

PHILIPPINE BIDDING DOCUMENTS

CONSTRUCTION OF WAITING SHED IN THE BANGSAMORO AUTONOMOUS REGION IN MUSLIM MINDANAO (BARMM)

Government of the Republic of the
Philippines

**Sixth Edition
July 2020**

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Section I. Invitation to Bid



Republic of the Philippines
BANGSAMORO AUTONOMOUS REGION IN MUSLIM MINDANAO
BIDS AND AWARDS COMMITTEE
OFFICE OF THE CHIEF MINISTER

Bangsamoro Government Center, Governor Gutierrez Avenue, Rosary Heights VII, Cotabato City 9600

Invitation to Bid for CONSTRUCTION OF COVERED COURT IN THE BARMM

ITB No.: **SLMG-2022-14**

1. The **Office of the Chief Minister, Bangsamoro Autonomous Region in Muslim Mindanao (OCM-BARMM)**, through the **General Appropriations Act Bangsamoro (GAAB) of 2021** intends to apply the sum of **Twenty-One Million Pesos (PHP 21,000,000.00)**, being the Approved Budget for the Contract (ABC) to payments under the contract for the **Construction of Waiting Shed in the BARMM 2021**. The procurement consists of 11 lots, to wit:

LOT NO.	PARTICULARS	ABC	BIDING DOCUMENTS FEE	PROJECT DURATION
1	Construction of 3-units of Waiting Shed: 1) 1-unit in Sentro Langkong, 2) 1-unit in Bugasan (in front of Municipal Hall), and 3) 1-unit in Bayanga Norte (Jct. Sitio Marayag and LDS), Matanog, Province of Maguindanao	PHP 2,100,000.00	PHP 5,000.00	45 cd
2	Construction of 3-units of Waiting Shed: 1) 1-unit in Lipawan, 2) 1-unit in Marang, and 3) 1-unit in Tugaig, Barira, Province of Maguindanao	PHP 2,100,000.00	PHP 5,000.00	
3	Construction of 2-units of Waiting Shed: 1) 1-unit in Makabiso, and 2) 1-unit in Tapayan (in front of Municipal Hall), Sultan Mastura, Province of Maguindanao	PHP 1,400,000.00	PHP 5,000.00	
4	Construction of 2-units of Waiting Shed: 1) 1-unit in Pura, Centro, and 2) 1-unit in Pura (Hataman	PHP 1,400,000.00	PHP 5,000.00	

	Village), Datu Blah Sinsuat, Province of Maguindanao			
5	Construction of 3-units of Waiting Shed: 1) 1-unit in Paldong, 2) 1-unit in Kulambog, and 3) 1-unit in SSB Municipal Hall Compound, Sultan sa Barongis, Province of Maguindanao	PHP 2,100,000.00	PHP 5,000.00	
6	Construction of 3-units of Waiting Shed: 1) 1-unit in Awang, Datu Odin Sinsuat, 2) 1-unit in Tenorio, Datu Odin Sinsuat, and 3) 1-unit in Tambunan, Guindulungan, Province of Maguindanao	PHP 2,100,000.00	PHP 5,000.00	
7	Construction of 3-units of Waiting Shed: 1) 1-unit in Pebpoloan, Carmen, 2) 1-unit in Pedtad, Kabacan, and 3) 1-unit in Tamped, Kabacan, North Cotabato	PHP 2,100,000.00	PHP 5,000.00	
8	Construction of 3-units of Waiting Shed: 1) 1-unit in Nunguan, Pikit I, 2) 1-unit in Bagoinged, Pikit II, and 3) 1-unit in Manaulanan, Pikit III, North Cotabato	PHP 2,100,000.00	PHP 5,000.00	
9	Construction of 4-units of Waiting Shed: 1) 1-unit in Kapinpilan, Midsayap I, 2) 1-unit Damatulan, Midsayap II, 3) 1-unit in Kadingilan (near market site), and 4) 1-unit in Libungan Torreta, Pigcawayan, North Cotabato	PHP 2,800,000.00	PHP 5,000.00	
10	Construction of 3-units of Waiting Shed: 1) 2-units in Cotabato Regional Medical Center (CRMC), and 2) 1-unit in City Hall	PHP 2,100,000.00	PHP 5,000.00	

	of Cotabato, City of Cotabato			
11	Construction of 1-unit of Waiting Shed in Municipal Hall of Lumbatan, Lumbatan, Lanao del Sur	PHP 700,000.00	PHP 1,000.00	

Bids received in excess of the ABC for each lot shall be automatically rejected at bid opening.


1. The **OCM-BARMM** now invites bids for the above Procurement Project. Completion of the Works is required within the period specified above. 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).
2. 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.
3. Interested bidders may obtain further information from **OCM-BARMM** and inspect the Bidding Documents at the address given below from **8:00 AM – 5:00 PM**.
4. A complete set of Bidding Documents may be acquired by interested bidders on **August 11, September 2, 2022** from given address and website/s below. The Procuring Entity shall allow the bidder to present its proof of payment for the fees **in person**.
5. The **OCM-BARMM** will hold a Pre-Bid Conference¹ on **August 18, 2022, 9:00 a.m. at Bangsamoro Planning and Development Authority Conference Hall, Bangsamoro Government Center, Cotabato City and via Zoom Teleconference**, which shall be open to prospective bidders. Prospective bidders may request the zoom details at **ocmbac@bangsamoro.gov.ph**.
6. Bids must be duly received by the BAC Secretariat through **manual submission** at **Bangsamoro Planning and Development Authority Conference Hall, Bangsamoro Government Center, Cotabato City**, on or before **September 2, 2022, 8:30 a.m.** Late bids shall not be accepted.
7. All bids must be accompanied by a bid security in any of the acceptable forms and in the amount stated in **ITB** Clause 15.
8. Bid opening shall be on **September 2, 2022, 9:00 a.m. at Bangsamoro Planning and Development Authority Conference Hall, Bangsamoro Government Center, Cotabato City**. Bids will be opened in the presence of the bidders' representatives who choose to attend the activity.

¹ 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. The **OCM-BARMM** 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.

10. **For further information, please refer to:**

<ul style="list-style-type: none"> a. Sale of Bidding b. Query on How to submit bids c. Links for online connectivity for procurement activities d. Written Clarifications on the project 	<p>Bids and Awards Committee Secretariat ocmbac@bangsamoro.gov.ph 0917-831-7214</p>
<p>Scope of Works, Plans, Drawings and Bill of Quantities</p>	<p>Support to Local Moral Governance-Project Management Office slmg@bangsamoro.gov.ph 0927-902-1155</p>


MOHD ASNIN K. PENDATUN
 Chairperson, Bids and Awards Committee

Section II. Instructions to Bidders

1. Scope of Bid

The Procuring Entity, **OCM-BARMM** invites Bids for the **Construction of Waiting Shed in the BARMM**, with Project Identification Number **SLMG-2022-14**.

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

2. Funding Information

2.1. The GOP through the source of funding as indicated below for **GAAB 2021** in the amount of **PHP 21,000,000.00**.

2.2. The source of funding is: **NGA, the General Appropriations Act or Special Appropriations.**

3. Bidding Requirements

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

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

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

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

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

5. Eligible Bidders

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

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

- 5.3. For Foreign-funded Procurement, the Procuring Entity and the foreign government/foreign or international financing institution may agree on another track record requirement, as specified in the Bidding Document prepared for this purpose.
- 5.4. The Bidders shall comply with the eligibility criteria under Section 23.4.2 of the 2016 IRR of RA No. 9184.

6. Origin of Associated Goods

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

7. Subcontracts

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

The Procuring Entity has prescribed that: **Subcontracting is not allowed.**

8. Pre-Bid Conference

The Procuring Entity will hold a pre-bid conference for this Project on the specified date and time and either at its physical address and/or through videoconferencing/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: 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 CALENDAR DAYS FROM THE BID SUBMISSION**. 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 16 shall be submitted for each contract (lot) separately.

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

20. Post Qualification

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

21. Signing of the Contract

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

Section III. Bid Data Sheet

Bid Data Sheet

ITB Clause			
3	<p>Bidders should comply with the prescribed Bidding forms specified in GPPB Circular 04-2020, GPPB Resolution 16-2020, and the Bidding Documents.</p> <p>Bids not addressing or providing all the required items in the above documents shall be considered non-responsive and, thus, automatically disqualified.</p>		
5.2	<p>For this purpose, contracts similar to the Project refer to contracts which have the same major categories of work, which shall be:</p> <p>i. Contract for General Building; and ii. Equivalent to at least 50% of the ABC per lot.</p>		
7.1	Not applicable.		
10.3	Particulars	Size Range	License Category
	Lot 1. Construction of 3-units of Waiting Shed: 1) 1-unit in Sentro Langkong, 2) 1-unit in Bugasan (in front of Municipal Hall), and 3) 1-unit in Bayanga Norte (Jct. Sitio Marayag and LDS), Matanog, Province of Maguindanao	Medium B	B
	Lot 2. Construction of 3-units of Waiting Shed: 1) 1-unit in Lipawan, 2) 1-unit in Marang, and 3) 1-unit in Tugaig, Barira, Province of Maguindanao	Medium B	B
	Lot 3. Construction of 2-units of Waiting Shed: 1) 1-unit in Makabiso, and 2) 1-unit in Tapayan (in front of Municipal Hall), Sultan Mastura, Province of Maguindanao	Medium B	B
	Lot 4. Construction of 2-units of Waiting Shed: 1) 1-unit in Pura, Centro, and 2) 1-unit in Pura (Hataman Village), Datu Blah Sinsuat, Province of Maguindanao	Medium B	B
	Lot 5. Construction of 3-units of Waiting Shed: 1) 1-unit in Paldong, 2) 1-unit in Kulambog, and 3) 1-unit in SSB Municipal Hall Compound, Sultan sa Barongis, Province of Maguindanao	Medium B	B
	Lot 6. Construction of 3-units of Waiting Shed: 1) 1-unit in Awang, Datu Odin Sinsuat, 2) 1-unit in Tenorio, Datu Odin Sinsuat, and 3) 1-unit in Tambunan, Guindulungan, Province of Maguindanao	Medium B	B
	Lot 7. Construction of 3-units of Waiting Shed: 1) 1-unit in Pebpoloan, Carmen, 2) 1-unit in Peditad, Kabacan, and 3) 1-unit in Tamped, Kabacan, North Cotabato	Medium B	B
	Lot 8. Construction of 3-units of Waiting Shed: 1) 1-unit in Nunguan, Pikit I, 2) 1-unit in Bagoinged, Pikit II, and 3) 1-unit in Manaulanan, Pikit III, North Cotabato	Medium B	B
	Lot 9. Construction of 4-units of Waiting Shed: 1) 1-unit in Kapinpilan, Midsayap I, 2) 1-unit Damatulan, Midsayap II, 3) 1-unit in Kadingilan (near market site), and 4) 1-unit in Libungan Torreta, Pigcawayan, North Cotabato	Medium B	B
	Lot 10. Construction of 3-units of Waiting Shed: 1) 2-units in Cotabato Regional Medical Center (CRMC), and 2) 1-unit in City Hall of Cotabato, City of Cotabato	Medium B	B
	Lot 11. Construction of 1-unit of Waiting Shed in Municipal Hall of Lumbatan, Lumbatan, Lanao del Sur	Medium B	B

10.4	The key personnel must meet the required minimum years of experience set below:																										
	Per Lot:																										
	<table border="1"> <thead> <tr> <th data-bbox="368 392 568 459">Key Personnel</th> <th data-bbox="571 392 991 459">General Experience</th> <th data-bbox="994 392 1353 459">Relevant Experience</th> </tr> </thead> <tbody> <tr> <td data-bbox="368 463 568 779">1 Project Engineer (per lot)</td> <td data-bbox="571 463 991 779">With experience on general construction</td> <td data-bbox="994 463 1353 779"> <p>With experience on actual vertical and Horizontal structures for at least two (2) years specifically in community development project such as Core Shelter, Housing, water system facilities, sewage system.</p> <p>With knowledge in Autocad and plan review.</p> </td> </tr> <tr> <td data-bbox="368 784 568 1064">1 Civil Engineer (per lot)</td> <td data-bbox="571 784 991 1064">With experience on general construction</td> <td data-bbox="994 784 1353 1064"> <p>With experience on actual vertical and Horizontal structure construction implementation and finishing of works on both building and water system projects for at least two (2) years.</p> <p>With knowledge in Autocad and plan review.</p> </td> </tr> <tr> <td data-bbox="368 1068 568 1160">1 Electrical Engineer (per lot)</td> <td data-bbox="571 1068 991 1160">With experience on general electrical works</td> <td data-bbox="994 1068 1353 1160">With experience on solar power system.</td> </tr> <tr> <td data-bbox="368 1164 568 1480">1 Materials Engineer (per lot)</td> <td data-bbox="571 1164 991 1480">With experience on quality control</td> <td data-bbox="994 1164 1353 1480"> <p>With experience on actual vertical and Horizontal structure construction implementation and finishing of works on both building and water system projects for at least two (2) years.</p> <p>Ensuring all materials used and work performed are as per specifications.</p> </td> </tr> <tr> <td data-bbox="368 1485 568 1610">1 Safety Officer (per lot)</td> <td data-bbox="571 1485 991 1610">With experience on general construction</td> <td data-bbox="994 1485 1353 1610">With experience as a safety Engineer or Safety Officer in construction site for at least one (1) year.</td> </tr> <tr> <td data-bbox="368 1615 568 1832">1 Construction Foreman (per site)</td> <td data-bbox="571 1615 991 1832">With experience on general construction</td> <td data-bbox="994 1615 1353 1832"> <p>With experience on actual vertical and Horizontal structure construction and finishing of works for at least two (2) years.</p> <p>With knowledge on plan execution.</p> </td> </tr> <tr> <td data-bbox="368 1836 568 1989">1 Plumber (per lot)</td> <td data-bbox="571 1836 991 1989">With experience on general construction</td> <td data-bbox="994 1836 1353 1989">With experience in water system, for at least two (2) years.</td> </tr> </tbody> </table>	Key Personnel	General Experience	Relevant Experience	1 Project Engineer (per lot)	With experience on general construction	<p>With experience on actual vertical and Horizontal structures for at least two (2) years specifically in community development project such as Core Shelter, Housing, water system facilities, sewage system.</p> <p>With knowledge in Autocad and plan review.</p>	1 Civil Engineer (per lot)	With experience on general construction	<p>With experience on actual vertical and Horizontal structure construction implementation and finishing of works on both building and water system projects for at least two (2) years.</p> <p>With knowledge in Autocad and plan review.</p>	1 Electrical Engineer (per lot)	With experience on general electrical works	With experience on solar power system.	1 Materials Engineer (per lot)	With experience on quality control	<p>With experience on actual vertical and Horizontal structure construction implementation and finishing of works on both building and water system projects for at least two (2) years.</p> <p>Ensuring all materials used and work performed are as per specifications.</p>	1 Safety Officer (per lot)	With experience on general construction	With experience as a safety Engineer or Safety Officer in construction site for at least one (1) year.	1 Construction Foreman (per site)	With experience on general construction	<p>With experience on actual vertical and Horizontal structure construction and finishing of works for at least two (2) years.</p> <p>With knowledge on plan execution.</p>	1 Plumber (per lot)	With experience on general construction	With experience in water system, for at least two (2) years.		
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10.5	<p>The minimum major equipment requirements are the following:</p> <table border="1" data-bbox="384 248 1347 678"> <thead> <tr> <th data-bbox="384 248 695 293">Equipment</th> <th data-bbox="695 248 1023 293">Capacity</th> <th data-bbox="1023 248 1347 293">Number of Units</th> </tr> </thead> <tbody> <tr> <td data-bbox="384 293 695 327">Dump Truck</td> <td data-bbox="695 293 1023 327">7 cu.m</td> <td data-bbox="1023 293 1347 327">1 per Project Site</td> </tr> <tr> <td data-bbox="384 327 695 360">Water Truck</td> <td data-bbox="695 327 1023 360">1000 liters</td> <td data-bbox="1023 327 1347 360">1 per Project Site</td> </tr> <tr> <td data-bbox="384 360 695 394">Concrete Vibrator</td> <td data-bbox="695 360 1023 394">1.5 kw - 2.3 kw</td> <td data-bbox="1023 360 1347 394">1 per Project Site</td> </tr> <tr> <td data-bbox="384 394 695 427">Concrete Mixer</td> <td data-bbox="695 394 1023 427">1 bagger</td> <td data-bbox="1023 394 1347 427">1 per Project Site</td> </tr> <tr> <td data-bbox="384 427 695 517">Plate Compactor</td> <td data-bbox="695 427 1023 517">Power Gen. BD170F(4.2HP)</td> <td data-bbox="1023 427 1347 517">1 per Project Site</td> </tr> <tr> <td data-bbox="384 517 695 551">Welding Machine</td> <td data-bbox="695 517 1023 551">300 amperes</td> <td data-bbox="1023 517 1347 551">1 per Project Site</td> </tr> <tr> <td data-bbox="384 551 695 584">Bar Bender</td> <td data-bbox="695 551 1023 584">At least 16mm dia.</td> <td data-bbox="1023 551 1347 584">1 per Project Site</td> </tr> <tr> <td data-bbox="384 584 695 618">Bar Cutter</td> <td data-bbox="695 584 1023 618">At least 16mm dia.</td> <td data-bbox="1023 584 1347 618">1 per Project Site</td> </tr> <tr> <td data-bbox="384 618 695 678"></td> <td data-bbox="695 618 1023 678"></td> <td data-bbox="1023 618 1347 678"></td> </tr> </tbody> </table>	Equipment	Capacity	Number of Units	Dump Truck	7 cu.m	1 per Project Site	Water Truck	1000 liters	1 per Project Site	Concrete Vibrator	1.5 kw - 2.3 kw	1 per Project Site	Concrete Mixer	1 bagger	1 per Project Site	Plate Compactor	Power Gen. BD170F(4.2HP)	1 per Project Site	Welding Machine	300 amperes	1 per Project Site	Bar Bender	At least 16mm dia.	1 per Project Site	Bar Cutter	At least 16mm dia.	1 per Project Site			
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12	Not applicable.																														
15.1	<p>The bid security shall be in the form of a Bid Securing Declaration or any of the following forms and amounts:</p> <ol style="list-style-type: none"> <li data-bbox="408 797 1417 909">a. The amount of not less than two percent (2%) of the ABC for each LOT, if bid security is in cash, cashier's/manager's check, bank draft/guarantee or irrevocable letter of credit; <li data-bbox="408 954 1417 1021">b. The amount of not less than five percent (5%) of the ABC for each LOT if bid security is in Surety Bond. 																														
16	<p>Each Bidder are requested to submit one (1) original copy and five (5) certified true copies of its technical and financial requirements certified by the owner or its duly authorized representative whose full name and designation should be indicated below the signature.</p> <p>With respect to the documents those are emanating from the bidder should be originally signed by the owner or its duly authorized representative, to wit: Statement of all ongoing government and private contract, Statement of Single Largest Completed Contract, Bid Securing Declaration, Project Requirements, Omnibus Sworn Statement, Net Financial Contracting Capacity, Bid Form, Bill of Quantities, Detailed Estimates, and Cash Flow.</p> <p>Each bidder shall submit its bid proposal to a one mother envelope that shall contain 6 more envelopes containing six copies of its technical and financial documents. Each of the six envelopes shall contain two more envelopes labeled as technical and financial component. The envelopes must be properly and separately marked and sealed.</p>																														
19.2	Partial bids are not allowed.																														
21	<p>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.</p> <p>The above documents should be submitted within 10 cd upon receipt of the Notice of Award.</p>																														

Section IV. General Conditions of Contract

1. Scope of Contract

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

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

2. Sectional Completion of Works

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

3. Possession of Site

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

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

4. The Contractor's Obligations

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

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

5. Performance Security

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

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

6. Site Investigation Reports

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

7. Warranty

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

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

8. Liability of the Contractor

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

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

9. Termination for Other Causes

Contract termination shall be initiated in case it is determined prima facie by the Procuring Entity that the Contractor has engaged, before, or during the

implementation of the contract, in unlawful deeds and behaviors relative to contract acquisition and implementation, such as, but not limited to corrupt, fraudulent, collusive, coercive, and obstructive practices as stated in **ITB** Clause 4.

