**Philippine Bidding Documents**

***Construction of Housing Units to Informal Settlers Families (ISF) -MDRRMO***

**PID NO. 2023 - 136**

Government of the Republic of the Philippines

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# Glossary of Terms, Abbreviations, and Acronyms

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

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

**BAC** – Bids and Awards Committee.

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

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

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

**BIR** – Bureau of Internal Revenue.

**BSP** – Bangko Sentral ng Pilipinas.

**CDA –** Cooperative Development Authority.

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

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

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

**CPI –** Consumer Price Index.

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

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

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

**GFI** – Government Financial Institution.

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

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

**GOP** – Government of the Philippines.

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

**LGUs –** Local Government Units.

**NFCC –** Net Financial Contracting Capacity.

**NGA –** National Government Agency.

**PCAB** – Philippine Contractors Accreditation Board.

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

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

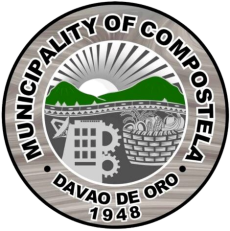
**PSA –** Philippine Statistics Authority.

**SEC –** Securities and Exchange Commission.

**SLCC –** Single Largest Completed Contract.

**UN –** United Nations.

# Section I. Invitation to Bid

Republic of the Philippines

Province of Davao de Oro

**MUNICIPALITY OF COMPOSTELA**

**BIDS AND AWARDS COMMITTEE**

CP#: 0909-279-9827

**Invitation to Bid for**

***Construction of Housing Units to Informal Settlers Families (ISF) -MDRRMO***

1. The *Municipality of Compostela*, through the *Trust Fund & Calamity Fund CY 2023*-intends to apply the sum of ***Five Million Five Hundred Twenty Three Thousand Eight Hundred Eight Pesos and Sixty Nine Centavos (P5,523,808.69)*** being the Approved Budget for the Contract (ABC) to payments under the contract for *Construction of Housing Units to Informal Settlers Families (ISF) - MDRRMO with Project Identification No. 2023-136.* Bids received in excess of the ABC shall be automatically rejected at bid opening.
2. The Municipality of Compostela now invites bids for the above Procurement Project. Completion of the Works is required ***150 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 Municipality of Compostela and inspect the Bidding Documents at the address given below from *8:00 a.m. to 5:00 p.m.*
5. A complete set of Bidding Documents may be acquired by interested bidders on ***November 13, 2023 to December 05, 2023*** from given address and website below *upon payment of the applicable fee for the Bidding Documents, pursuant to the latest Guidelines issued by the GPPB, in the amount of* ***Ten Thousand Pesos (P10,000.00)***. The Procuring Entity shall allow the bidder to present its proof of payment for the fees ***presented in person****.*

1. The Municipality of Compostelawill hold a Pre-Bid Conference on ***November 21, 2023 at 1:30 p.m*.** at Office of the BAC, 2nd Floor, Municipal Hall Building, Dagohoy St., Purok 2, Poblacion, Compostela, Davao de Orowhich shall beopen to prospective bidders.
2. Bids must be duly received by the BAC Secretariat through manual submission at the office address as indicated below on ***December 05, 2023 at 1:00 p.m.***Late bids shall not be accepted.

1. All bids must be accompanied by a bid security in any of the acceptable forms and in the amount stated in **ITB** Clause 16.
2. Bid opening shall be on ***December 05, 2023 at 1:30 p.m*.** at the given address below. Bids will be opened in the presence of the bidders’ representatives who choose to attend the activity.
3. The *Municipality of Compostela* 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.
4. For further information, please refer to:

**EDWARDFORD N. DAGATAN**

BAC Office

2nd Floor, Municipal Hall Building, Dagohoy St., Purok 2,

Poblacion, Compostela, Davao de Oro

CP#: 0909-279-9827

Email Add: compobacsec@gmail.com

1. You may visit [*www.philgeps.gov.ph*](http://www.philgeps.gov.ph)and search for Municipality of Compostela for downloading of Bidding Documents.

*November 13, 2023*

**LUCELIA L. PAQUEO**

BAC Chairperson

# Section II. Instructions to Bidders

### Scope of Bid

The Procuring Entity, *Municipality of Compostela,* invites Bids for the *Construction of Housing Units to Informal Settlers Families (ISF) - MDRRMO* with Project Identification Number *2023 – 136.*

*[Note: The Project Identification Number is assigned by the Procuring Entity based on its own coding scheme and is not the same as the PhilGEPS reference number, which is generated after the posting of the bid opportunity on the PhilGEPS website.]*

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

### Funding Information

1. The GOP through the source of funding as indicated below for *CY 2023* in the amount of *Five Million Five Hundred Twenty Three Thousand Eight Hundred Eight Pesos and Sixty Nine Centavos (P5,523,808.69).*
2. The source of funding is: LGUs, the *Trust Fund & Calamity Fund,* as approved by the Sanggunian.

### 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.

### 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.

### Eligible Bidders

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

1. 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.
2. The Bidders shall comply with the eligibility criteria under Section 23.4.2 of the 2016 IRR of RA No. 9184.

### 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.

### Subcontracts

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***.

* 1. 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.

### 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 at the *Office of the BAC, 2nd Floor, Municipal Hall Building, Dagohoy St., Purok 2, Poblacion, Compostela, Davao de Oro* as indicated in paragraph 6 of the **IB.**

### 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.

### Documents Comprising the Bid: Eligibility and Technical Components

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**.

1. 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.
2. 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**.
3. 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**.
4. 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**.

### Documents Comprising the Bid: Financial Component

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

### 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.

### 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.

### Bid and Payment Currencies

* 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.
  2. Payment of the contract price shall be made in: ***Philippine Pesos*.**

### Bid Security

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**.
2. The Bid and bid security shall be valid until ***One Hundred Twenty (120) days****.* Any bid not accompanied by an acceptable bid security shall be rejected by the Procuring Entity as non-responsive.

### 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.

### 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.**

### Opening and Preliminary Examination of Bids

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.

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

### Detailed Evaluation and Comparison of Bids

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.
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.
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.

### 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**.

### Signing of the Contract

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

# 

# Section III. Bid Data Sheet

**Bid Data Sheet**

|  |  |  |  |
| --- | --- | --- | --- |
| **ITB Clause** |  | | |
| 5.2 | For this purpose, contracts similar to the Project refer to contracts which have the same major categories of work, which shall be:  ***MASONRY WORKS, CARPENTRY WORKS, ELECTRICAL WORKS, PLUMBING WORKS*** | | |
| 7.1 | ***Subcontracting is not allowed.*** | | |
| 10.3 | *No further instruction.* | | |
| 10.4 | The key personnel must meet the required minimum years of experience set below: | | |
|  | Key Personnel  Project Engineer  Foreman  Mason  Carpenter  Steel Man  Electrician  Plumber | General Experience  3 years  3 years  3 years  3 years  3 years  3 years  3 years | Relevant Experience  1 year  1 year  1 year  1 year  1 year  1 year  1 year |
| 10.5 | The minimum major equipment requirements are the following: | | |
| Equipment  Excavator  Dumptruck  Concrete Mixer | Capacity | Number of Units  1  1  1 |
| 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:   1. The amount of not less than P 110,476.17 *[Two percent (2%) of ABC],* if bid security is in cash, cashier’s/manager’s check, bank draft/guarantee or irrevocable letter of credit; 2. The amount of not less than P 276,190.43 *[Five percent (5%) of ABC]* if bid security is in Surety Bond. | | |
| 19.2 | Partial bid is not allowed. The infrastructure project is packaged in a single lot and the lot shall not be divided into sub-lots for the purpose of bidding, evaluation, and contract award. | | |
| 20 | No further instructions. | | |
| 21 | Additional contract documents are the following: NONE | | |

# Section IV. General Conditions of Contract

### 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.

### 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).

### Possession of Site

* 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.
  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.

### 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.

### Performance Security

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.
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.

### 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.

### Warranty

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.
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**.

### 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.

### 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.

### 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.

### Program of Work

* 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.**
  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.

