may be used in lieu of separate hangers on pipe running parallel to and close to each other.

d. Insert shall be cast steel and shall be of type to receive a machine bolt or nut after installation. Insert may be permitted adjustment of the bolts in one horizontal direction and shall be installed before pouring of concrete.

e. Wrought iron clamps or collars to support vertical runs of pipe shall be placed not more than 6m apart for as indicated on the Plans.

#### 1002.3.5 Plates and Flashing

a. Plates to cover exposed pipes passing through floor finished walls or ceiling shall be fitted with chromium plated cast brass plates or chromium plated cast iron or steel plates on ferrous pipes.

b. Plates shall be large enough to cover and lose the hole around the area where pipes pass. It shall be properly installed to insure permanence.

c. Roof areas penetrated by vent pipes shall be rendered watertight by lead sheet flashing. It shall extend at least 150mm above the pipe and 300mm along the roof.

#### 1002.3.6 Protection and Cleaning

a. During installation of fixtures and accessories and until final acceptance, protect items with strippable plastic or other approved means to maintain fixtures in perfect conditions.

b. All exposed metal surfaces shall be polished clean and rigid of grease, dirt or other foreign materials upon completion.

c. Upon completion, through clean all fixtures and accessories to leave the work in polished condition.

#### 1002.3.7 Inspection, Warranty Test and Disinfection

All pipes, fittings, traps, fixtures, appurtenance and equipment of the plumbing and drainage system shall be inspected and approved by the Engineer to insure compliance with all requirements of all Codes and Regulations referred to this Specification. 1002.3.7.1 Drainage System Test

a. The entire drainage and venting system shall have all necessary openings which can be plugged to permit the entire system to be filled with water to the level of the highest stack vent above the roof.

b. The system shall hold this water for a full 30 minutes during which time there shall be no drop greater than 102mm.

c. Where only a portion of the system is to be tested, the test shall be conducted in the same manner as described for the entire system except that a vertical stack 3.00 m highest horizontal line to be tested may be installed and filled with water to maintain sufficient pressure or water pump may be used to supply the required pressure.

d. If and when the Engineer decides that an additional test is needed, such as an air to smoke test on the drainage system, the Contractor shall perform such test without any additional cost.

#### 1002.3.7.2 Water Test on System

a. Upon completion of the rough-in and before connecting fixtures the entire cold water piping system shall be tested at a hydrostatic pressure 1 ½ times the expected working pressure in the system during operation and remained tight and leak-proofed.

b. Where piping system is to be concealed the piping system shall be separately in manner similar to that described for the entire system and in the presence of the Engineer or his duly designated representative.

#### 1002.3.7.3 Defective Works

a. All defective materials replaced and tested will be repeated until satisfactory performance is attained.

b. Any material replaced for the satisfactory performance of the system made shall be at the expense of the Contractor.

c. Caulking of screwed joints or holes will not be permitted.

#### 1002.3.7.4 Disinfection

a. The entire water distribution system shall be thoroughly flushed and treated with chlorine before it is operated for public use.

b. Disinfection materials shall be liquid chlorine or hypochlorite and shall be introduced in a manner approved as prescribed or approved by the Engineer into the water distribution system.

c. After a contact period of not less than sixteen hours, the heavily chlorinated water shall be flushed from the system with portable water.

d. Valves for the water distribution system shall be opened and closed several times during the 16 hours chlorination treatment is done.

#### 1002.3.8 As-Built Drawings

Upon completion of the work, the Contractor shall submit two sets of prints with all as-built changes shown on the drawings in a neat workmanship manner. Such prints shall show changes or actual installation and conditions of the plumbing system in comparison with the original drawings. 1002.4 Method of Measurement

The work done under this item shall be quantified per length and/or number of units as provided in the Bill of Quantities, tested and accepted to the satisfaction of the Engineer.

1002.5 Basis of Payment

The quantified items, installed in place shall be the basis for payment, based from the unit bid price for which prices and payments shall constitute full compensation including labor, materials and incidentals necessary to complete this item.

Payment shall be made:

Pay Item Number	Description	Unit of measurement
1002 (a)	Cast Iron Soil Pipes and Fittings	pieces/length
1002 (b)	Galvanized Iron Pipes And Fittings	pieces/length
1002 (c)	Plumbing Fixtures	set
1002 (d)	Roof Drain with Strainer	set

**ITEM 1014 – PREPAINTED METAL SHEETS**

**1014.1 Description**

This item shall consist of furnishing all pre-painted metal sheet materials, tools and equipment, plant including labor required in undertaking the proper installation complete as shown on the Plans and in accordance with this Specification.

**1014.2 Material Requirements**

All pre-painted metal sheet and roofing accessories shall be oven baked painted true to profiles indicated on the Plans.

**1014.2.1 Pre-Painted Roofing Sheets**

Pre-painted roofing sheets shall be fabricated from cooled rolled galvanized iron sheets specially tempered steel for extra strength and durability. It shall conform to the material requirements defined in PNS 67-1985. Profile section in identifying the architectural moulded rib to be used is as follows: Regular corrugated, Quad-rib, tri-wave, Rib-wide, Twin-rib, etc. desired color shall be subject to the approval of the Architect/Engineer.

1014.2.2 Gutters, Valleys, Flashing Hip and Ridge roll shall be fabricated from gauge 24 (0.600 mm thick) cold-rolled plain galvanized iron sheets specially tempered steel. Profile section shall be as indicated on the Plans.

1014.2.3 Fastening hardware shall be of galvanized iron straps and rivets. G.I straps are of 0.500 mm thick x 16 mm wide x 267 mm long (gauge 26 x 5/8" x 10-1/2") and standard rivets.

1014.2.4 Base metal thickness shall correspond to the following gauge designation available locally as follows:

a)	<u>Base Metal Thickness</u>	<u>Designation Gauge</u>
	0.400 mm thick	Gauge 28
	0.500 mm thick	Gauge 26
	0.600 mm thick	Gauge 24
	0.800 mm thick	Gauge 22
b)	<u>Protective Coating</u>	<u>Thickness</u>
	1. Zinc	34.4 microns (244 gm/m <sup>2</sup> )
	2. Paint coatings	
	Top coat	15.20 microns
	Bottom coat	6.8 microns
c)	<u>Overall thickness with protective coats</u>	
	0.400 mm	0.426-451 mm
	0.500 mm	0.532-551 mm
	0.600 mm	0.638-651 mm
d)	Length of roofing sheets – available in cut to length long span length up to 11.4 meters.	
e)	Special length and thickness are available by arrangements.	

**1014.3 Construction Requirements**

Before any installation work is commenced, the Contractor shall ascertain that the top faces of the purlins are in proper alignment. Correct the alignment as necessary in order to have the top faces of the purlins on an even plane.

**1014.3.1 Handling/Lifting/Positioning of Sheets**



Sheets shall be handled carefully to prevent damage to the paint coating. Lift all sheets or sheet packs on to the roof frame with the overlapping down-turned edge facing towards the side of the roof where installation will commence, otherwise sheets will have to be turned end-to-end during installation.