10. Dayworks

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

11. Program of Work

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

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

12. Instructions, Inspections and Audits

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

13. Advance Payment

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

14. Progress Payments

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

15. Operating and Maintenance Manuals

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

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

Section V. Special Conditions of Contract

Special Conditions of Contract

GCC Clause	
2	n/a
4.1	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 ten (10) days of delivery of the Notice of Award.
11.2	The amount to be withheld for late submission of an updated Program of Work is [insert amount].
13	The amount of the advance payment shall not exceed 15% of the total contract price and schedule of payment.
14	Materials and equipment delivered on the site but not completely put in place shall not be included for payment.
15.1	The date by which operating and maintenance manuals are required upon substantial completion. The date by which "as built" drawings are required upon substantial completion.
15.2	The amount to be withheld for failing to produce "as built" drawings and/or operating and maintenance manuals by the date required is [amount in local currency].

Section VI. Specifications

16. SECTION 02200 EARTHWORK

PART 1 GENERAL

02200.1 SCOPE

a. Work Included:

1. Furnishing of all labor equipment and material for excavation and backfilling.
2. Inspection of site to survey necessary labor, equipment and materials.
3. Excavation and hauling of excavated materials.
4. Backfilling and grading up to the property line.

b. Related Work Specified Elsewhere:

1. Preparation of sub-grade for concrete pouring.
2. Trenching and backfilling for storm sewer system.
3. Trenching and backfilling for sanitary sewer system.

02200.2 PROTECTION

- a. Provide adequate bracing and shoring to existing construction as may required.
- b. Perform all excavation work with a minimum amount of damage to work, which is to remain.
- c. Repair any damage caused by negligence of Contractor at his own expense.
- d. Provide adequate protection measures for materials, men and adjoining property.
- e. Avoid creating nuisance to adjacent areas.

02200.3 MEASUREMENT AND PAYMENT

- a. Excavation shall be measured in its original position by cross-sectioning the area excavated. Volume will be computed from the cross-section measurements by the average-end-area method.
- b. Accepted quantities will be paid for at the contract price per unit of measurement for excavation, including embankment construction.

PART 2 PRODUCTS

02200.4 MATERIALS

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

PART 3 EXECUTION

02200.5 PREPARATION

- a. Stakes and Batter Boards:
 1. Stake out the building accurately and establish grades. Secure the approval of the Owner and/or Architect.
 2. Erect batter boards and reference mark where they will not be disturbed during construction.
 2. Store material and conduct work in such a manner as to preserve all reference marks.
 3. Re-establishment of lines and grades where necessary shall be done at the Contractor's expense.
- b. Rough Grading
 1. Cut and fill machine grade the site area.
 2. Deposit materials in horizontal layers not exceeding 20 centimeter (8 inches) in depth and compact to 95% of maximum density. (Modified Proctor Test)

02200.6 EXCAVATION

- a. Foundation:
 1. Excavate to grade indicated.
 2. Excavate trenches to a near size, leveled to line at the bottom ready to receive the foundation.
 3. Excavation greater than required by the drawings and specifications and which is within the bearing area of walls, footings, or floor slabs shall be filled with class "D" concrete at Contractor's expense.

4. All foundations are designed for an allowable soil bearing capacity computed and the soil boring test results. Contractor shall report to the Engineer actual soil conditions uncovered and confirm soil actual capacity before any concreting is started.

b. Trenching for Utility and Foundation Drawings

1. Excavate to a point 1.0 meter beyond building line of sufficient distance from the walls and footings to allow placement removal of forms.
2. Backfill materials and concrete fill. Where excavation is at lower levels or greater depth than required for foundation, or where unsatisfactory material is removed, the excess material shall be replaced with backfill material, except below grade beams, footings or other structural concrete where fill to depth or level shall be with concrete of the same strength as specified.

02200.7 DEWATERING

- a. Water encountered during excavation shall be removed by piling or pumping, care being taken that the surrounding particles of soil are not disturbed or removed.
- b. Pump water out of excavated area throughout the construction.

02200.8 SUB-DRAINAGE

- a. Excavate trenches for underground utility system and drain lines. Grade and tamp to provide firm bed trenches for drain lines.
- b. When rock is encountered, excavate to a depth 15 centimeter below the bottom of the pipe, and before pipe is laid, the space below the pipe shall be filled with sand, gravel or crushed stone.

02200.9 SOIL COMPACTION

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

02200.10 DISPOSAL OF EXCAVATED MATERIAL

Surplus materials resulting from the site excavation and grading operations shall be removed from the site and disposed off in proper manner at the Contractor's expense.

02200.11 BACKFILLING AND GRADING

- a. Backfilling:
 1. Commence after approval of construction below finish grade, underground utility system inspected and tested, form removed and the excavation clean of trash and debris.

2. Place in layers not more than 15 centimeter thick and evenly compact and ram by wetting, tamping or rolling until the correct grade is reached.
- b. Finish Grading:
1. Place fill materials in horizontal loose layers not exceeding 15 centimeter in thickness and spread, mix and place in such manner as to produce a uniform thickness of material.
 2. Start in deepest area and progress approximately parallel to finish grade.
 3. Grade finish surface to drain water away from the building.

SECTION 02280 SOIL POISONING

PART 1 GENERAL

02280.1 SCOPE

- a. Soil Poisoning shall be executed by a duly licensed and certified termite and pest control company to guarantee the soil poisoning works for five years.
- b. Furnish material and equipment and perform labor required to complete soil poisoning work.

02280.2 EXAMINATION OF SITE

Visit the site of the work and examine the premises to fully understand all existing conditions relative to the work.

PART 2 MATERIALS

02280.3 SOIL POISONING

- a. Soil poise shall be water-base emulsions. Any of the following may be used:
 1. Benzene Hexachloride - 0.8 percent gamma isomer concentration.
 2. Chloride - 1 percent concentration.
 3. Dieldrin - 0.5 percent concentration.
 4. Aldrin - 0.5 percent concentration.
 5. Heptachlor - 0.5 percent concentration.

PART 3 EXECUTION

02280.4 APPLICATION

- a. Soil poisoning work shall not begin until all preparations for footings, CHB under grade and slab on fill have been completed.
- b. Soil Poisson shall not be applied when soil is excessively wet.

- c. After grading and leveling the soil in the ground and layer of gravel is laid preparatory to the pouring of concrete floor or soap every square meter of floor area with soil Poisoning working solution.
- d. Thoroughly drench and saturate every linear meter excavation for footings and other foundation work with soil poison working solution before pouring of concrete.
- e. 7.6 liters of soil poison working solution per 1.5 linear meter shall be applied to all area immediately below expansion joints, control joints, and all areas, where slab will be penetrate by pipe duct and other construction features.
- e. Hollow masonry walls resting on grades shall have its voids treated with 3.79 liter of soil poison working solution per 1.5 linear meter of wall. Poisons are poured directly into the hollow spaces.
- f. Prior to landscaping of the lawn, saturate very linear meter perimeter of the building about 3 meters wide with soil poison working solution.
- g. Treat earthfill thoroughly. As soon as fill is packed and levelled, drench every 1 square meter area with soil poison working solution.

02280.5 INSPECTION AND TIME

- a. One sample of concentrates toxicant shall be tested.
- b. One sample of working solution shall be tested for each 1,000 square meter of treated area. There shall be at least two sample tested.
- c. Samples shall be taken and analytical tests performed by approved testing laboratory. Test shall be paid by the Contractor. The result shall be submitted to the Owner.

02280.6 GUARANTEE

Upon completion of the work, and a condition of final acceptance, the Owner shall be furnish with a written guarantee which shall provide that: THE SOIL POISONING TREATMENT SHALL PREVENT SUB-TERRANEAN TERMITES FROM ATTACKING THE BUILDING OR ITS CONTENT FOR A PERIOD OF NOT LESS THAN 5 YEARS.

7.2. DIVISION 3 CONCRETE

17. SECTION 03100 - CONCRETE FORMWORK

PART 1 GENERAL

03100.1 SCOPE

- a. Work Included :
 - 1. All labors, materials, equipment, plant, tools and other facilities necessary to complete all concrete formwork.

2. Refer to General Conditions.
3. Work shall BE DONE IN accordance with the "NATIONAL STRUCTURAL CODE OF THE PHILIPPINES, Volume 1, 3rd Editions and the "ACI BUILDING CODE (ACI 318-latest edition)" and the National Building Code, 1988 Edition in so far as they do not conflict with specific provisions.

03100.2 PROTECTION

- a. Forms shall be used whenever necessary to confine the concrete and shape it to the required lines, or to insure the concrete of contamination with materials caving or sloughing from adjacent, excavated surfaces.
- b. Forms shall have sufficient strength to withstand the pressure resulting from placement and vibration of the concrete, and shall be maintained rigidly in correct position.
- c. Forms shall be sufficiently tight to prevent loss of mortar from the concrete.
- d. Forms for exposed surfaces against which backfill is not to be placed shall be lined with a form grade plywood.
- e. Bolts and rods used for internal ties shall be so arranged that when the forms are removed all metal will not be less than two (2) centimeters from the formed surface.

PART 2 PRODUCTS

03100.3 MATERIALS

- a. Forms:
 1. Plywood, metal, plaster of Paris or plastic materials or surfaced lumber forms shall be used for all cast-in-place concrete works.
 2. In no case shall the forms for beams and slabs be less than 12 millimeters (1/2 in) thick plywood for exposed concrete, 20 millimeters (3/4 in") T & G for covered concrete.

- b. Quality:

Provide forms that will produce correctly aligned concrete. Plastering in general shall not be allowed so that care shall be exercised in the choice of surface of forms and fittings that will be in contact with concrete.

PART 3 EXECUTION

03100.4 PREPARATION

- a. Check all formwork for plumbness and correct alignments.
- b. Provide openings for column forms for cleaning and inspection preferably at lowest points of pour lifts.

- c. Provide camber as indicated in construction notes.
- d. Before placing the concrete, the contact surfaces of the form shall be cleaned of encrustations of mortar, the grout, or other foreign material, and shall be coated with a commercial form oil that will effectively prevent sticking and will not stain the concrete surfaces.

03100.5 FORMS AND SHORING

- a. Removal:
 - 1. Forms and shoring shall not be removed until concrete is adequately set and strong enough to withstand anticipated loading and in no case less than what is required in the following tabulations:

PARTS OF STRUCTURE	CLASSIFICATION OF PARTS	TIME REQUIRED
Footing	<ul style="list-style-type: none"> a. Massive footing b. Cantiliver footing c. Slab Footing 	<ul style="list-style-type: none"> a. 1 day (24 hours) b. 5 days (120 hours) c. 5 days (120 hours)
Walls and Plasters	<ul style="list-style-type: none"> a. Massive Walls, 30 centimeters b. Thin Walls - less than 150mm c. Cantiliver walls 	<ul style="list-style-type: none"> a. Up to 60 centimeters (2 ft.) - 1 day (24 hours). Add 1 day for additional 90 centimeters (3 ft.) of height or fraction thereof. b. Up to 180 centimeters (6 ft.) high - 2 days (48 hours). Add 1 1/2 days (36 hours) for every additional 90 centimeters of height or fraction thereof but not more than 28 days (672 hours) a. without load same as <u>a</u> and <u>b</u>
Columns	<ul style="list-style-type: none"> a. ratio of height to least dia. up to 4 b. Ratio of height to least dia. from 4 to 15 	<ul style="list-style-type: none"> a. 2 days (48 hours) b. Add to the above number 1 day(24 hours) for every additional 90 centimeters (3 ft.) of height or fraction thereof but not more than 28 days (672 hours)
Slabs	<ul style="list-style-type: none"> a. 90 centimeters (3 ft.) to 210 centimeters (7 ft.) span 	<ul style="list-style-type: none"> a. 90 centimeters (3 ft.) span - 5 days (120 hours). Add 1/2 day (12 hours) for every 30 centimeters

PARTS OF STRUCTURE	CLASSIFICATION OF PARTS	TIME REQUIRED
beams and Girders	b. over 210 centimeters (7 ft.) span	(1 ft.) span or fraction thereof. b. 210 centimeters (7 ft.) span - 7 days (168 hours). Add 1/2 day (12 hours) for every 30 centimeters (1 ft.) additional span or fraction thereof but not more than 28 days (672 hours)
	a. sides b. bottoms	a. 3 days (72 hours) b. Up to 425 centimeters (14 ft.) - 15 days (336 hours). Add 1/2 day (12 hours) for every 30 centimeters (1 ft.) additional span or fraction thereof but not more than 28 days (672 hours).

2. Forms and shoring may be removed earlier than specified above provided that test samples of concrete are taken and are shown to be adequately strong to carry safely, dead and construction loads to the satisfaction of the Project Engineer.
3. Forms shall be removed in a manner, which will prevent damage to the concrete. Forms shall not be removed without approval by the Project Engineer. Any repairs of surface imperfections shall be performed at once and curing shall be started as soon as the surface is sufficiently hard to permit it without further damage.

18. SECTION 03200 - CONCRETE REINFORCEMENT

PART 1 GENERAL

03200.1 SCOPE

- a. Related Work Specified Elsewhere:
 1. Concrete Formworks: ITEM 900
 2. Masonry: ITEM
 3. Thermal and Moisture Protection: ITEM 1016

03200.2 PROTECTION

- a. Storage of Materials:

Steel reinforcements shall be stored under cover or otherwise prevented from rusting.

- b. Concrete cover shall be determined before concrete pouring is started.

03200.3 DESIGN CONDITION

All Steel reinforcements shall be designed in accordance with the ACI Building Code (ACI 318-latest edition), Uniform Building Code 1988 Edition, and the National Structural Code of the Philippines, Volume 1, 3rd Edition.

03200.4 TESTING

The Owner, his duly authorized representative or the Architect shall have the right to order the test of any steel supplied by the Contractor, Such tests shall conform to the ASTM Designations enumerated below on materials. Samples shall be provided by the Contractor without cost to the Owner and expenses for testing shall be borne by the Contractor and copies of results shall be furnished to the Owner and to the Architect.

PART 2 PRODUCTS

03200.5 MATERIALS

- a. Steel Bars:
 - 1. Reinforcing steel bars to be used shall be new and free from rust, oil, grease or kinds.
 - 2. Shall conform to the latest edition of ASTM Designation A615M Specifications.
 - 3. Reinforcing steel for columns shall be intermediate grade. For all other parts of the structure such as beams, girders, slab, footings, walls, etc., reinforcing steel shall be structural grade, unless noted in the plan.
 - 4. Ties and stirrups for beams and column as well as slab reinforcements may be plain bars unless noted in the plan or specified herein.

PART 3 EXECUTION

03200.6 PREPARATION

- a. Remove all loose rust or scale, adhering materials and oil or other materials , which tend to destroy bond between concrete and reinforcement before steel is placed or before pouring.
- b. All bars shall be bend cold, unless otherwise permitted by the Engineer.

03200.7 PLACING REINFORCEMENTS

- a. Metal Reinforcements:
 - 1. Placing shall be in accordance with the plans furnished. Refer to the Architect/Engineer in case of doubt or ambiguity in the placing of steel.

2. Reinforcing bars shall be accurately placed and adequately secured by concrete metal wires, or metal chair spaces.
3. Spacing of bars shall be done in accordance with the ACI - Building Code or as follows:

Clear distance between parallel bars shall be one and one half (1/2 times) the diameter for round bars, and twice the side dimension for square bars.

4. Clear distance shall not be less than 2.54 centimeters (1 inch) nor more than 1 1/3 times the minimum size of aggregates.
5. Where bars are used in two or more layers, the bars in the upper layers shall be placed directly above those in the lower layers at a clear distance of not less than 25 mm.

b. Stirrups and Ties:

Bends for stirrups and ties shall be made around a pin having a diameter of not less than 6 times the minimum thickness of the bar, except that for bars larger than 25 mm, the pin shall not be less than 8 times the minimum thickness of the bar.