### 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.

### 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.

### 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.

### Operating and Maintenance Manuals

1. If required, the Contractor will provide “as built” Drawings and/or operating and maintenance manuals as specified in the **SCC.**
2. If the Contractor does not provide the Drawings and/or manuals by the dates stated above, or they do not receive the Procuring Entity’s Representative’s approval, the Procuring Entity’s Representative may withhold the amount stated in the **SCC** from payments due to the Contractor.

# Section V. Special Conditions of Contract

**Special Conditions of Contract**

|  |  |
| --- | --- |
| **GCC Clause** |  |
| 2 | *Not applicable.* |
| 4.1 | *The procuring entity shall give possession of all parts of the site to the contractor upon receipt of the NTP.* |
| 6 | The site investigation reports are: *none* |
| 7.2 | Five (5) years. |
| 10 | No dayworks are applicable to the contract. |
| 11.1 | The Contractor shall submit the Program of Work to the Procuring Entity’s Representative within *Ten (10)* days of delivery of the Notice of Award. |
| 11.2 | The amount to be withheld for late submission of an updated Program of Work is Fifty Thousand Pesos (P50,000.00). |
| 13 | The amount of the advance payment shall not exceed 15% of the total contract price which will only be released upon complete mobilization. |
| 14 | Materials and equipment delivered on the site but not completely put in place shall be included for payment. |
| 15.1 | The date by which operating and maintenance manuals are required is upon acceptance of the project.  The date by which “as built” drawings are required is prior to the release of certificate of completion. |
| 15.2 | The amount to be withheld for failing to produce “as built” drawings and/or operating and maintenance manuals by the date required is *one percent (1%) of the contract amount.* |

# Section VI. Specifications

PROJECT NAME: **CONSTRUCTION OF HOUSING UNITS FOR INFORMAL SETTLERS FAMILIES (ISF)**

PROJECT LOCATION: **BRGY. OSMEÑA COMPOSTELA, DAVAO DE ORO**

PROJECT DESCRIPTION: **CONSTRUCTION OF 29 UNITS WOODEN TYPE HOUSING**

**TECHNICALSPECIFICATIONS**

**INTRODUCTION**

The Technical Specifications describe in detail the work to be executed, the character and quality of materials and workmanship and the specific responsibilities of the Contractor that are not covered by the Conditions of Contract. The Technical Specification shall be read in conjunction with the plans and other contract documents.

Pertinent notes appearing in the Contract Plans or Drawings shall also be considered as part and parcel of the technical specifications. Such notes shall take precedence over the DPWH Standard Specifications and the Supplemental Specifications.

**ITEM 100 – CLEARING AND GRUBBING**

**100.1 Description**

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

**100.2 Construction Requirements**

**100.2.1 General**

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

**100.2.2 Clearing and Grubbing**

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

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

(2) In areas outside of the grading limits of cut and embankment areas, stumps and non-perishable solid objects shall be cut off not more than 150 mm (6 inches) above the ground line or low water level.

(3) In areas to be rounded at the top of cut slopes, stumps shall be cut off flush with or below the surface of the final slope line.

(4) Grubbing of pits, channel changes and ditches will be required only to the depth necessitated by the proposed excavation within such areas.

(5) In areas covered by cogon/talahib, wild grass and other vegetations, top soil shall be cut to a maximum depth of 150 mm below the original ground surface or asdesignated by the Engineer, and disposed outside the clearing and grubbing limits as indicated in the typical roadway section.

Except in areas to be excavated, stump holes and other holes from which obstructions are removed shall be backfilled with suitable material and compacted to the required density.

If perishable material is burned, it shall be burned under the constant care of component watchmen at such times and in such a manner that the surrounding vegetation, other adjacent property, or anything designated to remain on the right of way will not be jeopardized. If permitted, burning shall be done in accordance with applicable laws, ordinances, and regulation.

The Contractor shall use high intensity burning procedures, (i.e., incinerators, high stacking or pit and ditch burning with forced air supplements) that produce intense burning with little or no visible smoke emission during the burning process. At the conclusion of each burning session, the fire shall be completely extinguished so that no smoldering debris remains.

In the event that the Contractor is directed by the Engineer not to start burning operations or to suspend such operations because of hazardous weather conditions, material to be burned which interferes with subsequent construction operations shall be moved by the Contractor to temporary locations clear of construction operations and later, if directed by the Engineer, shall be placed on a designated spot and burned.

Materials and debris which cannot be burned and perishable materials may be disposed off by methods and at locations approved by the Engineer, on or off the project. If disposal is by burying, the debris shall be placed in layers with the material so disturbed to avoid nesting. Each layer shall be covered or mixed with earth material by the land-fill method to fill all voids. The top layer of material buried shall be covered with at least 300 mm (12 inches) of earth or other approved material and shall be graded, shaped and compacted to present a pleasing appearance. If the disposal location is off the project, the Contractor shall make all necessary arrangements with property owners in writing for obtaining suitable disposal locations which are outside the limits of view from the project. The cost involved shall be included in the unit bid price. A copy of such agreement shall be furnished to the Engineer. The disposal areas shall be seeded, fertilized and mulched at the Contractor’s expense.

Woody material may be disposed off by chipping. The wood chips may be used for mulch, slope erosion control or may be uniformly spread over selected areas as directed by theEngineer. Wood chips used as mulch for slope erosion control shall have a maximum thickness of 12 mm (1/2 inch) and faces not exceeding 3900 mm² (6 square inches) on any individual surface area. Wood chips not designated for use under other sections shall be spread over the designated areas in layers not to exceed 75 mm (3 inches) loose thickness. Diseased trees shall be buried or disposed off as directed by the Engineer.

All merchantable timber in the clearing area which has not been removed from the right of way prior to the beginning of construction shall become the property of the Contractor, unless otherwise provided.

Low hanging branches and unsound or unsightly branches on trees or shrubs designated to remain shall be trimmed as directed. Branches of trees extending over the roadbed shall be Strimmed to give a clear height of 6 m (20 feet) above the roadbed surface. All trimming shall be done by skilled workmen and in accordance with good tree surgery practices.

Timber cut inside the area staked for clearing shall be felled within the area to be cleared.

**100.2.3 Individual Removal of Trees or Stumps**

Individual trees or stumps designated by the Engineer for removal and located in are as other than those established for clearing and grubbing and roadside cleanup shall be removed and disposed off as specified under Subsection 100.2.2 except trees removed shall be cut as nearly flush with the ground as practicable without removing stumps.

**100.3 Method of Measurement**

Measurement will be by one or more of the following alternate methods:

1. Area Basis. The work to be paid for shall be the number of hectares andfractions thereof acceptably cleared and grubbed within the limits indicated on the Plans or as may be adjusted in field staking by the Engineer. Areas not within the clearing and grubbing limits shown on the Plans or not staked for clearing and grubbing will not be measured for payment.

2. Lump-Sum Basis. When the Bill of Quantities contains a Clearing and Grubbinglump-sum item, no measurement of area will be made for such item.

3. Individual Unit Basis (Selective Clearing). The diameter of trees will be measuredat a height of 1.4 m (54 inches) above the ground. Trees less than 150 mm (6inches) in diameter will not be measured for payment.

When Bill of Quantities indicates measurement of trees by individual unit basis, the units will be designated and measured in accordance with the following schedule of sizes:

Diameter at height of 1.4 m  Pay Item Designation

Over 150 mm to 900 mm  Small

Over 900 mm  Large

**100.4 Basis of Payment**

The accepted quantities, measured as prescribed in Section 100.3, shall be paid for at the Contract unit price for each of the Pay Items listed below that is included in the Bill of Quantities, which price and payment shall be full compensation for furnishing all labor, equipment, tools and incidentals necessary to complete the work prescribed in this Item.

