

PHILIPPINE BIDDING DOCUMENTS

Construction of Perimeter Fence at URS Tanay Campus

URS-22-03-052

Government of the Republic of the Philippines

UNIVERSITY OF RIZAL SYSTEM

**Sixth Edition
July 2020**

Preface

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

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

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

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

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

- a. All the documents listed in the Table of Contents are normally required for the procurement of Infrastructure Projects. However, they should be adapted as necessary to the circumstances of the particular Project.
- b. Specific details, such as the “name of the Procuring Entity” and “address for bid submission,” should be furnished in the Instructions to Bidders, Bid Data Sheet, and Special Conditions of Contract. The final documents should contain neither blank spaces nor options.
- c. This Preface and the footnotes or notes in italics included in the Invitation to Bid, BDS, General Conditions of Contract, Special Conditions of Contract, Specifications, Drawings, and Bill of Quantities are not part of the text of the final document, although they contain instructions that the Procuring Entity should strictly follow.
- d. The cover should be modified as required to identify the Bidding Documents as to the names of the Project, Contract, and Procuring Entity, in addition to date of issue.

- e. Modifications for specific Procurement Project details should be provided in the Special Conditions of Contract as amendments to the Conditions of Contract. For easy completion, whenever reference has to be made to specific clauses in the Bid Data Sheet or Special Conditions of Contract, these terms shall be printed in bold typeface on Sections I (Instructions to Bidders) and III (General Conditions of Contract), respectively.
- f. For guidelines on the use of Bidding Forms and the procurement of Foreign-Assisted Projects, these will be covered by a separate issuance of the Government Procurement Policy Board.

TABLE OF CONTENTS

Glossary of Terms, Abbreviations, and Acronyms.....	5
Section I. Invitation to Bid	8
Section II. Instructions to Bidders.....	11
1. Scope of Bid.....	12
2. Funding Information	12
3. Bidding Requirements.....	12
4. Corrupt, Fraudulent, Collusive, Coercive, and Obstructive Practices	12
5. Eligible Bidders.....	12
6. Origin of Associated Goods	13
7. Subcontracts	13
8. Pre-Bid Conference.....	14
9. Clarification and Amendment of Bidding Documents.....	14
10. Documents Comprising the Bid: Eligibility and Technical Components.....	14
11. Documents Comprising the Bid: Financial Component	15
12. Alternative Bids	15
13. Bid Prices	15
14. Bid and Payment Currencies.....	15
15. Bid Security.....	15
16. Sealing and Marking of Bids.....	16
17. Deadline for Submission of Bids	16
18. Opening and Preliminary Examination of Bids	16
19. Detailed Evaluation and Comparison of Bids	16
20. Post Qualification.....	17
21. Signing of the Contract	17
Section III. Bid Data Sheet.....	18
Section IV. General Conditions of Contract	21
1. Scope of Contract.....	22
2. Sectional Completion of Works	22
3. Possession of Site.....	22
4. The Contractor’s Obligations.....	22
5. Performance Security	22
6. Site Investigation Reports	23

7.	Warranty.....	23
8.	Liability of the Contractor.....	23
9.	Termination for Other Causes.....	23
10.	Dayworks.....	23
11.	Program of Work.....	24
12.	Instructions, Inspections and Audits.....	24
13.	Advance Payment.....	24
14.	Progress Payments.....	24
15.	Operating and Maintenance Manuals.....	24
	Section V. Special Conditions of Contract.....	26
	Section VI. Specifications.....	29
	Section VII. Drawings.....	31
	Section VIII. Bill of Quantities.....	103
	Section IX. Checklist of Technical and Financial Documents.....	105

Glossary of Terms, Abbreviations, and Acronyms

ABC – Approved Budget for the Contract.

ARCC – Allowable Range of Contract Cost.

BAC – Bids and Awards Committee.

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

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

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

BIR – Bureau of Internal Revenue.

BSP – Bangko Sentral ng Pilipinas.

CDA – Cooperative Development Authority.

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

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

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

CPI – Consumer Price Index.

DOLE – Department of Labor and Employment.

DTI – Department of Trade and Industry.

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

GFI – Government Financial Institution.

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

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

GOP – Government of the Philippines.

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

LGUs – Local Government Units.

NFCC – Net Financial Contracting Capacity.

NGA – National Government Agency.

PCAB – Philippine Contractors Accreditation Board.

PhilGEPS - Philippine Government Electronic Procurement System.

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

PSA – Philippine Statistics Authority.

SEC – Securities and Exchange Commission.

SLCC – Single Largest Completed Contract.

UN – United Nations.

Section I. Invitation to Bid

Notes on the Invitation to Bid

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

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

- a. The date of availability of the Bidding Documents, which shall be from the time the IB is first advertised/posted until the deadline for the submission and receipt of bids;
- b. The place where the Bidding Documents may be acquired or the website where it may be downloaded;
- c. The deadline for the submission and receipt of bids; and
- d. Any important bid evaluation criteria.

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



Republic of the Philippines
UNIVERSITY OF RIZAL SYSTEM
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Invitation to Bid for the Construction of Perimeter Fence at URS Tanay Campus

1. The **University of Rizal System**, through the **fund 052 of 2022** intends to apply the sum of **Four Million Pesos Only (₱4,000,000.00)** being the Approved Budget for the Contract (ABC) to payments under the contract for **Construction of Perimeter Fence at URS Tanay Campus URS-22-03-052**. Bids received in excess of the ABC shall be automatically rejected at bid opening.
2. The **University of Rizal System** now invites bids for the above Procurement Project. Completion of the Works is required **180 calendar days**. Bidders should have completed a contract similar to the Project. The description of an eligible bidder is contained in the Bidding Documents, particularly, in Section II (Instructions to Bidders).
3. Bidding will be conducted through open competitive bidding procedures using non-discretionary “pass/fail” criterion as specified in the 2016 revised Implementing Rules and Regulations (IRR) of Republic Act (RA) No. 9184.
4. Interested bidders may obtain further information from **University of Rizal System** and inspect the Bidding Documents at the address given below during office hours 8:00 AM to 5:00 PM.
5. A complete set of Bidding Documents may be acquired by interested bidders on **May 26, 2022** from given address and website below and upon payment of the applicable fee for the Bidding Documents, pursuant to the latest Guidelines issued by the GPPB, in the amount of **Five Thousand Pesos Only (₱5,000.00)**. The Procuring Entity shall allow the bidder to present its proof of payment for the fees in person.
6. The **University of Rizal System** will hold a Pre-Bid Conference¹ on **June 3, 2022, 9:30 AM** at **BAC Conference Room, URS Morong Campus** and through videoconferencing/webcasting via **Google Meet** which shall be open to prospective bidders.
7. Bids must be duly received by the BAC Secretariat through manual submission at the office address as indicated below, on or before **9:00 AM of June 15, 2022**. Late bids shall not be accepted.

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.

8. All bids must be accompanied by a bid security in any of the acceptable forms and in the amount stated in **ITB** Clause 16.
9. Bid opening shall be at **9:30 AM of June 15, 2022** at **AVEC, URS Morong Campus, J. Sumulong St., Brgy San Juan, Morong, Rizal** and **broadcast online via Google Meet**. Bids will be opened in the presence of the bidders' representatives who choose to attend the activity.
10. The **University of Rizal System** reserves the right to reject any and all bids, declare a failure of bidding, or not award the contract at any time prior to contract award in accordance with Sections 35.6 and 41 of the 2016 revised Implementing Rules and Regulations (IRR) of RA No. 9184, without thereby incurring any liability to the affected bidder or bidders.
11. For further information, please refer to:

Mr. John John C. Faulve
Head of BAC Secretariat
URS Morong Campus, J. Sumulong St., Brgy San Juan, Morong, Rizal
Tel. No. 8653-2860
Email: spmo@urs.edu.ph / bacsecretariat@urs.edu.ph
12. You may visit the following websites:

For downloading of Bidding Documents: <http://www.urs.edu.ph/bid-opportunities/>

May 26, 2022

NELSON S. GONZALES, Ed. D.
Chairperson, Bids and Awards Committee

Section II. Instructions to Bidders

Notes on the Instructions to Bidders

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

1. Scope of Bid

The Procuring Entity, **University of Rizal System** invites Bids for the **Construction of Perimeter Fence at URS Tanay Campus**, with Project Identification Number **URS-22-03-052**.

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 **fund 052 of 2022** in the amount of **Four Million Pesos Only (₱4,000,000.00)**.

2.2. The source of funding is:

GOCC and GFIs, the Corporate Operating Budget.

3. Bidding Requirements

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

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

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

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

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

5. Eligible Bidders

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

A contract is considered to be "similar" to the contract to be bid if it has the major categories of work stated in the **BDS**.
- 5.3. For Foreign-funded Procurement, the Procuring Entity and the foreign government/foreign or international financing institution may agree on another track record requirement, as specified in the Bidding Document prepared for this purpose.
- 5.4. The Bidders shall comply with the eligibility criteria under Section 23.4.2 of the 2016 IRR of RA No. 9184.

6. Origin of Associated Goods

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

7. Subcontracts

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

The Procuring Entity has prescribed that:

Subcontracting is not allowed.

- 7.1. [If Procuring Entity has determined that subcontracting is allowed during the bidding , state:] The Bidder must submit together with its Bid the documentary requirements of the subcontractor(s) complying with the eligibility criterial stated in **ITB** Clause 5 in accordance with Section 23.4 of the 2016 revised IRR of RA No. 9184 pursuant to Section 23.1 thereof.
- 7.2. [If subcontracting is allowed during the contract implementation stage, state:] The Supplier may identify its subcontractor during the contract implementation stage. Subcontractors identified during the bidding may be changed during the implementation of this Contract. Subcontractors must submit the documentary requirements under Section 23.1 of the 2016 revised IRR of RA No. 9184 and comply with the eligibility criteria specified in **ITB** Clause 5 to the implementing or end-user unit.

- 7.3. Subcontracting of any portion of the Project does not relieve the Contractor of any liability or obligation under the Contract. The Supplier will be responsible for the acts, defaults, and negligence of any subcontractor, its agents, servants, or workmen as fully as if these were the Contractor's own acts, defaults, or negligence, or those of its agents, servants, or workmen.

8. Pre-Bid Conference

The Procuring Entity will hold a pre-bid conference for this Project on the specified date and time and either at its physical address and 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 **September 15, 2022**. Any bid not accompanied by an acceptable bid security shall be rejected by the Procuring Entity as non-responsive.

16. Sealing and Marking of Bids

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

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

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

17. Deadline for Submission of Bids

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

18. Opening and Preliminary Examination of Bids

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

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

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

19. Detailed Evaluation and Comparison of Bids

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

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

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

20. Post Qualification

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

21. Signing of the Contract

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

Section III. Bid Data Sheet

Notes on the Bid Data Sheet (BDS)

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

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

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

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

Bid Data Sheet

ITB Clause																			
5.2	For this purpose, contracts similar to the Project refer to contracts which have the same major categories of work, which shall be: Construction of concrete fence and other similar structures.																		
7.1	Subcontracting is not allowed																		
10.3	[Specify if another Contractor license or permit is required.]																		
10.4	The key personnel must meet the required minimum years of experience set below: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Key Personnel</u></th> <th style="text-align: center;"><u>General Experience</u></th> <th style="text-align: center;"><u>Relevant Experience</u></th> </tr> </thead> <tbody> <tr> <td>Project Manager (Must be registered & with Valid PRC licensed Engineer or Architect)</td> <td style="text-align: center;">5 years</td> <td style="text-align: center;">Building & Construction</td> </tr> <tr> <td>Project Engineer (Must be registered & with Valid PRC licensed Civil Engineer)</td> <td style="text-align: center;">5 years</td> <td style="text-align: center;">Building & Construction</td> </tr> <tr> <td>Materials Engineer (Must have Valid DPWH certification)</td> <td style="text-align: center;">5 years</td> <td style="text-align: center;">Building & Construction</td> </tr> <tr> <td>Foreman</td> <td style="text-align: center;">5 years</td> <td style="text-align: center;">Building & Construction</td> </tr> <tr> <td>Safety Officer (Must have BOSH/COSH/OSH Certificate)</td> <td style="text-align: center;">3 years</td> <td style="text-align: center;">Safety practitioner</td> </tr> </tbody> </table>	<u>Key Personnel</u>	<u>General Experience</u>	<u>Relevant Experience</u>	Project Manager (Must be registered & with Valid PRC licensed Engineer or Architect)	5 years	Building & Construction	Project Engineer (Must be registered & with Valid PRC licensed Civil Engineer)	5 years	Building & Construction	Materials Engineer (Must have Valid DPWH certification)	5 years	Building & Construction	Foreman	5 years	Building & Construction	Safety Officer (Must have BOSH/COSH/OSH Certificate)	3 years	Safety practitioner
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10.5	The minimum major equipment requirements are the following: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Equipment</u></th> <th style="text-align: center;"><u>Capacity</u></th> <th style="text-align: center;"><u>Number of Units</u></th> </tr> </thead> <tbody> <tr> <td>Mini Dump/ Hauling Truck</td> <td style="text-align: center;">3 cu.m (min.)</td> <td style="text-align: center;">1</td> </tr> <tr> <td>Jack hammer</td> <td></td> <td style="text-align: center;">1</td> </tr> <tr> <td>Concrete Mixer</td> <td style="text-align: center;">1 bagger</td> <td style="text-align: center;">1</td> </tr> <tr> <td>Scaffolding</td> <td></td> <td style="text-align: center;">1 (set)</td> </tr> </tbody> </table>	<u>Equipment</u>	<u>Capacity</u>	<u>Number of Units</u>	Mini Dump/ Hauling Truck	3 cu.m (min.)	1	Jack hammer		1	Concrete Mixer	1 bagger	1	Scaffolding		1 (set)			
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Concrete Mixer	1 bagger	1																	
Scaffolding		1 (set)																	
12	[Insert Value Engineering clause if allowed.]																		
15.1	The bid security shall be in the form of a Bid Securing Declaration or any of the following forms and amounts: a. The amount of not less than ₱80,000.00 , if bid security is in cash, cashier's/manager's check, bank draft/guarantee or irrevocable letter of credit; b. The amount of not less than ₱200,000.00 if bid security is in Surety Bond.																		
19.2	Partial bid are not allowed																		
20	DPWH Department order no. 30 as of March 29, 2021, and Latest IATF Guidelines.																		
21	1. Certificate of Compliance with Labor laws 2. Man power schedule. 3. Construction schedule and S-Curve 4. Construction safety and health program approved by the DOLE																		

	5. Construction methods, equipment utilization schedule.
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Section IV. General Conditions of Contract

Notes on the General Conditions of Contract

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

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

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

1. **Scope of Contract**

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

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

2. **Sectional Completion of Works**

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

3. **Possession of Site**

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

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

4. **The Contractor's Obligations**

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

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

5. **Performance Security**

- 5.1. Within ten (10) calendar days from receipt of the Notice of Award from the Procuring Entity but in no case later than the signing of the contract by both parties, the successful Bidder shall furnish the performance security in any of the forms prescribed in Section 39 of the 2016 revised IRR.
- 5.2. The Contractor, by entering into the Contract with the Procuring Entity, acknowledges the right of the Procuring Entity to institute action pursuant to RA No. 3688 against any subcontractor be they an individual, firm, partnership, corporation, or association supplying the Contractor with labor, materials and/or equipment for the performance of this Contract.

6. Site Investigation Reports

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

7. Warranty

- 7.1. In case the Contractor fails to undertake the repair works under Section 62.2.2 of the 2016 revised IRR, the Procuring Entity shall forfeit its performance security, subject its property(ies) to attachment or garnishment proceedings, and perpetually disqualify it from participating in any public bidding. All payables of the GOP in his favor shall be offset to recover the costs.
- 7.2. The warranty against Structural Defects/Failures, except that occasioned-on force majeure, shall cover the period from the date of issuance of the Certificate of Final Acceptance by the Procuring Entity. Specific duration of the warranty is found in the SCC.