03200.8 OFFSET AND SPLICES IN REINFORCEMENT

a. Splices

1. In slabs, beams and girders at points of maximum stress shall not be made, and may be allowed only upon written approval of splice details by the Project Engineer.
2. Provide sufficient lap to transfer stress between bars by bonding shear or by welding.
3. Splices in adjacent bars shall be generally staggered.
4. Unless otherwise indicated, the minimum splice length shall be 24 times the bar diameter or 300 mm whichever is greater.

- b. Offsets - Where changes in cross section of column occur, longitudinal bars shall be offset in a region where lateral support is afforded. The slope of the inclined portion of an offset bar with axis of column shall not exceed 1 in 6. Portions of the bar above and below an offset shall be parallel to axis of column. Horizontal support at offset bends shall be provided by lateral ties, spirals, or parts of the floor construction. Horizontal support provided shall be designed to resist 1 1/2 times the horizontal component of the computed force in the inclined portion of an offset bar. Lateral ties or spirals, if used, shall be placed not more than 150 mm from points of bend. Offset bars shall be bend before placement in the forms.

DIVISION 4 - MASONRY

SECTION 04110 CEMENT AND LIME MORTARS

PART 1 GENERAL

04110.1 SCOPE

a. Work Included:

1. All labor, materials, equipment, plans and other facilities and the satisfactory performance of all work necessary to complete all cement and masonry work shown on the drawings and specifies herein.
2. Refer to the General Conditions accompanying these specifications.

PART 2 PRODUCTS

04110.2 MATERIALS

- a. Sand : ASTM C-4
- b. Portland Cement : ASTM C150, Type I
- c. Water shall be clean and free from deleterious substances.

04110.3 MIXES

a. Cement Mortar for Finish Coat:

- 1 part - Portland Cement
- 2 part - Sand but not more than 4 parts

b. Cement Mortar for Plastering:

- 1 part - Portland Cement
- 3 part - Sand

PART 3 EXECUTION

04110.4 INSTALLATION

- a. Surface to receive plasters shall be cleaned of all projections, dust, loose particles, grease bone breaker an other foreign matter. Plaster shall on be applies directly to concrete on masonry surface that have been coat with bituminous compound, to surface that have been painted on previously plastered. Before the plasterwork is started, masonry surface shall be wetted thoroughly with fog spray of clean water to produce a uniformly moist condition. Metal grounds, corner bend and other accessories shall be check carefully of alignment before work is started.
- b. Brown coat shall be applied with sufficient pressure to fill the groove in hollow block on concrete to prevent aid pocket and receive a good bond Brown coat shall be lightly scratch an bromide Each coat of cement plaster shall be keep moist of 48 hour after application and then allowed to dry.

- c. Finish coat shall be applied untie after brow coat has seasoned for days Just before application of the finish coat, brown coat shall again be evenly moisten with fog spray finish coat shall be float first to a true an even surface the trowel in a manner that will force the sand particle Dow into the plaster. Plaster surface shall be and free from rough areas, trowel marks, checks and blemishes.

04110.5 PATCHING

- a. Patch plaster following work of other trades.

19. SECTION 04200 UNIT MASONRY

PART 1 GENERAL

04200.1 SCOPE

- a. Furnish materials and equipment and perform labor required to complete concrete unit masonry
- b. See drawing for sizes, details and location work required.

04200.2 HANDLING AND STORAGE

- a. Handle in a manner to prevent undue chipping and breakage.
- b. Protect storage piles, stacks on bins from heavy traffic.
- c. Provide platforms to protect bottom piles from contact with soil.

PART 2 PRODUCTS

04200.3 MATERIALS

- a. Concrete Hollow Block - 100 mm x 200 mm x 400 mm and 150 mm x 200 mm x 400 mm and 200 mm x 200 mm x 800 mm.
- b. Mortar - 1 part Portland Cement, 3 parts sand
- c. Wire Ties - 16 gauge looped at both ends.
- d. Bars and Rods - ASTM Standard of masonry reinforcement and minimum diameter at 10 millimeter (3/8 inch).

PART 3 EXECUTION

04200.4 ERECTION

- a. Lay all masonry units plumb, true to line, level and with accurately spaced courses.
- b. Bond shall be kept plumb throughout. Corners and reveals shall be plumb and true.

- c. Built-in anchors, wall plug and accessories to masonry as erection progresses.
- d. Each course shall be solidly bedded in Portland cement mortar. All must be damp when laid.
- e. Units terminating against beam or slab soffits shall be wedged tight with mortar and reinforcement properly secured to dowels.
- f. Reinforcements shall be as shown in drawings. Minimum reinforcement is 12 millimeters (1/2 inch) round horizontal bars at every 3 courses and 12 millimeters (1/2 inch) round vertical bars at every 2 blocks.

04200.5 UNFINISHED WORK

- a. Unfinished work shall be stepped back for joining with new works.
- b. Before new work is started, all loose mortar shall be removed and the exposed joint thoroughly wetted not less than one hour before laying new work.

04200.6 PLASTERING

- a. Grout wall to be plastered generously and let dry.
- b. Apply scratch coat same as specified under Section 04110.4.
- c. Final plaster finish shall be 1 part Portland cement and 2part sand, and 1/4 part hydrates lime. Plaster shall conceal all joints and even-out wall surface to a uniform smooth finish using Manila Paper or rubber sponge.

04200.7 CLEANING

Wash finish wall with a solution of 10 percent by volume of muriatic acid applied with stiff fiber brushes.

04200.8 OPENINGS

- a. Provide beam blocks over or above openings not exceeding 1.20 meters span with same height and width as unit masonry blocks exceeding at least two masonry block lengths beyond the edge of the opening into the wall.
- b. Provide 2-4 longitudinal reinforcing bars each at top and bottom of beam blocks with ties at 25 centimeter (10 inches O.C.).
- c. For openings over 1.20 meters (4 ft.) in span, refer to drawing of cast-in-place design of lintel beam.

04200.9 CONSTRUCTION STANDARDS

Provisions of Section 6.10 of the National Structural Code of the Philippines, 3rd Edition, shall strictly be followed.

04200.10 TESTING

Testing of masonry materials shall be done in accordance with ASTM C140-70, METHOD OF TEST FOR CONCRETE MASONRY UNITS.

DIVISION 6 WOOD AND PLASTIC

SECTION 06100 ROUGH CARPENTRY

PART 1 GENERAL

06100.1 SCOPE

- a. Furnish materials and equipment and perform labor required to complete framing sheathing and related rough carpentry work as indicated on the drawings and/or specified herein.
- b. Include in the work, plates, straps, joints hangers, rods, dowels, rough hardware, fasteners and other miscellaneous iron and steel items pertinent to rough carpentry work.
- c. See drawings and details for location of framing, sheathing and related rough carpentry work required.

06100.2 STORAGE AND PROTECTION

- a. Stack framing lumber and plywood to insure against deformation and maintain proper ventilation.
- b. Protect lumber and plywood from elements.
- c. Lumber in contact with concrete or masonry shall be coated with asphalt or any approved preservative.

PART PRODUCTS

06100.3 LUMBER

- a. Moisture Content - not to exceed 20 percent.
- b. Grade and Trade Mark - required on each piece of lumber.
- c. Quality - lumber must be sound, thoroughly seasoned, well cut and free from wrap.
- d. Preservative and Pressure Treatment - all lumber shall be pressure impregnated with waterborne preservative like wolman salt, boiled salt and tanalite H.R. Surface, cut after treatment, shall be brush coated with same preservative.

06100.4 PLYWOOD

Unless otherwise specified or indicated in drawings, use the following:

Testing of masonry materials shall be done in accordance with ASTM C140-70, METHOD OF TEST FOR CONCRETE MASONRY UNITS.

DIVISION 6 WOOD AND PLASTIC

SECTION 06100 ROUGH CARPENTRY

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- a. Stack framing lumber and plywood to insure against deformation and maintain proper ventilation.
- b. Protect lumber and plywood from elements.
- c. Lumber in contact with concrete or masonry shall be coated with asphalt or any approved preservative.

PART PRODUCTS

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- b. Grade and Trade Mark - required on each piece of lumber.
- c. Quality - lumber must be sound, thoroughly seasoned, well cut and free from wrap.
- d. Preservative and Pressure Treatment - all lumber shall be pressure impregnated with waterborne preservative like wolman salt, boiled salt and tanalite H.R. Surface, cut after treatment, shall be brush coated with same preservative.

06100.4 PLYWOOD

Unless otherwise specified or indicated in drawings, use the following:

- a. For Interior Plywood: Use 6 millimeter (1/4 inch) thick.
- b. Pressure Treatment: All plywood shall be pressure treated.

06100.5 ROUGH HARDWARE AND METAL FASTENERS

Plates, straps, nails, spikes, screws, bolts, joists, hangers, rods, dowels, fasteners and miscellaneous iron and steel items shall be of size and types to rigidly secure members in place.

PART 3 EXECUTION

06100.6 INSTALLATION

- a. Framing shall be cut square on bearings, closely fitted, accurately set to required lines and levels and rigidly secured in place. Plans and dress side of frames that will receive wallboards or sidings.
- a. Wood Furring and Nailers shall be in accordance with detailed drawings. Where not indicated on the drawings or mentioned herein, furring trips shall be 2.5 centimeter x 5 centimeter (1" x 2") spaced at 40 centimeter (16 inches) on center both ways. Fasten wood furring securely by expansion bolts or other approved device at every 60 centimeter (2 ft.) on center. Wood plugs shall not be used.

06100.7 SCHEDULES

- a. Treated Apitong Lumber shall be used for:
 - 1. Vertical and Horizontal Studding of Wood Partitions.
 - 2. Ceiling Nailers and Ceiling Joists
 - 3. Other Related Rough Lumber Works
- b. Well-seasoned Yakal shall be used for all plates, plugs and other portions of the work directly in contact with concrete or masonry.

SECTION 06200 FINISH CARPENTRY

PART 1 GENERAL

06200.1 SCOPE

- a. Furnish materials and equipment and perform labor required to complete built-in cabinetry and countertops and related finish carpentry work as indicated on the drawings and/or specify herein.
- a. See drawings and details for location and quantity of finish carpentry work required.

6200.2 STORAGE AND PROTECTION

- a. Protect millwork against dampness during and after delivery.
- b. Do not bring in interior finish, including doors, into building until plaster is thoroughly dry.

06200.3 MEASUREMENT AND COORDINATION

- a. Check and verify measurement at sites prior to fabrication.
- a. Coordinate work with all other related trades.

06200.4 LUMBER

- a. Kiln-dried quarter saws containing not more than 14% moisture, free from imperfections impairing its strength and finish.
- b. Trademark is required on each piece of lumber.

06200.5 PLYWOOD

For interior plywood, use Class A Plywood the specie and thickness shall conform to Schedule and Drawings.

PART 3 EXECUTION

06200.6 WORKMANSHIP

- a. All wood finish, millwork and built-in cabinet work shall be true to details, clean and sharply defined.
- b. Panels must be set to allow for free movement in case of swelling or shrinkage.
- c. Means of fastening various parts together shall be concealed.

06200.7 FINISH

- a. Mill, fabricate and erect interior finish as indicated on the drawings. Machine-sand at the mill and hand-sand smooth at the job.
- b. Interior trim set against concrete, masonry or wood shall be separated with 6 millimeter (1/4 inch) stone cut joints.
- c. Intersecting plywood veneers or plywood panels shall be finished with a corner trim of wood with same specie and finish as the plywood.
- d. Make joints tight and in a manner to conceal shrinkage. Secure trim with fine finishing nails, screws or glue where required.
- e. Set nails for putty stopping
- f. Window and door trim shall be single length.
- g. Mites molding at corner, cope at angles.

06200.8 WOOD DOOR, JAMBS AND HEAD

- a. Set door frames plumb and level and brace until built-in.
- b. Anchor wood frames to masonry with approved metal anchors on each side of jamb. Place top and bottom anchors 20 centimeter (8 inches) from head and floor.

06200.9 WOOD SHELVING

- a. Each shelf shall be supported on a continuous wood cleat at walls.
- b. Secure cleats to masonry walls by expansion bolt or approved fastening device.

06200.10 BUILT-IN CABINETS AND COUNTERTOPS (MILL MADE)

- a. Fabricate counter and cabinets in accordance with details.
- b. Only sound kiln-dried lumber or plywood shall be used.
- c. Erect cabinet straight, level and plumb and securely anchor in place. Scribe and closely fit cabinets to adjacent work. Provide necessary grounds and anchors for securing cabinet work in place.

06200.11 FIXED GLASS ON WOOD FRAMES

Where fixed glass is set on wood frames, thoroughly prime rabbets and wood stops. Fit screw and secure in place loosely with chrome oval-head screws.

06200.12 HARDWARE INSTALLATION

- a. Accurately fit and install all finish hardware items required.
- b. In surface-applied hardware is fitted and applied before painting, remove all such items, except butts, and reinstall after painting is completed.

06200.13 SCHEDULES

- a. Kiln-Dried Tanguile Lumber shall be used for:
 - 1. Exposed woodwork as ceiling including wood slats.
 - 2. Other finish carpentry work as shown on the drawings unless indicated or specified otherwise.
 - 3. Cabinets and Shelving
- b. Well-seasoned Yakal Lumber shall be used for:

1. Door jambs and heads

20. SECTION 07610 SHEET METAL ROOFING

PART 1 GENERAL

07610.1 SCOPE

- a. Furnish materials and equipment and perform labor required to complete:
 1. sheet metal roofing
 2. metal roof flashing and trim
- b. See drawings and details for sizes and location of work required.

07610.2 SAMPLES

Submit samples of sheet metal flashing and trim, grilles and louvers.

07610.3 GUARANTEE

THE CONTRACTOR SHALL ISSUE A WRITTEN GUARANTEE TO THE OWNER TO MAINTAIN ENTIRE ROOF FLASHING AND COUNTER FLASHINGS IN A WATERTIGHT CONDITION FOR A PERIOD OF FIVE (5) YEARS.

PART 2 PRODUCTS

07610.4 MATERIALS

- a. Corrugated Sheets - Gauge 26 galvanized iron zinc coated by hot dip process.
- b. Plain Sheets - Gauge 26 galvanized iron sheet zinc coated by hot dip process.
- c. Solder - Standard solder for galvanized iron sheets.

PART 3 EXECUTION

07610.5 INSTALLATION OF SHEET METAL ROOFING

- a. Space purlins to fit sizes of the sheets so that center line of purlins will come of line 15 centimeters (6 inches) from bottom line of end laps.
- b. Space intermediate purlins equidistant from purlins at end laps.
- c. Minimum end lap shall be 25 centimeters (10 inches). Minimum side lay shall be 2-1/2 corrugations.
- d. Lay sheets in a manner such that vertical joints are broken. Lay top sheets with side corrugation down. Nail upper end of each sheet securely to purlins

with 8-d G.I. pail in the valley of every second corrugation. The upper end of each sheet shall be covered by other sheets or by ridge and hip rolls.

- e. Secure lower end of first sheet laid at gutter line by straps to the purlins after gutter hangers are in place. Use No. 24 gauge strap one inch wide with corners clipped of at riveting ends. Bend strap around purlins and rivet to the sheets.
- f. Place first row of straps at gutter line. Then rivet the lower end of every sheet to the sheet beneath at the top of every fourth corrugation. Such rivets to alternate with rivets engaging top line of straps.
- g. Rivet side laps with two lines of rivets staggered and spaced not to exceed 23 centimeters (9 inches) on centers.
- h. Rivets must be anchored on top of corrugations.

07610.6 RIDGE ROLLS, HIP ROLLS AND VALLEY

- a. Use Gauge 24 ridge roll. Minimum lay of ridge roll shall be 30 centimeters (12 inches) over roofing sheets. Rivet ridge to roofing sheets at top of every fourth corrugation in addition to rivets engaging top line of straps
- b. Use Gauge 24 hip roll. Minimum lay of hip roll shall be 30 centimeters (12 inches) over roofing sheets. Rivet hip roll at every second corrugation.
- c. Use Gauge 24 valley. Project 45 centimeters (18 inches) away and under roofing sheet edge each way and secure to framework with G.I nails spaced not to exceed 30 centimeters (12 inches) on center.

07610.7 FLASHING AND COUNTER FLASHING

- a. Use Gauge 24 plain G.I. sheet for flashings at intersection of roof and parapet walls. Raise one wing of flashing not less 20 centimeters (8 inches) high terminated at horizontal reglet.
- b. Where corrugation run parallel to the walls, corrugate one wing of the flashing sheet to match corrugation of G.I. sheets which other wing shall go up against the walls and counterflashed.

7.3. DIVISION 8 - DOORS AND WINDOWS

21. SECTION 08210 WOOD DOORS

PART 1 GENERAL

08210.1 SCOPE

- a. Furnish materials and equipment and perform labor required to complete flush doors and other wood doors

- b. See drawings and details for sizes, location, extent and other requirements.

08210.2 SAMPLES

Submit sample corner sections of wood doors and jambs.

08210.3 PROTECTION

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

PART 2 PRODUCTS

08210.4 MATERIALS

- a. Plywood: First quality plywood grain and color suitable for painted finish.
- b. Framing: Kiln-dried tanguile treated lumber for interior framing.

08210.5 FABRICATION

- a. Assemble joints in doors with water-resistant glue keep doors under pressure until glue has thoroughly set.
- b. Sand smooth finished door. Door must have tiger joints and clear-cut mouldings.
- c. Faces shall be free from defects or machine marks that will show through the finish.
- d. Wood flush doors hollow core:
 - 1. Size, design and thickness shall be as indicated on the drawings.
 - 2. Doors shall have cross banding, and faces of two or more plies with a combined minimum thickness of 2.5 millimeters (1/10 inch) after sanding. Face veneer shall be first class quality selected plywood either rotary-cut or sliced-cut.