Payment will be made under:

Pay Item Number  Description  Unit of Measurement

100 (1)  Clearing and Grubbing  Hectare

100 (2)  Clearing and Grubbing  Lump Sum

100 (3)  Individual Removal of Trees, Small Each

100 (4)  Individual removal of Trees, Large Each

**ITEM 103 Structure Excavation**

**103.1 Description**

This Item shall consist of the necessary excavation for foundation of bridges, culverts, under drains, and other structures not otherwise provided for in the Specifications. Except as otherwise provided for pipe culverts, the backfilling of completed structures and the disposal of all excavated surplus materials, shall be in accordance with these Specifications and in reasonably close conformity with the Plans or as established by the Engineer. This Item shall include necessary diverting of live streams, bailing, pumping, draining, sheeting, bracing, and the necessary construction of cribs and cofferdams, and furnishing the materials therefore, and the subsequent removal of cribs and cofferdams and the placing of all necessary backfill. It shall also include the furnishing and placing of approved foundation fill material to replace unsuitable material encountered below the foundation elevation of structures. No allowance will be made for classification of different types of material encountered.

**103.2 Construction Requirements103.2.1 Clearing and Grubbing**

Prior to starting excavation operations in any area, all necessary clearing and grubbing in that area shall have been performed in accordance with Item 100, Clearing and Grubbing.

**103.2.2 Excavation**

1. General, all structures. The Contractor shall notify the Engineer sufficiently inadvance of the beginning of any excavation so that cross-sectional elevations andmeasurements may be taken on the undisturbed ground. The natural ground adjacent to the structure shall not be disturbed without permission of the Engineer.

Trenches or foundation pits for structures or structure footings shall be excavated to the lines and grades or elevations shown on the Plans or as staked by the Engineer. They shall be of sufficient size to permit the placing of structures or structure footings of the full width and length shown. The elevations of the bottoms of footings, as shown on the Plans, shall be considered as approximate only and the Engineer may order, in writing, such changes in dimensions or elevations of footings as may be deemed necessary, to secure a satisfactory foundation.

Boulders, logs, and other objectionable materials encountered in excavation shall be removed.

After each excavation is completed, the Contractor shall notify the Engineer to that effect and no footing, bedding material or pipe culvert shall be placed until the Engineer has approved the depth of excavation and the character of the foundation material.

(2) Structures other than pipe culverts. All rock or other hard foundation materialsshall be cleaned all loose materials, and cut to a firm surface, either level, stepped, or serrated as directed by the Engineer. All seams or crevices shall be cleaned and grouted. All loose and disintegrated rocks and thin strata shall be removed.

 When the footing is to rest on material other than rock, excavation to final grade shall not be made until just before the footing is to be placed. When the foundation material is sofor mucky or otherwise unsuitable, as determined by the Engineer, the Contractor shall remove the unsuitable material and backfill with approved granular material. This foundation fill shall be placed and compacted in 150 mm (6inches) layers up to the foundation elevation.

When foundation piles are used, the excavation of each pit shall be completed before the piles are driven and any placing of foundation fill shall be done after the piles are driven. After the driving is completed, all loose and displaced materials shall be removed, leaving a smooth, solid bed to receive the footing.

1. Pipe Culverts.The width of the pipe trench shall be sufficient to permit satisfactory jointing of the pipe and thorough tamping of the bedding material under and around the pipe.

Where rock, hardpan, or other unyielding material is encountered, it shall be removed below the foundation grade for a depth of at least 300 mm or 4 mm for each 100 mm of fill over the top of pipe, whichever is greater, but not to exceed three-quarters of the vertical inside diameter of the pipe. The width of the excavation shall be at least 300 mm (12 inches) greater than the horizontal outside diameter of the pipe. The excavation below grade shall be backfilled with selected fine compressible material, such as silty clay or loam, and lightly compacted inlayers not over 150 mm (6 inches) in un-compacted depth to form a uniform but yielding foundation.

Where a firm foundation is not encountered at the grade established, due to soft, spongy, or other unstable soil, such unstable soil under the pipe and for a width of at least one diameter on each side of the pipe shall be removed to the depth directed by the Engineer and replaced with approved granular foundation fill material properly compacted to provide adequate support for the pipe, unless other special construction methods are called for on the Plans.

The foundation surface shall provide a firm foundation of uniform density throughout the length of the culvert and, if directed by the Engineer, shall be cambered in the direction parallel to the pipe centerline.

Where pipe culverts are to be placed in trenches excavated in embankments, the excavation of each trench shall be performed after the embankment has been constructed to a plane parallel to the proposed profile grade and to such height above the bottom of the pipe as shown on the Plans or directed by the Engineer.

**103.2.3 Utilization of Excavated Materials**

All excavated materials, so far as suitable, shall be utilized as backfill or embankment. The surplus materials shall be disposed off in such manner as not to obstruct the stream or otherwise impair the efficiency or appearance of the structure. No excavated materials shall be deposited at any time so as to endanger the partly finished structure.

**103.2.4 Cofferdams**

Suitable and practically watertight cofferdams shall be used wherever water-bearing strata are encountered above the elevation of the bottom of the excavation. If requested, the Contractor shall submit drawings showing his proposed method of cofferdam construction, as directed by the Engineer. Cofferdams or cribs for foundation construction shall in general, be carried well below the bottoms of the footings and shall be well braced and as nearly watertight as practicable. In general, the interior dimensions of cofferdams shall be such as to give sufficient clearance for the construction of forms and the inspection of their exteriors, and to permit pumping outside of the forms. Cofferdams or cribs which are tilted or moved laterally during the process of sinking shall be righted or enlarged so as to provide the necessary clearance. When conditions are encountered which, as determined by the Engineer, render it impracticable to dewater the foundation before placing the footing, the Engineer may require the construction of a concrete foundation seal of such dimensions as he may consider necessary, and of such thickness as to resist any possible uplift. The concrete for such seal shall beplaced as shown on the Plans or directed by the Engineer. The foundation shall then bedewatered and the footing placed. When weighted cribs are employed and the mass isutilized to overcome partially the hydrostatic pressure acting against the bottom of the foundation seal, special anchorage such as dowels or keys shall be provided to transfer the entire mass of the crib to the foundation seal. When a foundation seal is placed under water, the cofferdams shall be vented or ported at low water level as directed. Cofferdams shall be constructed so as to protect green concrete against damage from sudden rising of the stream and to prevent damage to the foundation by erosion. No timber or bracing shall be left in cofferdams or cribs in such a way as to extend into substructure masonry, without written permission from the Engineer. Any pumping that may be permitted from the interior of any foundation enclosure shall be done in such a manner as to preclude the possibility of any portion of the concrete material being carried away. Any pumping required during the placing of concrete, or for a period of at least 24 hours thereafter, shall be done from a suitable sump located outside the concrete forms. Pumping to dewater a sealed cofferdam shall not commence until the seal has set sufficiently to withstand the hydrostatic pressure. Unless otherwise provided, cofferdams or cribs, with all sheeting and bracing involved therewith, shall be removed by the Contractor after the completion of the substructure. Removal shall be effected in such manner as not to disturb or mar finished masonry.

**103.2.5 Preservation of Channel**

Unless otherwise permitted, no excavation shall be made outside of caissons, cribs, cofferdams, or sheet piling, and the natural stream bed adjacent to structure shall not be disturbed without permission from the Engineer. If any excavation or dredging is made at the side of the structure before caissons, cribs, or cofferdams are sunk in place, the Contractor shall, after the foundation base is in place, backfill all such excavations to the original ground surface or stream bed with material satisfactory to the Engineer.