8. Liability of the Contractor

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

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

9. Termination for Other Causes

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

10. Dayworks

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

11. Program of Work

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

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

12. Instructions, Inspections and Audits

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

13. Advance Payment

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

14. Progress Payments

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

15. Operating and Maintenance Manuals

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

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

Section V. Special Conditions of Contract

Notes on the Special Conditions of Contract

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

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

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

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

Special Conditions of Contract

GCC Clause	
2	[If different dates are specified for completion of the Works by section, i.e. “sectional completion,” these dates should be listed here.]
4.1	[Specify the schedule of delivery of the possession of the site to the Contractor, whether full or in part.]
6	The site investigation reports are: [list here the required site investigation reports.]
7.2	<p>[Select one, delete the other.]</p> <p>[In case of permanent structures, such as buildings of types 4 and 5 as classified under the National Building Code of the Philippines and other structures made of steel, iron, or concrete which comply with relevant structural codes (e.g., DPWH Standard Specifications), such as, but not limited to, steel/concrete bridges, flyovers, aircraft movement areas, ports, dams, tunnels, filtration and treatment plants, sewerage systems, power plants, transmission and communication towers, railway system, and other similar permanent structures:] Fifteen (15) years.</p> <p>[In case of semi-permanent structures, such as buildings of types 1, 2, and 3 as classified under the National Building Code of the Philippines, concrete/asphalt roads, concrete river control, drainage, irrigation lined canals, river landing, deep wells, rock causeway, pedestrian overpass, and other similar semi-permanent structures:] Five (5) years.</p> <p>[In case of other structures, such as bailey and wooden bridges, shallow wells, spring developments, and other similar structures:] Two (2) years.</p>
10	<p>[Select one, delete the other:]</p> <p style="padding-left: 40px;">a. Dayworks are applicable at the rate shown in the Contractor’s original Bid.</p> <p style="padding-left: 40px;">b. No dayworks are applicable to the contract.</p>
11.1	The Contractor shall submit the Program of Work to the Procuring Entity’s Representative within [insert number] 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 is [insert amount as percentage of the contract price that shall not exceed 15% of the total contract price and schedule of payment].
14	[If allowed by the Procuring Entity, state:] Materials and equipment delivered on the site but not completely put in place shall be included for payment.
15.1	The date by which operating and maintenance manuals are required is [date].

	The date by which “as built” drawings are required is [date].
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

Notes on Specifications

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

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

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

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

Sample Clause: Equivalency of Standards and Codes

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

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

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

A. TEMPORARY SIGN

The Contractor shall provide suitable sign acceptable to the Owner advertising the work and indicating thereon the names of the Project, the Contractor. The sign layout and the text and location of such sign will be approved by the Owner. No other sign or advertising will be permitted.

B. TEMPORARY STRUCTURES AND SERVICES

Temporary Building and Facilities

- Temporary Buildings shall be of a design and materials acceptable to the Owner.

Contractor's Office

- The Contractor shall provide on or near the premises, temporary building for his own use, equipped among other items.

Toilets

- The Contractor shall provide suitable toilet facilities at approved location (2) with proper enclosures for the use of workmen, and shall maintain some in sanitary operable conditions, all in conformity with the local regulations.

Other Temporary Buildings

- The Contractor shall provide such other temporary building as maybe required for use of his workmen and safe storage of tools and materials. Such structures shall be located only where previously approved.

Temporary Electric Power

- The Contractor shall provide and pay for all light and Owner required for the construction work including all wiring, connections and accessories and all power consumed.

Temporary Water Supply

- The Contractor shall make all necessary arrangements for and provision of water including temporary piping and house extensions required for the construction purposes. He shall obtain and pay for necessary permits and for all water used.

Temporary Parking Facilities

- The Contractor shall provide and maintain in a safe and satisfactory condition temporary facilities for use by workmen employed on the job and for the Owner, the Project Engineer's use.

Temporary Scaffolding, Hoist, etc.

- The Contractor shall install and operate an adequate number of temporary hoist and shall also furnish and maintain temporary scaffolds, runways, ladders, and the like as required for the proper execution of the work. As soon as the progress of the work will permit, the Contractor shall erect the permanent stair platforms, ramps, catwalks, etc., safeguard and shall provide these and all other permanent parts from damage or defacement during the work

Removal of Temporary Services and Facilities

- All temporary services and facilities installed by the Contractor shall be removed by the Contractor on completion of this Contract or as directed by the Project Engineer. The Contractor shall make any repairs or alterations necessitated by such removal.

C. PROTECTION OF WORK, PROPERTY, AND PERSONS

- The Contractor shall protect the work of employees, equipment at the Owner's property and adjacent property from damage for any cause whatsoever, and shall be responsible for any damage or injury (including death) due to his act or neglect. These provisions are solely for the benefit of third persons.
- The Contractor as, part of the contract shall provide watchmen and erect all planking bridges, bracings, shorings, sheet piling, lights and warning signs necessary for the public. The Contractor shall provide scaffolds, tarpaulins, and similar items as directed by the Project Engineer to protect Owners, equipment and employees and shall if necessary seal off his work so as not to interfere with Owner's business operation.

Watchmen Service

- The Contractor shall provide reputable watchmen service or in lieu thereof any approved protective service to guard the construction area against vandalism, theft, and mischief. Such service should be in operation at all hours that the Contractor's supervisory staff is not in attendance at the site, 24 hours per day and 7 days per week from the date of Contractor starts work until the date of final acceptance of the work under this Contract.
- Watchmen or approved protective service shall continue uninterrupted during delays in the work such as inclement weather, delays in delivery, and the like. In the event of any official work stoppage of the Project, make immediate arrangements with the Owner regarding watchmen service continuation and cost thereof during the time the work will be stopped. If such official stoppage is found to be due to fault, neglect or improper work performance of the Contractor, or his sub-contractors, the extra cost for watchmen service shall be borne by the Contractor.

The Contractor shall be responsible for any injury loss or damage to any presently existing improvements on the premises caused by him or his employees, agents or any sub-contractors, and in the event of such injury, loss or damage shall promptly make such repairs or replacement as required by the Owner without additional cost to the Owner.

During the progress of the work the Contractor shall protect all finished work as soon as it is erected and shall maintain such protection until such time they are no longer required.

D. INSPECTION AND TEST

- The Contractor shall permit and facilitate inspection of the work by the Owner, its representatives, the Project Engineer, or his authorized representative, and the public authorities having jurisdiction at all times during the progress of the work.
- The Contractor will be responsible for all test and engineering services required by the Specifications. The cost for inspection or tests not required by the specification but which the Owner requires, will be borne by the Owner.
- All tests shall be performed by the testing agency approved by the Owner and shall be in accordance with the current standards of the American Society for Testing and Materials unless otherwise specified by the Owner. The Contractor shall furnish the Owner with 2 copies of the test procedures used.
- Failures of the Owner, the Project Engineer during the progress work or work not in accordance with the Drawings and Specifications shall not be deemed an acceptance thereof nor waiver of the Owner's right to a proper execution of the Contract work or any part of it. No partial payment of entire occupancy of the premises by the Owner shall be construed to be an acceptance of work or materials which are not strictly in accordance with the Contract Documents, nor a waiver of the Owner's right.

E. SECURITY OF EQUIPMENT AND OPERABLE MACHINERY

- Site-parked mobile equipment and operable machinery, and hazardous parts of the new construction subject to mischief shall be kept locked or otherwise made inoperable whenever left unattended.

F. PESTILENCE CONTROL

- Contractor shall guard against and if necessary exterminate rodents, termites, vermin and other pests. All job personnel shall be required to dispose of garbage and refuse in covered metal containers, which Contractor shall furnish and empty regularly. Should services of extermination firm be necessary, the Contractor shall provide such services.

G. AIR POLLUTION

- Contractor shall comply with the requirements of "The Clean Air Act of 1999" and of local authorities regarding air pollution control: As a general rule, shall be no burning of trash at the site.

H. CLEANING

- The Contractor shall at all times keep the premises from accumulation of waste materials or rubbish caused by his employees, sub-contractors, or the work. At completion of the work he shall remove from the building and site all rubbish, scaffolding and surplus materials and shall leave the work broom clean, unless

otherwise specified. If the Contractor fails to keep the premises clean, the Project Engineer may remove the waste materials and rubbish; charge the expense of such removal to the Contractor.

- The Contractor shall thoroughly wash and clean all glass, clean hardware, remove stains, spots, smears, marks and dirt from all surfaces; clean fixtures, wash terrazzo, tile floors and all exposed concrete so as to present clean work to the Owner for acceptance.

I. FINAL COMPLETION

- The term final completion means the completion of all work called for under the Contract to include but not limited to satisfactory operation of all equipment, by means of acceptance tests, correction of all punch list items to the satisfaction of the Owner, the Project Engineer, settlement of all claims, any payment and release of all record of all mechanics materials, men and like lines, delivery of all guarantees, Equipment Operation and Maintenance Manuals; as built drawings, Building certificates prior to occupancy; Electrical permits; all other required approvals and acceptance by the City/Municipality or other authority having jurisdiction and removal of all rubbish, tolls scaffoldings and surplus materials and equipment from the job site.

J. PUNCH LIST

- The list prepared by the Project Engineer of the Contractor's uncompleted defective or uncorrected work.

K. AS-BUILT DRAWINGS

- The drawings to be submitted by the Contractor to the Owner, illustrating how the various elements of the work were actually installed during the progress of the construction. As-built Drawings shall be approved by the Project Engineer.
- The Contractor shall keep "as-built" drawings up to date concurrently as the work progresses and not wait until the end of the job to do so.

L. CONNECTING THE WORK

- The Contractor shall do all the cutting, fitting and pitching that may be required to make several parts of the work come together properly and to fit his work to receive or be received by the work of other contractor shown upon, or reasonable implied by the Drawings and Specification. After the other contractor has finished he shall properly complete and finish his work, as the Project Engineer shall direct.

M. SAFETY AND ACCIDENT REPORTS

- The Contractor shall take necessary precautions for the safety of all employees; Owner's Representatives and Project Engineer. The Contractor

shall comply with all instructions and Government Safety laws and Building Codes to prevent accident or injury to persons on about or adjacent to the premises as well as for the protection of adjacent property where work is performed. The Contractor shall not excessively loaded.

PREPARATION OF SITE

A. SCOPE OF WORK

- Furnish all labor materials, equipment, plant and other facilities and perform all operations necessary to complete the preparation of site shown and hereinafter specified.

B. SURVEY

- The Contractor shall stake out the building accurately and shall establish grades and after the approval by the Project Engineer shall be secured before further work is commenced.
- Basic batter boards and basic reference marks as directed by the Project Engineers shall be erected at such places where they will not be disturbed during construction.
- Materials shall be stored and work shall be conducted in such manner as to preserve all references approved the Project Engineer. Reestablishment of lines and grades where necessitated due to negligence of part the contractor shall be done at the expense of the Contractor.
- The Contractor shall construct two (2) permanent benchmarks near the site of construction for the purpose of determining any settlement that may occur during the progress of construction.
- The Contractor shall provide all necessary instruments.

STRUCTURAL EXCAVATION AND BACKFILL

A. SCOPE OF WORK

- Furnish all materials, equipment, labor, plant and other facilities to complete the structural excavation and backfill as shown and hereinafter spec j/led.

- All work included under this division shall be subject to the General Conditions accompanying these Specifications. The Contractor and Sub-Contractor are required to refer especially thereto.
- Examine the list of record of existing utilities and construction, record of the test borings and sub-surface exploration reports and soil samples to determine the conditions under which work will be performed. The record of test borings is not guaranteed to represent all conditions that will be encountered.

B. QUALITY CONTROL

- The testing laboratory shall perform all tests and submit reports specified in this section. The testing laboratory shall be responsible for conducting and interpreting the tests; shall state in each report whether or not the test specimens comply with all the requirements of the Contract Documents and specify note the deviation therefrom.
- Testing Materials
The testing laboratory shall perform all tests herein specified and additional tests as may be required.

Optimum moisture-maximum density curve for each type of soil encountered in sub-grades and fills under pave areas and bulking slabs. Determine maximum densities in accordance with ASTM D1157. Each type of borrow materials shall receive the following:

- | | | |
|---|---|------------|
| a. Material Analysis | : | AASHT T88 |
| b. Plasticity index determination | : | AASHTO T90 |
| c. Moisture-density curve determination | : | ASTM D1557 |

- Testing of Sub-grade and Fill Layers

Sub-grade and fill layers shall be approved before construction of any further works thereon. Test of sub-grades and fill layers shall be taken as follows:

1. Footing subgrades: The design bearing capacities shall be verified by testing each strata of soil on which footings will be placed. The following tests shall be performed as required by the Project Engineer.

Cohesionless soil, plates bearing test and filled density test.

For cohesive soil, unconfirmed compression test.

- Paved area and Building Slab Sub-grades: The top 12-inch of sub-grade resulting from excavation shall have the maximum density of optimum moisture as specified. Infill area, each layer of fill shall meet the required density test of

the sub-grade for every 3000 ft. square of paved area or building slab but in no case less than three tests shall be made in each compacted fill layer. Make one field density test for every overlying 3000 square feet of building slab or paved area, but in no case less than three tests. Field density tests shall be performed in accordance with ASTM D1556 at ASTM D2167.

- Foundation Wall Backfill at least three field density tests ASTM D1556 or ASTM D2167 shall be taken at locations and elevations as directed.

C. PREPARATION

- Clear and grub shrubs, roots, brush, vegetation, rubbish and debris within the construction limit lines, except as otherwise designated to remain or to be relocated.

D. EXCAVATION

- General

Excavation to the lines and elevations are required. Excavation shall comprise and includes the satisfactory removal and disposal of all materials encountered regardless of the nature of the materials. Make excavations sufficiently large to permit placing and removal of forms, installation of weatherproofing, damp proofing and utilities and to permit inspection.

- Excavation for Footings

Footing subgrades shall be approved before proceeding with construction of piers and footings shall be found on rock or firm understructure at elevations indicated or as shown. Refer to construction notes for required preparations. Subgrades of footings shall be level and free of loose rock, dirt, debris, and standing water prior to acceptance for placing concrete.

- Excavation for Paved Areas, Building Slabs and Structural Members in Cut Areas

Structural Members: Structural members shall include frame slabs, grade beams utility tunnels.

Subgrades: Subgrades shall be approved before proceeding with construction of structural members.

The top 12 inch of subgrade resulting from excavation shall be free from unsuitable material and have a minimum moisture when cohesive soil are tested in accordance with ASTM D2049.

If the subgrade thus meet the above requirements, compact the subgrade by rolling with suitable compaction equipment to obtain the density specified.

- Excavation for General Grading

Excavations made below the elevations shown or specified shall be filled and compacted as hereinafter specified for filling and compacting.

- Excavation for Paved Areas, Building Slabs and Structural Members in fill Areas
Subsection c applies except that no subgrade recompaction will be required.

E. FILLING AND COMPACTION

- Fill Materials
Materials for fill and backfill shall be in general fill as herein before specified, obtained from the required excavation on site, if acceptable, or from burrow sources.
- Utilization of Excavated Materials
Suitable excavated materials for fill and backfill as defined in clause 2 and 1 MATERIALS shall be approved. Materials which are suitable for use as fill under exterior slabs and paving and backfill shall be separated from material which is only suitable for general grading.
- Placing
Place fill materials in horizontal loose layers in such manner as to produce a uniform thickness of materials. Placement shall start in the deepest area and progress approximately parallel to the finished grade. Thickness of layers before compaction shall not exceed 8 inches for cohesive soils. No fill material shall be placed on areas where free water is standing, or on surfaces which have not been approved.
- Compaction
Compact each layer of fill with equipment to achieve 95 percent of maximum density at optimum moisture when cohesive soils are tested in accordance with ASTM D1557 or 75 percent of relative density when cohesionless soils are tested in accordance with ASTM D2040.