Provide lock blocks of size required for hardware use. Rails and side edge bands shall be of hardwood same as face veneer.

- 3. Doors shall be rimmed square and factory pre-fit to standard sizes.

PART 3 EXECUTION

08210.6 INSTALLATION

- a. Each door shall be accurately cut, trimmed and fitted to its frame and hardware.
- b. Give allowance for painter's finish and possible swelling or shrinkage.

- c. Clearance at lock and hanging stiles and at top shall not exceed 3 millimeters (1.8 inch). At bottom, not bigger than 6 millimeters (1/4 inch).
- d. All corners shall be rounded to 1.5 millimeters (1/16 inch radius). Lock and rail edges shall be slightly leveled.
- e. The screws for hardware shall not be driven, but merely started by driving and then screwed home.
- f. All doors shall operate freely and with all hardware properly adjusted and functioning.

08210.7 SCHEDULE

Refer to Schedule of Drawings.

7.4. DIVISION 9 FINISHES

22. SECTION 09310 TILE WORK

PART 1 GENERAL

09310.1 SCOPE

Furnish materials and equipment and perform labor required to complete ceramic glazed and vitrified ceramic tile work.

See drawings and details for location and extent of work required.

09310.2 SAMPLES

Submit sample of floor and wall tiles including all required beads and moldings.

09310.3 DELIVERY OF MATERIALS

Deliver all materials in original cartons and container with labels intact and seals unbroken.

09310.4 PROTECTION OF FINISHED WORK

- a. Cover floor with heavy building paper before foot traffic is permitted over finished tile floors.
- b. Lay board walkways on floors to be used as passageways.

PART 2 PRODUCTS

09310.5 CERAMIC TILES

- a. Ceramic Glazed Wall Tiles - standard grade bright or matte glaze. Square edge or cushion edge with integral spacer approximately 8 millimeter (5/16 inch.) thick.

- b. Vitrified Ceramic Floor Tile - standard grade vitrified unglazed natural clay type dust-pressed or extrudes approximately 6 millimeter (1/4 inch) thick.
- c. Trim - compatible with type, color, thickness, face size and finish as specified wall tiles.
- d. Accessories - soap holders and paper holders shall be recessed type to follow color of specified wall files.

09310.6 GROUT MATERIALS

Portland Cement Grout:

- 1. Scratch Coat: 1 part portland cement to 5 part damp sand to 1/5 part hydrate lime.
- 2. Mortar Bed: 1 part Portland cement to 5 parts dam sand to 1/2 part hydrate lime.
- 3. Bond Coat: Neat Portland cement paste.

PART 3 EXECUTION

09310.7 APPLICATION OF SCRATCH COAT

- a. Thoroughly dampen, but do not saturate surface on masonry or concrete walls before applying the scratch coat. Surface area shall appear slightly damp. Allow no free water on the surface.
- b. On masonry, first apply a thin coat with great pressure, then bring it out sufficiently to compensate for the major irregularities of the masonry surfaces to thickness of not less than 6 millimeter (1/4 inch.) at any point.
- c. On surfaces not sufficiently rough to provide good mechanical key, dash on the first coat with a whist broom or fiber brush using a strong whipping motion. Do not trowel or otherwise disturb mortar applied by dashing unto it has hardened.
- d. Evenly rake scratch coats, but not dash coats, to provide good mechanical key for the subsequent coat before the mortar has fully hardened.

09310.8 FLOOR TILE INSTALLATION ON MORTAR BED

- a. Before spreading the setting bed, establish line on borders and canter the fieldwork in both directions to permit the pattern to be laid with a minimum on cut tiles.
- b. Clean concrete sub-floor then moisten but not soak. Afterwards sprinkle dry cement over the surface and spread the mortar on the setting bed.

- c. Mix mortar 1 part Portland cement to 3 part sand. Tamp to assure good bond over the entire area and screw to provide a smooth and level bed at proper height and slope.
- d. Pitch floor to drain as required.
- e. After setting bed has set sufficiently to be worked over, sprinkle dry cement over surface and lay tile.
- f. Keep tile joints parallel and straight over the entire area by using straight edges.
- g. Tamp the tile solidly onto the bed, using wood block on size to ensure solid bedding free from depressions.
- h. Lay tiles from centerlines outward and make adjustment at walls.

09310.9 WALLTILE INSTALLATION ON MORTAR BED

- a. Before application of mortar bed, dampen the surface on scratch coat evenly to obtain uniform suction.
- b. Use temporary or spot ground to control the thickness on the mortar bed. Fill out the mortar bed even with the grounds and rob it to a true plane.
- c. Apply the mortar bed over an area no greater than can be covered with tiles while the coat is still plastic.
- d. Allow no single application of mortar to be 19 millimeter (3/4 inch.) thick.
- e. Completely immerse glazed wall tile in clean water and soak it at least 1/2 hour. After removal, stack tile on edge long enough to drain off excess water. Resoak and drain individual tiles that dry along edges.
- i. Allow no free moisture to remain on the back of the tile during setting.
- f. Apply a bond coat 0.8 millimeter to 1.6 millimeter (1/32 to 1/16 inch) thick to the plastic setting bed or to the back of each shell of tile.
- g. Press tile firmly into the bed and beat into place within 1 hour.
- h. Lay tile fields in rectangular block area not exceeding 60 centimeter x 60centimeter (24 by 24 inches). Cut the setting bed through its entire depth along the edge on each block area after placement and before subsequent block are installed.
- i. Within 1 hour after installation on tile, remove strings from string-set tile and wet the face on face-mouthed tile and remove the paper and glue. Avoid using excess water. Adjust any tile that is out of alignment.

09310.10 SETTING TILE ON ADHESIVE TWO METHODS

Note:

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4. Do not allow spread adhesive to stand over 45 minute before setting tile.

b. Buttering Method:

- 1. Apply sufficient adhesive to the back on each tile to produce a spot of approximately 75 centimeter (3 inches) in diameter, when bonded.
- 2. Press down adhesive thickness to 1.5 millimeter (1/16 inch) using a slight twisting motion.

09310.11 GROUTING

- a. After tile has sufficiently set, force a maximum of grout into joints by trowel, squeeze, and brush on finger application.
- b. Before grout sets, strike on tool the joints of cushion-edges tile to the depth of the cushion.
- c. Fill all joints of square edges tile flush with the surface of the tile. Fill all gaps of skips.
- d. During grouting clean all excess grout of with clean burlap, other clothes or sponges.

09310.12 CLEANING

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Contractor stipulated in the Specifications shall be assumed by the General Contractor

- d. There shall be no contractual relation between the Owner and the Plumbing Specialty Trade Contractor.

15400.2 GENERAL REQUIREMENTS

- a. All works shall be performed in accordance with the requirements of all applicable laws of the Republic of the Philippines and all codes and ordinances so required.
- b. The Plumbing Contractor is required to refer to all architectural, structural, mechanical and electrical plans and specifications and shall investigate all possible interference and conditions affecting his work.
- c. Contractor and all providing labor, material, or both, for this project are specifically referred to the General Conditions of the Contract, to contract drawings, to all the divisions of the specifications and the various other contract documents which may affect the completion of any work in other divisions. In the absence of any agreement between sub-contractor as the General Contractors (authorized by the Owner), supply of others affected by the construction of this project, the General Contractor shall be held responsible for the coordination and completion of all work.
- d. All plumbing work to be done and sizes to be used shall be in accordance with the National Plumbing Code of the Philippines as so required under the direct supervision of the licensed Sanitary Engineer or Master Plumber.

15400.3 WORK INCLUDED

Furnish all materials and equipment and perform all labor necessary for all complete installation, testing and operation of the plumbing system in accordance with the applicable drawings and this division of the specification consisting of, but not limited to the following:

- a. Sanitary drainage system
- b. Storm drainage system
- c. Soil, waste, and vent pipe systems within the building.
- d. Water distribution and supply pipes, and fitting.
- e. Fire standpipe system
- f. Installation of drinking fountain, (Verify)
- g. Water services connections
- h. Plumbing fixtures of exposed pipes and appurtenances and asphalt protective coating and concrete covering for all pipes laid underground.

- i. Any and all other works involved in providing the complete operation of the domestic water supply system, fire protection system, sanitary plumbing and storm drainage system for the above-named project.

15400.4 ITEMS BY OTHERS

- a. General cutting and patching of openings except for pipe hangers and inserts.
- b. All concrete foundations or based required for plumbing equipment.
- c. Concrete sumps and pits.
- d. Flashing of roof drains and pipes penetrating the roof.
- e. Water for construction and testing purposes will be supplied by the General Contractor.

15400.5 COORDINATION WITH OTHER TRADES

Refer to all electrical, structural, mechanical and architectural plans and specifications and investigate all possible interference and conditions affecting the plumbing works. Proposed solutions to anticipated problems shall be submitted to the Sanitary Engineer for approval as least one (1) week ahead of the construction schedule.

15400.6 INTENT

It is not intended that the Drawings shall show every pipe fitting, valve and appliance. All such items, whether specific, all mentioned or not, or indicated on the drawings shall be furnished and installed if necessary to complete the system in accordance with the best practice of the plumbing trade and to the satisfaction of the Owner.

15400.7 EXTRA WORK

Cost estimate of all extra works that shall be deemed necessary during the progress of the work shall be submitted to the Owner for approval as least two (2) days before any extra work shall be started.

PART 2 REQUIREMENTS OF REGULATORY AGENCIES

15400.8 CODES AND PERMITS

- a. Execute the work in full accordance with the requirement of all governmental agencies having jurisdiction thereof as well as with the requirements and/or recommendation of the National Plumbing Code of the Philippines, the Philippine Rating Bureau, the Underwriters, all applicable laws of the Republic of the Philippine and all codes and ordinances.
- b. Secure and pay for all necessary approvals, permit, inspection, and the like, before starting work, and turn over the official records of the granting permits to the Owner without additional cost.

- c. Obtain all necessary allowances, pay all royalties, and the like, in connection with the use of any patented devices or system, and save the Owner harm from any claim or law suit arising from such use.

15400.9 All materials shall conform to the standard tabulated below:

- a. Concrete sewer and drainage pipes - ASTM 076 - 59T and ASTM C-14-59
- b. Cast iron soil pipes and fittings, extra heavy, ASTM 076-595 and ASTM G-14-59, service weight pipes conforming to federal specifications or "SILVA" or approved equal.
- c. Cast iron drainage fittings - ASC B16.12 1953.
- d. Wrought iron pipe - ASTM A72-52T
- e. Malleable iron fittings - ASTM A-338-51T
- f. Caulking Lead- Federal Specifications QQ-L-156
- g. Galvanized iron pipes and fittings - ASTM A-120-57T
- h. Bronze gate valves-Federal Specifications Wx-V-54
- i. Gate Valves - AWWA c500-59
- k. Lead sheet-Federal Specifications - QQ-L-201
- l. Water meter - MWSS or LUWA approved
- m. PVC Pipes and fittings-Neltex Series 1000, Moldex Sch. 40 or approved equal.
- n. Plumbing Fixtures - Saniware or approved equal.

15400.10 IDENTIFICATION OF MATERIALS

- a. Each length or pipe, fittings, trap, fixture and device used in the plumbing system shall have cast, stamped or indelible marked on it the manufacturer's trade mark or name, the weight, the type, the classes of product when so required by the standard mentioned above.
- b. All plumbing fixtures and fittings installed without the above trademarks shall be removed and replaced with properly marked fixtures and fittings without any extra cost to the Owner.

PART 3 PLUMBING FIXTURES

15400.11

All bids to be considered shall include all plumbing fixtures shown on the drawings and specified herein or by the Architect.

- a. All plumbing fixtures shall be installed free and open in a manner to afford access for cleaning and shall be furnished with brackets, cleats, plates, and anchors required to support the fixtures rigidly in place.
- b. After the installation of any or all the plumbing fixtures of the building same shall be kept clean and in working order but shall not be used by anybody until the building has been turned over and accepted by the Owner.
- c. Fixture trim, traps, faucets, escutcheons and waste pipes that are exposed to view in finishing or finished spaces shall be brass with polisher chromium plating or nickel finish, unless otherwise specified. Exposed supply pipes shall be brass or copper tubing plates in the same manner otherwise specified.
- d. The Plumbing Contractor shall be responsible for providing those portions of fixture fittings (as trims), which are not provided with the fixture but are required for the complete installation. All fixtures shall be carefully checked to determine the portions, which must be provided to complete the installation.
- e. All fixtures shall be provided with separate stop valves for cold water so that each fixture may be separately controlled without affecting any other fixtures.
- f. All flush valves shall be equipped with vacuum breaking device.

15400.12 GUARANTEE

The Plumbing Contractor shall furnish to the Owner a written guarantee covering satisfactory operations of the plumbing installation in all its parts for a period of one (1) year after date of final acceptance. During this period, the Plumbing Contractor shall repair or replace any defective work and pay for any repair or replacement costs. Included with this guarantee certificate shall be the guarantee certificates of every material supplier employed by this Trade.

15400.13 AS-BUILT DRAWINGS

- a. The Plumbing Contractor with the approval of the Engineer shall mark down with red pencil, on two sets of plumbing plans all the revisions, omissions and/or additions to the various plumbing installation drawing as the construction progresses one set of the plans as marked shall be submitted to the Engineer after completion of work.
- b. Before the final payment to the Contractor is made, he shall submit to the Owner an As-Built Drawing incorporating all the changes made and noted in the marked plans retained by him. The As-Built Drawings shall be prepared on reproducible form.
- c. The Plumbing Contractor shall prepare and submit the As-Built Drawings without extra cost to the Owner.

PART 5 PROTECTION

- 15400.14 The Plumbing Contractor shall protect all the work and materials from loss, injury or defacement. Protection of fixtures and materials shall be by boards,

- b. For cast iron soil and waste pipes -bell and spigot joints calked with oakum and soft peg lead or epoxy.
- c. Galvanized wrought or steel pipes - screwed or threaded joints carefully reamed and jointed with red lead applied on male thread
- d. Concrete pipes - bell and spigot or tongue and groove by use of oakum and cement mortar.
- e. Dissimilar pipes - screwed pipe to cast iron joints shall be either calked or threaded joints. Adapter fittings are acceptable. PVC pipe joint to metal pipe with flanged fittings. Rigid pipe - taper sleeve method.

15420.6 CLEANOUT PLUGS AND TRAPS

- a. Cleanout Plugs:
 - 1. Cleanout installed in connection with cast iron bell and spigot pipes shall consists of a long-sweep quarter bend or one or two eight-bends extended to an easily accessible place, where indicated on the drawings.
 - 2. An extra heavy, cast-brass ferrule, with countersunk tap screw cover shall be calked into the hub of the fitting and shall be flushed with the finished floor or wall.
 - 3. Where cleanout in connection with threaded pipes are indicated and are accessible, they shall be cast-iron drainage pattern 90 branch fittings with extra-heavy screw plugs of the same size as the pipe up to and including 100 millimeters (4 inches).
 - 4. Cleanout plugs: Comply with the National Plumbing Code, with American Standard Pipe Thread, "Permacel" teflon tape applied to the male thread, or as approved.
 - 5. No floor clean out must be on the ay of person that may step on it.
- b. Traps:
 - 1. Every plumbing fixtures connected to the sanitary drainage system shall be equipped with a trap. Traps are specified to be supplied with the fixtures.
 - 2. Each trap shall be placed as near to the fixtures as possible.
 - 3. Traps installed on hub-spigot pipe shall be extra-heavy cast iron.
 - 4. Traps installed on threaded pipe shall be recessed drainage pattern.
 - 5. Traps shall be set level with respect to their waterseal.

15420.7 VALVE AND HOSE BIBBS

- a. The entire plumbing system shall be provided with the valves so located that they can be operated, replaced, repaired, and provide complete control of the water supply to each group of fixtures, to each cold water riser and where indicated on drawings. Pressure reducing valves shall be provided as shown on drawings or as required by the Sanitary Engineers.
- b. Valves 20 millimeters (3/4 inch) and smaller shall be glove valves; larger size shall be solid-wedge type gate valve 65 millimeters (2-1.2 inches) and smaller shall be brass or bronze; larger size shall be iron body, brass mounted. Valves 65 millimeters (2-1/2 inches) and smaller shall have screwed ends. Valves 85 millimeters (3 inches) and larger, unless otherwise noted, shall have flanged ends. Check valves shall be 68 kgs. (150 lbs.) working pressure type. Walworth or approved equal.
- c. Hose bibs shall be size 13 millimeters (1/2 inch) male inlet and 20 millimeters (3/4") hose thread bronze body conforming to ASTM Specifications BG2 suitable for cold water pressure up to 689kpa (100psi). Equal or similar to No. 58 Chicago Hose valve. Every hose bibs shall be provided with a gate valve.

15420.8 SLEEVES

- a. Provide sleeves for all pipes passing through floors, walls and concrete pits or concrete fireproofed beams.
 - 1. Sleeves in concrete beams, through concrete walls, and where serving exposed pipes penetrating floors - Schedule 40 Steel Pipes
 - 2. Sleeves within furred cut enclosure, through steel beams and concrete blocks walls: gauge 18 galvanized sheet metal.
 - 3. Provide sleeves in foundation walls and in concrete pits with anchor flanges.
- b. Provide sleeves with an I. D. at least 12 millimeters (1/2 inch) and 25 millimeters (1 inch) outside of the pipe served, including pipe insulation, which must be continuous through the sleeve.
 - 1. Finish sleeve flush with underside of slab and 25 millimeters (1 inch) above finished floor. Pack the space between pipes and other sleeves with Fiberglass and finish with BF 60-30 trowel grade non-hardening mastic or as approved.
 - 2. Calk the space between pipes and sleeves in exterior walls, foundation walls, pits and membrane waterproofed floors with lead and oakum.
- c. Set sleeves as construction progresses and secure in place during curing of concrete
 - a. Do not support pipes by resting clamps on sleeves
 - b. Plastering of floor drains in membrane waterproofed floors and roof drains will be performed under specifications of another trade. Provide drains with suitable flashing devices.