**103.2.6 Backfill and Embankment for Structures Other Than Pipe Culverts**

 Excavated areas around structures shall be backfilled with free draining granular material approved by the Engineer and placed in horizontal layers not over 150 mm (6 inches) in thickness, to the level of the original ground surface. Each layer shall be moistened or dried as required and thoroughly compacted with mechanical tampers. In placing backfills or embankment, the material shall be placed simultaneously in so far as possible to approximately the same elevation on both sides of an abutment, pier, or wall. If conditions require placing backfill or embankment appreciably higher on one side than on the opposite side, the additional material on the higher side shall not be placed until the masonry has been in place for 14 days, or until tests made by the laboratory under the supervision of the Engineer establishes that the masonry has attained sufficient strength to withstand any pressure created by the methods used and materials placed without damage or strain beyond a safe factor. Backfill or embankment shall not be placed behind the walls of concrete culverts or abutments or rigid frame structures until the top slab is placed and cured. Backfill and embankment behind abutments held at the top by the superstructure, and behind the side walls of culverts, shall be carried up simultaneously behind opposite abutments or sidewalls. All embankments adjacent to structures shall be constructed in horizontal layers and compacted as prescribed in Subsection 104.3.3 except that mechanical tampers may be used for the required compaction. Special care shall be taken to prevent any wedging action against the structure and slopes bounding or within the areas to be filled shall be benched or serrated to prevent wedge action. The placing of embankment and the benching of slopes shall continue in such a manner that at all times there will be horizontal berm of thoroughly compacted material for a distance at least equal to the height of the abutment or wall to the backfilled against except insofar as undisturbed material obtrudes upon the area. Broken rock or coarse sand and gravel shall be provided for a drainage filter at weep holes as shown on the Plans.

**103.2.7 Bedding, Backfill, and Embankment for Pipe Culverts**

Bedding, Backfill and Embankment for pipe culverts shall be done in accordance with Item 500, Pipe Culverts and Storm Drains.

**103.3 Method of Measurement**

**103.3.1 Structure Excavation**

The volume of excavation to be paid for will be the number of cubic metres measured in original position of material acceptably excavated in conformity with the Plans or as directed by the Engineer, but in no case, except as noted, will any of the following volumes be included in the measurement for payment:

(1) The volume outside of vertical planes 450 mm (18 inches) outside of and parallel to the neat lines of footings and the inside walls of pipe and pipe-arch culverts at their widest horizontal dimensions.

(2) The volume of excavation for culvert and sections outside the vertical plane for culverts stipulated in (1) above.

(3) The volume outside of neat lines of under drains as shown on the Plans, and outside the limits of foundation fill as ordered by the Engineer.

(4) The volume included within the staked limits of the roadway excavation, contiguous channel changes, ditches, etc., for which payment is otherwise provided in the Specification.

(5) Volume of water or other liquid resulting from construction operations and which can be pumped or drained away.

(6) The volume of any excavation performed prior to the taking of elevations and measurements of the undisturbed ground.(7) the volume of any material rehandled, except that where the Plans indicate or the Engineer directs the excavation after embankment has been placed and except that when installation of pipe culverts by the imperfect trench method specified in Item500 is required, the volume of material re-excavated as directed will be included.(8) The volume of excavation for footings ordered at a depth more than 1.5 m (60inches) below the lowest elevation for such footings shown on the original Contract Plans, unless the Bill of Quantities contains a pay item for excavation ordered below the elevations shown on the Plans for individual footings.

**103.3.2 Bridge Excavation**

The volume of excavation, designated on the Plans or in the Special Provisions as “Bridge Excavation” will be measured as described below and will be kept separate for pay purposes from the excavation for all structures. The volume of bridge excavation to be paid shall be the vertical 450 mm (18 inches)outside of and parallel to the neat lines of the footing. The vertical planes shall constitute the vertical faces of the volume for pay quantities regardless of excavation inside or outside of these planes.

**103.3.3 Foundation Fill**

The volume of foundation fill to be paid for will be the number of cubic metres measures in final position of the special granular material actually provided and placed below the foundation elevation of structures as specified, complete in place and accepted.

**103.3.4 Shoring, Cribbing, and Related Work**

Shoring, cribbing and related work whenever included as a pay item in Bill of Quantities will be paid for at the lump sum bid price. This work shall include furnishing, constructing, maintaining, and removing any and all shoring, cribbing, cofferdams, caissons, bracing, sheeting water control, and other operations necessary for the acceptable completion of excavation included in the work of this Section, to a depth of 1.5 m below the lowest elevation shown on the Plans for each separable foundation structure.

**103.3.5 Basis of Payment**

The accepted quantities, measured as prescribed in Section 103.3, shall be paid for at the contract unit price for each of the particular pay items listed below that is included in the Bill of Quantities. The payment shall constitute full compensation for the removal and disposal of excavated materials including all labor, equipment, tools and incidentals necessary to complete the work prescribed in this Item, except as follows:

(1) Any excavation for footings ordered at a depth more than 1.5 m below the lowest elevation shown on the original Contract Plans will be paid for as provided in Part K, Measurement and Payment, unless a pay item for excavation ordered below Plan elevation appears in the Bill of Quantities.

(2) Concrete will be measured and paid for as provided under Item 405, Structural Concrete.

(3) Any roadway or borrow excavation required in excess of the quantity excavated for structures will be measured and paid for as provided under Item 102.

(4) Shoring, cribbing, and related work required for excavation ordered more than 1.5m (60 inches ) below Plan elevation will be paid for in accordance with Part K.

Payment will be made under:

Pay Item Number  Description  Unit of Measurement

103 (1)  Structure Excavation  Cubic Meter

103 (2)  Bridge Excavation  Cubic Meter

103 (3)  Foundation Fill  Cubic Meter

103 (4)  Excavation ordered  Cubic Meter

Below Plan elevation

103 (5)  Shoring, cribbing,   Lump sum

And related work

103 (6)  Pipe culverts and Cubic Meter

Drainage excavation

**ITEM 104 - EMBANKMENT**

**104.1      Description**

This    Item   shall    consist   of   the   construction   of   embankment in accordance with   this   Specification   and   in conformity   with   the   lines, grades    and   dimensions   shown    on   the   Plans   or   established   by the Engineer.

**104.2       Material Requirements**  
Embankments    shall    be    constructed    of    suitable     materials,     in consonance with the following definitions:

**1.Suitable Material** - Material which is acceptable in accordance with the Contract and

which can be compacted in the manner specified in this Item. It can be common material

or rock.   
  
 **Selected   Borrow, for  topping** -  soil  of  such  gradation that all  particles will  pass  a

sieve with 75mm square opening and not  more  than   15  mass   percent  will  pass the  0.075 mm  (No.200)   sieve,   as  determined   by  AASHTO  T  11.The   material shall  have  a plasticity  index  of  not  more  than  6 as  determined by  AASl4TO  T  90 and   a  liquid  limit of  not  more   than   30  as determined  by AASHTO  T 89.

**2.Unsuitable   Material** -   Material   other   than   suitable   materials such as:

* 1. Materials containing detrimental quantities of organic materials, such as grass, roots and sewerage.
  2. Organic soils such as peat and muck.
  3. Soils with liquid limit exceeding 80 and/or plasticity index exceeding 55.
  4. Soils with a natural water content exceeding 100%.
  5. Soils with very low natural density, 800 kg/m3 or lower.
  6. Soils that cannot be properly compacted as determined by the Engineer.

**104.3       Construction Requirements**

**104.3.1    General**

Prior to  construction  of  embankment, all  necessary  clearing  and grubbing  in that area  shall have  been  performed  in conformity  with  Item 100,  Clearing and Grubbing. Embankment construction shall consist of constructing roadway embankments, including preparation of the areas  upon  which   they  are to be placed;  the construction  of dikes within   or adjacent to the roadway; the  placing  and  compacting of  approved  material within   roadway  areas where unsuitable material has been   removed; and the placing   and compacting of embankment material in holes, pits, and other depressions  within the roadway area.

Embankments and backfills shall contain no muck, peat, sod, roots or other deleterious matter. Rocks, broken concrete or other solid, bulky materials shall not be placed in embankment areas where piling is to be placed or driven.

Where   shown   on the  Plans  or directed  by the  Engineer,  the  surface of the  existing  ground   shall   be compacted  to a depth  of  150  mm  and  to the  specified requirements  of this  Item.

Where   provided on the  Plans  and  Bill of Quantities  the  top portions of  the   roadbed  in  both  cuts   and   embankments,   as   indicated,   shall consist  of selected borrow for topping   from  excavations.