In case of cohesive soil, do not compact materials when the moisture content varies more than 3 percent from the optimum moisture content. Maintain moisture content by wetting and drying manipulation. Suspend compaction operation because of rain and other unsatisfactory conditions.
- Gravel Fill for Building Slabs
Provide completion of foundation walls and removal of forms. Clean the excavation of all trash and debris before application of damp proofing or waterproofing and placement of backfill as hereinafter specified for fill operations. Maintain symmetrical backfill loading and compact each layer by hand tampers or other unsatisfactory conditions.
- Do not backfill against foundation or basement walls until compaction or supporting floor construction to top of backfill or to first level above top of

backfill. In placing backfill, take special care to prevent wedge action, eccentric or overloading of structure by equipment used in compacting backfill material, and to prevent damage to waterproofing or damp proofing on walls.

- Where subsoil drainage system is installed, place backfill so as to prevent any drainage to the system.
- Place drainage fill top of felt above footing subsoil drains to within 18 inches of finished grade, except as otherwise shown. Place and compaction as necessary to obtain the required densities under paved areas of general as specified herein.

CAST-IN-PLACE CONCRETE

A. SCOPE OF WORK

- Furnish all labor, materials, equipment, plant and other facilities the cast-in-place concrete as shown and hereinafter specified.
- All work under this division shall be subject to the General Conditions accompanying these specifications. The Contractor and Sub-Contractor for this portion of the work required are especially referred thereto.

B. APPLICABLE CODES AND STANDARDS

- The Standards and codes applicable to only a portion of the work specified in the section are referenced in the relevant parts of the clauses. Standards and codes, which are generally applicable to the work of this section, are listed hereinafter.
- American Concrete Institute
 - Recommended Practice for Selecting Proportions for Normal Weight Concrete
 - Recommended Practice for Evaluation of Compression Test Results of Field Specifications for Structural Concrete for Building
 - Recommended Practice for Measuring and Placing Concrete
 - Recommended Practice for Curing Concrete
 - Recommended Practice for Consolidation of Concrete
 - Building Code Requirements for Reinforcing Concrete
- American Society for Testing and Materials
 - Making and Curing Concrete Test Specimen in the Field

Compressive Strength of Cylindrical Concrete Specimens
Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
Ready Mixed Concrete
Slump of Portland Cement Concrete
Sheet Materials for Curing Concrete
Fresh Concrete Sampling
Liquid Membrane — Forming Compounds for Curing Concrete
Chemical Admixtures for Concrete
Concrete Made by Volumetric Batching and Continuous Mixing
Sampling Aggregates
Reporting Results of Analysis of Water
Performed Expansion Joint Fillers for Concrete Paving and Structural Construction
Wire — Cloth Sleeves for Testing Purposes

- Federal Specifications
Concrete Patching and Leveling Compound
- C — E Corps of Engineers
Requirements for water for use in Mixing or Curing Concrete
Rubber Waterstops
Polyvinylchloride Waterstops
Expansive Grout

C. SUBMITTALS

- Layout of Proposed Placement
- Placement Schedule Proposed Construction Joint Layout and Sequence of Placement
- Proposed Curing Concrete
- Quality Assurance
Proof of quality of manufacturer and reliability in field operations. Such proof shall normally constitute evidence that the product/equipment has been manufactured by them over a period of time and has established field service record. It shall include installation locations, dates and years of operating services. If there is no experience for an identical unit it may release to a similar unit by the same manufacturer.

- **Samples**
Samples of any materials or product to be used in the works. They shall be properly marked and accompanied by a letter of transmittal clearly listing the samples, their intended use and locations in the work.
- **Certificate of Compliance**
Certificate of Compliance shall include materials or Product manufacturer's Statement that the supplied items or systems to the specifications.
- **Test Reports**
Shop test shall show the results of required shop test of materials, equipment or system certified in writing by the manufacturer or its representative.

Field test reports shall show the results of required field test and compliance with approved procedures, certified by the Contractor.

D. TRANSPORTATION, HANDLING, STORAGE AND PROTECTION

- **Cement and Admixtures**
Upon the delivery at site of work, cement and admixtures shall be stored separately in dry, weather tight, properly ventilated structure with adequate provision for prevention of absorption of moisture.
- **Temperature Control**
The Contractor shall provide facilities and procedures to control or reduce the temperature of all materials used for concrete during hot weather; to such degree of temperature shall not exceed 90 degrees Fahrenheit.

Concrete Removed from the Structure

When the results of the strength test of the specimen indicate deficiency in specification requirements or where there is other evidence that the quality of the concrete is below specification requirements, core-boring tests shall be made in conformance with ASTM C42. If deficiency is discovered, the Contractor may be allowed to make load test at his expense, and results shall be evaluated in conformance with ACI 318, Chapter 2.

Slump

Slump test shall be performed in the field under the supervision of the Project Engineer. Slump test shall conform to ASTM C143.

- **Sample Concrete Panel**
Sample concrete panel for exposed or painted concrete shall be constructed and submitted for approval by the Project Engineer. The panel shall be not less than 6 ft. by 4ft. in size. Sample panel shall be protected until acceptance of the complete concrete work. The approved sample shall be representative of the smooth texture concrete finish required in the work.

E. MATERIALS

- Portland Cement

Only one brand of any type of cement shall be used for exposed concrete surfaces of any individual structure.

- Concrete Patching Compound

PS SS — 1302, type 11, that can be painted without evidence of bleeding and that after final set will be unaffected by high humidity and moisture.

- Aggregates

Grading requirements shall conform to ASTM C33. Coarse aggregates shall be well graded from fine to coarse within the prescribed limits of the Contract Documents.

Fine Aggregates

Fine aggregates shall consist of natural sand, manufactured sand or combination of the two and shall compose of clean, hard and durable spherical or curvical particles.

F. QUALITY CONTROL

- Samples and Testing

Samples from stock on the site shall be taken by the Contractor in the presence of the Project Engineer.

Cement

The testing laboratory shall test sampled cement. Certify copies of laboratory of cement and shall include all test dates, and testing procedures are in conformance with stored more than four months after being tested shall be tested before use. Cement found unsatisfactory under test shall be immediately removed from the construction site.

Aggregates

Aggregates sampling shall conform to ASTM D75. Aggregates shall be sampled and submitted to the Project Engineer for testing. No aggregate shall be used until test results are satisfactory to the Project Engineer.

Water

Water analysis shall be performed in accordance with ASTM D596.

Admixtures

Sampling and testing of all admixtures used in concrete mix shall be in accordance with the standard procedure recommended by the testing laboratory. No admixtures shall be used if the test results are unsatisfactory.

- Concrete

During Place Concrete

The Contractor shall provide for test purposes three sets of the test specimens taken under the supervision of the Project Engineer from each 100 cu. m or fraction thereof for each class of concrete placed. At least one set of the test specimens for each classes of the concrete shall be provided in each eight-hour shift. Samples shall be secured in accordance with ASTM 172. Test specimens shall be made and cured in accordance with ASTM C39 or ACI 214. Test specimen shall be evaluated for each class of concrete specified in conformance with ACI 318, Chapter 4 Concrete Quality. Specimen may be tested 7 days to 28 days strength of the concrete is established.

Coarse Aggregates

Coarse Aggregates shall consist of crushed or uncrushed gravel, crushed stone, or a combination thereof and shall be clean, hard, and compacted particles of maximum nominal size 3/4 inch. However, coarse aggregate of greater maximum size may be used provide the requirements of ACI 318, Sec. 3.3.3 are met.

- Water

Water for washing aggregated and for mixing and curing concrete shall be fresh and free from injurious amounts of oil, acid, slate, alkali, organic matter, or other deleterious substances as determined by CDCRD — C400. Chlorides and hardeners shall not exceed specified limits of ASTM D512.

- Admixtures

Admixtures containing chloride ions or other ions producing deleterious effect shall not be used.

- Vapor Barrier

Polyethylene sheeting conforming to ASTM E154 and mils thick minimum. Other similar materials having a vapor permanence rating not exceeding 0.5 per as determined by ASTM E96, procedure will be considered.

- Grout

Damp pack bedding grout mix of one part of Portland cement type 1 and ½ parts of the fine aggregates proportioned by weight and more than 4— ½ gal. of water per bag, 94 lb. of cement.

Expansive Grout

CE CRD — C588, Type A or M, as required.

- Curing Materials

Impervious Sheeting

ASTM C171 type optional except that polyethylene sheeting shall be 4 minimum winds the imperious sheeting shall not be used.

Burlap

Cloth made of jute or kenaf shall conform to AASHTO M182 and shall weigh a minimum 0.06 lb. square foot.

Membrane Forming Compound

ASTM C309, Type 1. When non- pigmented compound is used, each shall contain a fugitive dye.

- **Joint Fillers**

ASTM D1751 performed resilient bituminous type or ASTM D1752, performed sponge rubber.

- **Joint Sealant**

ASTM D1190, hot — pour type

- **Water Stops**

Metallic

Copper conforming to ASTM B370, 20-ounce weight or stainless steel conforming to

ASTM 167, 0.037-inch nominal thickness and 6 inch wide.

Non-Metallic

CEO CRD —513 and CRD — 572, ¼ inches minimum thickness and 6 inches wide.

- **Installation Joints — Shown and detailed on the plans**

- **Expansion Joints — As Shown and Detailed on the Plans**

G. CLASSES, USAGE AND PROPORTIONING

- Concrete of the various classes indicated and as required under other section for different usage shall be proportioned and mixed by volumetric batching and continuous mixing in accordance with ASTM C685.
- Retarder Agents

Water reducing admixtures (plastic and retarder) maybe used subject to the approval of the Project Engineer.

- Trial Designed batches

Trial designed batches for various classes required shall be the responsibility of the Contractor. Trial mixture having a proportion, consistencies and air contents suitable for the work shall be made based on ACI 211.1, using at least 3 different water cement ratios which will produce a range of strength encompassing those required for the work. Trial mixtures shall be designed for maximum permitted slump and air content. The temperature of concrete in each content. The temperature of concrete in each trial batch shall be reported. For each water-cemented ratio at least three strength shall be determined by ACI 301, Chapter 3, and Paragraph 3.8 method 1 or 2.

- Slump

Slump for vibrated concrete shall be minimum of 2 inch to a maximum of 4 inch as determined by ASTM C143.

H. BATCHING, MIXING, and TRANSPORTING CONCRETE

- Batch Plant

The plant shall be semi-automatic type and of sufficient capacity not to impair the construction time schedule. The semi-automatic plant is a system where batching weights are set manually and materials are batched automatically.

Site — Mixed Concrete

Measuring tolerances, mixing capacity, and time shall be in accordance with ACI 301, Chapter 7, and paragraph 7.2.

- Truck Mixers

When a truck is used to complete mixing of central plant batch of materials, all water shall be added at mixing speed before completing of mixing. Retempering of concrete will not be permitted. Each truck shall carry a ticket stamped by item clock to show date and time of the loading of each truck was completed.

I. PLACING CONCRETE

- Sequence of Concrete Placement

To control shrinkage defects placement of concrete for floors shall follow a checker board pattern. Joints line shall cross within middle third of beams, girders, and short spans of slabs, unless otherwise allowed by Project Engineer. Contractor shall submit a construction joint layout and sequence of concrete placement for approval of Project Engineer.

- Preparation of Placing

Excavation of forms shall be clean, free of debris of foreign materials. Reinforcement and embedded items shall be secured in position and shall be inspected and approved before placing concrete. Runways shall be provided for wheeled concrete handling equipment. Such equipment shall not be wheeled over reinforcement nor shall runways be supported on reinforcement.

- **Placing Procedures**

Concrete shall be delivered from central plant of final deposit in a continuous manner in the time interval specified and without segregation or loss of ingredients. Placing shall be suspended when the sun, heat, wind, or limitation of facilities furnished by Contractor prevents proper finishing and curing of concrete. Concrete shall be placed in forms or excavations as close as possible in final position, in uniform approximately horizontal layers not over 12 inches deep unless otherwise directed. Concrete shall not be allowed to drop freely more than 5 feet in unexposed work nor 3 feet in exposed work. For greater drop trunks or other approved means shall be employed. Conduits and pipes shall not be embedded in concrete unless specifically indicated or specified.

- **Transformation Time Interval**

Concrete mixed in central plant and transported by non-agitating equipment shall be placed and transported in the forms in 60 minutes.

- **Placing in Hot Weather**

Hot weather placing shall be in accordance with recommended practice of ACI 305, except that air temperature, reinforcement and form temperature exceeding 35 degrees C concreting shall be controlled as follows:

Concrete temperature during mix, transporting and placing shall not exceed 32 degrees C otherwise approved by the Project Engineer.

Reinforcing Steel and Forms shall be protected from direct sunrays and shall be cooled with water immediately before concrete placing so that concrete temperature specified can be maintained.

When cold joints tends to form or where surface set and dry too rapidly or plastic shrinkage cracks tend to appear, concrete shall be kept moist by sprays applied shortly after placement and before finishing.

- **Conveying Concrete**

Concrete may be conveyed by chute, conveyor, or pump if so approved by the Project Engineer. Aluminum chutes or pipelines shall not be used in conveying concrete. Approval will not be given for chutes or conveyors requiring changes in the concrete design mixed for desired operation.

Chutes and Conveyors

Chutes shall be steel or steel lined wood, rounded in cross section, rigid in construction protected from overflow and slopes not exceeding one vertical to three horizontals. Conveyors shall be designed to operate assuring uniform flow of concrete without segregation of ingredients, loss of mortar or change in slump.

Pumps

Placing concrete by pumping method shall conform with ACI 304. Pumps shall be operated and maintained so that a continuous stream of concrete is delivered in the forms without air pockets, segregation or change in slump exceeding two inches.

- **Placing Through Reinforcement**

Where congestion of steel or other condition make placing of concrete difficult, a trim pipe shall be used. Recommended placing and consolidation practices shall conform to that outline ACI 304 and ACI 309.

J. COMPACTION

- Immediately after placing each layer of concrete shall be compacted by internal concrete vibration supplemented by hand spanding, rodding and tamping or other external vibration of forms will not be permitted. Internal vibrators submerged in concrete shall maintain a minimum frequency of not less than 8000 vibration per minute. The vibrating equipment shall be adequate in quantity and capacity required and shall conform to the requirement of ACI 309.

K. BONDING

- Before depositing new concrete on or against concrete that has set, the surface of the set concrete shall be thoroughly cleaned so as to expose the coarse aggregate. Form shall retighten and all surface moisture.

L. SLABS ON GRADE

- Subgrade under slabs within the building shall be covered with vapor barrier. Edge shall be lapped by not less than 6 inches and seal a pressure sensitive tape not less than 2 inches wide, compatible with the membrane. Concrete shall be placed continuously so that each unit of operation will be monolithic in construction. Concrete shall be placed in alternate checkerboard pattern terminating at crack control joints or maybe limited by expansion and construction joints. Cracks control joints shall be expansion control, or construction joints.
- **Control Joints**

Control Joints shall be performed by an insertion of hard pressed fiber guard strips inserted in plastic concrete. The joints shall be 1/8 inch wide and depth equal approximately 1/4" of the slab thickness, unless otherwise indicated on the drawings.
- **Sealing**

Concrete joints shall be filled with joint sealant except where floor covering is required.

M. SETTING OF BASE PLATE

- After being plumbed and properly positioned, base plates shall be provided with full bearing weight non-shrink grout except where expansive grout is indicated. The grout shall be packed by tamping or ramming with a bar or rod until voids are completely filled. For clearances of two inches or more than expansive grout shall be provided. Mixing and placing shall be in accordance with manufacturer's instructions. Grout shall not be retempered or subject to vibration. Temperature of the grout and the surface receiving the grout shall not exceed 32 degrees C.