1. Where drains are installed in non-waterproofed floors, with fill, provide 910 millimeters (3 ft x 3 ft) square copper flashing at each drain
 2. Provide waterproofed type pipe sleeves, Zurn Z-195 galvanized with flashing clamp, brass bolts where penetrating membrane waterproofed floors.
- f. Pipes passing through wall be flashed under the Specifications of another trade, provide roof couplings Zurn Z 196 or approved equivalent at suitable level above roof to terminate flashing
- a. Whenever pipes are exposed and pass through walls, floors partitions or coiling, fit them with chromium plated cast brass escutcheons held in place with setscrew. Fit escutcheons snug over insulation, secure in place. Take special care to protect the escutcheons during the construction progress.

15420.9 FIXTURES AND EQUIPMENT SUPPORTS AND FASTENING

- a. All fixtures and equipment shall be supported and fastened in a safe and satisfactory manner.
- b. Inserts shall be securely anchored and the anchors shall be properly slushed with mortar, insert shall be installed flush with the finished wall and shall be completely concealed when the fixtures are installed.
- c. Where through bolts are used, they will be provided with plates or washers at the back and set so that heads, nuts washers will be concealed by plaster. Exposed bolts, nuts, cap nuts, and screw head shall be provided with chromium plated brass washers.

15420.10 HANGERS, ANCHORS, GUIDES IN BUILDING

- a. All piping shall be rigidly supported by means of approved hangers and supports. Piping shall be supported to maintain required position and pitching of lines, to prevent vibration and to secure piping in place and shall be arranged as to provide for expansion and contraction.
- b. Pipe hangers shall be thoroughly cleaned and painted with one coat of asphalt varnish.
- c. Horizontal runs of pipes shall be hung with adjustable wrought iron or malleable iron pipe hangers space one length apart but not over 3 meters (10ft.), except hub and spigot soil pipes which shall have hangers spaced not over five (5) feet apart and located near the hub. PVC pipes and tubing shall have hangers spaced not over six (6) feet apart.
- d. Hangers shall conform to the standard details but the contractor may, if he elects, use other commercial hangers having parts not lighter than indicated

on the detail, provided that he has obtained prior written approval of the Architect/Engineer. Chain, straps, perforated bars or wire hangers will not be permitted.

- e. Inserts shall be cast steel and shall be of a type to receive a machine bolt or nut after installation. Inserts shall permit adjustment of the bolt in one horizontal direction and shall installed before the concrete is poured.
- f. Vertical runs of pipe shall be supported by wrought-iron clamp or collars spaced not more than two floors apart.
- g. Chromium-plated pipes shall have a clearance of not less 20millimeters (3/4 inch) or more than 25millimeters (1 inch) where run on the face of plaster and the pipe shall be supported where required by cast brass supports finished to match the pipe.
- h. Hangers on water piping 65millimeters (2-1/2inch) and larger vent lines shall be band type 6millimeters x 25millimeters (1/4" x 1") flat mild steel or black iron with 12 millimeters (1/2") round iron rod with plates and nuts, flat iron clamps or expansion shields installed to developed their full strength. Hangers on water piping 50millimeters (2") and smaller shall be split ring type with 10millimeters (3/8") iron rods with inserts, plates and nuts, toggle bolts, clamps or expansion shields as specified above.
- i. Space hangers on all cast-iron soil, waste, drain and vent lines 1.50m (5ft) on centers and at all changes in direction.
- j. All soil, waste, vent and water riser shall be provided at the base of riser and on each floor, heavy blacksmith construction friction clamps.
- k. Approved bolts and inserts and clamps shall be used for connecting hangers, supports, fixtures or equipment. Wood plugs shall not be used.

15420.11 CEILING PLATES AND FLASHING

- a. Floor, Wall and Ceiling Plates:
 - 1. Where uncovered exposed pipes pass through floors, finished walls or finishing ceiling, they shall be fitted with chromium plated pipes or with cast-iron or steel plates on ferrous pipes.
 - 2. Plates shall be large enough to completely close the hole around the pipe and shall be square, octagonal or round, with the least dimensions not less than 38millimeters (1-1/2") larger than the diameter of the pipe.
 - 3. Plates shall be secured in an approved manner.
- b. Flashing:
 - 1. All pipes passing through roof shall be provided with lead flashing.
 - 2. All flashing shall be built of 2.72 kilograms (6lbs.) sheet lead and shall extend up to the pipe at least 150mm (6") above the roof and along the roof plans not less than 300millimeters (12") distance around.

3. Lead counter flashing of the same weight shall be turn down over the top of pipe and shall fit over flashing to make waterproof joint.
4. All drain flashing installed in connection with membrane waterproofed floors shall be equipped with clamping devices.
5. Roof drains and floor drains installed in connection with membrane waterproofing shall be made watertight with a sheet of 16 ounces soft copper sheet one (1) foot square placed between the layer in an approved manner. The metal surfaces mopped with hot asphalt and bonded to the membrane. The copper sheet shall extend at least twelve (12) inches from drain rim into membrane waterproofing.
6. Roof drains shall be cast iron body, with removable lock type mushroom dome strainer or flat strainer; clamping collar with integral gravel guard, corrosion resistant clamping bolts bronze expansion joint with graphite asbestos packing, female threaded connection similar and equal to that manufactured by Metma Foundry and Machine Shop, figures K 278, K-279 and K-280; size as indicated on drawings.
7. Floor drains for mechanical equipment room shall be cast-iron body and grate; combination drip and floor drain with integral seepage pan and adjustable strainer head circular slotted floor level grate, similar and equally manufactured by Metma Foundry or M-200-0, or approved equal; size as indicated on drawings.

PART 2 FIRE PROTECTION SYSTEM

15420.12 FIRE HOSE STATION

Cabinet for fire hose stations shall be recessed 1.52mm (gauge 16) steel or aluminum body, door and trim. Cabinet shall accommodate a 38mm x 30m fire hose and a 4.55 kg. Fire extinguisher. Door shall be full plate glass and aluminum frame. Cabinet finish shall be baked white enamel inside and red enamel outside. Pin rack for fire hose station cabinets shall be semi-automatic type, designed for 30m of 38mm hose and furnished with a 38mm brass rack nipple.

Hose for fire hose station shall be 30m of 38mm cotton, single jacketed, rubber lined and subjected to wax and gum treatment. Hose coupling shall be 38mm male/female National Standard hose threads.

Nozzle for fire hose station shall be 38mm adjustable, capable of complete shut-off, solid straight stream, or any degree of solid conical fog, polished brass or led lexan type. A suitable spanner wrench and fireman's ax shall be provided for each fire hose station. Portable extinguisher for each fire hose station shall be 4.55 kg. Dry chemical type, class ABC, tested and listed by UL and/or FM

15420.13 FIRE STAND PIPE SYSTEM

- a. Wet stand pipe system shall consist of risers, siamese connections and hose valves; valves to be underwriters approved high grade cast bronze mounted, 175 lbs working pressure.
- b. Pipe shall be schedule 40 G.I. and fittings shall be 150lbs malleable iron.
- c. All wet standpipe have to be tested by the Plumbing Contractor at a pressure designated by the Architect/Engineer and the Fire Department concerned.

PART 3 PREPARATION AND INSTALLATION

15420.14 CUTTING AND REPAIRING

The Work shall be laid in advance and any cutting of construction shall be done with the written permission of the Owner or his authorized representative. "Roughing-in" for fixtures shall be carried along with the building construction. Opening shall be left in walls and floors of proper sizes correctly located for the pipes but the contractor shall do any additional cutting needed in case of error or omission and shall properly replace any concrete work or flashing around the pipe as may be required without additional cost to the Owner.

15420.15 GENERAL INSTALLATION OF PIPES

- a. Install pipe approximately as shown on the Drawings and as directed during installation as straight and direct as possible, forming right angle or parallel lines with building walls and other pipes, and neatly spaced. Erect pipe risers plumb and true, and parallel with walls and other pipes and neatly spaced.
- b. Keep all horizontal runs of piping, except where concealed in particulars, as high as possible and close to the walls. Maintain minimum 10millimeters fall per meter (1/8" fall per foot) on all soil, waste and drain line.
- c. Do not install pipes or other apparatus in a manner, which interferes with the full swing of the door or windows.
- d. The arrangement, positions and connections, of pipes, fixtures, drains, valves, and the like indicated on the drawing shall be followed as closely as possible, but the right is reserved by the Architect/Engineer to change location and elevation to accommodate condition which may arise during the progress of the work, prior to installation without additional cost to the Owner for such changes. The responsibility for accurately laying out of the work, and coordinating the installation with other Trades rests with the Contractor. Should it be found that any work if laid out, interference will occur, will report matter to the Architect/Engineer before commencing work.
- e. Ream all screwed pipe smooth before installation. DO not bend, flatten, split or injure the pipe in any way.
- f. Use reducing fitting, unless otherwise approved in special cases, in making reduction in size of pipe. Bushing will not be allowed unless specifically approved.

- g. Where chrome piping is installed, cut and thread pipe so that no unplated pipe threads are visible when the work is completed.
- h. Carry fixtures connections, concealed in building construction, to point above floor, break out close to the underside of fixtures and rise exposed to fixtures.
- i. Provide protective pans under and over individual pipes passing high voltage (460V) electrical bus duct or switchgear equipment. Construct the pans of 12 gauges black with a 150 millimeters (6 inches) lip, the corners being welded to make the pans watertight. Give each pan three coats of Rust-Oleum paint or approved equal and support pan with pipe hangers, and drain. Clear off the bus duct or switchgear.
- j. Do not install exterior piping in water or when trench or weather conditions are unsuitable for the work, as decided by the Architect/Engineer.
- k. Wedge fitting at bends or toes in buried water pipes against concrete thrust blocks poured between the vertical natural face of the trench and the fittings to prevent the fittings from being blown off the lines when under pressure. The size of the concrete block is based on the working pressure plus 586(kpa) (85psi), the pipe size and the bearing capacity of the soil, all as recommended in the Standards of the American Water Works Association.
- l. Use friction type wrench and vises on all copper tubing and brass piping. Remove and replace pipe showing tool marks with new materials.

15420.16 INSTALLATION OF WATER SUPPLY PIPES AND FITTINGS

- a. The piping shall be extended to all fixtures, outlets and equipment from the gate valve installed in the branch near the riser. The cold water piping shall be installed with a fall toward main shut-off valve and drains. Ends of pipes and outlets shall be capped or plugged and left ready for future connections.
- b. The branch water piping to the fixtures, shall not be less than the following sizes:

Fixtures	Cold Water Supply
Water closet flush-o-meter type	32mm (1 - 1/4")
Water closet - tank type	15mm (1/2 ")
Urinal, flush-o-meter type	25mm (1")
Slop sink	15mm (1/2")
Lavatories	15mm (1/2")
Shower	15mm (1/2")
Laboratory sink	15mm (1/2")
Sill cocks	20mm (3/4")
Drinking fountain	15mm (1/2")
Hose Bib	15mm (1/2")

- c. Where the branch serves more than one fixture, the branch shall be increase in size in proportion to sizes as shown above or as shown on the drawings
- a. Other fixtures not definitely detailed herein are to have stand and pipe connections and valves to correspond to the fixtures connected
- b. Cast bronze unions shall be installed at the connection to any equipment so that they may be conveniently disassembled.
- c. Upon completion of water system, flush out line and all valve seats to clear system of particle and dirt.
- d. Air chamber. All individual branches to fixtures and/or equipment shall be provided with air chambers, shock absorbers as shown on the drawings.

15420.17 JOINTS AND CONNECTIONS

- a. Fixture Connections:
 - 1. Where space condition will not permit the use of standard fittings in conjunction with cast iron floor flanges, special short-radius fittings shall be provided
 - 2. Connection between fixtures and flanges on soil, pipe shall be made absolutely air and watertight with an approved setting compound. Rubber gaskets or putty will not be permitted to this connection.
 - 3. Closet bolts shall be less than 6 millimeters (1/4") in diameter and shall be equipped with chromium plated nuts and washers.
 - 4. Fixtures without outlet flanges shall be set at the proper distance from floor or wall to make first class joint with the use of closet-setting compound or gasket.
 - 5. No fixtures shall be set in place until the Owner or his representative has examined and approved such flanged.
- b. Unions:
 - 1. Unions on ferrous pipe shall be malleable iron and conform to the requirement of U.S. Federal Specifications WW-U 531. Type B, zinc-coated.
 - 2. Provide unions where indicated and in the following locations even if not indicated:
 - a. In long runs for piping for water supply and other services, each drainage at intervals as directed to permit convenient disassembly for alterations and repairs.
 - b. In by-passes around equipment
 - c. In connection to water tanks and other equipment which requires disconnection for repair and replacement

- d. On inlet side of fixture traps.
3. Unions shall be located between shut-off and equipment
 1. Unions shall not be concealed in walls, partitions or ceilings.
- c. Cast Iron Pipe Joints

All joints in bell and spigot cast iron soil waste and vent pipe, or between cast iron soil waste and vent pipes and threaded pipes or calking ferrules, shall be firmly packed with oakum and calked with lead at least 25mm (1") deep. Cast Iron pressure pipe joints shall be calked with lead at least 50mm (2") deep.
 - d. Threaded Pipe Joints
 1. Threaded joints shall be standard taper screw thread in accordance with a U.S. Federal Specifications GG-P-351 with graphite and oil compound applied to the male thread.
 2. Connection between threaded pipe and soil pipe shall be calked joint. The threaded pipe shall have a ring or half coupling screwed on the hub-end of soil pipe
 - e. Concrete Pipe joints:
 1. Ends must be cleaned thoroughly before laying joints and the pipe properly aligned.
 2. Joints must be spaced evenly before cement mortar is applied
 3. Press the mortar evenly into the joint and bank for about 50millimeters (2") and smooth with towel.
 4. Remove surplus mortar inside joint to leave interior of pipe free from construction.
 - f. Union Connection:
 1. Slip joint shall be permitted only in trap seals or on the inlet side of the trap.
 2. Brass ground joint seat union connection shall be used.
 3. Use of long threads and bushings for underground piping is prohibited.
 - g. PVC Pipe Joints:
 1. All joints in PVC pressure DW pipes with pre-moulded fittings shall be made in accordance with the pipe manufacturers recommendations.
 2. Joints, between PVC and other pipe materials shall be made with adaptors.

15420.18 EXCAVATION, PIPE LAYING AND BACKFILLING

a. Excavation and Pipe Laying:

1. Trenches for all underground pipelines shall be excavated to the required depths and grades.
2. Bell holes shall be provided, so that pipe will rest on well-tamped solid bedding for its entire length.
3. Cast iron, galvanized or concrete pipe in trenches shall be laid true to line and grade on a stable or suitably prepared foundations, each section of the pipe being properly bedded and the bottom of the trench shaped to fit the lowest 90 Arc of the pipe circumference.
4. When rock is encountered, excavation shall extend to a depth six (6) inches below the pipe bottom, and before pipe is laid, the space between the bottom of pipe and rock surface shall be filled with sand or gravel, or other approved filling materials.
5. Water supply pipes and sewers shall be laid in separate trenches
6. Width of an open pipe trenches for all sizes of pipes shall be twelve (12) inches greater than the outside diameter of the bell of the pipe.

b. Backfilling:

1. After the pipe have been tested, inspected and approved by the Architect/Engineer and prior to backfilling, all sheatings leggings and bracings shall be removed and the excavation shall be cleaned of all trash and debris.
2. Materials for backfilling shall consist of the materials excavated or other approved materials. Backfilling materials shall be free of debris and big stones and shall be placed in horizontal layers not exceeding those included on the drawings.
3. Backfilling shall be carefully placed and tamped under and around the pipe barrel in such manner that the pipeline and joints are not disturbed. Each layer shall be properly moistened and compacted by hand or machine tamper or by other suitable equipment to an optimum density that will prevent excessive settlement and shrinkage.
4. Backfill shall be brought to a suitable elevation above grade o provide for anticipated settlement and shrinkage.

15420.19 WORKMANSHIP

All labor shall perform in first class, neat and workmanlike manner by mechanics skilled in their trades, and such mechanics and work shall be satisfactory to the Owner.

PART 4 EXPANSION AND CONTRACTION OF PIPING

15420.20

Accessible contraction-expansion joints shall be made where necessary horizontal runs of pipe over 15meers (50ft) length shall be anchored to the wall or to the supporting structure about midway on the run to force expansion and contraction equally towards the ends.

15420.21 CLEANING AND PAINTING

- a. All exposed meal surfaces shall be rid of grease, dirt or other foreign materials. Chrome or nickel-plated pipings, fittings and trimmings shall be polished upon completion. All equipment pipes, valves and fittings shall be cleaned of grease and sludge, which may have accumulated.
- b. Any stoppage or discoloration or other damages to part of the building or its finish of furnishing, due to the contractor’s failure to properly clean the piping system, shall be repaired by the contractor at his expense.

15420.22 PAINTING

- a. All exterior of surface of piping to be installed in or through concrete floor fill of tile floor and underground shall be given one coat of acid resistant paint having a bituminous base.
- b. Pipe hangers, support and all other ironwork in concealed space shall be thoroughly cleaned and painted with one coat of red lead and finish coat of oil enamel paint.
- c. All exposed soil, waste and vent piping of cast-iron that are asphalt or tar-coated shall be given two (2) coats of shellac and two (2) coats of oil paint.
- d. Color Code: All exposed pipings shall be adequately and durably identified by distinctive colored paints as follows:

Cold water pipes	-----	Blue
Storm Water Pipes	-----	Aluminum
Soil pipes	-----	Gray
Vent Pipes	-----	Green
Fire lines	-----	Red

PART 6 WARRANTY AND DISINFECTIONS

15420.23 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 and/or vent stack above roof.
- b. The system shall hold this water for a full 30 minutes during which time there shall be no drop greater than four (4) inches.