**104.3.2 Methods of Construction**

Where   there   is evidence  of  discrepancies  on .the  actual   elevations and  that  shown   on  the Plans,  a  preconstruction  survey   referred  to  the datum   plane   used   in  the   approved  Plan  shall be  undertaken  by  the Contractor  under   the  control   of  the  Engineer  to  serve as  basis  for  the computation  of the  actual  volume   of the  embankment  materials.

When   embankment  is to  be  placed   and  compacted  on  hillsides,  or when new   embankment is    to    be    compacted    against   existing embankments,   or  when embankment   is  built  one-half  width   at  a time, the  existing  slopes   that   are  steeper  than 3: 1    when   measured  at  right angles  to  the  roadway  shall   be  continuously  benched over  those   areas as  the  work   is brought  up  in  layers. Benching  will  be  subject   to  the Engineer's  approval  and  shall  be  of sufficient  width  to  permit   operation of  placement  and compaction  equipment.  Each  horizontal cut  shall begin  at the  intersection  of the  original ground   and  the  vertical sides  of the  previous cuts. Material    thus  excavated shall   be   placed    and compacted  along  with  the  embankment material  in accordance  with  the procedure described  in this  Section.

Unless   shown   otherwise  on the  Plans  or special   Provisions,  where an  embankment  of less than   1.2  m  below   subgrade  is to  be  made,   all sod   and   vegetable   matter   shall be removed from   the   surface    upon which   the  embankment  is to  be  placed,   and  the cleared   surfaced shall be   completely   broken    up   by   plowing,   scarifying,    or   steeping to   a  minimum depth of  150  mm  except   as  provided  in  Subsection 102.2.2. This area shall then   be compacted as provided in Subsection 104.3.3. Sod  not required  to  be removed  shall be thoroughly  disc harrowed  or scarified  before   construction  of  embankment.     Wherever a compacted road surface containing  granular    materials  lies  within   900   mm  of  the subgrade,  such  old  road  surface shall  be scarified to a depth   of at least 150 mm whenever directed by the Engineer.  This scarified materials shall then be compacted as provided in Subsection 104.3.3.

When shoulder excavation is specified, the roadway shoulders shall be excavated to the depth and   width shown on the Plans. The shoulder material shall be removed without disturbing the adjacent existing base course material, and  all excess excavated  materials  shall be  disposed off  as  provided  in  Subsection  102.2.3. If necessary, the areas shall be compacted before being backfilled.

Roadway   embankment    of   earth    material     shall    be    placed     in horizontal   layers   not exceeding  200  mm,   loose  measurement,  and  shall be  compacted  as  specified  before  the  next layer  is  placed.   However, thicker   layer  maybe   placed   if vibratory  roller  with  high compactive effort is  used provided that  density   requirement  is  attained  and  as  approved by  the   Engineer. Trial section to this effect must be conducted and approved by the Engineer.  Effective spreading equipment shall be used on each lift to obtain   uniform thickness as determined in the trial section prior   to compaction. As the   compaction   of each   layer   progresses, continuous leveling and manipulating will be required to assure   uniform density. Water shall be added or removed, if necessary, in order to obtain   the required density. Removal of water   shall   be accomplished through aeration by plowing, blading,  discing,  or  other  methods satisfactory to the Engineer.

Where    embankment    is   to   be   constructed   across    low   swampy ground    that   will   not support   the    mass    of   trucks    or   other    hauling equipment,  the   lower   part   of  the  fill  may be  constructed   by  dumping successive   loads   in  a  uniformly  distributed   layer   of  a  thickness  not greater  than necessary to support the hauling  equipment while  placing subsequent layers.

When   excavated  material  contains  more   than  25  mass   percent  of rock  larger  than   150  mm in greatest  diameter  and  cannot   be  placed   in layers    of   the   thickness   prescribed   without crushing, pulverizing or further breaking  down   the   pieces resulting  from   excavation  methods, such  materials  may    be   placed    on   the   embankment    in   layers    not exceeding   in  thickness the approximate   average   size   of  the   larger rocks, but  not greater   than  600  mm.

Even though   the  thickness  of  layers   is  limited   as  provided  above, the   placing   of  individual rocks   and   boulders  greater   than   600   mm   in diameter  will   be   permitted   provided   that when  placed,  they  do  not exceed 1200 mm  in  height   and  provided  they  are  carefully distributed, with  the  interstices filled  with  finer  material to form  a dense  and  compact mass.

Each layer shall   be leveled    and   smoothed with   suitable leveling equipment and   by distribution of spalls   and   finer   fragments   of earth. Lifts of material containing more   than   25 mass  percent of rock larger than  150  mm  in greatest   dimensions  shall  not  be constructed  above   an elevation 300  mm  below   the  finished  subgrade.   The   balance  of  the embankment shall   be  composed of suitable  material  smoothed  and placed  in   layers  not   exceeding    200   mm      in   loose   thickness  and compacted  as specified for embankments.

Dumping  and  rolling areas   shall  be  kept  separate,  and  no  lift  shall be covered  by another until compaction  complies with  the  requirements of Subsection  104.3.3.

Hauling  and  leveling  equipment  shall  be  so  routed and  distributed over   each    layer   of   the   fill   in   such   a   manner   as   to   make  use   of compaction  effort   afforded   thereby  and  to minimize rutting  and  uneven compaction.

**104.3.3  Compaction**

Before commencing  the  formation  of embankments,  the  Contractor shall  submit   in writing to the Engineer for approval  his  proposals for the compaction  of  each  type  of  fill  material  to  be used  in  the  works.  The proposals    shall     include     the     relationship    between    the    types of compaction equipment, the number of passes   required and the method of adjusting moisture content.  The  Contractor  shall  carry  out  full  scale compaction  trials  on  areas  not less than 10  m wide  and  50  m  long  as required  by  the  Engineer  and   using his  proposed  procedures  or  such amendments  thereto   as may  be found  necessary to satisfy  the  Engineer that    all   the    specified requirements    regarding   compaction    can    be consistently  achieved.      Compaction  trials   with the   main   types   of  fill material to be used  in the works  shall  be completed  before  work  with the corresponding  materials will  be allowed to commence.

Throughout the periods  when  compaction of  earthwork is in progress, the  Contractor shall  adhere   to  the compaction procedures found  from  compaction  trials  for  each  type  of material being compacted, each   type   of  compaction   equipment   employed   and   each   degree    of compaction specified.

**Earth**

The Contractor    shall     compact    the     material    placed    in    all embankment  layers   and the material  scarified  to  the  designated  depth below  subgrade  in cut  sections,   until  a uniform density   of  not  less  than 95 mass  percent of the maximum  dry density determined  by AASHTO T 99 Method C, is attained,  at a moisture content   determined  by  Engineer to  be  suitable  for  such density.    Acceptance   of  compaction  may   be based on  adherence  to  an  approved  roller   pattern developed  as  set forth  in Item  106',  Compaction  Equipment and  Density "Control Strips.  
  
The   Engineer   shall   during   progress   of  the   Work,  make  density tests of compacted material in  accordance with AASHTO T  191,  T 205, or  other  approved  field   density  tests,  including  the use   of  properly calibrated nuclear testing  devices.   A correction for coarse particles may be made in accordance  with  AASHTO  T  224.     If,  by  such  tests,  the Engineer determines that the specified density and  moisture conditions have  not  been  attained, the  Contractor  shall  perform additional  work as may  be necessary to attain the  specified conditions.  
  
At  least  one  group  of three  in-situ  density tests  shall  be carried  out for each 500  m2 of each layer of compacted fill.

**Rock**

Density requirements will  not apply to portions of embankments constructed  of  materials  which cannot  be  tested  in  accordance  with approved methods.  
  
Embankment   materials   classified   as   rock    shall    be   deposited, spread and  leveled  the  full width  of the  fill  with sufficient  earth  or other fine   material  so  deposited  to  fill  the   interstices to   produce  a  dense compact embankment.     In addition, one  of the  rollers, vibrators, or compactors  meeting  the  requirements  set forth   in  Subsection  106.2.1, Compaction Equipment, shall  compact the  embankment full  width with a minimum of three-complete  passes for each layer of embankment.