N. CONCRETE FINISHES

- Floor and Roof Slabs

Finish floors and roof slabs surfaces shall be through plane surface without deviation in excess of 8 inches when tested with a 10-foot straight edge. Surface shall be pitched as shown.

- Other Than Floor And Roof Slabs

Within 12 hours after forms are removed, surface defects shall be prepared as specified hereinafter or as directed by the Project Engineer. Temperature of the concrete ambient air and mortar during repair work including curing shall not exceed 32 degrees C. Fine and loose materials shall be removed. Honeycombed, aggregate pockets, voids over ½ inch diameter and holes left by the reamed wetted, brush coated with neat cement grout and filled with mortar. Holes shall be packed full and all patchwork shall be damped cured for 7-day minimum.

For surface, which is not to receive architectural finish; the following additional measures shall be taken:

The concrete shall receive smooth finish by brush coating surface with cement grout composed by volume of one part Portland cement and not more than two parts fine aggregates passing number 30 mesh sieve and mixed with water to consistency of thick paint. Excess grout shall be scraped off with a trowel any visible grout film. The grout shall be kept damp by means of fog spray during setting period.

- Non-Slip Finish

The concrete shall be screened and flatted to the required finish level with coarse aggregate visible. Abrasive aggregate shall be uniformly sprinkled over flattened surface at a rate recommended by the manufacturer. The surface then shall be steel trowelled to a smooth, even finish that is uniform in texture and appearance. Immediately after curing, cement coating or laitance covering the abrasive aggregate shall be removed by steel brushing, rubbing or light sand blasting to expose abrasive particles.

- Hardener

Hardener shall be applied to expose interior concrete floor where indicated on the drawing and in accordance with the manufacturer's written installation.

- Curing

Concrete shall be protected against moisture loss, rapid temperature changes, mechanical injury and injury from wind or flowing water for a period of time corresponding to cementing material used as follows:

Portland Cement Type I7days

Monolithic finish

Slabs shall be screened and flattened with straight edge to bring the surface to the required finish level with coarse aggregates visible. The concrete while still green but sufficiently harder to bear a man's weight without deep imprint shall be wood trowelled to a smooth even dense finish free from blemishes including trowel marks. Rough surface shall be provided for resilient flooring thin — set ceramic tile carpeting where no other finish is specified.

Power machine Finish (option)

In lieu of hand finishing, an approved power-finishing machine may be used. The preparation of surface by machine shall be in general herein before specified for hand finish. Finish surface shall be free of machine marks, ridges or other blemishes.

Rough Slab Finish

Tamp the concrete to force the aggregate away from the surface, then screen with a straight edge to produce a uniform surface. Rough slab finish surface shall be provided for ceramic tile, floor toppings, and insulation built-up roofing of terrazzo.

Broom Finish

The concrete shall be screened and flatted to required finish level with coarse aggregate visible. While concrete is still green, steel or wood trowel to uneven smooth finish and then broom with fiber bristle brush in a direction transverse to that of the maintained traffic broom finish surface shall provide for drive — ways and ramps.

Wood Float

The preparation of surface shall be in general herein force specified for monolithic finish. While surface is still green, wood float to an even textured surface. Curing procedure shall conform to ACI 308 and ACI 305. During the specified curing period, the concrete shall be maintained in the moist condition and temperature not over 90 degrees F.

CONCRETE REINFORCEMENT

A. SCOPE OF WORK

- Furnish all equipment, labor, plant and other facilities to complete the concrete reinforcement as shown on the drawings and herein specified.

- All work included under this division shall be subject to the General Conditions accompanying these specifications. The Contractor and Sub-Contractor are required to refer especially thereto.

B. APPLICABLE CODES AND STANDARDS

- The Standards and codes applicable to only a portion of the work specified in this section are reference in the relevant parts of clauses. Standards and codes, which are generally applicable to the work of this section, are listed hereinafter.

- ACI American Concrete Institute

Manual of Standard Practice for Detailing Reinforced Concrete Structures
Building Code Requirements for Reinforced Concrete

- ASTM — American Society for Testing and Materials

A185 Welded Steel Wire

Fabric for Concrete Reinforcement

A615 Deformed and Plain Billet — Steel Bars for Concrete Reinforcement

- CRSI — Concrete Reinforcing Steel Institute Manual of Standard Practice Placing Reinforcing Bars.

- AWS — American Welding Society Reinforcing Steel Welding Code

C. SUBMITTALS

- Details, Drawings and/or Shop Drawings

Fabrication installation and assembly drawings for all parts of the work in sufficient detail to enable to check conformity with Contract requirements. Drawings shall show details and dimensions of all component parts including plan and elevation views, cross sections and details.

- Test Reports

Shop test shall show the results of required test of materials, equipment or systems certified in writing by the manufacturer or its authorized representative.

Field Test Reports shall show the results of required field test and compliance with the approved procedures, certified by the Contractor.

D. MATERIALS

- Bars: ASTM A615 Grade 60 and Grade 40, 40.

- Bar Mats: ASTM A184, of mesh and bar size indicated on the drawings
- Welded Fabric Wire: ASTM A4976, or mesh and bar size indicated on the drawings.
- Drawn Wire: ASTM A82
- Bar Supports: Comply with CRS — WCRSI “Manual of Standard Practice”
Interior concealed areas: Class A “Bright Basic”
Interior exposed areas: Class C “Plastic Protected.”
Exposed painted or concealed: Class D “Stainless Steel Protected”
Exterior unpainted or exposed: Class E “Special Stainless Protected”

E. DETAILING AND FABRICATION

- Reinforcement
Provide concrete reinforcement, which is made from new billet steel and free from rust, dirt, oil and grease and any other foreign substances detrimental to bonding with concrete. Accurately bend or from fabricated bars to the shapes and dimensions shown using methods that will not damage materials. Do not weld unless specially shown or approved by the Project Engineer.
- Identification
Bundle and tag reinforcement with suitable identification to facilitate sorting transportation to, or storage and placing at the job site.

F. PLACING REINFORCEMENT

- Reinforcement shall be installed as shown.
- Tolerances
Maintain surfaces clearances dimensions shown, plus or minus ¼ inch. Secure reinforcement with accessories and tie wire to prevent displacement before and during concreting. Do not place concrete if bars are not properly placed with adequate support.
- Dowels
Secure in position prior to placing concrete

G. SPLICES

- Lap-splices all bars up to 36 mm in accordance with ACI 318, unless otherwise shown. Follow AWS D12.1 recommendations for welded splices where shown.

H. REPAIR

- Remove and replace damaged bars as directed.

CONCRETE FRAMEWORK

A. SCOPE OF WORK

- Furnish all labor, materials, equipment, plant and other facilities to complete the concrete form work as shown and hereinafter specified.
- All work under this division shall be subject to general construction accompanying this specification. The Contractor and Sub-contractor for this portion of the work as required referring specifically thereto.

B. APPLICABLE CODES AND STANDARDS

- The standards and codes applicable to only portion of the work specified in this section are referenced in the relevant parts of clauses. Standards and codes, which are generally applicable to the work of this section, are listed hereinafter.
- ACI — American Concrete Institute
 - 301 Specifications for Structural Concrete for Buildings
 - 318 Building Code Requirements for Reinforced Concrete
 - 347 Recommend Practice for Concrete Formworks (ANSI A 145.1)
- ANSI — American National Standards Institute, Inc.
 - A199.1 Construction and Industrial Plywood
- Timber Design Standard— Philippine Association of Civil Engineers (PA CE) CP 202,1965.

C. SUBMITTALS

- Detail Drawings and Shop Drawings for all parts of the work in sufficient detail to enable the Project Engineer to check conformity with the contract requirements. Drawings shall show the details.

D. QUALITY CONTROL

- Construction
 - Construction formworks so that concretes surface comply with ACI 347, Chapter 2 and 3.

- Hydraulic Pressure

The maximum allowable deflection of forming surface from concrete pressure is length/360 between supports.

E. MATERIALS

- Formworks Materials

Unless otherwise shown form materials shall be one of the following:

Plywood: ANSI A199.1 minimum —“ in thickness

Form Lumber

Fiberglass reinforced plastic

Steel

- Blockouts and keyways

Wood or extended expanded polystyrene

- Ties

Bolt or standard snap ties for snap off 1 inch from surface with minimum working capacity of 3,000 lbs. Maximum size cones shall be —“ in diameter.

- Chamfer Strips

Wood, polyvinyl chloride or neoprene

- Dovetail Anchor Slots

Standard size, 20 gauge galvanized steel with removable filler installed for abutting masonry and at 24 inch o. c. for facing masonry where shown.

- Flashing Reglets

26 gauged galvanized sheet, with removable filler and beveled edges.

- Anchoring Inserts

Approved propriety type inserts for the load capacity and use shown.

- Fabricated Embedments

Install only as shown and as specified.

- Form Release

Non-staining, non-reactive rust preventive guaranteed not to affect bond of surface application to concrete.

F. FABRICATION AND ERECTION

- Forms

Design, construct, erect, support, brace, maintain and remove forms in conformance with the requirements of ACI 318 part 1, 2 and 3 exclusive and ACI 347 for loads lateral pressure and allowable stresses; in addition to other design parameters such as wind loads.

- Shores
Shores shall be adjustable by screw jacks or wedges.
- Preparation of Forms
Clean forms before each use. All steel forms shall be free of rust and scale.
- Form Re-use: The Number of reuses is dependent on the resulting finish quality and is subject to approval.
- Form Joints: Forms shall be butted types.
- External Corner: Chamfered unless noted.
- Cleanouts: Where required provide temporary openings panels in the forms to facilitate cleaning, placing and inspection.
- Cambers: Where specified camber is noted position the forms to maintain hardened concrete lines with specified tolerances measured for camber lines. Camber is to maintain as noted plus or minus 3mm (1/8 inch) until shoring is removed.
- Form Release: Coat removable forms with forms release agent before reinforcing is placed and in accordance with manufacturer's instruction. Remove release agents from reinforcing steel embedments solvents recommended by the manufacturer.

G. STRIPPING AND RESHORING

- General: Do not remove forms or shoring until the concrete members have acquired sufficient strength to support their weight and subsequent construction loads without deflection. Forms shall be moved in a manner to assure safety of the structure.
- Time: Form and supports shall remain in place until the concrete has attained sufficient strength to support the loads to be applied but in no case shall they be stripped in less than the following minimum periods.

Columns - 2 days

Walls - 2 days

Sides of Beams and Girders - 2 days

Floor Slabs - 14 days

Shoring for Beams and Girders - 14 days

Beam and Girders - 14days

- Reshore: Reshore immediately after stripping slab, beams and girders that support subsequent formwork. Retain reshore for as many levels as required to combine the live load capacities of cured floors to support the loads of the subsequent fresh construction loads. Reshore at minimum of two consecutive levels.

MASONRY WORK

A. SCOPE OF WORK

- Furnish all labor, materials, equipment, plant and other facilities and perform all operations on necessary to complete the Masonry Work requirements hereinafter specified.
- All work under this Division shall be subject to the General Conditions accompanying these specifications. The Contractor and Sub-Contractor for this portion of the work are required to refer specifically thereto.

B. MATERIALS

- Concrete Hollow Blocks: Shall be "Jackbilt" "Rockbilt" or approved equivalent. Minimum face shell thickness shall be 1" Nominal face 7" x 17" normal thickness shown. Hold all units in storage for a period of not less than 28 days (including curing period) and do not deliver prior to that time unless strength and other test indicate compliance with this specification.
- Mortar Aggregate: Natural river sand, clean free from soluble salts and organic matter, grades from fine to coarse, compatible with the thickness of joints in which used.
- Cement: Shall be Portland cement or approved equal.
- Mortar:

General: Mix mortar from 3 to 5 minutes in such quantities as are needed for immediate use. No retempering will be permitted on mortar stiffness because of premature setting. Discard such materials, as well as those that have not been used within one hour after mixing.

Proportioning: Cement mortar shall be one (1) part Portland Cement and two (2) parts sand by volume but not more than one (1) Portland cement and three (3) parts sand by volume.

C. HANDLING AND STRUCTURE

- Take care in handling masonry units to avoid chipping and breakage. Locate storage piles and stacks so as to avoid being disturbed. Barricade to protect from damage by construction operation. Stack masonry units, reinforcement and other materials on wood blocking above ground.

D. SCAFFOLDING

- Provide all scaffolding required for masonry work, including cleaning down on completion, remove.

E. SAMPLES AND TESTING

- Sample blocks shall be taken at random from every one thousand (1000) blocks delivered. Average strength of concrete hollow blocks shall not be less than 800 lbs. per square inch. Test shall be at the expense of the Contractor.

F. CUTTING AND PATCHING

- Consulting other trades in advance of masonry work and make provision for installation of their work to avoid unnecessary cutting and patching. Experienced masons shall do all cutting and patching.

G. HOLLOW METAL FRAMES

- Fill jamb of all pressed steel hollow frames occurring in masonry walls with mortar and carefully point all joints between metal frames and adjacent masonry and other construction.

H. WALL FLASHING

- Build in wall flashing at base of cavity wall formed to exclude water, bended in and covered with mortar. Keep joints to a minimum but where necessary, lap 6' and seal with plastic cement.

I. LAYING CONCRETE BLOCKS

- Lay units in common bond with uniform coursing and jointing. All concrete block joints shall be uniform thickness, approximately 3/8 tooled concave where exposed and flush cut where concealed, making 16' x 8' course. Butter vertical and horizontal joints full with mortar.

Bond courses at corners and intersection and tie to abutting walls as per TRU-LOK Specifications.

Reinforce concrete block walls continuously in two 2) consecutive course below openings; using TRU-LOK shall be provided at every 16" of vertical wall height for load bearing walls. Lay units full thickness of partition from floor slabs to height shown, and where necessary cut.

GLASS AND GLAZING

A. SCOPE OF WORK

- Furnish all labor equipment, plant and other facilities required to complete all glazing work as shown in the drains and schedule and hereinafter specified.
- All work included under this division shall be subject to the General Conditions accompanying these specifications. The Contractor and the Sub-Contractor for this portion of the work is required to refer especially thereto.

B. GENERAL

- The type and the location of the glass are indicated. Determine the actual size by measuring the opening to be glazed, each piece of glass shall bear the Manufacturer's label giving his name and the quality, type and thickness of the glass. Do not remove label until final cleaning.

C. MATERIALS

- All glass for the steel window shall be ..." thick clear polish plate glass as indicated in the schedule of windows.
- Size shall be those shown on the drawings.

D. SHOP DRAWINGS

- The Contractor shall furnish copies of the drawings showing dimensions and details and indicating all necessary items to the Project Engineer for approval.
- Any correction required by the Project Engineer shall be done immediately by the Contractor and corrected copies of drawings affected shall be returned to the Project Engineer. The examination and approval of shop drawings by the Project Engineer shall not relieved the Contractor from any obligation to perform the work strictly in accordance with plans and specifications. The responsibility for errors in shop drawings shall remain with the Contractor.

E. INSTALLATION OF GLASS

- General: Employ only skilled labor. Set glass without springing, accurately fitted and carefully set using setting and spacer blocks in accordance with the recommendation of the glass manufacturer. Set all glass before painting. Take every precaution to insure first-glass free from edge chips cracks or other defects and all glazing materials properly installed to meet approval.
- Examination of Surfaces: Before commencing the setting examines surfaces and report to the Project Engineer in writing any defect in it. Commencement of work shall indicate the acceptance of the surface as satisfactory.
- Breakage: The Contractor shall be responsible for all glass broken because of faulty setting and shall be replaced at his expense.
- Expansion: Allow for expansion of glass as per manufacturer's recommendation.

F. GUARANTEE

- Furnish guarantee to Owner as per requirements of the General Conditions for the period of one year after date of final acceptance of building.