1014.3.2 Installation Procedure

1014.3.2.1 Start roofing installation by placing the first sheet in position with the downturned edge in line with other building elements and fastened to supports as recommended.

1014.3.2.2 Place the downturned edge of the next sheet over the edge of the first sheet, to provide side lap and hold the side lap firmly in place. Continue the same procedure for subsequent sheets until the whole roofing area is covered and/or (Adopt installation procedure provided in the instruction manual for each type of architectural molded rib profile section).

1014.3.2.3 For walling applications follow the procedure for roofing. Allow a minimum end lap of 100 mm (4") for vertical walling.

1014.3.3 Gutters, Valleys, Flashing ridge and Hip rolls Gutters, valleys, flashing ridge and hip rolls shall be fastened where indicated on the Plans by self-tapping screw or galvanized iron straps and rivets.

1014.3.4 End Laps In case handling or transport consideration requires using two or more end lapped sheets to provide full length coverage for the roof run, install each line of sheets from bottom to top or from eave line to apex of roof framing. Provide 150 mm minimum end lap.

1014.3.5 Anchorage/Fastening

1014.3.5.1 Prepainted steel roofing sheets shall be fastened to the wood purlins with standard length G.I straps and rivets.

1014.3.5.2 For steel frame up to 4.5 mm thick use self-drilling screw No. 12 x 35 mm long hexagonal head with neoprene washer.

1014.3.5.3 For steel support up to 5 mm thick or more use thread cutting screw No. 12 x 40 mm long hexagonal head with neoprene washer.

1014.3.5.4 Side lap fastener use self-drilling screw No. 10 x 16 mm long hexagonal head with neoprene washer.

1014.3.5.5 Valley fastened to lumber and for walling use self-drilling wood screw No. 12 x 25 mm long hexagonal head with neoprene washer.

1014.3.5.6 Valley fastened to steel supports use self-drilling screw, head with neoprene washer. Drill size is 5 mm diameter. 1014.3.6 Cutting of Sheets

1014.3.6.1 In cutting prepainted steel roofing sheets and accessories to place the exposed color side down. Cutting shall be carried out on the ground and not over the top of other painted roofing products.

1014.3.6.2 Power cutting or drilling to be done or carried out on prepainted products already installed or laid in position, the area around holes or cuts shall be masked to shield the paint from hot fillings

1014.3.7 Storage and Protection Prepainted steel roofing, walling products and accessories should be delivered to the jobsite in strapped bundles. Sheets and/or bundles shall be neatly stacked in the ground and if left in the open it shall be protected by covering the stacks materials with loose tarpaulin.

1014.4 Method of Measurement

The work done under this Item shall be measured by actual area covered or installed with prepainted steel roofing and/or walling in square meters and accepted to the satisfaction of the engineer/Architect.

1014.5 Basis of Payment

The area of prepainted steel roofing and/or walling in square meters as provided in section 1014 shall be paid for at the unit bid or contract unit price which payment shall constitute full compensation including labor, materials, tools and incidents necessary to complete this Item.

Payment shall be made under:

Pay Item Number	Description	Unit of Number Measurement
1014 (a)	Prepainted metal sheets	m <sup>2</sup>

**1027 – CEMENT PLASTER FINISH**

**1027.1 Description**

This Item shall consist of furnishing all cement plaster materials, labor, tools, and equipment required in undertaking cement plaster finish as shown on the Plans and in accordance with this Specification.

**1027.2 Material Requirements**

Manufactured materials shall be delivered in the manufacturer's original unbroken packages or containers which are labeled plainly with the manufacturer's name and trademark.

**1027.2.1 Cement**

Portland cement shall conform with the requirements as defined in Item 700, hydraulic cement.

1027.2.2 Hydrated Lime

Hydrated lime shall conform to the requirements as defined in item 701, Hydrated Lime.

1027.2.3 Fine Aggregates

Fine aggregates shall be clean, washed Sharp River sand and free from dirt, clay, organic matter or other deleterious substances. Sand derived from crushed gravel or stone may be used with the Engineer's approval but in no case shall such sand be derived from stone unsuitable for use as coarse aggregates.

1027.3 Construction Requirements

1027.3.1 Mixture

- a) Mortar mixture for brown coat shall be freshly prepared and uniformly mixed in the proportion by volume of one part Portland Cement, three (3) parts sand and one fourth (1/4) part hydrated lime.
- b) Finish coat shall be pure Portland cement properly graded conforming to the requirements of item 700, Hydraulic cement and mixed with water to approved consistency and plasticity.

1027.3.2 Surface Preparation

- a) After removal of formworks reinforce concrete surfaces shall be roughened to improved adhesion of cement plaster.
- b) Surfaces to receive cement plaster shall be cleaned of all projections, dust, loose particles, grease and bond breakers. Before any application of brown coat is commenced all surfaces that are to be plastered shall be wetted thoroughly with clean water to produce a uniformly condition.

1027.3.3 Application

- a) Brown coat mortar mix shall be applied with sufficient pressure starting from the lower portion of the surface to fill the grooved and to prevent air pockets in the reinforced concrete/masonry work and avoid mortar mix dropping. The brown coat shall be lightly broomed/or scratched before surface had properly set and allowed to cure.
- b) Finish coat shall not be applied until after the brown coat has seasoned for seven days and corrective measures had been done by the Contractor on surfaces that are defective. Just before the application of the finish coat, the brown coat surface shall be evenly moistened with portable water. Finish coat shall be floated first to a true and even surface, then troweled in a manner that will force the mixture to penetrate into the brown coat. Surfaces applied with coat shall then be smooth with paper in a circular motion to remove trowel marks, checks and blemishes. All cement plaster finish shall be 10 mm thick minimum on vertical concrete and/or masonry walls.

Whenever indicated on the Plans to be "Simulated Red Brick Finish", the Contractor shall render brick design on plaster surface before brown coat had properly set and then allowed to dry. Cement plaster shall not be applied directly to:

- a) Concrete or masonry surface that had been coated with bituminous compound and,
- b) Surfaces that had been painted or previously plastered. 1027.3.4 Workmanship Cement plaster finish shall be true to details and plumb. Finish surface shall have no visible junction marks where one (1) day's work adjoins the other. Where directed by the Engineer or as shown on the Plans vertical and horizontal groove joints shall be 25 mm wide and 10 mm deep.

1027.4 Method of Measurement

All cement plaster finish shall be measured in square meters or part thereof for work actually completed in the building.

1027.5 Basis of Payment

The work quantified and determined as provided in the Bills of Quantities shall be paid for at the Contract Unit Price which price constitutes full compensation including labor, materials, tools, and equipment and incidentals necessary to complete this item.

Payment will be made under:

Pay Item Number	Description	Unit of Number measurement
1027(a)	Cement plaster Finish	m <sup>2</sup>
1027(b)	Simulated red Bricks pn 142	m <sup>2</sup>

ELECTRICAL

ITEM 1100 - CONDUITS, BOXES & FITTINGS

1100.1 Description

This item shall consist of the furnishing and installation of the complete conduit work consisting of electrical conduits, conduit boxes such as junction boxes, pull boxes, utility boxes and square boxes, conduit fittings such as coupling, locknuts and bushings and other electrical materials needed to complete the conduit roughing-in work of this project.