- 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 ten (10) feet above the highest horizontal line to be tested may be installed and filled with water to maintain sufficient pressure or a water pump may be used to supply the required pressure.
- d. If and when the Architect/Engineer decides an additional test, such as air or smoke test, on the drainage system, the Plumbing Contractor shall perform such test without additional cost.

15420.24 WATER SYSTEM TEST

- a. Upon completion of the roughing-in and before connecting fixtures, the entire cold water piping system shall be tested at a hydrostatic pressure of one and a half (1-1/2) times the expected working pressure in the system when in operation, and proved tight at this pressure.
- b. Where a portion of the water piping system is to be concealed, before completing this portion, shall be tested separately in a manner similar to that described for the entire system, and in the presence of the Architect/Engineer.

15420.25 DEFECTIVE WORK

- a. If the inspection or test shows any defects, such defective work or materials shall be replaced and the inspection and test repeated, until satisfactory to the Architect/Engineer.
- b. All repairs to piping shall be made with new materials at the expense of the Plumbing Contractor.
- c. Calking of screwed joints or holes will not be permitted.

15420.26 DISINFECTION

- a. The entire system shall be thoroughly flushed and disinfected with chlorine before it is placed in operation.
- b. Chlorination materials shall be liquid chlorine or hypochlorite as specified and shall be introduced into the manner approved by the Architect/Engineer into the water lines.
- c. The chlorine dosage shall be such as to provide no less than fifty parts per million (50ppm) of available chlorine.
- d. Following a contact period of not less than sixteen (16) hours, the heavily chlorinated water shall be flushed from the system with clean water until the residual chlorine content is not greater than two-tenths (0.2) ppm
- e. All valves in waterlines being disinfected shall be opened and closed several times during the 16-hour chlorination period.

PART 7 PERMITS, DRAWINGS AND GUARANTEE

15420.27 "AS-BUILT" DRAWINGS

Upon completion of the work, the Plumbing Contractor shall submit two (2) sets of prints with all "AS-BUILT" changes shown on the drawings in a neat and professional manner. Such prints shall show changes or actual installation and condition of the plumbing system in comparison with the original drawings. The prints shall be marked "Revised to show As-Built Conditions". Failure to submit the As-Built drawings may be considered cause from withholding final payment until drawings have been submitted and approved by the Architect/Engineer.

15420.28 PERMITS

All construction permit, inspection fees, license and taxes due to local, National Government necessary for the prosecution of the work shall be secured and paid by the Plumbing Contractor, who shall solely be responsible should there be any delay by reason of his failure to comply with the provision of this clause. He shall also be responsible for any penalties, incurred by himself or his Agents. He shall secure the Plumbing Certificate after final inspection of the proper authorities concerned.

15420.29 PUBLIC SAFETY AND GUARANTEE

- a. The Plumbing Contractor shall furnish, erect and maintain such barrier, lights and signs as necessary to give adequate warning or instruction in installation for safety and personal security.
- b. The Plumbing Contractor shall guarantee his work from defects or installation of materials or equipment for a period of one (1) year, after acceptance of his work. A written guarantee to this effect shall be furnished to the Architect/Engineer. During this period, the Plumbing Contractor shall repair or replace any defective work and pay for any repair or replacement cost.

PART 8 SEPTIC TANK AND WATER METER

15420.30 SEPTIC TANK

The Plumbing Contractor shall construct the septic tank, in such like manner, size and its dimension based on the detailed plans.

15420.31 WATER METERS

- a. Water meter and their parts, especially parts that are in continuous contact with water shall be made of materials resistant to corrosion and should be non-toxic. Use of dissimilar metals in contact under water should be avoided in order to minimize electrolytic corrosion.
- b. All internal parts of the measuring unit that is in contact with water should be smooth in order to prevent adhesion of sediments.

- c. Best suitable materials to fulfill the above requirements both for internal and external parts are thermoplastics, brass and stainless steel.
- d. Water meter shall be approved by the MWSS.

PART 9 MISCELLANEOUS

15420.32

- a. Throughout the construction period, open ends of all installed pipelines shall be kept closed by temporary plugs. Drainage lines shall not be used to conduct dirty construction washwater, especially those with cement mixes, to avoid possible clogging.
- b. A temporary fire protection system shall be provided by the Plumbing Contractor during the construction period. This shall be of sufficient capacity to put out any fire that may break out due to construction operations. This is in addition to temporary fire extinguisher required.
- c. A temporary potable water supply shall be made available at all times to construction workers as construction work progresses.
- d. A temporary sanitary human excreta disposal system shall be provided by the Plumbing Contractor during the construction period.

DIVISION 16 ELECTRICAL SYSTEMS

26. SECTION 16000 GENERAL PROVISIONS

PART 1 GENERAL

16000.1 EXPLANATION

OWNER-GENERAL CONTRACTOR-ELECTRICAL
RELATIONSHIP

CONTRACTOR

- a. The Electrical Work is a Specialty Trade which shall be performed by a Contractor hereinafter referred to as the CONTRACTOR
- b. The scope of work and responsibility of the CONTRACTOR is stipulated in this specification and is treated separately from the function of the General Contractor and other Specialty Trade Contractors for the sole purpose of delineating the electrical work.
- c. Should the General Contractor subcontract the Electrical Work to a Specialty Trade Contractor, all responsibilities and functions of the Specialty Trade Contractor stipulated in the Specifications shall be assumed by the General Contractor.
- d. There shall be no contractual relation between the Owner and the Specialty Trade Contractor subcontracted by the General Contractor.

16000.2 GENERAL REQUIREMENTS

- a. The General Conditions and Provisions of the Civil Works Contract not in conflict with these specifications and the Drawings form part of and are included in this Specification.
- b. Examine the Specifications and Drawings of the Civil Works, the Airconditioning Works and Sanitary Works, for requirements, which affect work under this Division whether or not such work is specifically mentioned in this Division.
- c. Visit the site and ascertain local conditions and facilities, the nature of the soil, and other conditions as may affect the work. The CONTRACTOR will be deemed to have done this before preparing his proposal and no subsequent claim on the ground of inadequate or inaccurate information will be entertained.

16000.3 WORK INCLUDED

The work of the CONTRACTOR consists of furnishing all plant, labor and supervision, equipment and materials, and performing all operations in connection with the electrical system shown of the Drawings, their test and inspections, complete and in accordance with this specifications and the Drawings and subject to the terms and conditions of the contract and all other labor and materials not specifically mentioned as furnished and/or installed by others, to bring the electrical system to operating condition and ready for use by the Owner. The specific scope of work of the CONTRACTOR (by area and/or by work items) shall be as outlined in other contract documents.

16000.4 WORK BY OTHERS

The following will be by others unless otherwise shown in the Drawings.

- a. Service connection to the utility companies facilities.
- b. Others as may be specified IN the Drawings, elsewhere in the specifications, the addenda, or in the contract documents

16000.5 INTENT

- a. It is the intention of the Specifications and Drawings to call for finished work tested and ready for operation, and/or continuation.
- b. Any apparatus, appliance, material, or work not shown of Drawings but mentioned in the Specifications or vice versa, or any incidental accessories necessary to make the work complete in accordance with the scope set forth elsewhere, even if not particularly specified, shall be furnished, delivered and installed by the CONTRACTOR without additional expenses to the Owner.
- c. Minor details not usually shown or specified but necessary for proper installation and operation shall be included in the Contractor's estimate, the same as if herein specified shown

- d. With submission of bid, the CONTRACTOR shall give written notice to the Architect of any materials or apparatus believed inadequate or unsuitable, in violation of laws, ordinances, rules and necessary items of work omitted. In the absence of such written notice, it is mutually agreed that the CONTRACTOR has included the cost of all required items in his proposal and that he will be responsible for the approved satisfactory functioning of the entire system without extra compensation.

16000.6 DRAWINGS

- a. The Drawings accompanying this Specifications, addendum drawings and additional detail or clarification drawings as may be subsequently prepared by the ARCHITECT and shop drawings as may be submitted by supplier and/or manufacturer are hereby made part of this Specifications.
- b. The Drawings are diagrammatic and indicate the general layout of the system and the CONTRACTOR shall be responsible for the proper installation of the system without substantial alterations or modifications. The Contractor shall follow drawings in laying out work and check drawings of other trade to verify spaces in which work will be installed. Whenever field conditions or exigencies of construction make departure from these Specifications and other Drawings necessary, detail of such departure and reason thereof shall be submitted without delay to the Architect and no departure shall be made without written approval of the ARCHITECT.
- c. If directed by the ARCHITECT, the CONTRACTOR shall, without extra charge, make reasonable modifications in the layout as needed to prevent conflict with work of other trade or not proper execution of the work.
- d. The Drawings and these Specifications are complementary to each other and what is called for by one shall be binding as if call for by both. Any apparent conflict between the Drawings and this Specifications and unclear points of either shall be referred to the ARCHITECT for final decision.

16000.7 EXTRA WORK AND CHANGE ORDERS

Cost estimates of all extra works and change order that are deemed necessary during the progress of the work shall be submitted to the Owner for approval at least ten (10) days before any work shall be started, or within a reasonable length of time so as not to impede the progress of the work.

16000.8 TEMPORARY FACILITIES

The CONTRACTOR shall make all arrangements and pay for the provisions of the necessary electricity required for the work and shall clean away all temporary installation before or upon completion of the work.

16000.9 INSPECTIONS AND TESTS

The ARCHITECT or his representative shall be allowed access to all parts of the work at all times and shall be furnished such information and assistance by the CONTRACTOR as may be required to make a complete detailed

inspection. Materials and installation shall be subject to such test as are deemed necessary by the ARCHITECT to properly ascertain their fitness both during installation and after installation is complete. The cost of such test shall be borne by the CONTRACTOR.

16000.10 LEAVING THE SITE

The CONTRACTOR shall not withdraw from the site until the OWNER has agreed that no further work is necessary at the time.

16000.11 SUSPENSION OR DELAYS

The CONTRACTOR shall not suspend or fail to make proper progress with the work without justifiable cause. The OWNER, in the event of delay or suspension of work still persisting after written complaint, in accordance with existing laws and regulations shall have the right to take over the work and all materials of the site and make arrangements as are necessary to have the work completed by others.

16000.12 CLEANING UP

During the process of the work and of the completion of the project, the CONTRACTOR shall remove from the premises all dirt, debris, rubbish and waste materials caused by him in the performance of his work. He shall remove all tools, scaffolding and surplus materials after completion and acceptance of the work.

PART 2 GENERAL REQUIREMENTS

16000.13 CODES AND REGULATIONS

The installation specified herein shall comply with the following, which are hereby made part of this Specification:

- a. All laws and regulations applying to electrical installation in effect;
- b. The provisions of the latest approved edition of the Philippine Electrical Code, Part I and Part II
- c. The rules and regulations of the local utility companies concerned.

16000.14 PERMITS AND APPROVAL

The CONTRACTOR shall obtain at his own expense all permits required by the Government Authorities. Work shall not be started unless the plans have been approved by said authorities and a valid wiring permit has been issued. Likewise, the CONTRACTOR shall secure from the power company their approval of the plans prior to start of the work.

All work done in violation of the above conditions shall be at the risk of subsequent rejection. The replacement or correction of such rejected work shall be the sole responsibility of the CONTRACTOR.

16000.15 OTHER REQUIREMENTS

The CONTRACTOR shall obtain all necessary allowances, pay all royalties and the like, in connection with the use of any patented devices or systems and save the OWNER from any claim or lawsuit arising from such use.

PART 3 WORK STANDARDS

16000.16 STANDARD OF WORKMANSHIP

- a. The CONTRACTOR shall execute all work in a neat and workmanlike manner and shall do all necessary work whether it is clearly specified in these Specifications or shown on the Drawings or not. All work shall be done in accordance with the best practices employed in modern electrical installations.
- b. The CONTRACTOR shall employ only competent and efficient workmen and shall, upon written request of the ARCHITECT, discharge or otherwise remove from work any employee who is, in the opinion of the ARCHITECT, careless or incompetent, or who obstructs the progress of the work or acts contrary to instructions or conducts himself improperly.

16000.17 REMOVAL OF DEFECTIVE OR UNAUTHORIZED WORK

Any defective work whether the result of poor workmanship, defective materials, damage through carelessness or any other cause, found to exist prior to acceptance of, or final payment for, the work shall be removed immediately and replaced by work and material which shall conform to these Specifications, or shall be otherwise remedied in an acceptable manner. This clause shall have full effect regardless of the fact that the work may have been done with the full knowledge of the ARCHITECT or the Implementing Agency

16000.18 COORDINATION WITH OTHER CONTRACTORS

- a. The CONTRACTOR shall arrange his work and dispose his materials so as not to interfere with the work or storage of materials of the other Contractors.
- b. Where the work of the CONTRACTOR will be installed in close proximity to work of other trades, or where there is evidence that the work of the CONTRACTOR will interfere with the work of other trades, he shall assist in working out space conditions to make a satisfactory adjustment. If so directed by the ARCHITECT, the CONTRACTOR shall prepare a composite working drawing and sections at a suitable scale clearly showing other trades.

If the CONTRACTOR installs his electrical work before coordinating with the work of other trades, he shall make necessary changes in his work to correct the condition without extra charge.

- c. The complexity of equipment and the variation between equipment manufacturers require complete coordination of all trades. The

CONTRACTOR, who offers for consideration, substitute of equal products of reliable manufacturers, has to be responsible for all changes that affect his installation and the installation of equipment of other trades.

16000.19 CUTTING AND PATCHING

The CONTRACTOR shall do all cutting and patching required by the work by engaging men who are skilled in the particular trade to do the work. Surfaced obtained by cutting and patching shall exactly match surrounding work so that there will be no evidence of alteration and patching.

PART 4 MATERIALS

16000.20 STANDARD OF MATERIALS

All materials shall be new and shall conform to the Technical Specifications. All materials shall be the standard products of reputable manufacturers and shall bear the name of the manufacturer. All local materials shall bear the PS mark when such standards have been set. All materials of foreign origin shall bear marks of approval by standards agencies of the country of origin.

16000.21 EQUIVALENTS

- a. Where the Technical Specifications or the Drawings give the name of the manufacturer and/or catalog number of materials, it is given as a guide to the size, strength, quality or class of the materials, desired and shall be interpreted to mean that item or another fully equal for the service intended. Substitution shall be subject to prior written approval of the ARCHITECT.
- b. The apparent silence of the Specifications and Drawings as to any detail, or apparent omission from the of a detailed description concerning any material shall be required to mean that only material of first class quality shall be used.

16000.22 APPROVAL

- a. All materials shall be subject to the approval of the ARCHITECT. All materials and equipment installed without prior approval of the ARCHITECT shall be at the risk of subsequent rejection.
- b. Approval by the ARCHITECT shall not relieve the CONTRACTOR of the responsibility of inspecting such materials for defects or non-conformance with the Specifications.

16000.23 DEFECTIVE MATERIALS

- a. All materials not conforming to the requirements of the Specifications shall be considered as defective.
- b. No defective material, the defect of which has been subsequently corrected, shall be re-used until approval has been given by the ARCHITECT.

PART 5 SUBMITTALS

16000.24

The CONTRACTOR shall, within Forty five (45) days after the award of the contract, submit for the approval of the ARCHITECT a list of materials he proposes to use in the work, including such samples, catalog, drawings, and descriptive data as far be required by the ARCHITECT.

16000.25 SHOP DRAWINGS

The CONTRACTOR shall submit to the ARCHITECT with such promptness as not to cause delay in his work or in that of any Contractor, five (5) copies of all shop drawings and the schedules required by the work. Shop Drawings shall be submitted on all major pieces of electrical equipment, specifically panelboards, wireways and gutters, and all fabricated items. The shop drawing shall give complete information on the proposed equipment. Each item of the drawings shall be properly labeled, indicating the intended service of the material, the job name, and Contractor's name.

The CONTRACTOR shall make any corrections required by the ARCHITECT, and submit five (5) corrected copies and other copies as needed. The Architect's approval of such drawings shall not relieve the CONTRACTOR of responsibility for deviations from the Drawings and Specifications unless he has in writing called attention to such deviation at the time of submission, nor shall it relieve him of responsibility for errors of any sort.

16000.26 "AS-BUILT" DRAWINGS

- a. Upon substantial completion of the project, the CONTRACTOR shall submit to the OWNER five (5) sets of "AS-BUILT" Drawings showing all changes and deviations from the Contract Drawings. The "AS-BUILT" Drawings shall be identical to the Contract Drawings except for the said changes and deviations.
- b. Where the changes and deviations are substantial, the CONTRACTOR shall also submit additional sets of "AS-BUILT" Drawings for submission to the Government Approving Authorities.

16000.27 CERTIFICATION OF FINAL INSPECTION AND APPROVAL

After completion of the work, the CONTRACTOR shall furnish the Owner with a Certificate of Final Inspection and Approval issued by the government authorities who issued the wiring permit. The CONTRACTOR shall pay all inspection fee, other fees and penalties, which said authorities would impose.

16000.28 GUARANTEE

The CONTRACTOR shall furnish the Owner a written guarantee covering the satisfactory operation of the electrical installation in all its parts for a period of one (1) year from the date of final certificate of approval issued by government authorities having jurisdiction or from the date of final acceptance by the Owner whichever comes first. During this period, the CONTRACTOR shall repair or replace any defective work and pay for any

repaid or replacement costs. Included with this guarantee certificate shall be the guarantee certificate of the material suppliers employed by this trade. Should any part of the work be accepted and occupied or utilized by the owner prior to final acceptance, the guarantee period for that portion of the work shall commence on the mutually acknowledged date of said acceptance, use or occupancy.

PART 6 PROTECTION

16000.29 CONTRACTOR'S WORK AND MATERIALS

The CONTRACTOR shall protect all his work and material from loss, injury or defacement. Any cost, damaged or defaced material shall be replaced by the CONTRACTOR at his own expense.

- a. All conduit openings shall be closed with caps in plugs during installation.
- b. All equipment shall be tightly covered and protected against dirt, water or mechanical injury, and shall be installed in perfect condition.