HARDWARE

A. SCOPE OF WORK

- Furnish all labor equipment, and other facilities required to complete the installation of hardware as shown on the drawings and hereinafter specified.
- All work included under this division shall be subject to the General Conditions Accompanying these specifications. The Contractor and Sub-Contractor for this portion of the work are required to refer specifically thereto.
- The intent of the specifications is to cover the complete hardware requirements for this building, and any hardware called for in the specifications not shown on the drawings or vice versa shall be furnished the same as if it were shown on the drawings and called for in the specifications. Also any hardware which has been omitted from both drawings and specifications but is evidently necessary for complete building shall be finished the same as if it were shown on the drawings and called for in the specification.

B. GENERAL

- Determine the quality of hardware to be furnished from the drawings and schedules. Provide all complete finish hardware for doors and other movable

parts of the building with exception of items specified elsewhere or not included.

- The hardware herein specified are given as a means of describing the type, materials, strength, design, quality, weight, mechanical constructions, operation and requirements to which such hardware shall conform.
- It is the responsibility of the contractor to thoroughly check the drawings and specifications and to furnish all required materials whether specifically mentioned or not.

C. FINISHING

- Hardware finishes specified are in accordance with US. Standard finishes flush bolts, push plates, pulls, and knobs and other finishing hardware shall be polished brass or as stated in shop drawings.

D. PROTECTION

- After hardware has been properly fitted exposed items such as door knobs, escutcheons, plates, locks, etc. shall be removed after final coat has been applied. All hardware unless to be painted over, that are not removed after painting shall be properly masked.

E. HARDWARE LOCATION

- Unless otherwise specified locate hardware as follows;

Doorknobs shall be 39" from finished floor level to center knob.

- Butt Hinges: the number of butt hinges to be furnished for each door shall be determined as follows:

For door 5'-0" high less, provide two (2) butts.

For door 5'-0" high less than 7'-0" high provide three (3) butts.

For doors over 7'-0" high unless otherwise required, provide additional one (1) butt for every 2'-0" or fraction thereof

F. HARDWARE SCHEDULE

- Refer to schedule on drawings.

G. GUARANTEE

- Furnish guarantee to the owner as per requirements of the General Conditions for one year after date of final acceptance of building.

ROOFING WORKS

A. SCOPE OF WORK

- The work under this division shall include all labor equipment; plant and other facilities and the satisfactory performance of all work necessary to complete all the roofing works as shown on the drawings and hereinafter specified.
- All work included under this division shall include all labor equipment, plant and other facilities and the satisfactory performance of all work necessary to complete all the roofing works as shown on the drawings and hereinafter specified.
- All work included under this division shall be subject to the General Conditions accompanying this specifications. The Contractor and Sub-Contractor for this portion of the work are required to refer especially thereto.

B. ROOFING MATERIALS

- All roofing materials including accessories will be supplied by the Contractor.

C. INSTALLATION

- Lay roofing sheets as per manufacturer's recommendations with overlaps oriented following storm wind direction. Manufacturer's installation details.
- All roofing works shall be done by experienced tinsmiths known to the Contractor.
- Rat proofing works shall be in accordance with ordinances of the National Building Code and its Implementing Rules.
- All welded and soldered connection in the roofing shall be painted by red oxide paint.

D. GUARANTEE

- Furnish guarantee to the owner as per requirements of the general conditions for period of one year after date of final acceptance.

PAINTING

A. SCOPE OF WORK

- Furnish all labor materials, equipment, plans and facilities to complete all painting and varnishing as shown and hereinafter specified.
- The Contractor shall examine the specification for the various other trades and shall thoroughly familiarize himself with the items and surfaces of work to be included.
- All work included under this division shall be subject to the General Conditions accompanying this specifications. The Contractor and Sub-Contractor for this portion of work are required to refer especially thereto.

B. GENERAL

- This work includes interior and exterior painting and finishing of all items as required to produce a finished painting job throughout all of the areas affected by work under this contract, except items which are specifically excluded.
- Complete color scheme for the painting of the building (exterior and interior) shall be furnished by the Project Engineer to the Contractor. Color schemes samples required by these specifications and/or by the Project Engineer shall be submitted by the Contractor for approval at his expense.
- All exposed work shall be protected while the building is being painted. The floor steps and all other surfaces not to be painted shall be well protected during painting by sufficient covers. Any stains, dirt, smear, etc. shall be removed by the Contractor to the satisfaction of the Project Engineer.

C. SURFACES NOT TO BE PAINTED NOR VARNISHED

- Neither paint nor varnish shall be applied on finish like glazed & unglazed tiles, glass, plastic, brass, bronze, aluminum and other corrosive metal finishes.

D. MATERIALS

- Make and Certificate of Origin and Quality
- All paint materials shall meet the requirements of the Standard Specifications of the Standardization Committee on Suppliers and shall be delivered on the site in the original containers, with label intact and seal unbroken.
- The manufacturer's certificate of origin and quality shall be submitted to the Project Engineer for inspection and approval before using any of the paint materials herein specified.

- Use materials only as specified by manufacturer's direction on label of container unless otherwise specified herein.
- Paint materials only as specified by manufacturer's direction on label of container unless specified herein.
- Paint materials such as linseed oil, shellac, turpentine etc., shall be pure, higher quality and should bear identifying label on container.
- The use of white zinc (lithopone) shall not be allowed.
- Pigment for Tinting
- Tinting color for oil paint shall be color-in-oil, ground in pure linseed oil, and of the highest grade obtainable.
- Colors shall be non-fading.
- Color pigments shall be used to produce the exact shades of paint, which shall conform to the approved color scheme of the finish coat. The first coat shall be white.

E. INSPECTION OF SURFACES

- The Contractor shall inspect all surfaces to be painted and all defects shall be remedied before starting work. Commencing of work by the Contractor indicates his acceptance of the surface.
- No work shall be started unless the Contractor shall have made certain as to the dryness of surfaces. Tests shall be made, in the presence of the Project Engineer or his representative, to verify dryness of surfaces to be painted.

F. PREPARATION OF SURFACE

- All concrete shall be allowed to weather for two months before painting.
- Clean all surfaces to be painted and varnished off loose dirt and dust before painting is started. Do the customary amount of sanding in the Project Engineer's opinion to produce a surface suitable to receive paint or varnish.

- Inspect all surfaces with regards to their suitability to receive a finishing. In the event that imperfection due to materials or workmanship appear on any surfaces after the application of the paint the cost of any correction shall be borne by the Contractor. Damages to any painted or varnished finish due to carelessness or negligence of others shall be corrected.
- Touch all knots, pitch streaks and sappy spots with shellac or other approved sealer. Apply concrete neutralizer on new plastered concrete to neutralize the acidity present in cement. Apply patching compound on nail holes cracks, uneven portion, etc. to attain the desired smooth wall finish.
- Wash all metal surfaces with benzene, mineral spirits, or detergent to remove any dirt or grease before applying materials. Where rust or scale is present, wire brush or sandpaper cleans before painting. Where shop coats of paint have become marred clean, and touch up with a compound designed for this purpose, or approved acid solution before applying the first coat of paint.
- Prepare masonry surfaces to be painted by removing all dirt, dust, oil and grease stain sand efflorescence. The method of surface preparation shall be left to the discretion of the Contractor provided that the result is satisfactory to the Project Engineer. Masonry surfaces to be painted shall be free from alkali and thoroughly dry before paint is applied.
- Before applying succeeding coats, primers, and undercoats shall be completely integral and performing the function for which they are specified. Properly prepare and touch up all scratches, abrasions, or any other disfigurement and remove any foreign matter before proceeding with the following coat.
- Do not apply final coat on interior work until after others are finished with their work in any given area in normal sequence and all materials and debris removed, and the premises left in satisfactory broom clean condition as approved.
- Remove or protect hardware, hardware accessory plates, lighting, fixtures and similar items placed prior to paintings or remove protection upon completion of each space. Disconnect equipment adjacent to walls where necessary move to permit painting of all wall surfaces, and following completion of painting, replace and reconnect.
- Paint the backsides of access panels, removable or hinged covers and the like.

- All wood shall be sanded lightly with #100 Sandpaper between coats. Paint coats shall be thoroughly dry before sanding.

G. WORKMANSHIP

- All painting and varnish work shall be done in workmanlike manner by skilled house painter and varnisher only.
- All materials shall be evenly applied, so as to form a film of uniform thickness, free from sags, runs, crawls, or other defects. The use heavy brush (nylon brushes for oil paints) is required. Light brushes shall not be permitted. Paint shall be thoroughly stirred so as to have the pigment evenly in suspension while paint is being applied.
- In general or unless otherwise specified, and/or instructed by the Project Engineer due to actual conditions on the job, no less than 48 hours time shall elapse between application of succeeding coats. Each of paint shall be allowed to dry thoroughly and inspected for approval before the succeeding coat is applied.
- No oil painting shall be done in damp weather.
- Except where otherwise noted or specified all paints shall be applied in three coats (priming body and finish coats). Each coat shall be roller applied (except as otherwise noted) spread evenly and in full covering body.
- No work shall be done in conditions unsuitable for the production of good results. No painting or varnishing on woodwork shall be done while plastering is in processor is drying.
- Surfaces which cannot be satisfactorily finished on the number of coats specified shall have additional coats, or such preparation coats and subsequent coated as many as may required to produced satisfactory finished work without additional cost to the Owner.
- Spray gun application shall be used where indicated in the color schedule.
- All parts of molding and ornaments shall be left clean and true to details.

- All finishes shall be uniform as to sheen color and texture, except when glazing is required.
- The Painting Contractor since he is the last tradesman on the project shall include in his work all final clean up and washing of glass, spots on floors, hardware fixtures, etc.

H. PAINTING SCHEDULE

- The type of paint specified are intended to illustrate the quality and are taken from paint catalogue equivalent materials from manufacturers listed herein, which the Contractor desires to use other than those specified should accompany proposal with such request in writing for approval by the Project Engineer. Give manufacturers name, specific name of each product offered as a substitute. After the award, no substitution of materials for those mentioned in the accepted proposal will be permitted. Other brands of paint and primer are the following: Dutch Boy; Sinclair; Sherwin Williams; Boysen; General Paint and Finch.

Exterior Walls

Cement Plaster over Concrete give:

Coat concrete primer and sealer

2 Coats semi-gloss paint

Exterior and Interior Work

Metal steel doors, frames, railings, balusters, and grating give:

Coat Primer Paint

Coats Quick Drying Enamel

Interior work

- Plywood walls (painted) give: (Roller Painted)
 - 1 Coat flat wall enamel washable paint after which putty all over and sand smooth
 - 1 Coat interior Primer Sealer
 - 1 Coat paint
- Plywood ceiling give: (Roller Painted)
 - 1 priming coat flat washable paint
 - 2 finish coats semi-gloss washable paint
- Cement plaster and sunblasted finish over concrete and hollow concrete blocks, give:
 - 1 Coat flat wall enamel washable paint

2 coats semi-gloss washable paints

I. GUARANTEE

- The Contractor shall guarantee his work for a period of one (1) year from date of the acceptance. Under such guarantee, the Contractor shall make good any defect due to faulty materials or workmanship caused by him by without any additional cost to the Owner for the period specified.

WOOD AND PLASTICS

A. SCOPE OF WORK

- Furnish all materials and equipment and perform labor required to complete wooden framing and related rough carpentry work as indicated in the drawings and/or specified herein.
- Include in the works, nailing strips, scaffoldings, plates, straps, joists, hangers, rods, dowels, rough hardware, fasteners, and other miscellaneous iron and steel items pertinent to rough carpentry work.

B. STORAGE AND PROTECTION

- Stack framing lumber to insure against deformation and maintain proper ventilation.
- Protect Lumber from elements.
- Lumber in contact with concrete masonry shall be coated with two (2) coats of asphalt, applied hot.
- Temporary Protection
Provide and maintain temporary protection of the work as required to safeguard completed or partially completed work during the progress.

Provide all the necessary rough stairs, ladders, runways, for convenient access to all parts of the building until other permanent facilities are in place.

C. SCOPE OF WORK

- Lumber
Moisture content — not to exceed 18 percent

Grade and Trade Mark — required on each piece of lumber. All lumber including scaffoldings, conforming to 63 % stress grade lumber in accordance to the requirements of the National Structural Code of the Philippines, Volume 1, latest edition.

Refer to summary of Materials and Finishes

Substitution of Lumber

Any lumber equally good for the purpose intended may be substituted for kinds specified, provided however, that the substitution be authorized in writing by the Project Engineer.

D. ROUGH HARDWARE AND METAL FASTENERS

- Plates, straps, nails, spikes, bolts, joists, hangers, rods, dowels, fasteners, and miscellaneous iron steel items shall be of sizes and types to rigidly secure member in place.
- Execution

Anchor all frames coming in contact with concrete, unless otherwise specified, by means of 20 D nails, spaced not more than 0.20 m (8") apart all around the contact surfaces. Plane and dress side of frames that will receive the ceiling boards or sidings.

Wood nailers shall be in accordance with detail drawings or mentioned herein, nailing strips shall be 1" x 2" at 16 inches on centers both ways. Fasten securely by expansion bolts or other approved device at every (2) feet on center.

Make all exposed nails countersunk. Do scrubbing, metering and joining accurately and neatly to conform to data

MILL WORK

A. SCOPE OF WORK

- Furnish materials and equipment and perform labor required to complete wooden jambs and doors and ceiling panels and related rough carpentry work indicated in the drawings and/or specified herein. Coordinate work with all other trades.

B. STORAGE AND PROTECTION

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

C. PRODUCTS

- Lumber

Kiln dried, selected, quarter sawn containing not more than 12 % moisture, free from imperfections impairing its strength, function and appearance with the same shade, color, grain configuration.

Trademark is required in each piece of lumber.

- Plywood

For interior plywood, use class A plywood whose species and thickness conform to schedule and drawings.

- Finish Hardware

D. EXECUTION

- Workmanship

Make all wood finish and millwork true to details clean and sharply defined.

Set panels to allow free movement in case of swelling shrinkage.

Conceal means of fastening various parts together.

E. FINISH

- Mill fabricates and erects interior finish as indicated on the drawings. Machine sand at the mill and hand smooth at the job.

- Separate with $\frac{1}{4}$ inch stone-cut joints all interior trims set against concrete masonry or wood.

- Make joints tight and in a manner to conceal shrinkage. Secure trim with fine finishing nails, screws, or glue where required.

- Set nails for putty stopping.

- Make window and door trim single length.

- Meter molding at corner, cope at angles.

F. WOOD JAMBS

- Set door frames plumb and level and brace until built-in.

- Anchor wood frames to masonry with approved metal anchors on each side of jamb. Place top and bottom anchors 8 inches from head to floor.

G. HARDWARE

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

WOOD DOORS

A. SCOPE OF WORK

- Furnish all materials and equipment and perform labor required to complete solid panel doors.

B. SAMPLES

- Submit sample corner sections of wood doors and jamb for approval of the Project Engineer.

C. PROTECTION

- Protect door adequately from scratches, and other stains with heavy building appear

D. PRODUCTS

- Fabricates

Assemble joints and doors with water resistant glue. Keep door under pressure until glue has thoroughly set. Add simple wood carving design.

Sand smooth finish doors. Provide with joints and clean cured molding.

Keep faces free from defects or machine marks that will show through the finish.

E. EXECUTION

- Installation

Cut, trim and fit each door to each frame and hardware accurately.

Give allowance for painter's finish and possible swelling or shrinkage.

Provide not more than 1/8-inch clearance at lock end hanging styles and not more than ¼ inch at bottom.

Round all corners to 1/16-inch radius. Level slight lock and rail edge.

All doors shall operate freely and all hardware shall be properly adjusted and functioning.

STEEL WINDOWS, FRAMES AND RAILINGS

A. SCOPE OF WORK

- Unless otherwise specified, the Contractor or his Sub-Contractor shall furnish all materials, tools, equipment apparatus, transportation, labor, supervision, management, and incidentals necessary and required for the completion and satisfactory performance of work in strict accordance with this section of the specification and the applicable drawings, subject to the terms and conditions of the Contractor.