**104.3.4   Protection of Roadbed During Construction**

During   the construction   of   the   roadway,   the   roadbed  shall    be maintained  in   such condition  that  it  will   be  well   drained  at  all  times. Side    ditches or   gutters   emptying   from cuts   to   embankments   or otherwise shall be so constructed as to avoid damage to embankments by erosion.

**104.3.5   Protection of Structure**

If embankment  can  be  deposited  on  one-side  only of abutments, wing  walls,   piers or culvert headwalls, care shall  be  taken  that the  area immediately adjacent to the  structure  is  not compacted to the  extent that it will  cause overturning of, or excessive pressure against the  structure. When   noted  on  the  Plans,   the  fill  adjacent  to  the  end  bent  of  a  bridge shall  not  be placed higher than  the  bottom  of the  backfill  of the  bent until the  superstructure  is  in  place. When embankment is to  be  placed on both sides  of  a concrete wall  or box  type  structure,  operations shall  be so conducted that the  embankment is always at approximately the  same elevation  on both sides  of the  structure.

**104.3.6   Rounding and Warping Slopes**

Rounding-Except in  solid  rock,  the  tops  and  bottoms of all  slopes, including  the  slopes of drainage  ditches,  shall  be  rounded as  indicated on the  Plans. A  layer  of  earth  overlaying  rock shall  be  rounded above the  rock  as done  in  earth  slopes.  
  
Warping-adjustments  in  slopes  shall   be  made   to  avoid   injury  in standing  trees   or  marring of weathered   rock,   or  to   harmonize  with existing  landscape features,  and  the  transition to  such adjusted slopes shall   be  gradual.      At  intersections  of  cuts  and  ftlls,   slopes  shall   be adjusted and  warped to  flow into each other or into the  natural  ground surfaces without noticeable  break.

**104.3.7· Finishing Roadbed and Slopes**

After the  roadbed  has  been  substantially  completed, the  full  width shall  be conditioned  by removing any  soft  or other unstable  material  that will  not compact properly or serve  the  intended purpose. The  resulting areas and  all  other low  sections,  holes  or depressions  shall  be  brought to grade  with suitable selected material.    Scarifying,  blading, dragging, rolling,    or  other  methods of  work  shall    be   performed   or  used   as necessary to  provide  a thoroughly  compacted roadbed shaped to  the grades  and   cross-sections  shown  on  the   Plans   or  as  staked  by  the Engineer.  
  
All  earth   slopes  shall  be  left with  roughened  surfaces  but shall  be reasonably  uniform,  without any  noticeable  break,  and   in  reasonably close  conformity with  the  Plans  or other surfaces indicated  on the  Plans or  as   staked  by  the   Engineer,  with  no  variations  therefrom  readily discernible  as viewed from  the  road.

**104.3.8   Serrated Slopes**

Cut   slopes  in   rippable   material   (soft   rock)   having    slope    ratios between 0.75:1   and  2:1 shall  be constructed so that  the  final  slope  line shall  consist of a  series  of small   horizontal steps. The  step  rise  and tread   dimensions  shall   be  shown  on  the  Plans.  No 'scaling  shall   be performed   on  the   stepped  slopes  except  for  removal 1      of  large   rocks which will  obviously be  a  safety  hazard  if they  fall  into the  ditchline  or roadway.

**104.3.9   Earth  Berms**

When  called  for  in the  Contract,  permanent earth  berms  shall  be constructed  of well   graded materials  with  no  rocks   having   a  diameter greater than  0.25  the  height  of the  berm.     When   local material is not acceptable, acceptable material shall be imported, as directed by the Engineer.

**Compacted Berm**

Compacted berm construction shall  consist of moistening or drying and  placing  material  as necessary  in  locations  shown on  the  drawings or as  established  by  the   Engineer. Material shall   contain no frozen material, roots, sod,   or other deleterious materials. Contractor shall take precaution to prevent material from escaping over the embankment slope. Shoulder surface beneath berm will be roughened to provide a bond between the berm and shoulder when completed. The  Contractor shall  compact the  material  placed until at least 90  mass  percent of the maximum density  is  obtained as  determined by AASHTO T 99,  Method C. The cross-section of the finished compacted berm shall reasonably conform to the typical cross-section as shown on the Plans.

**Uncompacted  Berm**

Uncompacted    berm    construction    shall     consist   of   drying,    if necessary and  placing material  in  locations  shown on  the  Plans   or as established by the  Engineer.    Material shall contain no frozen material, roots,   sod   or other deleterious   materials. Contractor   shall   take precautions to prevent material from escaping over the embankment slope.

**104.4 Method of Measurement**

The quantity of embankment to be paid for shall be the volume of material compacted in place, accepted by the Engineer and formed with material obtained from any source.  
  
Material    from     excavation    per   Item    102    which   is    used     in embankment   and  accepted  by   the    Engineer  will    be    paid    under Embankment and  such ·payment will  be deemed  to  include the  cost of excavating,  hauling,  stockpiling  and   all  other  costs  incidental  to the work.  
  
Material  for Selected Borrow topping will  be  measured  and  paid  for under the  same-conditions specified in  the  preceding  paragraph.

**104.5 Basis of Payment**

The  accepted quantities,  measured as  prescribed in Section  104.4, shall   be  paid    for· at the Contract  unit  price  for each of the  Pay  Items listed below that is included in the  Bill  of Quantities.    The  payment shall continue  full  compensation  for  placing  and   compacting  all materials including   all   labor,   equipment,   tools    and   incidentals   necessary     to complete the work prescribed  in this  Item.

Payment will be made under:

Pay  Item Number Description Unit of Measurement

104 (1) Embankment Cubic Meter

**ITEM 404 REINFORCING STEEL**

**404.1 Description**

This item shall consist of furnishing, bending, fabricating and placing of steel reinforcement of the type, size,shape and grade required in accordance with this Specification and in conformity with the requirementsshown on the Plans or as directed by the Engineer.

**404.2 Material Requirements**

Reinforcing steel shall meet the requirements of Item 710, Reinforcing Steel and Wire Rope.

**404.3 Construction Requirements**

**404.3.1 Order List**

Before materials are ordered, all order lists and bending diagrams shall be furnished by the Contractor, for approval of the Engineer. The approved of order lists and bending diagrams by the Engineer shall in no way relieve the Contractor of responsibility for the correctness of such lists and diagrams. Any expense incident to the revisions of materials furnished in accordance with such lists and diagrams to make them comply with the Plans shall be borne by the Contractor.

**404.3.2 Protection of Material**

Steel reinforcement shall be stored above the surface of the ground upon platforms, skid or other supports and shall be protected as far as practicable from mechanical injury and surface deterioration caused by exposure to conditions producing rust. When placed in the worked, reinforcement shall be free from dirt, detrimental rust, loose scale, paint, grease, oil, or other foreign materials. Reinforcement shall be free from injurious defects such as cracks and laminations. Rust, surface seams, surface irregularities or mill scale will not be cause for rejection, provided the minimum dimension, cross sectional area and tensile properties of the material meets the physical requirements for the size and grade of steel specified.

**404.3.3 Bending**

All reinforcing bars requiring bending shall be cold-bent to the shapes shown on the or required by the Engineer. Bars shall be bent around a circular pin having the following diameter (D) in relation to the diameter of the bar (d):

**Bends and Hooks**

Nominal diameter, (d), mm Pin diameter (D)

10 to 20 6d

25 to 28 8d

32 and greater 10d

Bends and hooks in stirrups or ties may be bent to the diameter of the principal bar enclosed therein.

**404.3.4 Placing and Fastening**

All steel reinforcement shall be accurately placed in the position shown on the Plans and firmly held there during the placing and setting of the concrete. Bars shall be tied at all intersections except where spacing is less than 300 mm in each directions, in which case, alternate intersections shall be tied. Ties shall be fastened on the inside. Distance from the forms shall be maintained by means of stays, blocks, ties, hangers, or other approved supports, so that it does not vary from the position indicated on the Plans by more than 6 mm. Blocks for holding reinforcement from contact with the forms shall be precast mortar blocks of approved shapes and dimensions. Layers of bars shall be separated by precast mortar blocks or by other equally suitable devices. The use of peebles, pieces of broken stone or brick, metal pipe and wooden blocks shall not be permitted. The minimum distance between bars shall be 40 mm. Reinforcement any member shall be placed, inspected and approved by the Engineer before the concrete begins. Concrete placed in violation of this provision maybe rejected and removal may be required.