16000.30 OTHER CONTRACTOR'S WORK AND MATERIALS

Should the CONTRACTOR cause damage to any other Contractor on the work, the CONTRACTOR shall, upon due notices, settle with such Contractor by agreement or arbitration. The CONTRACTOR shall be liable for any claims by other Parties against the Owner on account of such damage.

16000.31 INJURY TO PERSONS OR DAMAGE TO PROPERTY

The CONTRACTOR shall be responsible for all injury to persons and damage to property caused by the works or by workmen and shall be liable for any claims against the OWNER on account of such injury and/or damage.

The CONTRACTOR shall likewise take necessary precautions to protect the property of the OWNER against rain or other inclemency of the weather and against theft. Where exposure to such inclement weather or theft is due to the performance of his work, the CONTRACTOR shall be liable for any such damage or loss.

27. SECTION 16050 BASIC MATERIALS AND METHODS

PART 1 RACEWAY MATERIALS AND WORKMANSHIP

16050.1 GENERAL

Install a complete raceway system as shown on the drawings and stated in other section of the Specifications. All materials used in the raceway system shall be new and the proper material for the service intended.

16050.2 MATERIAL SPECIFICATIONS

Raceway materials shall be as hereunder specified:

- a. Rigid Steel Conduit (RSC) shall be hot-dipped galvanized, manufactured to U.L. and ANSÉ Standards, 3 meters in length, taper threaded at both ends with one coupling, conduit shall be "KOREA", "PUSAN" brand, or any PS approved local equivalent.
- b. Electric Metallic Tubing (EMT) shall be hot-dipped galvanized mill steel pipe, manufactured to ANSE Standards, 3 meters in length, not-threaded: tubing shall be "MATSUSHITA", "MARUICHI", or PS approved local equivalent.
- c. Rigid PVC Conduit shall be schedule 40 or thick wall unplasticized PVC (uPVC) pipe 3 meters in length for electrical use (red orange), it shall be suitable for installation in concrete slab and manufactured to PSC Standard PNS 14 conduit shall be "ATLANTA", "NELTEX" or "EMERALD".
- d. Flexible PVC Conduit shall be corrugated unplasticized Polyvinyl Chloride (PVC) and shall be manufactured to applicable PSC Standards conduit shall be "MOLDFLEX".
- e. Fittings for rigid steel conduit shall be U.L. listed or PS approved local equivalent. Connectors and coupling for EMT shall be approved for the purpose, U.L. listed.
- f. Other raceways not mentioned above but called for of the Drawings shall be as specified thereon.

16050.3 INSTALLATION

- a. Not more than four 90 degree bends shall occur in any run. When it becomes necessary to have more than four (4) 90 degrees bends in any run, an intermediate pull box shall be installed to facilitate pulling-in of wires. All bends shall be free of dents or flattening. Field bends shall not be allowed for conduits larger than 20 mm dia. trade size except by hydraulic in motor operated benders.
- b. All raceways runs shall be in floors, ceilings, and walls. Embedded runs shall be installed in such manner as not to weaken or interfere with the structure of the building. No horizontal runs of embedded conduit or tubing shall be permitted in solid walls and partitions. Concealed raceways shall be run in as direct manner and with as long a bend as possible. Exposed raceways shall be run parallel to or at right angle with lines of the building. Where raceways cross building joints, furnish and install expansion fittings for contraction, expansion and settlement.
- c. Raceway shall be of ample size to permit the ready insertion and withdrawal of conductors without abrasion. All joints shall be cut square, reamed smooth, and drawn up tight.
- d. Open ends shall be capped with suitable seals as soon as installed and keep capped until ready to install conductors. A No. 16 galvanized iron or steel

fish wire shall be left in all conduits in which the permanent wiring is not installed.

e. Hangers and supports

1. Raceway shall be securely and rigidly supported to the building structure in a neat and workmanlike manner and wherever possible, parallel runs of horizontal raceways shall be grouped together of adjustable trapeze hangers. Support spacing shall not be more than 300 mm.
2. Exposed raceways shall be supported by one-hole malleable iron straps, two-hole straps, suitable beam clamps, or spilt ring hanger with support rod.
3. Single raceways 32 mm dia. and larger run concealed horizontally shall be supported by suitable beam clamps or spilt-ring hangers with support rod. Multiple runs shall be grouped together of trapeze hangers where possible.
4. Raceways 20 mm diameter and smaller run concealed above a ceiling may be supported directly to the building structure with strap hangers or No. 16 gauge galvanized wire provided the support spacing does not exceed 122 mm.
5. Raceways shall be firmly supported and fastened at three (3) meter intervals and within 0.1 meter of each outlet or cabinet.

f. Coupling and connection to boxed and cabinets

1. Metallic conduit shall be securely fastened to all sheet metal outlets, junction and pull boxed with galvanized locknuts and bushings, care being observed to see that the full number of threads project through to permit the bushing to be drawn tight against the end of the conduit, after which the locknuts shall be made up sufficiently tight to draw the bushings into firm electrical contact with the box.
 2. Electric metallic tubing shall not be coupled together nor connected to boxes, fittings, or cabinets by means of threads in the wall of the tubing. Only fittings approved for the purpose shall be used. Treadles couplings and connectors used with the tubing shall be of the concrete tight type where not exposed to the weather and raintight type where exposed to the weather.
 3. Metallic raceways shall be continuous from outlet to outlet to cabinets or junction or pull boxed in such a manner that each system shall be electrically continuous throughout.
 4. Not-metallic raceways shall be securely fastened to outlet boxes, junction and pull boxed with proper adapters to permit the installation of metallic bushings.
- g. Other raceways shall be installed in the manner prescribed in the latest approved edition of the Philippine Electrical Code, in accordance with the best

practices employed in modern electrical installations, and in accordance with the manufacturer's instructions.

PART 2 OUTLET BOXES

16050.4 GENERAL

Install all junction and outlet boxes as shown on the Drawings or as required by the construction. The Drawings indicate only the approximate location of each fixture, receptacle, and special purpose outlet and wall switch. The exact location shall be determined later at the site as the work progresses. The right is reserved by the ARCHITECT to change the exact location of any switch, light outlet, receptacle outlet and any other outlet in any room before the same is installed. If any outlet is installed by the CONTRACTOR in such a manner as to be out of proper relation to beams, walls, or other details of the building construction its position or location shall be corrected by and at the expense of the CONTRACTOR and under the direction of the ARCHITECT.

16050.5 MATERIAL SPECIFICATIONS

- a. Outlet boxes and junction boxes shall be galvanized, pressed-steel boxes where not exposed to the weather and case metal boxes where exposed to the weather as in outdoor or roof deck installations. Minimum thickness of pressed-steel boxes shall be 1.6 mm and case-metal boxes shall be at least 3.2 mm thick. The boxes shall be complete with the approved type of connectors and required accessories. Cast-metal boxes shall have threaded hubs.
- b. Boxes shall be of approved design and construction, and of such form and dimensions as required to serve the kinds of devices or fixtures to be used and the number, size and arrangement of conduits connecting thereto.

The allowable conduit fill as given in Section 5.7.2.2 of the Philippine Electrical Code shall not be exceeded. Deep boxes, box rings and raised plastic covers shall be used, when necessary, to obtain the required conductor capacity.

16050.6 INSTALLATION

- a. Receptacle Outlet Boxes. Wall receptacles shall be mounted approximately 300 mm above the finished floor (AFF) at center unless otherwise noted. All receptacle outlet boxes shall be equipped with grounding leaf, which shall be connected to grounding terminal of device. The leaf shall be properly bonded to the box and to the separate ground wire, if any.
- b. Switch Outlet Boxes. Wall switches shall be mounted approximately 1200 mm above the finished floor (AFF) at center unless otherwise noted. When the switch is mounted in a masonry wall, the bottom of the outlet box shall be in line with the bottom of a masonry unit.
- c. Lighting Fixture Outlet Boxes. The lighting fixture outlet boxes shall be furnished with the necessary accessories to install the fixture. The support must be such as not to deepen the outlet box supporting the fixture. The supports for the lighting fixtures shall be independent of the ceiling system.

- d. Boxes for outlet of auxiliary systems shall be as specified elsewhere in this Specification or as shown of the Drawings.

PART 3 PULL BOXES, WIREWAYS AND AUXILIARY GUTTERS

16050.7 GENERAL

- a. Pull boxes shall be installed at all necessary points, whether indicated of the drawings or not, to prevent injury to the insulation or other damage that might result from pulling resistance, or for other reasons necessary to proper installation. Pull box locations shall be approve by the ARCHITECT prior to installation. Minimum dimensions shall be not less than PEC requirements and shall be increased if necessary for practical reasons or where required to fit a job condition.
- b. Wireways shall be used where indicated of the Drawings or as required by the construction.
- c. Auxiliary gutters shall be used to supplement wiring spaces as required by the construction or as indicated of the Drawings.

16050.8 CONSTRUCTION SPECIFICATIONS

- a. All pull boxes, wireways and auxiliary gutters shall be constructed of galvanized sheet steel, with minimum thickness of 1.2 mm, and painted inside and outside to prevent corrosion.
- b. Covers shall be attached to the box with a suitable number of countersunk flathead machine screws. Screws, which may cause injury to the insulation shall not be used.
- c. Each circuit in box shall be marked with a tag guide denoting panels to which they connect.

PART 4 CONDUCTOR MATERIAL AND WORKMANSHIP

16050.9 GENERAL

Provide and install a complete wiring system as shown of the Drawings.

16050.10 CONDUCTOR SPECIFICATIONS

- a. Conductors used in the wiring system shall be of soft-annealed copper having a conductivity of not less than 98% of that of pure copper and insulate for 600 V.
- b. The wires and cables shall be delivered to the site in its original package whenever possible, plainly marked or tagged as follows:
 - 1. Size, kind, and insulation of wire
 - 2. Name of Manufacturer

3. Trade name of wire

c. Wires and cables shall be PHELPS DODGE, COLUMBIA or DURAFLEX.

16050.11 CONDUCTOR WORKMANSHIP

- a. Install conductors in all raceways as required to a neat and workmanlike manner. Empty conduits, as noted, shall have a No.14 gauge galvanized pull wire left in place for future use. No wires shall be drawn into the raceways until all works, which may cause injury to the wire are completed.
- b. Conductors shall be color-coded in accordance with the Philippine Electrical Code. Mains, feeders and sub-feeders shall be tagged in all pull, junction, and outlet boxed and in the gutter of panels with approved wire markers.
- c. No lubricant other than powdered soapstone or approved pulling compound may be used to pull conductors.
- d. At least 200 mm of slack wire shall be left in every outlet box whether it be in use or left for future use.
- e. All conductors and connections shall test free of grounds, shorts, and opens before turning the job over to the Owner.
- f. Branch circuits splices shall be soldered or joined by the use of insulate splicing devices (wire nuts). All soldered joints shall be made mechanically strong before soldering and shall be carefully soldered without the use of acid, then taped with plastic tape to a thickness equal to or exceeding that of the insulation.
- g. Unless otherwise indicated in the Drawings or specified, not more than the specified number of conductors constituting a single circuit or branch shall be drawn in one conduit.

SECTION 16400 SERVICE ENTRANCE AND DISTRIBUTION SYSTEM

PART 1 SERVICE ENTRANCE

16400.1 GENERAL

Provide and install a complete service-entrance system as shown on the Drawings and as required for a complete system. All materials and workmanship shall conform to Section 16050 of these Specifications, the Philippine Electrical Code, and the local laws and regulations. The electric service-entrance shall conform to the requirements and regulations of the electric utility serving the project.

16400.2 MATERIALS

- a. Conduits used for service-entrance shall be galvanized rigid steel conduit.
- b. Conductors for service-entrance shall be copper, type THWW.

16400.3 SCOPE

- a. Verify with the electric utility company serving the project the point of connection to the utility facilities before preparing the bid and include therein all work entailed for such connection.
- b. Verify with the electric utility company the scope of the work regarding the metering facilities and include in the bid all materials, labor, and charges that the utility company may require of the Owner, for the purpose of installing permanent metering connection.

PART 2 FEEDERS AND BRANCH CIRCUITS

16400.4 GENERAL

Provide and install a complete electrical distribution system as shown on the Drawings or as required for a complete system. All materials and workmanship shall conform to Section 16050 of the Specifications, the Philippine Electrical Code, and the local laws and regulations.

16400.5 MATERIALS

- a. Raceways shall be as indicated on the Drawings.
- b. Conductor type shall be as indicated on the Drawings. No wire smaller than 1.2 mm diameter or 2.0 square mm (AWG No. 14) shall be used for any lighting or power circuit. Conductors smaller than 5.5 square mm shall be solid. Conductors 5.5 square mm and larger shall be stranded.

16400.6 INSTALLATION

- a. Feeder conductors and raceways shall be installed as shown on the Drawings and no change in size shall be made without written consent of the ARCHITECT. Feeder conductors shall be continuous, and without splices between terminals unless expressly indicated in the Drawings. When feeders are run in multiple, they shall be exactly of the same length to avoid unbalanced division of the current.
- b. The Drawings indicate the general methods of installation of all circuit wiring and the outlet, which are to be supplied for these circuits. Branch circuit raceways shall be run from outlet to panelboards as direct as the building conditions will allow. Circuit allocations shall be as indicated on the Drawings. Where it becomes necessary to connect any outlet to a circuit other than the one shown on the Drawing, this shall be done without extra charge and only upon written consent of the ARCHITECT. All lighting outlet shall be supplied from single-phase circuits. Number of wires for all circuits shall be as indicated on the Drawings.

PART 3 DISCONNECT AND SAFETY SWITCHES

16400.7 GENERAL

Furnish and install safety switches as indicated on the Drawings or as required. All safety switched shall be General Duty Type. The switched shall be Fuse Safety Switched (FSS) or Not-Fuse Safety Switched (NFSS) as shown on the Drawings or required.

16400.8 MATERIAL SPECIFICATIONS

Safety Switched shall be approved by the Bureau of Product Standards and shall exhibit the "PS" mark as proof thereof.

16400.9 INSTALLATION

The safety switched shall be securely mounted in accordance with the Philippine Electrical Code. The CONTRACTOR shall provide all mounting materials.

PART 4 PANELBOARDS - CIRCUIT BREAKERS

16400.10 GENERAL

Furnish all install circuit-breaker panelboards as indicated in the panelboards schedule and where shown on the Drawings.

16400.11 MATERIAL SPECIFICATIONS

- a. The panelboards shall be dead-front type equipped with molded-case circuit breakers and shall be the type as indicated in the panelboards schedule/detail.
- b. Provide molded-case circuit breakers of frame, trip rating and interrupting capacity as shown on the Drawings. Also provide the number of spacer for future circuit breakers as shown in the schedule. The circuit breakers shall be quick-make, quick-break, thermal-magnetic, trip-indicating, and have common trip on all multiple breakers with internal trip mechanism.
- c. But bad connections to the branch circuit breakers shall be the "phase-sequence" type. Single-phase three-wire panelboards bussing shall be such that any two adjacent single-pole breakers are connected to opposite polarities in such a manner that two-pole breakers can be installed in any location. Three-phase four-wire bussing shall be such that any three adjacent single-pole breakers are individually connected to each of the three different phases in such a manner that two or three-pole breakers can be installed at any location. All current-carrying parts of the panelboards shall be plated. Provide solid neutral (S/N) assembly when required. The assembly shall be isolated from the enclosure.

- d. Terminals for feeder conductors to the panelboards mains and neutral shall be suitable for the type of conductor specified. Terminals for branch-circuit wiring, both breaker and neutral, shall be suitable for the type of conductor specified.
- e. The panelboards buy assembly shall be enclosed in a steel cabinet. The size of the wiring gutters and gauge of steel shall be in accordance with NEMA Standards. The box shall be fabricated from galvanized steel or equivalent rust-resistant steel. Fronts shall include door and have flushed, brushed stainless steel, spring-loaded door pulls. The flush lock shall not protrude beyond the front of the door. All panelboards locks shall be keyed alike. Fronts shall have hash provisions for padlocking onto the tub.
- f. On the inside of the door of each cabinet, provide a typewritten directory, which will indicate the location of the equipment or outlet supplied by each circuit. The directory shall be mounted in a metal frame with a non-breakable transparent cover. The panelboards designation shall be stenciled in 1-1/2 inch-high letters on the inside of the door.
- g. Panelboards and circuit breakers shall be FUJI, MITSUBISHI, GE, ITE, SQUARE A or WESTINGHOUSE, GOLDSTAR.
- h. There shall be no intermixing of brands in one panel.

16400.12 INSTALLATION

- a. Before installing panelboards, check all the architectural drawings for possible conflict of space. Adjust the location of the panelboards to prevent such conflict with other items.
- b. When the panelboards is recessed into a wall serving an area with accessible ceiling space, provide and install an empty conduit system for each spare circuit for future wiring. A 1-1/2 inch conduit shall be stubbed into the ceiling space above the panelboards as such accessible ceiling space exists.
- c. The panelboards shall be mounted in accordance with Article 5.8 of the Philippine Electrical Code. Furnish all materials for mounting the panelboards.

PART 5 WIRING DEVICES

16400.13 GENERAL

Furnish and install all wiring devices and plate as called for on the Drawings and as specified herein.

16400.14 MATERIAL SPECIFICATIONS

- a. Switched shall be 15A, 250V or 300V except as otherwise noted. Terminals shall be screw-type or quick-connect type.
- b. General use receptacle shall be 10A, 240V grounding type unless otherwise indicated on the Drawings. Terminals shall be screw-type or quick-

connect type. Hospital grade receptacles shall be used when called for on the Drawings.

- c. Special purpose receptacles shall be as called for on the Drawings. Matching plugs shall be supplied.
- d. Wiring devices shall be EAGLE, NATIONAL, MEIKOSHA, TOSHIBA, JIMBO, or as called for on the Drawings.

16400.15 INSTALLATION

- a. Mounting height shall be as follows unless otherwise noted on the Drawings:
 - 1. Switched - 1.20 meters above floor finish.
 - 2. Receptacle - 0.30 meter above floor finish.
- b. For screw type devices, the wire connected thereto shall be formed into a clockwise loop to fit around the screws. For quick-connect devices, the exact length of wire shall be stripe of insulation and then pushed in.