#### 1100.2 Material Requirements

All material shall be brand new and shall be of the approved type meeting all the requirements of the Philippine Electrical Code and bearing the Philippine Standard Agency (PSA) mark.

##### Conduits

Conduits shall be standard rigid steel, zinc coated or galvanized. Intermediate metal conduit may be used if shown or specified on the approved Plans. PVC conduits if required shall be schedule 40. Enamel coated steel conduits and conduits with rough inner surfaces are not acceptable.

##### Conduit Boxes

All conduit boxes shall be Code gauge steel and galvanized. Outlet boxes shall be galvanized pressed steel of standard make. In general, outlet boxes shall be at least 100mm square or octagonal, 53 mm deep and 16 mm minimum gauge.

##### Conduit Fittings

All conduit fittings such as locknuts and bushing shall be galvanized of standard make.

#### 1100.3 Construction Requirements

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

##### Conduits

Conduits shall be cut square with a hacksaw and reamed. Bends shall be made with the required radius. In making bends only conduit bending apparatus will be used. The use of pipe tee or vise for bending conduits shall not be permitted. Conduits which have been crushed, deformed or flattened shall not be installed. No running thread shall be allowed. Conduits runs crossing construction joints of the building shall be provided with standard expansion fittings of the approved type.

No conduits shall be used in any system smaller than 12 mm diameter electric thread size nor shall have more than four (4) 90° bends in any one run and where necessary, pull boxes shall be provided.

All ends of conduits which are left empty in cabinets and conduit boxes shall be plugged with lead or approved pipe caps so as to prevent the entrance of white ants and dirt within the conduit system. Pull wires shall be inserted in the empty ducts before they are closed with lead or pipe caps and shall be left therein for future use. On exposed work, all pipes and outlet boxes shall be secured by means of galvanized metal clamps which shall be held in place by means of machine screws. When running over concrete surfaces, the screws shall be held in place by means of expansion sleeves for big pipes and rolled lead sheet for small pipes. All pipes shall be run at right angles to and parallel with the surrounding walls. No diagonal run shall be allowed and all bends and offsets shall be avoided as much as possible. Conduits shall be supported at 1,500 mm intervals maximum.

##### Conduit Boxes & Fittings

Provide conduit boxes for pulling and splicing wires and outlet boxes for installation of wiring devices.

As a rule, provide junction boxes or pull boxes in all runs greater than 30 metres in length, for horizontal runs. For other lengths, provide boxes as required for splices or pulling. Pull boxes shall be installed in inconspicuous but accessible locations.

Support boxes independently of conduits entering by means of bolts, rod hangers or other suitable means.

Conduit boxes shall be installed plumb and securely fastened. They shall be set flush with the surface of the structure in which they are installed where conduits are run concealed.

All convenience and wall switch outlet boxes for concealed conduit work shall be deep, rectangular flush type boxes. Four-inch octagonal flush type boxes shall be used for ceiling light outlets and shall be of the deep type where three or more conduits connect to a single box.

Floor mounted outlet boxes required shall be waterproof type with flush brass floor plate and brass bell nozzle.

All boxes shall be painted with antirust red lead paint after installation.

All conduits shall be fitted with approved standard galvanized bushing and lock nuts where they enter cabinets and conduit boxes.

Junction and pull boxes of code gauge steel shall be provided as indicated or as required to facilitate the pulling of wires and cables.

#### 1100.4 Method of Measurement

The work under this item shall be measured either by lengths, pieces, pairs, lot and set actually placed and installed as shown on the approved Plans.

#### 1100.5 Basis of Payment



All works performed and measured and as provided for in the Bill of Quantities shall be paid for at the Unit Bid of Contract Unit Price which payment shall constitute full compensation including labor, materials, tools and incidentals necessary to complete this item.

Payment shall be made under:

Pay Item Number	Description	Unit of Number Measurement
(1)	RSC Conduit Pipe – mm dia., with couplings	length
(2)	Locknut and Bushings	pairs
(3)	Conduit type	pieces
(4)	Conduit pipe elbow	pieces
(5)	Connector	pieces
(6)	Conduit clamp	pieces
(7)	PVC adapter	pieces
(8)	G.I Wire G.A.#14	kilos
(9)	Hacksaw Blade	pieces
(10)	PVC Tape 19 mm dia x 18 mm	rolls
(11)	Rubber Tape 19 mm dia x 227 g	rolls
(12)	PVC Solvent cement @ 400 cc	cans
(13)	PVC End Ball	pieces
(14)	Octagonal junction boxes	pieces
(15)	Utility Boxes	
(16)	Metal Pull Box	pieces
(17)	Square Box	pieces
(18)	Telephone Cabinet	set
(19)	Reinforced Concrete Pedestal Pole	lot
(20)	Red Lead Point	lot
(21)	Weatherhead with type "F" Conduit	pieces
(22)	Grounding Rod copperweld 20 mm dia x 3 m	length
(23)	Splitting or Approved equal Creosoted wood pole	pieces
(24)	Anchor Rod – mm dia	pieces
(25)	Anchor Log – mm dia	pieces
(26)	Powerload Studs with nuts	pieces

#### 1100.6 General Specifications

The work to be done under this division of specifications consists of the fabrication, furnishing, delivery and installation, complete in all details of the electrical work, at the subject premises and all work materials incidental to the proper completion of the installation, except those portions of the work which are expressly stated to be done by other fields. All works shall be done in accordance with the rules and regulations and with the specifications.

#### 1100.7 Specifications on:

##### 1. Lighting fixtures and lamp

All lighting fixtures and lamps are as specified and listed on lighting fixture schedule. For fluorescent lamp, it shall be 40-watt rapid start cool-white. All fluorescent ballast shall be 230 volt, high power factor, of good quality materials and approved by the Bureau of Product Standards (BPS).

##### 2. Material Requirements

All materials to be used shall conform to the BPS specification.

##### 3. Construction Requirements

All grounding system installation shall be executed in accordance with the approved plans. Grounding system shall include building perimeter ground wires, grounding rods, clamps, connectors, ground wells and ground wire taps as shown in the approved design.

#### 1100.8 Auxiliary systems

All auxiliary systems such as telephone and intercom system, time clock system, fire alarm system and public address/nurse's call/paging system installations shall be done in accordance with the approved design.

All materials to be used shall conform to the Bureau of Products Standards (BPS) specifications.

#### 1100.9 Important requirement regarding Supervision of the work and submission of certificate of completion.

All wiring installation herein shall be done under the direct supervision of a licensed Electrical Engineer at the expense of the contractor. The contractor shall submit certificate of completion duly approved by the owner's representative.

**1100.10 Test and guarantee**

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

The contractor shall guarantee the electrical installation are done and in accordance with the approved plans and specifications. The contractor shall guarantee that the electrical systems are free from all grounds and from all defective workmanship and materials and will remain so for a period of one year from date and acceptance of works. Any defect shall be remedied by the Contractor at his own expense.