**404.3.5 Splicing**

All reinforcement shall be furnished in the full lengths indicated on the Plans, Splicing of bars except where shown on the Plans will not be permitted without the written approval of the Engineer. Splices shall be staggered as far as possible and with a minimum separation of not less than 40 bar diameters. Not more than one-third of the bars may be spliced in the same cross-section, except where shown on the Plans.

**Unless otherwise shown on the Plans, bars shall be tapped a minimum distance of:**

Splice Grade 40 Grade 60 But not less than Tension 24 bar dia. 36 bar dia 300 mm

Compression 20 bar dia 24 bar dia 300 mm In tapped splices, the bars shall be placed in contact and wired together. Lapped splices will not be permitted at locations where the concrete section is insufficient to provide minimum clear distance of one and one-third(1 1/3) the maximum size of coarse aggregate between the splice and the nearest adjacent bar. Welding of reinforcing steel shall be done only if detailed on the Plans or if authorized by the Engineer in writing. Spiral reinforcement shall be spliced by lapping at least one and a half turns or by butt welding unless otherwise shown on the Plans.

**404.4 Method of Measurement**

The quantity of reinforcing steel to be paid for will be the final quantity placed and accepted in the completed structure. No allowance will be made for tie-wires, separators, wire chairs and other material used in fastening the reinforcing steel in place. No measurement or payment will be made for splices added by the Contractor. When there is no item for reinforcing steel in the Bill of Quantities, costs will be considered as incidental to the other items (i.e. structural concrete, masonry, etc.) in the Bill of Quantities.

**404.5 Basis of Payment**

The accepted quantity, measured as prescribed in Section 404.4 shall be paid for at the contract unit price for Reinforcing Steel which price and payment shall be full compensation for furnishing and placing all materials, including all labor, equipment, tools, and incidentals necessary to complete the work prescribed in this item.

Payment will be made under:

Pay Item No. Description Unit of Measurement

404 (1) Reinforcing Steel (d) Kilogram (kgs.)

**ITEM 405 STRUCTURAL CONCRETE**

**405.1 Description**

**405.1.1 Scope of Work**

This item shall consist of furnishing, bending, placing and finishing concrete in all structures except pavements in accordance with this Specification and conforming to the lines, grades, and dimensions shown on the Plans. Concrete shall consist of a mixture of Portland Cement, fine aggregate, course aggregate, admixture when specified or approved by the Engineer.

**405.1.2 Classes and Uses of Concrete**

Five classes of concrete are provided for in this item, namely: A, B, C, P and Seal. Each class shall be used in that part of the structure as called for on the Plans. The classes of concrete will generally be used as follows:

Class A – All superstructures and heavily reinforced substructures. The important parts of the structure included are slabs, beams, girders, columns, arch ribs, box culverts, reinforced abutments, retaining walls, and reinforced footings.

Class B – Footings, pedestals, massive pier shafts, pipe bedding, and gravity walls, unreinforced or with only a small amount of reinforcement.

Class C – Thin reinforced sections, precast R.C. piles and cribbing and for filler in steel grid floors.

Class P – Pre-stressed concrete structures and members.

Seal – Concrete deposited in water.

**405.2 Material Requirements**

**405.2.1 Portland Cement**

It shall conform to all the requirements of Subsection 311.2.1

**405.2.2 Fine Aggregate**

It shall conform to all the requirements of Subsection 311.2.2.

**405.2.3 Coarse Aggregate**

It shall conform to all the requirements of Subsection 311.2.3 except that graduation shall conform to Table 405.1.