28. SECTION 16500 LIGHTING

16500.1 GENERAL

Furnish, install and connect all lighting fixtures to the building wiring system unless otherwise noted.

16500.2 SPECIFICATIONS

- a. Fixture type shall be as indicated on the Drawings.
- b. Fluorescent ballast shall be pre-heat, high power factor or high frequency (electric) energy saving type. The ballast shall be subject to one (1) year manufacturer's guarantee. The guarantee shall be filed with the Owner. The ballast shall indicate Bureau of Produce Standards approval (with "PS" mark)
- c. Fluorescent fixture housing shall be GA. 22 minimum, with baked enamel finish.
- d. Downlights and pinlights shall be of heavy gauge spun aluminum with wooden plaster bevel and equipped with the lamp type indicated on the drawings. Pinlights shall have no live parts exposed at the back of the fixtures. Minimum opening diameter shall be 150 mm and minimum depth shall be 200 mm.
- e. Fluorescent lamps shall be cool-white and lampholders shall be made of thermosetting plastic.
- f. Special lighting requirements shall be as call for the Drawings.

16500.3 INSTALLATION

Coordinate with the Ceiling Contractor and the General Contractor in order that the proper type of fixture be furnished to match the ceiling system or building construction material.

29. SECTION 16401 OVERHEAD DISTRIBUTION SYSTEM

PART I : PRIMARY (HIGH VOLTAGE) - not included

PART II : SECONDARY (LOW VOLTAGE) DISTRIBUTION

16401.1 GENERAL

Provide and install complete outside secondary distribution system or systems as indicated on the drawings specific scope of works shall be as described on the drawings or as indicated elsewhere in the Specifications. Connections and tapping work shall include the following:

- a. To utility company facilities - sufficient length of cables (2meters minimum) and quantity of solderless connection shall be provided by the contractor.
- b. To building under construction or renovation - sufficient length of cables
- c. To existing building - sufficient length of cable, quantity of properly sized connector and the tapping work itself shall be provided by the contractor.

16401.2 MATERIALS TYPE OF CONSTRUCTION

Supply lines shall be insulated power cables supported by messenger cable from clamps bolted to the sides of poles or crossarms. Poles shall be pre-cast concrete round poles.

16401.3 CONCRETE POLES SPECIFICATIONS

Concrete poles shall be Class 7A per Meralco and NEA Standards.

16401.4 POLE SETTING

- a. Holes for poles should be large enough to admit the poles without any slicing or chapping and should be of the same diameter from top to bottom. The diameter of the hole shall be large enough so that a tamping bag can be worked on all sides between the pole and the sides of the hole.
- b. Poles shall be set in alignment and plumb except at corners, terminals, angles, junctions or other points of strains where they shall be set and raked against the strain so that the tension of the cables will tend to straighten them. Poles shall be raked against the conductor strain not less than 2.5cm for each 3meters of pole length nor more than 7.6cm for each 3 meters of pole length after the conductor are installed at the required tension. Pole backfill must be thoroughly and slowly tamped the full depth.. Excess earth must be banked around pole.

16401.5 CROSSARMS

- a. Crossarms shall withstand all the vertical and transverse loads that the structure will experience, computed in accordance with or a specified in the pertinent provisions of the Philippine Electrical Code, Part II without exceeding 50% of the designated fiber stress of the material or a minimum of 320kg., applied horizontal load applied at the outermost conductor attachment point, whichever is greater.
- b. Wood crossarm shall be of selected tanguile or lauan with a minimum cross section of 83mm x 110mm.
- c. Wood crossarm shall be free from all defects (subject to inspection prior to installation) and shall be treated with approved preservative preferably creosote Petroleum (70-30)

16401.6 LINE HARDWARE

- a. Line hardware shall be hot dip galvanized iron or steel, with U.S. Standard cut threads.
- b. Belts shall have sufficient length for the intended use.
- c. Round washers shall be used under heads of carriage bolts, which fasten crossarms to crossarm. Square washer shall be used for others.
- d. Guy clamps shall be 3 bolts heavy type.

16401.7 CABLES

Cables shall be as specified on the Drawings. Conductors shall be U.L. listed. Steel cable messenger wires and guying shall be U.S. made.

16401.8 GUYING

- a. Poles shall be provided with guys to ensure continuity of service under the most severe condition that are likely to be obtained.
- b. Terminal poles and poles carrying two sets of double crossams shall be head guyed. Side guys shall be installed on other poles.
- c. Where it impractical to install a guy directly from the attachment to the ground, a side walk guy shall be used.

Section VII. Drawings

[Insert here a list of Drawings. The actual Drawings, including site plans, should be attached to this section, or annexed in a separate folder.]

Section VIII. Bill of Quantities

Notes on the Bill of Quantities

Objectives

The objectives of the Bill of Quantities are:

- a. to provide sufficient information on the quantities of Works to be performed to enable Bids to be prepared efficiently and accurately; and
- b. when a Contract has been entered into, to provide a priced Bill of Quantities for use in the periodic valuation of Works executed.

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

Daywork Schedule

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

- a. A list of the various classes of labor, materials, and Constructional Plant for which basic daywork rates or prices are to be inserted by the Bidder, together with a statement of the conditions under which the Contractor will be paid for work executed on a daywork basis.
- b. Nominal quantities for each item of Daywork, to be priced by each Bidder at Daywork rates as Bid. The rate to be entered by the Bidder against each basic Daywork item should include the Contractor's profit, overheads, supervision, and other charges.

Provisional Sums

A general provision for physical contingencies (quantity overruns) may be made by including a provisional sum in the Summary Bill of Quantities. Similarly, a contingency allowance for possible price increases should be provided as a provisional sum in the Summary Bill of Quantities. The inclusion of such provisional sums often facilitates budgetary approval by avoiding the need to request periodic supplementary approvals as the future need arises. Where such provisional sums or contingency allowances are

used, the SCC should state the manner in which they will be used, and under whose authority (usually the Procuring Entity's Representative's).

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

Signature Box

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

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

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
- (b) Registration certificate from Securities and Exchange Commission (SEC), Department of Trade and Industry (DTI) for sole proprietorship, or Cooperative Development Authority (CDA) for cooperatives or its equivalent document;
and
- (c) Mayor's or Business permit issued by the city or municipality where the principal place of business of the prospective bidder is located, or the equivalent document for Exclusive Economic Zones or Areas;
and
- (e) Tax clearance per E.O. No. 398, s. 2005, as finally reviewed and approved by the Bureau of Internal Revenue (BIR).

Technical Documents

- (f) 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**
- (g) 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**
- (h) 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**
- (i) 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**
- (j) 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**
- (k) 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

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

Class "B" Documents

- (n) 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

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

STATEMENT OF ALL ONGOING GOVERNMENT AND PRIVATE CONTRACTS

Name of the Company: _____
 Address: _____

STATEMENT OF ALL ONGOING GOVERNMENT AND PRIVATE CONTRACTS, INCLUDING AWARDED BUT NOT YET STARTED

Name of Contract	a. Name of the Procuring Entity; b. Contact Person; c. Address; d. Contact Nos:	a. Contract References (PO/Contract); b. Contract Date c. Contract Duration	a. Estimated Completion of Delivery	Contract Amount	% of Accomplishment		Value of Outstanding Works/Undelivered Portion
					Planned	Actual	
GOVERNMENT							
PRIVATE							
					Total Value of Outstanding Contract		

This statement shall be supported by:

1. Notice of Award;
2. Contract, if applicable; and
3. Notice to Proceed, if applicable.

Submitted by:

NAME OF THE BIDDER OR ITS AUTHORIZED REPRESENTATIVE AND ITS SIGNATURE

 Designation

Name of the Company: _____
 Address: _____

STATEMENT OF SINGLE LARGEST COMPLETED CONTRACT

a. Name of the Contract b. Name of the Procuring Entity	a. Date of Contract b. Contract Duration (No. of days or months)		a. Kinds of Goods/Nature of Works b. Contract Amount or value/Adjusted Contract amount, if applicable	a. Date of completion or delivery
	a. b.	a. b.		
a. b.	a. b.	a. b.	a. b.	a.

This statement shall be supported by:

1. Notice of Award;
2. Contract;
3. Notice to Proceed; and
4. Certificate of Completion and Final Acceptance.

Submitted by:

NAME OF THE BIDDER OR ITS AUTHORIZED REPRESENTATIVE AND ITS SIGNATURE

 Designation

Bid Securing Declaration Form

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

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

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

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

I/We, the undersigned, declare that:

1. I/We understand that, according to your conditions, bids must be supported by a Bid Security, which may be in the form of a Bid Securing Declaration.
2. I/We accept that: (a) I/we will be automatically disqualified from bidding for any procurement contract with any procuring entity for a period of two (2) years upon receipt of your Blacklisting Order; and, (b) I/we will pay the applicable fine provided under Section 6 of the Guidelines on the Use of Bid Securing Declaration, within fifteen (15) days from receipt of the written demand by the procuring entity for the commission of acts resulting to the enforcement of the bid securing declaration under Sections 23.1(b), 34.2, 40.1 and 69.1, except 69.1(f), of the IRR of RA No. 9184; without prejudice to other legal action the government may undertake.
3. I/We understand that this Bid Securing Declaration shall cease to be valid on the following circumstances:
 - a. Upon expiration of the bid validity period, or any extension thereof pursuant to your request;
 - b. I am/we are declared ineligible or post-disqualified upon receipt of your notice to such effect, and (i) I/we failed to timely file a request for reconsideration or (ii) I/we filed a waiver to avail of said right; and
 - c. I am/we are declared the bidder with the Lowest Calculated Responsive Bid, and I/we have furnished the performance security and signed the Contract.

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

*[Insert NAME OF BIDDER OR ITS AUTHORIZED
REPRESENTATIVE]*

[Insert signatory's legal capacity]
Affiant

[Jurat]

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

Omnibus Sworn Statement (Revised)

[shall be submitted with the Bid]

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

AFFIDAVIT

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

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

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

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

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

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

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

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

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

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

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

[If a sole proprietorship:] The owner or sole proprietor is not related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical

Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

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

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

7. *[Name of Bidder]* complies with existing labor laws and standards; and
8. *[Name of Bidder]* is aware of and has undertaken the responsibilities as a Bidder in compliance with the Philippine Bidding Documents, which includes:
 - a. Carefully examining all of the Bidding Documents;
 - b. Acknowledging all conditions, local or otherwise, affecting the implementation of the Contract;
 - c. Making an estimate of the facilities available and needed for the contract to be bid, if any; and
 - d. Inquiring or securing Supplemental/Bid Bulletin(s) issued for the *[Name of the Project]*.
9. *[Name of Bidder]* did not give or pay directly or indirectly, any commission, amount, fee, or any form of consideration, pecuniary or otherwise, to any person or official, personnel or representative of the government in relation to any procurement project or activity.
10. **In case advance payment was made or given, failure to perform or deliver any of the obligations and undertakings in the contract shall be sufficient grounds to constitute criminal liability for Swindling (Estafa) or the commission of fraud with unfaithfulness or abuse of confidence through misappropriating or converting any payment received by a person or entity under an obligation involving the duty to deliver certain goods or services, to the prejudice of the public and the government of the Philippines pursuant to Article 315 of Act No. 3815 s. 1930, as amended, or the Revised Penal Code.**

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

[Insert NAME OF BIDDER OR ITS AUTHORIZED REPRESENTATIVE]

[Insert signatory's legal capacity]
Affiant

[Jurat]

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

Bid Form for the Procurement of Infrastructure Projects
[shall be submitted with the Bid]

BID FORM

Date : _____
Project Identification No. : _____

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

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

- a. We have no reservation to the PBDs, including the Supplemental or Bid Bulletins, for the Procurement Project: *[insert name of contract]*;
- b. We offer to execute the Works for this Contract in accordance with the PBDs;
- c. The total price of our Bid in words and figures, excluding any discounts offered below is: *[insert information]*;
- d. The discounts offered and the methodology for their application are: *[insert information]*;
- e. The total bid price includes the cost of all taxes, such as, but not limited to: *[specify the applicable taxes, e.g. (i) value added tax (VAT), (ii) income tax, (iii) local taxes, and (iv) other fiscal levies and duties]*, which are itemized herein and reflected in the detailed estimates,
- f. Our Bid shall be valid within the a period stated in the PBDs, and it shall remain binding upon us at any time before the expiration of that period;
- g. If our Bid is accepted, we commit to obtain a Performance Security in the amount of *[insert percentage amount]* percent of the Contract Price for the due performance of the Contract, or a Performance Securing Declaration in lieu of the the allowable forms of Performance Security, subject to the terms and conditions of issued GPPB guidelines¹ for this purpose;
- h. We are not participating, as Bidders, in more than one Bid in this bidding process, other than alternative offers in accordance with the Bidding Documents;
- i. We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal Contract is prepared and executed; and
- j. We understand that you are not bound to accept the Lowest Calculated Bid or any other Bid that you may receive.
- k. We likewise certify/confirm that the undersigned, is the duly authorized

¹ currently based on GPPB Resolution No. 09-2020

representative of the bidder, and granted full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for the [Name of Project] of the [Name of the Procuring Entity].

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

Name: _____

Legal Capacity: _____

Signature: _____

Duly authorized to sign the Bid for and behalf of: _____

Date: _____



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Republic of the Philippines
Bangsamoro Autonomous Region in Muslim Mindanao
OFFICE OF THE CHIEF MINISTER
SUPPORT FOR LOCAL MORAL GOVERNANCE
NEDA Bldg, OCM Compound, Rosary Heights VII, Cotabato City



Contract ID : _____
 Contract Name : Construction of Waiting Shed
 Location of Contract : _____

BILL OF QUANTITIES

Part No.: _____ Description: _____

ITEM NO. (1)	DESCRIPTION (2)	UNITS (3)	QTY. (4)	UNIT PRICE (PESOS) (5)	AMOUNT (PESOS) (6)
PART I FACILITIES FOR THE ENGINEER					
A.1.1(8)	Field Office for the Engineer (Rental Basis)	days	43.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
PART II OTHER GENERAL REQUIREMENTS					
B.5	Project Billboard/Signboard	ea.	2.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
B.7(1)	Occupational Safety and Health Program	days	43.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
B.9	Mobilization / Demobilization	days	2.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
PART III EARTHWORKS					
803(1)a	Structure Excavation (Common Soil)	cu.m.	2.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
804(1)a	Embankment from Structure Excavation	cu.m.	5.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
804(1)b	Embankment from Borrow by Equipment	cu.m.	9.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
804(4)	Gravel Bedding	cu.m.	2.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
Sub-total for this page					In Words: Pesos
					In Figures: Php

PART IV PLAIN AND REINFORCED CONCRETE WORKS					
900(1)c1	Structural Concrete Class A , 28 days	cu.m.	6.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
902(1)a	Reinforcing Steel (Deformed), Grade 40	kg	140.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
903(2)	Formworks and Falseworks (for one-storey building)	sq.m.	26.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
PART V FINISHING AND OTHER CIVIL WORKS					
1000(1)	Soil Poisoning	L	3.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
1002(27)	Plumbing Works	l.s.	1.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
1003(1)a1	Ceiling, 4.5mm Fiber Cement Board on Metal Frame	sq.m.	28.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
1003(2)	Wall (Aluminum Metal Cladding)	sq.m.	22.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
1005(5)	Steel Windows	sq.m.	0.72	In Words: Pesos	In Figures: Php
				In Figures: Php	
1043(1)	PVC Doors and Frames	sq.m.	2.52	In Words: Pesos	In Figures: Php
				In Figures: Php	
1013(2)a2	Fabricated Metal Roofing Accessory, Gauge 26 (Flashing)	l.m.	10.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
1013(2)b1	Fabricated Metal Roofing Accessory (Gutter)	l.m.	10.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
Sub-total for this page					In Words: Pesos
					In Figures: Php

PART V	FINISHING AND OTHER CIVIL WORKS				
1014(1)b1	Prepainted Metal Sheet, Rib Type above 0.427mm, Long Span	sq.m.	38.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
1018(1)	Glazed Tiles and Trims	sq.m.	60.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
1018(2)	Unglazed Tiles	sq.m.	4.60	In Words: Pesos	In Figures: Php
				In Figures: Php	
1027(1)	Cement Plaster Finish	sq.m	74.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
1032(1)a	Painting Work (Masonry Painting)	sq.m.	66.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
1032(1)c	Painting Work (Metal Painting)	sq.m.	8.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
1046(2)a1	100mm CHB Non-Load Bearing (including reinforcement)	sq.m	40.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
1047(2)b	Structural Steel Roof Truss	kg	178.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
1047(2)c	Structural Steel (Purlins)	kg	40.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
1047(3)a	Structural Steel (Anchor Bolts)	pc	6.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
1047(3)b	Metal Structure Accessories (Sagrods)	pc	18.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
Sub-total for this page					In Words: Pesos
					In Figures: Php

PART V FINISHING AND OTHER CIVIL WORKS					
1047(3)c	Metal Structure Accessories (Turnbuckle)	pc	4.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
1047(4)	Metal Structure Accessories (Crossbracing)	kg	18.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
1047(5)	Metal Structure Accessories (Steel Plates)	kg	15.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
PART VI ELECTRICAL WORK					
1100(10)	Conduits, Boxes & Fittings (Conduit Works/Rough-in)	l.s.	1.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
1101(33)	Wire and Wiring Devices	l.s.	1.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
1102(1)	Panel Board with Main & Branch Breakers	set	1.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
1103(1)	Lighting Fixtures and Lamps	l.s.	1.00	In Words: Pesos	In Figures: Php
				In Figures: Php	
Sub-total for this page					In Words: Pesos
					In Figures: Php
GRAND TOTAL					In Words: Pesos
					In Figures: Php

Prepared by:

Submitted by:

Name & Signature of Bidder's Representative

Proprietor/Manager & Signature

Position