B. SHOP DRAWINGS AND SAMPLES

- The Contractor shall before proceeding with the manufacture of steel windows prepare and submit complete manufacturing and installation drawings in full size and in triplicate, together with samples of member, section and hardware to be used for the approval of the Project Engineer. Windows to be manufactured shall conform to the approved drawings and samples.
- Submit shop drawings of metal windows for approval. The drawings shall show complete details of construction, anchorage and samples.
- Guarantee
All steel works shall be guaranteed for one year from final acceptance of the Owner and the Project Engineer.

C. PRODUCTS

- All members shall be hot-rolled new billet steel with frame and ventilator section not less than 25mm deep from front to back. Frame members to be of equally designed section only at points where called for by the detail drawings and continuous angle pins, as indicated on drawings shall be furnished. For frame at sills, zee type section of special design. With offset permitting downtrend left of the vent member to set flush when vent is in a fully closed position shall be used. Ventilator member shall have integral weathering baffles providing double flat weathering contacts of not less than 6mm width on all four sides of the vent. For railings, steel pipe must be schedule 40 Galvanized Iron Pipe and square bars must be standard size.

D. EXECUTION

- Construction

- Corners of vent shall be metered, electrically butt-welded and ground smooth. Corners of frame and all other window joints and intersection of muntin with frame and vent members shall be coped and electrically welded. Muntin bars except where ventilators are to be continuous from head to sill and from jamb to jamb. Muntin cross joints shall be rigidly and neatly interlocked with faces flushed. Frame section and vent sills shall have weep-holes to provide drainage. Continuous weather drips shall be provided where required at the heads for side hinges ventilators or door. Windows and doors shall be designed for glazing from the outside with wire glazing clips and steel casement putty. All units shall be prepared for and supplied with necessary standard hardware, and for screen plans or drawings.

- Mullions

Rolled-steel T—bars, pipes, plate or other formed section or a combination of the as shown on drawings shall be furnished where two or more window units are installed in the same opening.

- Installation

No window unit shall be allowed, in any case, to be installed in place in the formwork previous to pouring concrete. Instead, grooves for grouting shall be caused to be formed along the side and heads of wall openings as indicated on detail.

Windows shall be erected and prepared openings by experienced window erection men. They be set plumb and true securely wedged and anchored as shown on detailed drawings and held in alignment during construction. All contacts between window and door wall units and adjacent steel including mullions shall be tightly sealed or bedded in mastic or approved sealing compound applied by the Contractor Ventilators shall be carefully adjusted before glazing.

Standard anchors, clips, and mullions, bolts or screws shall be provided by the window manufacturer provided suitable sinkages and frames for all mortised or counter-sunk hardware and insert steel reinforcement drilled and tapped for attaching all hardware. Frames in masonry shall have steel adjustable anchors for each jamb spaced approximately 0.60m on center. Provide special anchors for securing to concrete as detailed.

Steel Doorframes or jambs formed to details shown with rebates to receive the doors. Make allowance of not more than 3mm clearance for doors. Neatly form all returns and edge. Frames shall be smooth and free from warp and buckle, the finish work shall be strong and rigid, neat in appearance and free from corners, and shall be reinforced and may be metered, their full length welded length and dressed of flush on the exposed surface. Meters shall be well

formed and in true alignment. Set frames properly and braced against displacement during construction operation. During masonry work, grout the jambs solidly with masonry mortar. Protect all metal frames during construction.

Steel railings shall be welded to the 4" Ø Schedule 40 Galvanized Iron pipe post.

- **Field Painting**

Prior to or immediately after steel windows has been erected and before glazing, one coat of metal primer protective paint shall be applied. A second coat shall be applied after putty has dried and set, not sooner than 3 weeks after glazing.

- **Glass and Glazing**

Windows shall be glazed from the outside, using steel grade sash compound. Glass panels shall be bed-putted secured in place by copper-covered spring wire glazing clips furnished by the door manufacturer, and then face-puttees to a neat trim line. Glass shall be 6mm thick, clear, American or European made, unless other thickness is indicated on the drawings or as specified in the Schedule of Windows.

CEMENT FINISHES

A. SCOPE OF WORK

- Furnish materials and equipment and perform labor required to complete all plain cement, plaster finish.
- Samples
Submit test panels for Project Engineer's approval before execution of the work.

B. EXECUTION

- Plain cement plaster finish
Provide all walls indicated with three coats of cement plasters (scratch coat, brown coat, and finish coat). Mix each coat in the proportion of 1 part Portland Cement to 3 parts sand by volume.

Apply the scratch coat with sufficient materials and pressure to insure a good bond and then scratch to a rough surface. Provide a thickness of 3/8-inch scratch coat.

Apply brown coat one day after applying scratch coat, with a thickness of 3/8 inch and level to a flat even surface. When stiff enough, trowel with a wooden float and cross hatch or broom lightly and evenly to secure a good mechanical bond for the finish coat. Wet the surface and keep from drying out for at least three days.

Apply finish coat seven days after the application of brown coat. Provide thickness of 1/8 inch. Keep the finish coat damp but not saturated for a period of seven days.

CERAMIC TILE WORK

A. SCOPE OF WORK

- Furnish materials equipment and perform labor required to complete all types of tile works.
- Samples
- Submit samples of floor and wall tiles.

B. EXECUTION

- Application of scratch coat.

Thoroughly dampen but not saturated, surfaces of masonry or concrete walls before applying the scratch coat. Make surface areas appear slightly damp. Allow no free water on the surface.

On masonry, first apply a thin coat with pressure, then bring it out sufficient to compensate for the major irregularities on the masonry surfaces to a thickness of not less than 1/4 inch at any point.

Evenly rake scratch coats, but not dash coats, to provide good mechanical key for subsequent coats before the mortar applied by dashing until it has hardened.

On surfaces not sufficiently rough to provide good mechanical key, dash on the first coat with whisk brown or otherwise disturb mortar applied by dashing until it has hardened.

- Floor Tile Installation on Tile Adhesive

Before spreading the setting bed, establish lines of borders and center the field work in the both directions to permit the pattern to be laid with a minimum of cut tiles.

Clean concrete sub-floor then moistens but not soaked. Spread the adhesive mortar at a time using notched trowel.

Fix tiles immediately within the adhesive's open time.

Lay tiles from centerlines outward and make adjustment at walls.

Adjust and align to attain the desired height and slope.

Put plastic spacer to maintain the straight grout lines.

- Wall Tile Installation on Tile Adhesive.

Before application of adhesive mortar, clean and dampen the concrete surface.

Use temporary or spot grounds to control the thickness of the adhesive mortar bed. Fill out the adhesive mortar bed even with grounds and rod it to a true plane.

Apply the tile adhesive mortar bed over an area no greater than can be covered with tile while the coat is still workable.

Allow no single application of adhesive mortar to be $\frac{1}{4}$ inch thick.

Press tiles firmly into the bed and beat into place within one hour.

Put plastic spacer to maintain the straight grout lines.

- Grouting

After tile has sufficiently set, force a maximum of grout into joints by trowel, brush or finger application

Before grout sets, strike or tool the joints of cushion-edge tile to the depth of the cushion.

Fill all joints of square-edged tile flush with the surface of the tile. Fill all gaps and slips.

During grouting, clean all excess grout off with clean burdock, cloth or sponge.

- Cleaning

Sponge and wash tile thoroughly with clean water after the grout had stiffened. Then clean by rubbing with damp cloth or sponge and polish

Clean with dry cloth.

STRUCTURAL DESIGN CRITERIA

I. GENERAL

SCOPE

The following calculations cover the structural analysis and design calculations for the proposed One-storey type school building.

CODES AND SPECIFICATIONS

The following codes and specifications shall be applied to this project:

NSCP 4th ed. NATIONAL STRUCTURAL CODE OF THE PHIL.

AISC 9th ed. MANUAL OF STRUCTURAL STEEL CONSTRUCTION

Reference:

Design of Reinforced Concrete by Jack McCormac Design Handbook

Vol. 2 ACI 318-93.

MATERIAL STRESSES

A. Concrete

Footings	$f'c = 3,000$ psi
Beams	$f'c = 3,000$ psi
Columns	$f'c = 3,000$ psi
Slab on Fill	$f'c = 2,500$ psi
Others	as Required

B. Reinforcing Bars

Diameter 12 & smaller	$f_y = 33,000$ psi
Diameter 16 & larger	$f_y = 40,000$ psi

C. Structural Steel

ASTM A36	$f_y = 36,000$ psi
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D. Welds

E70XX

E. Anchor Bolts

A325

DESIGN LOADS

A. Dead Loads	60.0 psf
Slab	50.0 psf
Ceiling & Miscellaneous	10.0 psf
B. Live Loads (Roof Load)	20.0 psf

WIND LOAD

$$P = C_e C_q Q s I$$

Where:

Ce	=	Gust Factor Coefficient
Cq	=	Pressure Coefficient
Qs	=	Wind Stagnation Pressure
I	=	Importance Factor

SOIL BEARING CAPACITY 2000 psf (Assumed)

SPECIFICATIONS FOR STRUCTURAL WORKS

Working Drawings

- This “General Notes & Specifications for Structural Works” shall form a part of the Structural Plans.
- In the interpretation of these structural plans, indicated dimensions shall govern and distances or sizes shall not be scaled for construction purposes.
- In cases of conflict in details or dimensions between the Architectural and Structural Plans, refer to the Engineer or his authorized representative for final decision.
- In cases of conflict between the Structural Plans and the General Notes and Specifications, the Plans shall govern.

DESIGN LOADS

- Dead Loads

The design loads unless otherwise specified in the structural plans are as follows:

Concrete	150 pcf
Partitions (As reflected on plan) (minimum)	20psf
Concrete Topping	25 psf
Ceiling Utilities/Mechanical/Electrical/ Plumbing	5 psf

- Live Loads

The design live loads unless otherwise specified in the plans are 50 psf.

- Earthquake Loads

The design earthquake loads are as per the provision of the “Uniform Building Code (USA) 1994 Edition” for Earthquake Zone 4. These loads are assumed to be statically applied to the structure.

- Wind Loads

The design wind loads are as per the provision of the “National Structural Code for Building (PHIL) 1987”

- Equipment Loading

Equipment not indicated in the plans shall be not installed without the approval of the Structural Engineer.

The manufacturer shall submit equipment data specifying the weight, and its reaction at the base, and its vibration characteristics.

REINFORCED CONCRETE CONSTRUCTION

- Cement shall conform to Portland Cement ASTM C150.
- Concrete aggregates shall conform to ASTM C33 except the aggregates failing to meet these specifications but which have produced concrete of adequate strength and durability may be used to the approval of the Structural Engineer.
- Water used in mixing concrete shall be clean and free from injurious amounts of oil, acids, alkalis, salts, organic material or other substances deleterious to concrete or steel. In addition, the mixing water for pre-stressed concrete shall not contain deleterious amounts of chloride ion.
- Reinforcing bars shall conform to ASTM A615.
- Admixtures to be used in concrete shall be subject to prior approval by the Structural Engineer.
- Cement and aggregates shall be stored in such a manner as to prevent their deterioration or the intrusion of foreign matter.

Concrete cylinder samples for strength tests of each class of concrete shall be taken not less than twice a day nor less than once for each 110 cu. m. of concrete or for each 490 sq. m. of surface area place. The cylinder samples for strength tests shall be taken cured and tested in accordance with ASTM C172, ASTM C31, and ASTM C39.

- Acceptance of Concrete
Concrete poured will be considered satisfactory if the average of all sets of these consecutive strength test falls below the required f_c' and not individual strength test falls below the required f_c' by more than 500 psi.
- Core tests and load tests

If individual tests of laboratory cured cylinder samples produced strength more than 500 psi below f_c' core test and or load tests may be resorted subject to the approval by the Structural Engineer.

- **Mixing of Concrete**

All concrete shall be mixed until there is a uniform distribution of the materials and shall be discharged completely before the mixer is recharged.

- **Conveying of Concrete**

Concrete shall be conveyed from the mixer to the place of final deposit by methods that will prevent the separation or loss of materials.

- **Depositing of Concrete**

Concrete shall be deposited as nearly as practicable in its final position to avoid segregation due to re handling or flowing.

- **Curing**

Concrete shall be maintained in a moist condition for at least 7 days after placing. Wet burlap may be laid over the slab constantly applied with water.

CONCRETE MIXES

Unless otherwise indicated in the drawings, the minimum 28-day cylinder compressive strength shall be as follows:

- a) Foundation ----- $f_c' = 3000$ psi
- b) Columns ----- $f_c' = 3000$ psi
- c) Slab on Fill ----- $f_c' = 3000$ psi
- d) Suspended beam & Slab ----- $f_c' = 3000$ psi
- e) All others ----- $f_c' = 2000$ psi

FOOTINGS

- Assumed allowable soil bearing capacity, in the absence of soil investigation report, is 2000 psf. The Contractor shall verify actual soil condition at site.
- Existing underground pipes, tunnels, etc., shall be brought to the attention of the Structural Engineer for evaluation.
- An excavation adjacent to an existing structure shall be provided with adequate sheet piling by the Contractor. The sheet piles shall be properly

designed to resist earth and water pressure as well as surcharge loading on the footings of the adjacent existing structures.

- Unless otherwise detailed in the plans CHB wall footing shall be as per figures on Sheet SS-1.
- RC Slab on fill other than pressure slab @ basement shall be 0.125m thick with 10-mm bars at 0.30 m. o. c. each way unless otherwise indicated in the plans.
- All earth fill supporting ground slabs for flooring, parking, sidewalk, etc., shall be compacted to 90% proctor in layers of 0.30m. Unless otherwise specified by the Structural Engineer.

REINFORCED CONCRETE BEAMS

- Unless otherwise noted in the plans or specifications camber all RC beams at least 6 mm (1/4") for every 4500mm (15') of clear span except cantilevers which shall be 19mm (3/4") for every 3000 mm (10') of clear span.
- If there are two or more layers of reinforcing bars, use 25-mm separators spaced at 0.90 m. o. c. In no case shall there be less than two separators between layers of bars.
- If beam reinforcing bars end in a wall, the clear distance for the bar to the farther face of the wall shall be not less than 5 bar diameters. The reinforcing bar shall terminate on a standard 90 degrees hook.
- Beam reinforcing bars supporting slab reinforcement shall be 25 mm from the bottom of the finish.
- When a beam crosses a girder, rest beam bars on top of the girder bars. At column intersection girder bars shall be on top of beam bars.
- Lengths of bar cut-off and bar clearances shall be as specified in Sheet S-1.
- Top bar splices shall be located at mid-span and bottom bar splices at column supports. Unless otherwise indicated in the plans splice lengths shall follow those given for development length as per figure on Sheet S-1.

REINFORCED CONCRETE SLABS

- Unless otherwise noted in plans or specifications, camber all R.C. slabs 3mm (1/8") per 3000 mm (10') of shorter span.
- If slabs are reinforced both ways, bar along the shorter span shall be placed below those along the long span at the center and over the longer span bars near the supports.
- Lengths of bar cut off shall be as specified in Sheet S-1.
- Concrete covering shall be 18 mm for top and bottom bars.
- Unless otherwise specified by the Engineer, bar chairs shall be provided at least 600 mm. each way to support top and bottom bars separately.

REINFORCED CONCRETE COLUMNS

- Unless otherwise indicated, the column pedestal embedded in the ground shall be 50 mm. larger than the column as per plan at the basement floor level, or ground floor level if there is no basement.
- Construction joints in columns shall be located at the top of the pedestal (basement floor line, or ground floor line if there is no basement) or at least a distance above the floor equal to the maximum dimension of the column or 1/6 story height.
- All ties shall be fastened to column vertical reinforcement by means of wires at all intersection portions of ties and columns rebar.
- Not more than one-half (1/2) of the total number of bars shall be spliced at the same level. The lap be 1.3 l_d of the bar development length. Splices shall be staggered at a distance of at least 40 bar diameters.
- Column bar splice lengths shall follow those tabulated for development on Sheet SS-1.
- Lap welded splice maybe used in lieu of the above. The capacity of the weld provided shall be 125% larger than the tensile capacity of the bigger bar being spliced. No butt-welded splices are allowed unless otherwise permitted by the Structural Engineer.