**ITEM 1101 – WIRES AND WIRING DEVICES**

**1101.1**

This item shall consist of the furnishing and installation of all wires and wiring devices consisting of electric wires and cables, wall switches, convenience receptacles, heavy duty receptacles and other devices shown on the approved Plans but not mentioned in these specifications.

**1101.2 Materials Requirement**

Wires and cables shall be of the approved type meeting all the requirements of the Philippine Electrical Code and bearing the PSA mark unless specified or indicated otherwise, all power and lighting conductors shall be insulated for 600 volts.

All wires shall be copper, soft drawn and annealed, smooth and of cylindrical form and shall be centrally located inside the insulation.

All wiring devices shall be standard products of reputable electrical manufacturers. Wall switches shall be rated at least 10A, 250 volts and shall be spring operated, flush, tumbler type. Duplex convenience receptacles shall be rated at least 15A, 250 volts 3-wire, flush, polarized type.

**1101.3 Construction Requirements**

Conductors or wires shall not be drawn in conduits until after the cement plaster is dry and the conduits are thoroughly cleaned and free from dirt and moisture. In drawing wires into conduits, sufficient slack shall be allowed to permit easy connections for fixtures, switches, receptacles and other wiring devices without the use of additional splices.

All conductors of convenience outlets and lighting branch circuit homeruns shall be wired with a minimum of 3.5 mm<sup>2</sup> in size. Circuit homeruns to panelboard shall not be smaller than 3.5 mm<sup>2</sup> but all homeruns to panelboard more than 30 meters shall not be smaller than 5.5 mm<sup>2</sup>. No conductor shall be less than 2.0 mm<sup>2</sup> in size.

All wires of 14 mm<sup>2</sup> and larger in size shall be connected to panels and apparatus by means of approved type lugs or connectors of the solderless type, sufficiently large enough to enclose all strands of the conductors and securely fastened. They shall not loosen under vibration or normal strain.

All joints, taps and splices on wires larger than 14 mm<sup>2</sup> shall be made of suitable solderless connectors of the approved type and size. They shall be taped with rubber and PVC tapes providing insulation not less than that of the conductors.

No splices or joints shall be permitted in either feeder or branch conductors except within outlet boxes or accessible junction boxes or pull boxes.

All joints in branch circuit wiring shall be made mechanically and electrically secured by approved splicing devices and taped with rubber and PVC tapes in a manner which will make their insulation as that of the conductor.

All wall switches and receptacles shall be fitted with standard bakelite face plate covers. Device plates for flush mounting shall be installed with all four edges in continuous contact with finished wall surfaces without the use of coiled wire or similar devices. Plaster filings will not be permitted. Plates installed in wet locations shall be gasketed.

**1101.4 Method of Measurement**

The work under this item shall be measured either by meters, rolls, pieces, set, actually placed and installed as shown on the Plans.

**1101.5 Basis of Payment**

All work performed and measured and as provided for in this Bid of Quantities shall be paid for at the Unit Bid or Contract Unit Price which payment shall constitute full compensation including labor, materials, tools and incidentals necessary to complete this item.

Payment shall be made under:

Payment Item Number	Description	Unit of Number Measurement
(1)	Electric wire	meter of rolls
(2)	Single Pole tumbler switch	pieces
(3)	Two-gang tumbler switch	pieces
(4)	Three-gang tumbler switch	pieces
(5)	Three way tumbler switch	pieces
(6)	Duplex convenience receptacles	set
(7)	Heavy duty convenience	set receptacles
(8)	Standard Telephone outlet bakelite cover with 9/32 center hole	pieces
(9)	Window type air conditioning outlet 3-prong polarized type	pieces
(10)	Bare Copper wire	meters
(11)	Grounding clamps for electric wires	pieces
(12)	Messenger wire	meters
(13)	Guy wire	meters
(14)	Vibrating Bell	set
(15)	Traffic Light Control Panel	set
(16)	Traffic Light metal enclosures complete with red and green light provided with reflectors and 152 mm diameter vibrating bell	set

#### ITEM 1032 - PAINTING, VARNISHING AND OTHER RELATED WORKS

##### 1032.1 Description

This item shall consist of furnishing all paint materials, varnish and other related products, labor, tools equipment and plant required in undertaking the proper application of painting, varnishing and related works indicated on the Plans and in accordance with this Specification.

##### 1032.2 Material Requirements Paint Materials

All types of paint material, varnish and other related product shall be subject to random test as to material composition by the Bureau of Research and Standard, DPWH or the National Institute of Science and Technology. (Use the following approved and tested brand name: Boysen, Davies, Dutch Boy, Fuller O'Brien, or any approved equal).

###### Tinting Colors

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

###### Concrete Neutralizer

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

###### Silicon Water Repellant

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

###### Patching Compound

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

###### Varnish

Varnish shall be a homogeneous solution of resin, drying oil, drier and solvent. It shall be extremely durable clear coating, highly resistant to wear and tear without cracking, peeling, whitening, spotting, etc. with minimum loss of gloss for a maximum period of time.

###### Lacquer

Lacquer shall be any type of organic coating that dries rapidly and solely by evaporation of the solvent. Typical solvent are acetates, alcohols and ketones. Although lacquers were generally based on intrecellulose, manufacturers currently use, vinyl resins, plasticizers and reacted drying oils to improve adhesion and elasticity.

###### Shellac

Shellac shall be a solution of refined lac resin in denatured alcohol. It dries by evaporation of the alcohol. The resin is general furnished in orange and bleached grades.

**Sanding Sealer**

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

**Glazing Putty**

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

**Natural Wood Paste Filler**

Wood Paste Filler shall be quality filler for filling and sealing open grain of interior wood. It shall produce a level finish for following coats of paint varnish/lacquer and other related products.

**Schedule**

**Exterior**

- |    |   |   |   |
|----|---|---|---|
| a) | Plain cement plastered finish to be painted paint | - | 3 coats Acrylic base masonry paint                          |
| b) | Concrete exposed aggregate And/or tool finish     | - | 1 coat water repellent                                      |
| c) | Ferrous Metal                                     | - | 1 coat primer and 2 coats enamel paint                      |
| d) | Galvanized metal                                  | - | 1 coat zinc chromate primer and 2 coats Portland cem. Paint |
| e) | Wood Painted Finish                               | - | 3 coats oil base paint                                      |
| f) | Wood varnish finish                               | - | varnish water repellent                                     |

**Interior**

- |    |   |   |   |
|----|---|---|---|
| a) | Plain cement plastered finish to be painted paint | - | 2 coats Acrylic base masonry  |
| b) | Concrete exposed aggregate                        | - | clean surface   |
|    | And/or tool finish                                |   |   |
| c) | Ferrous Metal                                     | - | 1 coat primer and 2 coats enamel paint  |
| d) | Woodwork sea-mist                                 | - | 3 coats of 3 part thinner 1 part lacquer  |
| e) | Woodwork varnish                                  | - | 1 st coat, of one part sanding sealer to one part solvent 2nd coat of 2/3 sanding sealer to 1/3 solvent |
| f) | Wood Painted Finish                               | - | 3 coats oil base paint  |
| g) | Ceiling Boards textured finish                    | - | 1 coat oil based paint allow to dry then patch surfaces unevenness and apply textured paint coat.       |

**1032.3 Construction Requirements**

The contractor prior to commencement of the painting, varnishing and related work shall examine the surfaces to be applied in order not to jeopardize the quality and appearances of the painting varnishing and related works.

**Surface Preparation**

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

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

Concrete and masonry surfaces shall be coated with concrete neutralizer and allowed to dry before any painting primer coat is applied. When surface is dried apply first coating. Hairline cracks and unevenness shall be patched and sealed with approved putty or patching compound. After defects are corrected apply the finish coats as specified on the Plans (color scheme approved). Metal shall be clean, dry and free from millscale and rust. Remove all grease and oil from surfaces. Wash, unprimed galvanized metal with etching solution and allow it to dry. Where required to prime coat surface with Red Lead Primer same shall be approved by the Engineer.

In addition the Contractor shall undertake the following:

1. Voids, cracks, nick etc. will be repaired with proper patching material and finished flushed with surrounding surfaces.
2. Marred or damaged shop coats on metal shall be spot primed with appropriate metal primer.
3. Painting and varnishing works shall not be commenced when it is too hot or cold.
4. Allow appropriate ventilation during application and drying period.
5. All hardware will be fitted and removed or protected prior to painting and varnishing works.



**Application**

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

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

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

**Mixing and Thinning**

At the time of application paint shall show no sign of deterioration. Paint shall be thoroughly stirred, strained and kept at a uniform consistency during application. Paints of different manufacture shall not be mixed together. When thinning is necessary, this may be done immediately prior to application in accordance with the manufacturer's directions, but not in excess of 1 pint of suitable thinner per gallon of the paint.

**Storage**

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

**Cleaning**

All cloths and cotton waste which constitute fire hazard shall be place in metal containers or destroyed at the end of daily works. Upon completion of the work, all staging, scaffolding and paint containers shall be removed and the entire job left clean and acceptable to the Engineer.

**Workmanship in General**

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

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

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

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

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

**Procedure of Sea-Mist Finish**

a) Depress wood grain by steel brush and sand surface lightly.

b) Apply sanding sealer

c) Apply two coats of individual lacquer paint

d) Spray last coat of industrial lacquer paint mixed with sanding sealer.

e) Apply wood paste filler thinned with turpentine or paint thinner into the wood surface.

f) Wipe off wood paste filler immediately.

g) Spray flat or gloss lacquer whichever is specified.

**Procedure for Varnish Finish**

a) Sand surface thoroughly

b) Apply primer surface white or gray by brush or spray.

c) Apply lacquer spot putty in thin coat. Allow each coat to become thoroughly dry before applying next coat.

d) Apply primer surfaces and then allow to dry in two (2) hours before applying the next coat.

e) Apply a coat of flat tone semi-gloss enamel as per color scheme submitted and approved by the Engineer.

**1032.4 Method of Measurement**

The areas of concrete, wood and metal surfaces applied with varnish, paint and other related coating materials shall be measured in square meters as desired and accepted to the satisfaction of the Engineer.

**1032.5 Basis of Payment**

The accepted work shall be paid at the unit bid price, which price and payment constitute full compensation for furnishing all materials, labor, equipment, tools and other incidental necessary to complete this item.

Payment will made under:

Pay Item Number	Description	Unit of Measurement
	Painting Works	m <sup>2</sup>
	Varnishing	m <sup>2</sup>
	Sea-mist Finish	m <sup>2</sup>



Ducco Finish	m <sup>2</sup>
Texture Finish	m <sup>2</sup>

## ITEM 1200 – AIR CONDITIONING AND REFRIGERATION SYSTEM

### 1200.1 Description

This item consist of furnishing and installation of air conditioning, refrigeration and ventilation systems, inclusive of necessary electrical connections, accessories, ready for service in accordance with the plans and specifications.

### 1200.2 Material Requirements

The types, sizes, capacities, quantities and power characteristics of the compressor, evaporator, condenser chilled water pump and condenser water pump shall be as shown on the plans.

#### 1200.2.1 Refrigerant Pipes

Refrigerant pipes shall be copper tubing, type L or K or black steel pipe, schedule 40 for size 100 mm diameter and smaller. Pipes over 100 mm diameter shall be black steel pipe schedule 40.

Black steel pipe shall be standard seamless, lap-welded, or electric resistant welded for size 50 mm diameter and larger, screw type for size 38 mm diameter and smaller, fittings for copper tubing shall be cast bronze fitting designed expressly for brazing.

#### 1200.2.2 Pipes for Cooling Water

Chilled and condenser cooling water pipes shall be black steel pipe, schedule 40. Pipes and fittings for size 50 mm diameter and smaller shall be screwed type. Pipes and fitting for size 62 mm diameter and larger shall be welded or flanged type.

#### 1200.2.3 Pipe Insulations

Insulation shall be pre-formed fiberglass or its equivalent. The insulating materials shall be covered with 100 mm x 13 mm thick polythelene film which shall be overlapped not less than 50 mm. Pipe insulations shall be adequately protected at point of support by means of suitable metal shield to avoid damage from compression. Insulated pipes, valves and fittings located outdoors shall be provided with metal jackets.

#### 1200.2.4 Ductworks

Ducts shall be galvanized sheet steel of not less than the following gages:

1. No. 26 for 300 mm wide and smaller
2. No. 24 for 350 mm to 750 mm wide
3. No. 22 for 775 mm to 1500 mm wide
4. No. 20 for 1525 mm to 2250 mm wide
5. No. 18 for 2275 mm to 2500 mm or larger
6. For aluminum sheets use one gage higher

Joints and stiffeners of ducts using slip joints shall be as follows:

- a. 300 mm wide and smaller, without bracing
- b. 325 mm to 750 mm wide, brace with 25 mm x 25 mm x 3 mm steel angles
- c. 775 mm to 1500 mm, brace with 31 mm x 31 mm x 3 mm steel angles
- d. 1525 mm up, brace with 38 mm 38 mm x 3 mm steel angles

Stiffeners shall be located not more than 1200 mm from each joint.

#### 1200.2.5 Ductwork Installation

The application materials shall be rigid board made of styropor or equivalent 25 mm thick for ground and top floor, 13 mm thick for intermediate floor.

Galvanized metal bands for ducts shall be secured and spaced 300 mm minimum center to center and corners shall be protected with galvanized metal angles.

#### 1200.2.6 Diffusers

The type, shape, capacity, size and location shall be shown in the plans.

Diffusers shall be complete with frame and gasket, equalizing deflector and volume control as indicated or specified and have factory applied prime coat of paint.

Samples of supply and return air diffusers shall be submitted for approval before mass fabrication and installation.

#### 1200.2.7 Dampers

Dampers shall be of same materials as duct, at least one gage heavier and shall have accessible location, complete with locking device for adjusting and locking damper in position.

Where necessary, splitters, butterflies and louvers damper deflecting vanes for control of air volume and direction and for balancing the system shall be provided whether or not they are indicated on the plans.

**1004.3 Construction Requirements**

**1004.3.1 Submittals:**

The Contract shall submit all necessary information to the Engineer prior to placing of order.