- Confinement ties shall be provided on all columns at beam column intersections as shown in S-1.

REINFORCED CONCRETE WALLS

- Unless otherwise indicated in the plans, the R.C. wall horizontal bars shall be inside the vertical bars — (retaining wall).
- Reinforcing bars shall have at least 30mm concrete clearance except in 100-mm wall or less where they shall be at the center.
- Carry vertical bar 600 mm above floor level to provided for splices when necessary. Elsewhere stop at 50 mm. below the top of the slab, the bar shall terminate on a standard 90-degree hook.
- Horizontal and vertical bars conforming to ASTM A615 shall have a minimum splice lapping and wired with No. 16 G.I. wire provided that splices in adjacent bars are staggered at least 1.50 m. o. c. Not more than one-half (1/2) of the total number of bars shall be spliced at the same line. Splices shall be staggered a distance of at least 40 bar diameters.
- All opening on walls or slabs less than 300mm thick shall be reinforced as per Figure on Sheet SS-1.
- At wall intersections and corners, the anchorage length provided shall be as shown on Figure on SS-1.

C.H.B. WALLS

- Unless otherwise specified, the vertical and horizontal reinforcements for CHB shall be as indicated in the standard details.
- Lintel beams to be used shall be (t x 0.20m.) reinforced by 4-12 mm bars with 10 mm at 300 mm o. c. ties where “t” is the CHB wall thickness.
- Lintel beam shall be provided at top of CHB wall openings. It shall extend at least 200mm beyond the openings.
- For high walls, lintel beams shall be provided at 3000mm o. c.
- For long walls, stiffener columns shall be provided at 3000mm o. c.

- Where CHB walls adjoin R.C. Columns and beams, provide dowels on R.C. column and beams prior to pouring to match CHB wall reinforcement. The dowels shall be 12mm bars at 600 mm. o. c.
- Where columns and beams have been poured without the CHB wall dowels, provided ½" dia. bolts at 400mm o. c. These anchors shall be drilled and grouted w/ conc. epoxy. No chipping off of concrete columns and beams is allowed unless permitted by the Engineer.

STRUCTURAL TOLERANCES

Unless otherwise specified by the Engineer, the following are the acceptable structural tolerances for cast-in-place concrete construction. All dimensions, which are not within the required tolerances, shall be corrected prior to pouring of concrete. Tolerances for pre-cast concrete construction shall be ½ of the values given below:

- a) Cross sectional dimensions and location of reinforcement, pre-stressing steel and pre-stressing steel ducts.

Dimensions less than 200 mm	-	+ 6mm
200mm to 600 mm	-	+ 9mm
Over 600mm	-	+12mm

- b) Member lengths or height
(Maximum limitation = 12mm)

- 6mm per 3.0 meters

- c) Deviation from straight line
(Sweep and or plumpness)

- 6mm per 3.0 meters

- d) Locations of bar cut-off or bonds

- +50mm

CONCRETE PROTECTIONS FOR REINFORCEMENT

The following minimum concrete cover shall be provided for reinforcing bars. For bar bundles, the minimum cover shall equal the equivalent diameter of the bundled bars needed but not be more than 2 inches on the tabulated minimum whichever is greater.

- Cast-in-place concrete (pre-stressed concrete construction)
 - a) Cast against and permanently

Exposed to earth	75 mm
------------------	-------
 - b) Exposed to earth or weather

20mm diam. and larger	50 mm
-----------------------	-------
 - c) Not exposed to weather or in contact with ground,

Slabs, walls, and joints.

36 mm diam. and smaller	19mm
No. 14 and No. 18	38mm
Beams, girders and columns	
Principal reinforcements, ties	
Stirrups or spirals	38mm

REINFORCING BARS

- All reinforcing bars shall be deformed conforming to ASTM A615-68 unless otherwise noted in the plans the minimum yield strength of the reinforcing bars to be used corresponding to the structural member shall be as enumerated below:

a) $f_y = 33,000$ psi for 12mm & smaller sizes

b) $f_y = 40,000$ psi for 16mm & larger sizes

- Splice and anchorage lengths requirements follow those set for development length (l_d) as shown in SS-1 unless otherwise indicated in the plans or approved by the Structural Engineer.

- Equivalent metric size bars when used shall be as per tabulations below:

No. 3	10mmØ
No. 4	12mmØ
No. 5	16mmØ
No. 6	20mmØ
No. 8	25mmØ
No. 9	28mmØ
No. 10	32mmØ
No. 11	36mmØ

STANDARD HOOK

- A standard hook for rebars if required shall be either of the following:

A semicircular turn plus an extension of at least 4-bar diameter but not less than 62mm at the free end of the bar.

A 90-degree turn plus an extension of at least 12 bars diameter at the free end of the bar.

- Minimum diameter of bend measured on the inside of the bar shall be as follows:

10mmØ to 25mmØ	-	6 bar diameter
28mmØ to 36mmØ	-	8 bar diameter
No.14 to 18	-	10 bar diameter

WELDED SPLICES

- Lap welded splices when used shall develop a resistance equal to at least 125 percent of the tensile capacity of the bar being spliced.
- Butt-welded splice when used shall be considered 75% efficient. The remaining 50% capacity to develop 125 percent of the tensile capacity of the bar shall be provided for by an additional welded lap splice connection on the same joint.
- The Contractor for approval shall submit details of all welded splices by the Structural Engineer.
- Only certified welders shall be allowed to perform welding operations. These welders shall be subject to the approval of the Work Engineers.
- Testing of welds shall be by X-ray Method (non-destructive tests) unless otherwise directed by the Structural Engineer.
- Connection of crossing bars by track welding is not permitted.

PLUMBING WORKS

A. GENERAL

- Scope of Work

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

Water distribution and supply pipes to equipment and plumbing fixtures.

Provide oil, waste and vent pipes system and connection to septic vault and connection of outlet waste line to nearest existing storm drain.

Install plumbing fixtures, fittings, trims and accessories for the toilets.

Leakage tests of water supplies and sanitary drainage system.

Pressure test of newly installed water system.

Disinfecting of water distribution system.

Submit certificate of test on installed equipment and piping system.

Secure all permits and licenses as required.

Prepare and submit reproducible Final As-built plans and (4) set of white prints signed and sealed by Registered Sanitary Engineer or Master Plumber.

Furnish a written one-year warranty on the plumbing and equipment installation.

Investigate and coordinate with other trades of all possible conflicts of plumbing works with others.

- Coordinate With Other Trades

The Contractor is required to refer to the General Conditions and to all architectural, structural, electrical and mechanical plans and specifications and shall investigate all possible interference and conditions affecting this work.

- Responsibility

The contractor and all persons or Companies providing or both for this project are specially referred to the General Conditions of the Specifications and the various other contract documents, which may affect the completion of any work of the other trades. In the absence of complete agreement among the Sub-contractors of the General Contractor (Authorized by the Owner), supply dealers, or others affected by the construction, the General Contractor is to be held responsible for the Coordination and completion of all the works.

- Drawings and Specification

The General Drawings and these Specifications are complementary to each other and any labor or materials whether called for or both if necessary for the successful operation of any particular type of fixtures or equipment specified under this contract shall be furnished and installed without additional cost to the Owner.

- Intent

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

- Permits and Inspection

The Contractor shall obtain and pay for all permits bonds and inspection fees and shall be responsible for all penalties incurred by himself or his agents.

- Workmanship

All works shall be performed in first class and neat workmanship by plumbers and their work shall be satisfactory to the Project Engineer and to the Owner.

- Code to be followed

All plumbing work to be done shall be in accordance with the National Plumbing Code of the Philippines and with the requirements of all applicable laws of the Republic and all local codes and ordinances.

B. MATERIALS

- Approved Materials

Within 30 days after the award of contract, the Contractor shall submit for the Owner's Representative approval, four (4) copies of all equipment and materials he proposes to use under this contract.

After written approval of the above list, and before purchase of any equipment or material, the Contractor shall submit for approval four (4) complete sets of detailed information consisting of manufacturer's bulletins, shop drawings and part list of equipment and the materials to be provided under this contract.

The Contractor shall assume the cost of and the entire responsibility for any change in the work as shown on the Contract, which maybe occasioned by approval of materials other than specified.

- Standard for Materials

All materials shall conform to the standard listed below:

PVC pipe and fittings - ASTM - D 1784, CS 256 for water

Galvanized Iron Pipe - ASTM A — 53, Schedule 40

Reinforced concrete culvert, storm drain and sewer pipe - ASTM C 76-84

Cement - ASTM C150 — 86 Type I

Deformed reinforcement bar - ASTM A496

- Alternate Materials

Use of any materials, device, fixtures and appurtenances not specified in these specifications maybe allowed, provided that such alternate item has been approved in writing by the Owner's Representative and Contractors claim for its suitability. The cost for testing shall be paid for by the Contractor.

Test shall be done by any agency approved by the Owner's Representative and in accordance with generally accepted standards. In the absence of such standards, the Owner's Representative may specify the test procedure.

To any substitution, all health and safety requirements shall be observed. The Contractor shall, together with his bid, submit a list of materials which he intends to use in list of the materials specified in the contract documents which he believes he cannot supply and stating the reason for the substitution. Material shown in this list shall be installed as specified and no further request for substitution shall be made except when he can show a valid reason.

Request for substitution shall be accompanied by:

- Reason for substitution;
 - Certificate of test indicating quality of substitute materials;
 - Cost comparison with materials originally specified.
- Identification of materials
Each length pipe, each fitting, trap, fixture and device used in the plumbing and piping system shall be cast, stamped or indelibly marked on name, the weight, the type, the class of product when as required but the standard mentioned in the Sub-section 2.2 mentioned above.

All plumbing fixtures and materials installed without the above trademarks shall be removed and replaced with properly marked fixtures and fittings without any extra cost to the Owner.

- Materials schedule

Pipes and Fittings

PIPE AND FITTINGS MATERIALS

ITEMS	GIP Sch. 40 Standard	PVC Sanitary II Series 1000
A. Plumbing	X (indoor)	
1. Cold water supply	X	
2. Outdoor Sanitary Sewer system		X
3. Indoor House drain System		X
4. Downspout		X
5. Soil, waste	(Sch.20)	
6. Vent		X

Legend:

GI	-	Galvanized Iron Pipe
PVCP	-	Polyvinyl Chloride Pipe

- **Notes:**

Where uneven settlement at pipe joints is likely to occur, use Gilbault joint or the other suitable flexible fittings.

GI pipe when buried underground shall be given corrosion protection (painted with coal tar enamel and wrapped with non-water absorbent and painted again with coal tar enamel and wrapped with non water absorbent felt).

Ball Valves

- Ball valves shall be size 13mm ($\frac{1}{2}$ ") in diameter, stainless steel body to avoid corrosion. It shall have blowout proof stem and shall be of anti-static design. It shall have the tag number stamped on a 316 stainless steel tag and attached to the valve with stainless steel wire. Embossed stainless steel bands are acceptable.
- Notes:
When valves are placed or located in a box or compartment the valve stem shall be non- rising but provided with VALVE OPEN and CLOSE indicator attached to stem.

Hose Bibbs

Hose bibb shall be size 13mm ($\frac{1}{2}$ ") male and 19mm ($\frac{3}{4}$ ") hose thread, brass body conforming to ASTM Specification B62 suitable for cold water pressure up to 10.5 kg/cm (ISOpsi9, equal or similar to No. 58 Chicago hose valve screwed connections, with rubber composition disc, American Standard Taper Pipe Thread on the inlet and standard hose thread on male outlet.

Jointing

- Cold Water Lines:
- Flanged Joints Gasket "Garlock" of equal Screwed Joints: US.
- Federal Specification GG — P — 251.
- Sanitary Drainage Lines: Lead and oakum CISP, PVC cement or
- Rubber ring for PVC.
- Cement mortar for concrete drain pipes, PVC cement for PVC pipes.
- Dissimilar Pipes: Adapter fittings shall be used.

Drains:

- Similar or equal to "ASA" Model No. - 40B, with Type 125mm

- Strainer or approved equal.
- Floor drains (at toilets): “ASA” Model No. — 40B, with Type 125mm strainer or approved equal.
- Roof Drains: ASA No.10 — 8.2

Outdoor Pipe Lines, Appurtenances

- Sewer Junction Boxes
- -2000 psi reinforced concrete with pre-cast R. C. cover provided 2 recessed steel lifting eyes.
- Area-Drain Catch Basin — 2000 psi R.C. with cast iron grating cover.
- Sewer Pipe Concrete Encasement — 3000 psi R. C.

C. INSTALLATION

- General

Cutting and repairing

The work shall be laid out in advance and any cutting of construction shall be done with the written permission of the Owner's Representative or his authorized representative. Roughing in for pipes and fixtures shall be carried out along with the construction of the building of structure. Openings 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 pipes as maybe required without additional cost to the Owner.

All items to be embedded in concrete shall be thoroughly cleaned free from all rust, scale and paint.

Protection

The Plumbing Contractor shall protect all his work and materials from loss, injury or defacement. Protection of fixtures and materials shall be provided by boards, papers and or cloth as required, and any loss, damage or deface materials shall be replaced by the Plumbing Contractor at his own expense.

Installation

The work throughout shall be executed in accordance with the best practice of the trade and in the best and true manner under the direction of the licensed Sanitary Engineer or Master Plumber and to the satisfaction of the Owner's Representative who will interpret the intent of the contract drawings and

specifications and shall have the power to reject any work or materials which are not in full accordance herewith.

The piping in any location shall be closed-up, furred-in, or covered before the examination and testing of it by the government inspector, Owner or their representative.

- **Plumbing Fixtures and Equipment:**

All bids to be considered shall include installation of all plumbing fixtures shown on the drawing and specified by the Owner's Representative.

All plumbing fixtures and equipment shall be installed free and open in a manner to prove easy access for cleaning and shall be furnished with all brackets, cleats, plates and anchor required to support the fixtures and equipment rigidly in place.

After installation of any or all the plumbing fixtures for the building, same shall be kept clean and in working order and shall not be used by any one until the building has been formally turned over to and accepted by the Owner.

Fixtures, fittings, trims, faucets, escutcheon, traps and waste pipes that are exposed to view in finished spaces shall be brushed, with polished chromium plating or nickel finish, unless otherwise specified.

The Plumbing Contractor shall be responsible for the supply of fixture fittings (or trims) which are not provided with the fixture but required for the complete installation. All fixtures shall be carefully checked to determine the items that must be provided to complete the installation.

All fixtures shall be provided with the individual shut-off valve so that any fixture maybe separately controlled without affecting other fixtures supplied from the same distribution line.

All flushometer valves shall be equipped with vacuum breaking devices.

- **Fittings**

All change in size of soil waste and drain lines shall be made with reducing fittings or reducers.

Where it becomes necessary to use short-radius fittings in any other locations, prior written approval of the Project Engineer shall be obtained.

No fitting or a connection that offers abnormal obstruction to flow shall be used.

- **Cleanout Plugs and Traps**

 - **Cleanout Plugs**

Cleanout installed in connection with cast iron-bell and spigot shall consist of a long — sweep quarter bend, or one or two eight-bends extended to an easily accessible place, or where indicated on the drawings.

Traps

Every plumbing fixtures connected to the sanitary drainage system shall be equipped with a trap. Traps are specified to be supplied with the fixture, i.e. water closets and urinals.

Each trap shall be placed as near to the fixture as possible.

Traps installed on hub and spigot type shall be extra-heavy cast iron.

Traps installed on threaded type shall be recessed drainage pattern.

- **Sleeves and Supports**

General

Pipe sleeves, pipes support, and fixture shall be furnished and set, and the Contractor shall be responsible for their proper permanent locations.

Pipes shall not be permitted to pass through columns, footings, beams or ribs unless noted on the drawings or with the written approval of the Owner's Representative.

Pipe Sleeves

Pipe sleeves shall be installed and properly secured in place at all points where pipes pass through masonry or concrete.

Pipe sleeves except sleeves through footings shall be sufficient diameter to provide approximately 1/4" clearance around the pipe or insulation.

Pipe sleeves in walls and partition shall be cast-iron or steel pipe.

Flashing sleeves shall be installed where pipes pass through waterproofing membrane.

The sleeves shall be provided with an integral flashing flange or a clamping device to which a flashing shield can be clamped or soldered.

The space between the pipe sleeves shall be made watertight by inserting packed-oakum and filling the remaining space with poured lead or epoxy and caulking thoroughly.

Escutcheon shall be installed around all exposed pipes except water closet starts or bends passing through finished floors, walls or ceilings. Escutcheons shall be of sufficient outside diameter to cover the sleeve opening and shall fit snugly around the pipe. Escutcheons shall be cast—brass chrome plated of the approved size and make provided with a set screw to properly hold escutcheons in place.

Fixtures and Equipment Supports and Fastening

All fixtures and equipment shall be supported and fastened in a safe and satisfactory manner.

Inserts shall be securely anchored and the anchors shall be properly filled with mortar. Inserts shall be installed even or level with finish wall and shall be completely concealed with the fixtures and installed.

Where through bolts are used, they shall be provided plates or washers at the back and set so the heads, nuts, cap nuts and screw heads shall be chromium plated and shall be provided with chrome plated brass washer.

Use a water closet floor flange for mounting fixtures with an appropriate ball wax as gasket. Use stainless steel bolt and knots to fasten the flange and foot of the water closet.

- Ceilings, Plates, and Flashing:

Floor, Walls and Ceiling Plates:

Where uncovered or exposed pipes through floor, finish walls or finished ceilings, they shall be fitted with chromium plated steel plates.

Plates shall be large enough to completely close the hole around the pipe and shall be squared, octagonal, or round with the less dimension not less than 38mm (1 ½") larger than the diameter of the pipe.

- Joints and Connections

Fixture connections:

Closet bolts shall not be less than 6mm (1/4") in diameter and shall be equipped with chromium plated cap nuts washers.

The system shall hold this water for a full 30 minutes during which time there shall be drop more than 100mm (4").

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

- Pressure Test for Water System

Upon completion of the roughing-in and before setting fixtures, the entire hot and cold water piping system shall be tested at a hydrostatic pressure one-and-half times the expected working pressure in the system when in operation, and proved tight this pressure (but not less than 10.57 kg/c.m. or 150 psi) for a period of two hours. Where the portion of the water piping system is concealed before completion, this portion shall be tested separately in a manner similar to the described for the entire system and in the presence of the Owner's Representative.

- Leakage Test for the Water System

Leakage test shall be conducted after the satisfactory completion of the pressure test and shall consist of an examination of all joints for leakage test for the completed pipeline.

The pressure to be maintained during the test shall be the designed working pressure of the system.

Leakage test shall be made only after the minimum of 24 hours after the pipe to be tested has been filled with water. No test shall be made until at least 7 days after the last concrete thrust or reaction backing has been cast with standard cement.

The duration of each leakage test shall be two hours unless otherwise specified by the Project Engineer.

Each section of pipeline shall be slowly filled with water and the specified test pressure measured at the point of lowest elevation shall be applied by means of a positive displacement type pump, in manner satisfactorily to the Owner's Representative.

Before starting the leakage test, all air shall be expelled from the pipe. All exposed pipes, fittings and valves, joints shall be examined for leakage during the test.

ALLOWABLE LEAKAGE RATE PER 100 JOINTS OR PIPE DIAMETER AT PRESSURE STIPULATED.

PRESSURE		LEAKAGE RATE	
PSI	Kg/cm2	Liters/Hour	Liters/2Hour
50	3.50	1.45	2.90
75	5.30	1.75	3.50
100	7.00	2.05	4.10
125	8.80	2.30	4.60
150	10.50	2.50	5.00
200	14.00	2.90	5.80

- Defective Work
If inspection or test shows any defect, such work or materials shall be replaced and the inspection and test repeated until satisfactory to the Owner's Representative.

All repairs to piping shall be made of new materials at the expense of the Contractor.

No caulking of screw joints or holes will be accepted.

- Disinfection of Water Distribution System
The entire water system shall be thoroughly flushed and disinfected with chlorine before it is placed in operation.

Chlorinating materials shall be either liquid chlorine or hypochlorite, as specified, and shall be introduced into the water lines in a manner approved by the Owner's Representative.

The chlorine dosage shall be such as to provide not less than 50mg per liter of available chlorine.

Following a contact period of not less than 24 hours, the heavily chlorinated water shall be flushed from the system with clean water until the residual chlorine content is not greater than 2 tenths (0.02) mg/L. All valves in water lines being sterilized shall be closed several times during the testing period.

- **Painting**

All exposed soil, waste and vent piping of cast-iron is asphalt or tar coated shall be given two coats of shellac and two coats of oil enamel finish coating.

Color Code

All exposed piping, shall be adequately and durably identified by distinctive color paints as follows:

Cold water pipe	-	Blue
Hot water pipe	-	Blue with Red bands at 1.00m on center
Aluminum	-	Gray Green
Storm water pipe	-	
Sewerage pipe	-	Black
Vent pipe	-	

D. GUARANTEE

- The Plumbing Contractor shall furnish to the Owner a written guarantee covering the satisfactory operation of the plumbing installation in all its part for a period of one year after date of acceptance. During this period the plumbing contractor shall repair or replace any defective work and pay for any repair or replacement cost

E. As-Built Drawings

The plumbing Contractor, shall mark down with the red pencil on the two sets of plumbing plans all the revision, omissions, and or additions to various plumbing installation, drawings as the construction progress. One set of the plans as marked shall be submitted to the Project Engineer after completion of the work.

Before the final payment is made to the Contractor, he shall submit to the Owner, As-Built drawing incorporating all the change made and noted in the marked plans retained by him. The As-Built Drawings shall be prepared on reproducible form.

The Plumbing Contractor shall prepare and submit the As-Built Drawings without extra cost to the Owner.

F. Miscellaneous

- Throughout the construction period, open ends of all installed pipelines shall be kept closed by temporary plugs. Drainage lines shall not be kept closed by temporary plugs. Drainage lines shall not be used to conduct dirty construction wash-water, especially those with cement, to avoid possible clogging.
- The contractor shall provide a temporary fire protection system at the building during the construction period. This shall be of sufficient capacity to put out any fire that may be breaking out at any of the building rooms due to the construction operations. This is in addition to temporary extinguisher required.
- A temporary potable water supply shall be available to construction workers at each building room as the construction work progress.
- A temporary human excreta disposal system shall be provided by the Contractor to serve the workers during the construction period.

ELECTRICAL WORKS

I. GENERAL PROVISIONS:

A. WORK DESCRIPTION, GENERAL:

- The work to be done under this specification consist of fabrication, complete details of the electrical works at the subject premises and all work and materials incidental to the proper completion of the installation except those portion of the work which are expressly stated to be done by others.
- All works shall be in accordance with governing codes and regulations and with the specifications.
- The requirements with regards to materials and workmanship specify the required standards for the furnishing of all labor, materials, and appliances necessary for the complete installation of the work specified herein and indicated on the drawings.
- These specifications are intended to provide a broad outline of the required installation but are not intended to include all details of design and construction.

B. CODES, INSPECTION, PERMITS AND FEES

- The work under this contract is to be installed according to the latest requirements of the following:

1. Philippine National Building Code
 2. Philippine Electrical Code
 3. Electric Cooperative in that area
- All construction permits and fees required for these works shall obtain by and at the expense of the Contractor. The Contractor shall furnish the Project Engineer and the Owner of the final certificate of inspection and approval from the concerned government authorities after the completion of the work. The Contractor shall prepare all shop drawings, as-built plans and other paper work required by the approving authorities.
 - The Contractor shall secure approval from authorities of all plans for construction.

C. RECORD OF DRAWINGS

- The contractor shall record all deviations of the actual installation based on the contract drawings. Upon completion of work, the Contractor shall submit two copies of the as-built drawings indicating the work installed and finished including new information (revisions) not originally shown in the contract drawings to the Project Engineers for the approval as to conformance with the design concepts and compliance with pertinent code provisions. After such approval, the Contractor shall submit the as-built drawings original to the Owner.

D. COORDINATION

- Coordinate timing of installation with work of other trades.
- Systems provided shall be completed and operable and shall include required accessories fastenings and supports.
- Determine required locations, arrangements and quantities of equipment and materials from drawings, schedules and specifications.
- All equipment shall be installed in strict compliance with manufacturer's recommendations.
- On certain items of equipment specified on other contracts requiring electrical connections, the Contractor shall provide such connections as required.

E. MINOR MODIFICATIONS

- The plans as drawn are based upon architectural plans and details. Show conditions as accurately as possible to indicate them to scale. The plans do

not show all fittings necessary to fit the building conditions. The location of outlets, apparatus, and equipment shown on the plan are just approximated. The Contractor shall be responsible for the proper location in order to make them fit, with architectural details and instructions from Project Engineer representative at the site.

F. GUARANTEE

- The Contractor shall guarantee that the electrical system is free from all grounds, from all-defective workmanship and materials that will remain in good condition for a period of one year from the date of acceptance of work. This Contractor at his own expense shall repair any defects appearing within the aforementioned period.
- The Contractor shall indemnify and save the Owner, the Project Engineer from and against all liability for damage arising from injuries or disabilities to persons or damage to property occasioned by an act or omissions of the Contractor or any of his subcontractors including any and all expenses, legal or otherwise which may be incurred by the Owner, and the Project Engineer in the defense of any claim, action and suit.

G. APPROVALS, SUBSTITUTIONS, Etc.

- Wherever hereafter the word "Approval" or "Approved" (make, type, size, arrangement, etc.) are used specifically with regard to manufactured items, etc., or wherever it is desired to substitute a different make or type, all information pertinent to the adequacy and adaptability of the proposed apparatus, shall be submitted to the Project Engineer for their approval before the apparatus is ordered or installed

H. SUB-CONTRACTS, Etc.

- This Contractor shall be held fully responsible for the work of any sub-contractor or manufacturer performing work for or supplying materials as it is intended that the entire electrical work when finally delivered to the Owner shall be ready in every respect for satisfactory and efficient operation.

I. WORKMANSHIP

- The work throughout shall be executed in the best and most thorough manner to the satisfaction of the Project Engineer, who will interpret the meaning of the drawings and specifications and shall have power to reject any works and materials which in their judgment are not fully in accordance therewith.

II. BASIC MATERIALS AND METHODS

A. GENERAL

- Furnish and install all conduits, joints, outlet boxes, wires and miscellaneous materials required for wiring, as specified herein and as shown on drawings.
- Furnish and install all power and control wiring to all equipment except as otherwise specified.
- Perform test and adjustments and submit specific reports herein.

B. POLYVINYL CHLORIDE CONDUIT

- General: Standard trade size, heavy wall, manufactured to NEMA TC — 2 type rated for 90-degree C cable.
- Materials: Polyvinyl chloride conduit extruded use Atlanta or approved equivalent.
- Nominal Size 20mm diameter minimum
- Couplings and Fittings
- Use Limitations
 - As specified in the latest edition of the PEC.
 - Not permitted where subject to mechanical damage
- Pulling Hardware: flat fish tape with ball and flexible leather or polyethylene or manila rope Use of steel pulling cable not permitted

C. CONDUIT INSTALLATION

- General: Install in accordance with applicable codes and recognized standard of good practice.
- Actual routing subject to approval
- Joints: Make with approved couplings and unions to provide electrically continuous and moisture tight systems.

D. CONDUCTOR INSTALLATION

- Place all wiring, in a raceway or types indicated. Provide all required and indicated accessories for proper installation of all wiring

- Splicing:
Permissible only in junction boxes or similar accessible location. Number of splices held to absolute minimum.

E. DISTRIBUTION PANEL BOARD-FUSIBLE SWITCH

- General: Furnish and install distribution and power panel boards as indicated in the panel board schedule and where shown on the drawings. Panel boards shall be dead front safety types, equipped with quick-break fusible branch switches. The acceptable manufacturers of the panel board are General Electric and Square "D" or approved equal.
- Fusible switches: All fusible branch switches shall be quick-make, quick-break with visible blades and dual horsepower ratings. Switch handles shall physically indicate ON and OFF position. Such handles shall be able to accept three padlocks having heavy duty industrial type shackles. Covers shall be interlocked with the switch handles to prevent opening in the ON position. A means shall be provided to allow authorized personnel to release the interlock for inspection purposes when a switch is ON. A cardholder providing circuit identification shall be mounted on each branch switch. Switches shall be provided with a Bussman Fusetron fuses or as noted on the drawings.
- Bussing Assembly: Panel board bus structure and main lugs or main switch shall have current ratings as shown on the board schedule. The bus structure shall accommodate plug-on or bolted branch switches and motor starters as indicated in the panel board schedule without modification to the bus assembly. Provide solid neutral (S/N) assembly when required.
- Equipment Rating: Switches and panel board bus structure shall be safe and without failure withstand short circuits on the systems capable of delivering up to 50,000 amperes RMS symmetrical, unless otherwise noted.
- Cabinet: Panel board assembly shall be enclosed in a steel cabinet. The rigidity and gauge of steel is to be as specified in UL Standard for Cabinets. The size of wiring gutters shall be in accordance with UL Standard. Cabinets shall be equipped with a front door and shall be full finish steel with rust inhibiting primer and baked enamel finish

F. PANEL AND BOX

- Box, plain steel front, complete with hinged door, polished metal catch and lock Manufacturer's standard finish. Repair any damage to finish in a manner acceptable to the Project Engineer.

- Mounting: Flush and surface required.
- Cardholders on inside of the door with clear plastic cover and complete type written schedule of panel branch circuits. Leave spare circuits blank.
- Nameplate: Required at each panel.
- Installation: As shown maximum distance from the floor to the highest breaker (centerline) shall be 1.8m. Provided mounting materials required make connections specified as shown. Use collars around mounting bolts or equivalent means to provide air space between panels and walls.
- Warranty: A warranty for a period of one year shall be provided for failure of components resulting from normal use and/or factory defects.

III. LIGHTING

A. GENERAL

- Furnish, install and wire all equipment and materials required for complete lighting system as specified as shown.

B. LIGHTING FIXTURES

- Fluorescent Fixture: housing - #22 gauge, B. I. Sheet formed, screw with machine stove bolt and/or welded.
- Fluorescent Fixture Ballast: 230V, high power factor, rapid start, manufactured by Philips, G. E. or approved equal.

- Wiring:

General: Fixture wiring shall comply with fixture manufacturer's recommendation and PEC requirements.

Incandescent Fixtures: Use type TF wire in unwired fixtures. Minimum wire size 3.5mm".

- Location: Approximately as shown. Modify to avoid other equipment or structural components. Provide necessary conduits, wire, fittings and miscellaneous materials.

C. COORDINATION

- Coordination installation of all lighting fixtures with work of other trades.
- Coordination exact location of fixtures with respect to suspended ceiling layout to achieve uniformity.

D. SHOP DRAWINGS AND SAMPLES

- Prepare and submit for approval before manufacturing the following:

Fabrication drawings

Sample of each fixture

E. WARRANTY

- All fixture components shall be covered with a warranty for a period of one year against failure resulting from normal use and/or factory defects.

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**

Other documentary requirements under RA No. 9184

- (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.