1004.3.1.1 Manufacturers data such a catalog for every hardware item to be furnished, showing all finishes, sizes, catalog numbers and pictures, with all abbreviations fully explained shall be submitted as general information and reference.

1004.3.1.2 Hardware templates for fabricated doors and windows shall be furnished to each fabricator to confirm that adequate provision will be done for proper installation of the hardware.

1004.3.1.3 Operation and maintenance data shall be provided and submitted to the Owner/DPWH showing all the hardware component part lists and maintenance instructions for each type supplied including the necessary wrenches of tools required.

**1004.3.2 Packaging and Marking**

1004.3.2.1 Each article shall be individually packaged in the manufacturer's commercial carton/container properly marked or labeled so as to be readily identified and delivered to the project site in the original manufacturer's container/package

1004.3.2.2 All hardware shall be provided with fasteners necessary for the installation packed in the same container with the hardware.

**1004.3.3 Storage and Protection**

Hardware shall be properly stored in a dry and secured place. It shall be protected from damage at all times prior to and after installation.

**1004.3.4 Installation of Hardware**

a. All hardware shall be installed in a neat workmanship manner following the manufacturer's instruction manual to fit details as indicated on the Plans.

b. Except as indicated or specified otherwise, fasteners furnished with the hardware shall be used to fasten hardware in place.

c. After installation works are completed, the hardware shall be protected from paints, stains, blemishes and other damage until the work are properly turned over and accepted.

d. All hardware shall be properly checked and adjusted in the presence of the engineer and all hinges, locks, catches, bolts, pulls, closers and other miscellaneous items shall operate properly.

e. After hardware are properly checked and adjusted, keys shall be properly identified with key tags and turned over to the Engineer.

**1004.3.5 Keying**

Locks shall be keyed in sets and subsets. Where locks are required by the owner to be keyed alike in one system furnish a total of 4 keys for each set.

**1004.4 Method of Measurement**

All hardware actually installed shall be measured and determined by number of pieces or units ready for service as provided in the Bill of Quantities accepted to the satisfaction of the Engineer.

**1004.5 Basis of Payment**

The Items measured and determined as provided in subsection 1004.4 shall be paid for at the unit bid price which payment constitute full compensation of materials, labor and incidentals necessary to complete this item.

Payment shall be made under:

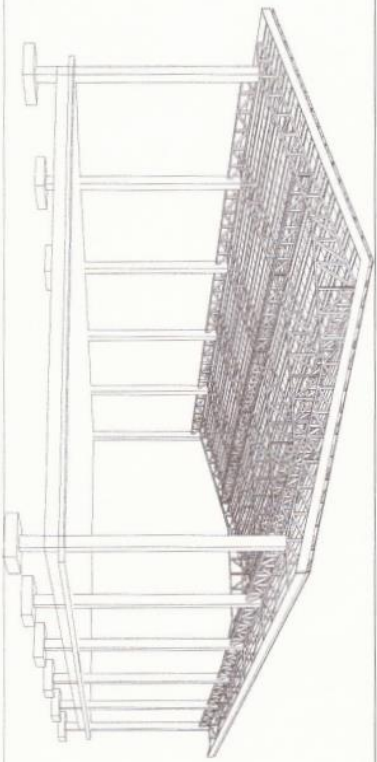
Pay Item	Description	Unit of Number Measurement
1004.2.1	Rough Hardware	pcs/kilo
1004.2.2	Finishing Hardware	pcs/set

Prepared by:

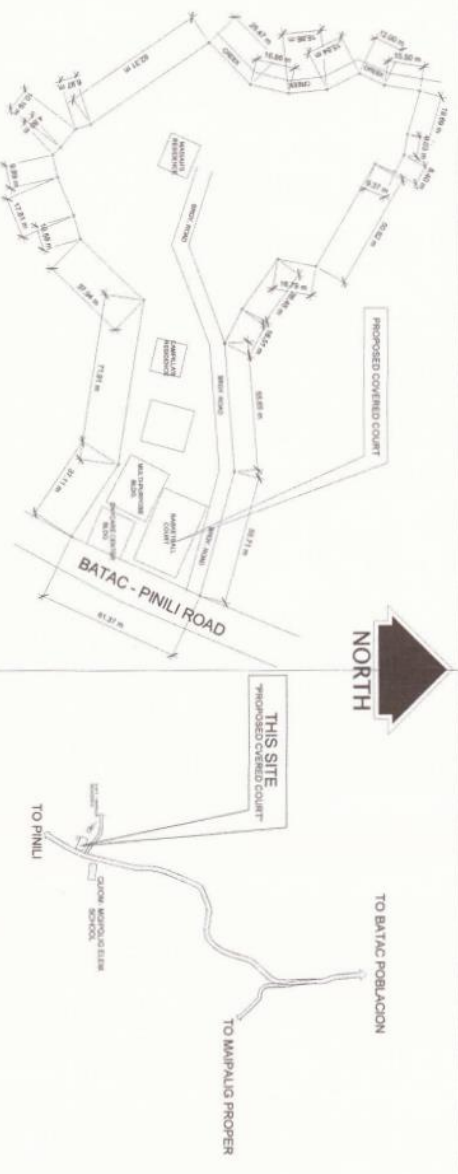


**ZHERLAND P. RIBUCA**  
Engineer II  
City Engineering Department

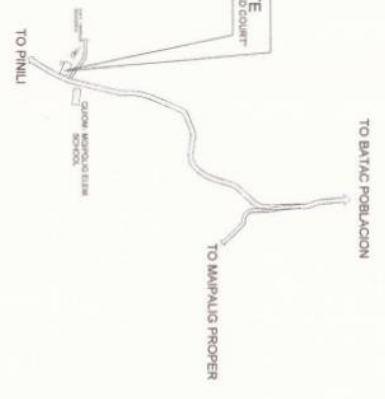
## *Section VII. Drawings*



1 EXTERIOR PERSPECTIVE  
SCALE: 1/8" = 1'-0"



2 SITE DEVELOPMENT PLAN  
SCALE: 1/8" = 1'-0"



3 VICINITY MAP  
SCALE: 1/8" = 1'-0"

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3. PROPOSED COVERED COURT	B-1
4. ELECTRICAL SYSTEMS	B-2
5. SANITARY	B-3
6. STRUCTURAL	B-4
7. MECHANICAL	B-5
8. LAND USE AND ZONING	B-6

REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS  
OFFICE OF THE DISTRICT OFFICIAL  
CITY OF BATAC

BUILDING OFFICIAL

LINE AND GRADE

LAND USE AND ZONING

ARCHITECTURAL

STRUCTURAL

SANITARY

ELECTRICAL

MECHANICAL

BUREAU OF FIRE



REPUBLIC OF THE PHILIPPINES  
CITY OF BATAC  
CITY ENGINEERING OFFICE

PROJECT TITLE:  
PROPOSED COVERED COURT

PROJECT LOCATION: IN BATAC, CITY OF BATAC

DATE: 1/15/2024

SCALE: 1/8" = 1'-0"

DESIGNED BY:  
AS SHOWN

CHECKED BY:

APPROVED BY:

REGISTERED ARCHITECT:  
ZHELE JOSE FERRELL

REGISTERED ELECTRICAL ENGINEER:  
JOSE L. ESTAL

REGISTERED CIVIL ENGINEER:  
JAMES A. SAMPANTU

REGISTERED MECHANICAL ENGINEER:  
HILARIO C. ANLUPITA

REGISTERED ELECTRICAL ENGINEER:  
ENGR. ALBERT D. CHUA

REGISTERED CIVIL ENGINEER:  
A



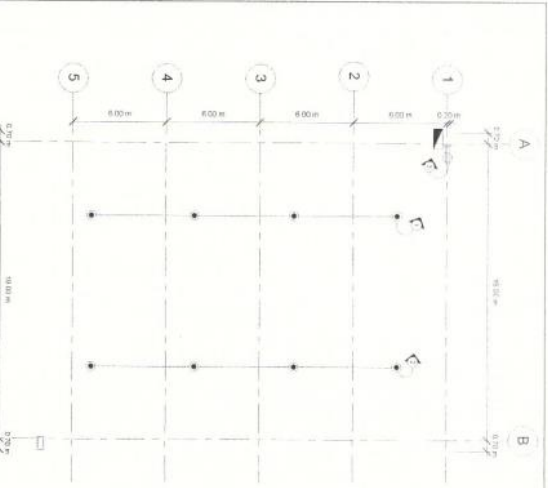




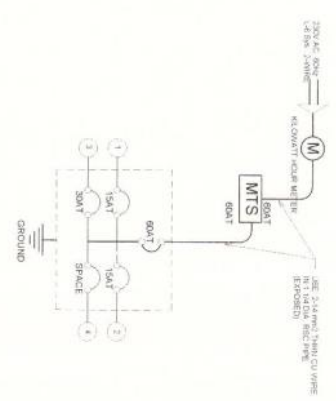








**1 LIGHTING & POWER LAYOUT**



**2 SINGLE LINE DIAGRAM**

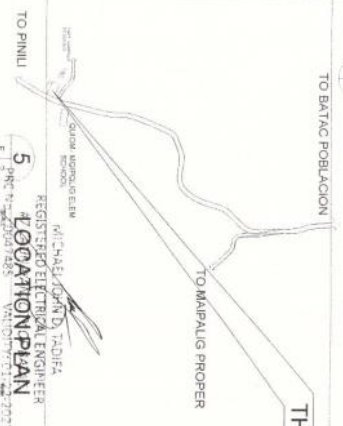
CIRCUIT NUMBER	LOAD DESCRIPTION	NUMBER OF SWITCHES			VA LOAD	CURRENT	BROKEN PROTECTION	WIRE	PVC CONDUIT
		S1	S2	S3 (S/W)					
cd1	LIGHTING OUTLET @ 100VA	4			600	2.6A	15A1.2P	2-1.5mm <sup>2</sup> THHN CU WIRE	20MM Ø
cd2	LIGHTING OUTLET @ 100VA	4			600	2.6A	15A1.2P	2-1.5mm <sup>2</sup> THHN CU WIRE	20MM Ø
cd3	POWER CIRCUIT @ 100VA	1			200	0.9A	30A1.2P	2-3.5mm <sup>2</sup> THHN CU WIRE	20MM Ø
cd4	SPARE				2000	6.1A			20MM Ø

GENERAL LIGHTING LOAD  
 LIGHTING CIRCUIT  
 GROSS COMPUTED LOAD  
 NET COMPUTED LOAD  
 COMPUTATION OF FL  
 $F_L = \frac{1000VA}{1.414} = 707VA$   
 $= 4.19A$   
 USE 1 PARALLEL WIRE 1000VA  
 2.5mm<sup>2</sup> THHN CU WIRE IN  
 1.5Ø PVC CONDUIT

**3 LOAD SCHEDULE AND COMPUTATION OF LOADS**

- POWER SERVICE ENTRANCE
- ACCOUNTANT HOUR METER
- PANEL BOARD
- CIRCUIT BREAKER
- CIRCUIT RUN
- SWITCH RUN
- S1 ONE GANG SWITCH
- S2 TWO GANG SWITCH
- S3 THREE GANG SWITCH
- S3W THREE WAY SWITCH
- FLUORESCENT LAMP CIRCULAR
- CIRCUIT NUMBER
- BULB OUTLET
- 150 WATTS HIGH BAY LIGHTS (LED)
- LED PANEL LIGHT
- COMMUNICATOR OUTLET
- ACU OUTLET
- ELECTRIC CEILING FAN
- EXHAUST FAN
- ELECTRIC WATER PUMP

**4 ELECTRICAL SYMBOL**



**5 LOCATION PLAN**

**6 ELECTRICAL NOTES**

1. ELECTRICAL WORKS REQUIRED HEREIN SHALL BE DONE ACCORDING TO THE PHILIPPINE ELECTRICAL CODE AND THE LOCAL EDITION OF THE PHILIPPINE ELECTRICAL CODE AND THE LOCAL ELECTRIC COOPERATIVE (INCO).
2. ALL WORKINGS SHALL BE INSTALLED IN STANDARD PVC PIPE SCHEDULE 40 PERMITTED BY APPROVED STRUCTURES OR NON-BURNING CEILING AND ROOFING.
3. ALL SPICES SHALL BE MADE AT JUNCTION BOXES AND OTHER LINE APPROVED MATERIALS FOR PARTICULAR PURPOSES.
4. BONDING SHALL BE DONE AS FOLLOWS:  
 A. WALL SWITCHES 1.375 WATS  
 B. CONSUMER OUTLETS 0.20 WATS  
 C. WALL PLUMBS 1.62 WATS
5. SERVICE LINE TO BE USED SHALL BE 20 V 60 HZ.
6. VERIFY POINT OF POWER SERVICE ENTRANCE.
7. WHENEVER REQUIRED OR NECESSARY, PULL BOXES AND JUNCTION BOXES SHALL BE INSTALLED AT CONVENIENT LOCATIONS, ALTHOUGH SUCH BOXES ARE NOT SHOWN.
8. ALL ELECTRICAL WORKS SHALL BE DONE UNDER THE SUPERVISION OF A DULY LICENSED ELECTRICAL ENGINEER OR MASTER'S ELECTRICIAN.



REGISTERED ELECTRICAL ENGINEER  
 CITY ENGINEERING OFFICE  
 PROJECT TITLE: PROPOSED COVERED COURT  
 PROJECT LOCATION: 200M ST. ST. MARIAN  
 DATE: 01-23-2022  
 REGISTERED ELECTRICAL ENGINEER: ENGR. ALBERT D. CHUA  
 PROJECT MANAGER: ENGR. ALBERT D. CHUA  
 CHECKED BY: ENGR. ALBERT D. CHUA  
 APPROVED BY: ENGR. ALBERT D. CHUA

## *Section VIII. Bill of Quantities*

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (Pesos)	AMOUNT PESOS
B.3	Permits & Clearances	L.S.	1.0	In words: <u>Pesos</u>  In Figures: <u>Php</u>	In Figures: <u>Php.</u>
B.5	Project Billboard/ Signboard	Ea.	1.0	In words: <u>Pesos</u>  In Figures: <u>Php</u>	In Figures: <u>Php</u>
B.7(2)	Occupational Safety and Health	L.S.	1.0	In words: <u>Pesos</u>  In Figures: <u>Php</u>	In Figures: <u>Php.</u>
B.9	Mobilization / Demobilization	L.S.	1.0	In words: <u>Pesos</u>  In Figures: <u>Php</u>	In Figures: <u>Php.</u>
801(1)	Removal of Structures and Obstruction (Concrete)	L.S.	1.0	In words: <u>Pesos</u>  In Figures: <u>Php</u>	In Figures: <u>Php.</u>
803(1)a	Structure Excavation (Common Soil, Manual Excavation)	cu.m.	81.96	In words: <u>Pesos</u>  In Figures: <u>Php</u>	In Figures: <u>Php.</u>
804(1)a	Embankment from Structure Excavation	cu.m.	57.60	In words: <u>Pesos</u>  In Figures: <u>Php</u>	In Figures: <u>Php.</u>

804(1)b	Embankment from Borrow	cu.m.	138.31	In words: <u>Pesos</u> <hr/> In Figures: <u>Php</u>	In Figures: <u>Php.</u>
804(4)	Gravel fill	cu.m.	28.50	In words: <u>Pesos</u> <hr/> In Figures: <u>Php</u>	In Figures: <u>Php.</u>
900(1)c1	Structural Concrete (Class A), 28 days	cu.m.	100.80	In words: <u>Pesos</u> <hr/> In Figures: <u>Php</u>	In Figures: <u>Php.</u>
902(1)a	Reinforcing steel (Deformed), Grade 40	kgs	7,780.92	In words: <u>Pesos</u> <hr/> In Figures: <u>Php</u>	In Figures: <u>Php.</u>
903(1)	Formworks and Falseworks	sq.m.	266.20	In words: <u>Pesos</u> <hr/> In Figures: <u>Php</u>	In Figures: <u>Php.</u>
1046(2)a 1	100mm CHB Non-Load Bearing (Including Reinforcing steel)	sq.m.	20.16	In words: <u>Pesos</u> <hr/> In Figures: <u>Php</u>	In Figures: <u>Php.</u>
1027(1)	Cement Plaster Finish	sq.m.	20.16	In words: <u>Pesos</u> <hr/> In Figures: <u>Php</u>	In Figures: <u>Php.</u>
1032(1)c	Painting Works (Steel)	sq.m.	1,604.38	In words: <u>Pesos</u> <hr/>	In Figures: <u>Php.</u>

				In Figures: <u>Php</u>	
1013(2)a 1	Fabricated Metal Accessory Rolls (Ridge/Hip GA26)	l.m.	33.00	In words: <u>Pesos</u>  <hr/> In Figures: <u>Php</u>	In Figures: <u>Php.</u>
1013(2)a 2	Fabricated Metal Accessory (Flashing GA26)	l.m.	45.60	In words: <u>Pesos</u>  <hr/> In Figures: <u>Php</u>	In Figures: <u>Php.</u>
1013(2)b 1	Fabricated Metal Accessory (Gutters GA26)	l.m.	66.00	In words: <u>Pesos</u>  <hr/> In Figures: <u>Php</u>	In Figures: <u>Php.</u>
1014(1)b 2	Prepainted Metal Sheets, (Long Span, Rib Type, above 0.427mm thk)	sq.m.	759.00	In words: <u>Pesos</u>  <hr/> In Figures: <u>Php</u>	In Figures: <u>Php.</u>
1047(2)	Structural Steel	kgs.	19,359.15	In words: <u>Pesos</u>  <hr/> In Figures: <u>Php</u>	In Figures: <u>Php.</u>
1100(10)	Conduit, Boxes & Fittings (Conduit Works/Conduit Rough-In)	l.s.	1.0	In words: <u>Pesos</u>  <hr/> In Figures: <u>Php</u>	In Figures: <u>Php.</u>
1101(33)	Wires and Wiring Devices	l.s.	1.0	In words: <u>Pesos</u>  <hr/> In Figures: <u>Php</u>	In Figures: <u>Php.</u>
1102(1)	Panel Board with Main & Branch Breakers	l.s.	1.0	In words: <u>Pesos</u>	In Figures: <u>Php.</u>



				<hr/> In Figures: <u>Php</u>	
1103(1)	Lighting Fixtures and Lamps	l.s.	1.0	In words: <u>Pesos</u> <hr/> In Figures: <u>Php</u>	In Figures: <u>Php.</u>
1001(6)	Catch Basin	l.s.	1.0	In words: <u>Pesos</u> <hr/> In Figures: <u>Php</u>	In Figures: <u>Php.</u>
1001(9)	Storm Drainage	l.s.	1.0	In words: <u>Pesos</u> <hr/> In Figures: <u>Php</u>	In Figures: <u>Php.</u>

## ***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);  
**or**

#### Technical Documents

- (e) Statement of the prospective bidder of all its ongoing government and private contracts, including contracts awarded but not yet started, if any, whether similar or not similar in nature and complexity to the contract to be bid; **and**
- (f) Statement of the bidder's Single Largest Completed Contract (SLCC) similar to the contract to be bid, except under conditions provided under the rules; **and**
- (g) Philippine Contractors Accreditation Board (PCAB) License;  
**or**  
Special PCAB License in case of Joint Ventures; **and** registration for the type and cost of the contract to be bid; **and**
- (h) Original copy of Bid Security. If in the form of a Surety Bond, submit also a certification issued by the Insurance Commission;  
**or**  
Original copy of Notarized Bid Securing Declaration; **and**
- (i) Project Requirements, which shall include the following:
- a. Organizational chart for the contract to be bid;
- b. List of contractor's key personnel (*e.g.*, Project Manager, Project Engineers, Materials Engineers, and Foremen), to be assigned to the contract to be bid, with their complete qualification and experience data;
- c. List of contractor's major equipment units, which are owned, leased, and/or under purchase agreements, supported by proof of ownership or certification of availability of equipment from the equipment lessor/vendor for the duration of the project, as the case may be; **and**
- (j) Original duly signed Omnibus Sworn Statement (OSS); **and** if applicable, Original Notarized Secretary's Certificate in case of a corporation, partnership, or cooperative; or Original Special Power of Attorney of all members of the joint venture giving full power and authority to its officer to sign the OSS and do acts to represent the Bidder.

#### Financial Documents

- (k) The prospective bidder's audited financial statements, showing, among others, the prospective bidder's total and current assets and liabilities, stamped "received" by the BIR or its duly accredited and authorized institutions, for the preceding calendar year which should not be earlier than two (2) years from the date of bid submission; **and**
- (l) The prospective bidder's computation of Net Financial Contracting Capacity (NFCC).

### *Class "B" Documents*

- (m) 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

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

### *Other documentary requirements under RA No. 9184*

- (o) Original of duly signed Bid Prices in the Bill of Quantities; **and**
- (p) 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**
- (q) Cash Flow by Quarter.