***Table 405.1- Grading Requirements for Coarse Aggregate***

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Standard (mm) | Alternate  US  Standard | Class A | Class B | Class C | Class D | Class Seal | | 63 | 2- ½” |  |  |  |  |  | | 50 | 2‟ | 100 | 100 |  |  |  | | 37.5 | 1- ½” | 95- 100 | - |  |  |  | | 25 | 1” | - | 35 -70 | - | 100 | 95 - 100 | | 19.0 | ¾” | 35-70 | - | 100 | - | 25 - 60 | | 12.5 | ½” | - | 10 - 30 | 90 – 100 | - | 25 - 60 | | 9.5 | 3/8” | 10 -30 | - | 40-70 | 20-55 | - | | 4.75 | No. 4 | 0- 5 | 0 - 5 | 0 – 15” | 0 – 10” | 0 – 10” | |  | | | | | | |

````“The measured cement content shall be within plus (+) or minus (-) 2 mass percent of the design cement content.

**405.2.4 Water**

It shall conform to all the requirements of Subsection 311.2.4.

**405.2.5 Reinforcing Steel**

It shall conform to all the requirements of Item 404, Reinforcing Steel and Item 710, Reinforcing Steel and Wire Rope. For Deformed Billet-Steel Bars (AASHTO M 31/ ASTM A615).

**405.2.5.1 Placing Reinforcement**

(1) General

Steel reinforcement shall be provided as indicated, together with all necessary wire ties, chairs, spacers, supports and other devices necessary to install and secure the reinforcement properly. All reinforcement, when placed, shall be free from loose, flaky rust and scale, oil grease, clay, and other coating and foreign substances that would reduce or destroy its bond with concrete. Reinforcement shall be placed accurately and secured in place by use of metal or concrete supports, spacers and ties. Such supports shall be of sufficient strength to maintain the reinforcement in place throughout the concreting operations. The supports shall be used in such manner that they will not be exposed or contribute in any way to the discoloration or deterioration of the concrete.

(2) Splicing

Splices shall be by lapping to develop the full strength of the bars unless otherwise indicated, the minimum splice length shall be 40 times the bar diameter or the development length shown in Subsection 404.3.5,and Item 710, Reinforcing Steel-Splicing..

**405.2.5.2 Admixtures**

Admixtures shall conform to the requirements of Subsection 311.2.7.

**405.2.5.3 Curing Materials**

Curing materials shall conform to the requirements of Subsection 311.2.8.

**ITEM 901 MASONRY WORKS**

**901.1 Description**

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

**901.2 Materials Requirements**

Concrete masonry unit work of the type indicated shall be provided and shall be properly coordinated with the work of their trades. The source of supply of materials, which will affect the appearance of the finished work, shall be changed after the work has started.

**901.2.1 Concrete Hollow Blocks**

Concrete hollow blocks shall be standard machine fabricated and shall have fine and even texture and well defined edges. CHB shall conform to the requirements of ASTM Specifications C 90, grade with minimum compressive strength of 2.45 MPa (350 psi) (average of 5 specimens). Samples shall be tested and submitted to the Engineer. Dimensions and tolerances shall be as individually specified on the Plans.

**901.2.2 Mortar and Grout**

Unless otherwise indicated on the Plans, masonry mortar shall be composed of one (1) part Portland cement, and two (2) parts fine aggregate by volume to which hydrated lime has been added in an amount equal to ten (10) mass percent of the cement. For masonry walls not exceeding 1,8 m (1.6) in height, a mortar composed of one (1) part masonry cement and two (2) parts fine aggregate by volume may be substituted for the above mixture of Portland cement, lime and fine aggregate. Grout shall be of the same materials and proportion as mortar to which additional water shall be added to produce a consistency for pouring without segregation. Masonry cement shall conform to the requirements of AASHTO M 150 – 74 (ASTM C 91). Fine aggregate shall conform to the requirements of AASHTO M 45 (ASTM C 144). Water shall conform to the requirements of Item 714, Water.

**901.2.3 CHB Wall Reinforcement**

1. Vertical and Horizontal Reinforcement

Unless otherwise specified, the vertical and horizontal reinforcements for CHB shall be 10mm diameter at 400 for all wall thick nesses. Lap splices shall be 300 mm long (minimum).

2. Lintel Beams

Unless noted otherwise, lintel beams to be used shall have a depth of 0.20 m and the thickness of CHB wall, reinforced by 4 – 10 mm diameter with 10 mm diameter at 200 ties. Lintel beams shall be provided on top of CHB wall openings. It shall extend at least 0.30 m beyond each opening. Stiffener beams (detail similar to lintel beam) shall be provided on top CHB partition walls not anchored to regular reinforced concrete beams/girders. Stiffener beams shall be provided for walls exceeding 3 meters in height.

3. Dowels

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 size and spacing. Dowels shall be 600 mm long unless noted otherwise.

4. Movement Gaps

Where the top of CHB wall adjoins a beam provide 50 mm gap to be filled with a soft material likestyrophor. Where the sides of a CHB wall adjoin a column provide 50 mm gap to be filled with soft material likestyropor. Rebars shall be retained for stability.

5. Anchors

Where columns and beams poured without the CHB wall dowels, provide 16 mm diameter expansion bolts to match CHB reinforcement spacing. These anchors shall be drilled and hammered in placed. No chipping off of concrete columns and beams is allowed unless otherwise permitted by the Engineer.

**901.3 Construction Requirements**

**901.3.1 Laying Concrete Masonry Units**

**901.3.1.1 Workmanship**

Units shall be set plumb and true to line with level horizontal joints. Hollow units shall be laid with full mortar coverage on horizontal and vertical face shells, and at least 50 percent of the cells shall be filled with grout, the cells containing vertical reinforcements to be among those to be filled up. All cells of CHB walls from footing up to at least the ground floor level shall be filled up. Solid units shall be laid with full head and bed joints. Joints shall be uniform and approximately 10 mm wide unless otherwise indicated. Unless otherwise shown on the drawings, joints of exterior concrete masonry units that will be exposed and painted shall be cut flush and tooled finished with a 6.5 mm dept “V” joint for horizontal joints. Vertical joints between the horizontal joints shall be tooled flush. Joints of interior concrete masonry units shall be cut flush, and the blocks shall be given a cement plaster finish except as otherwise shown on the Drawings. The minimum of cement plaster shall be 10 mm.

**901.3.1.2 Setting Embedded Items**

All anchor bolts and miscellaneous metalwork embedded in masonry shall be set in accordance with setting plans or instructions furnished by trades supplying the metalwork. Care shall be exercised to insure that all anchors are completely surrounded by grout.

**901.3.1.3 Masonry Lintels**

The Contractor shall provide properly shored supports for construction of masonry lintels for opening in walls. Shoring shall not be removed for at least seven days after lintels are placed.

**901.3.1.4 Placing Reinforcing Bars and Grouting**

All reinforcing steel, except dowels in concrete, shall be accurately set in strict accordance with the Drawing sand the notes thereon. Vertical steel shall be secured firmly in place by means of frames or other suitable devices. Horizontal steel may be placed as the work progresses. In any core containing reinforcement, the distance between any masonry and the reinforcement shall be at least 12.7 mm (1/2 in) at all points. The masonry contractor shall furnish all tiles, spacers and supports required to hold steel in position during grouting. Cores shall be grouted in lifts not exceeding 1.22 m (4 ft) in height. Grout shall be thoroughly rodded. Splices in reinforcing bars shall be lapped at a distance sufficient to develop the stress in the bar, but not less than 40 bar diameters. Concrete hollow blocks shall be laid with all cells completely grouted from the wall footing up to the ground level. The rest of the concrete hollow blocks above ground shall have at least 50 percent of the cells grouted, including those containing the vertical reinforcements.

**901.3.1.5 Protection and Cleaning**

Corners shall be protected from damage, with substantial board covers. Mortar or grout stains on masonry work shall be removed immediately. Any masonry work showing stains from mortar or concrete, or grout at completion of work, shall be replaced or the entire masonry surface sandblasted to provide uniform approved appearance. In cleaning the block, only stiff fiber brushes and wooden scrapers shall be used. Metal implements or acids shall not be used for cleaning blocks. All imperfect joining, nail holes, chipped edges of corners, and similar defects shall be corrected or replaced as directed.

**901.4 Method of Measurement**

All masonry works shall be measured in square meters installed complete with plastering, mortar and grout and installing reinforcing bars as shown on the drawing and prescribed in the specification.

**901.5 Basis for Payments**

The accepted quantities measured as prescribed in Sub-Section 901.4 shall be paid for at the appropriate contract unit price for the pay item listed below as shown in the Bill of Quantities, which price and payment shall be full compensation for furnishing all materials, including all form and false work; for mixing, placing, furnishing, and curing the concrete; and for all labor, materials, equipment, tools and incidentals to complete the item.

Payment shall be made under:

Pay Item No. Description Unit of Measurement

414 (1) 150 mm thick CHB Walls square meter (m2)

With Cement plaster finish

414 (2) 100 mm thick CHB Walls square meter (m2)

With Cement plaster finish

**ITEM 903 – FORMWORKS AND FALSEWORKS**

This Item covers fabrication, erection, and removal of forms and falseworks for cast-in-place concrete.

**903.2 Material Requirements**

Forms shall be constructed with metal or timber, for timber forms, it is important that the moisture content of the timber that will be used to make the formwork is between 15 to 20 percent. Low moisture content means the timber is very dry thus it can absorb moisture from the wet concrete resulting to swelling and bulging of timber and weak hardened concrete. Use of tough resin as wood coating is the treatment used to overcome the moisture problem in timber formworks though painting the wood with varnish is an alternative cheaper treatment. Forms for surfaces which will be exposed to view when construction is completed shall be prefabricated plywood panel forms, job-built plywood forms, or forms that are lined with plywood of fiber board.

For metal forms, it is important that the metal used as sheating should be free from rust and non-reactive to concrete or concrete containing calcium oxide. Plywood or lined forms will not be required for surfaces which are normally submerged or not ordinarily exposed to view. Other types of forms, such as steel or unlined wooden forms, may be used for surface which are not restricted to plywood or lined forms, and may be used as backing for form linings. Forms are required above all extended footings.

**903.3 Construction Requirements**

**903.3.1 General**

Forms shall be fabricated, erected, and removed as specified herein and shall be of a type, size, shape, quality and strength to produce hardened concrete having the shape, lines and dimensions indicated on the drawings. The forms shall be true to line and grade in accordance with the tolerances as specified for cast-in-place concrete and shall be mortar tight and sufficiently rigid to resist deflection during concrete placement. The surface of forms shall be smooth and free from irregularities, dents, sags, and holes that would deface the finished surfaces.

The minimum thickness used for metal forms shall be 2.5mm or 3mm thick or of such thickness that the forms remain true to shape. For timber formworks plywood is used for sheating with a minimum thickness of 18 mm to 25 mm though the thickness of the plywood to be used will depend on the pressure that the wet concrete will put on the formwork. The design of formwork will specify the thickness of the plywood that will be incorporated in the project. All tie bars with bolts used in fastening forms should be countersunk to depth similar to the required concrete covering and patched with cement mortar. The use of approved internal steel ties or steel or plastic spacers shall be permitted. The fabricated spacer blocks shall have an embedded No. 16 G.I. Tie Wire with sufficient length to be attached to the reinforcing steel bars to hold the spacers in place after closure minimum wall thickness of 4 mm.

The design and construction of the formworks and falseworks shall be the responsibility of the Contractor and for approval of the Engineer. The Contractor shall employ competent professional engineering services to design forms to be approved by the Engineer and supervise the erection of all formworks needed for the completion of the project. All materials to be incorporated to the site shall be inspected and approved by the Engineer.

**903.3.2 Fabrication and Erection**

Formworks to be used shall conform to ACI 347 – Guide to Formwork for concrete. Forms shall be substantial and sufficiently tight to prevent leakage of mortar. Forms shall be braced or tied to maintain the desired position, shape, and alignment during and after concrete placement. Waters, studs, internal ties, and other form supports shall be sized and spaced so that proper working stresses are not exceeded. Joints in forms shall be bolted tightly and shall bear on solid construction. Forms shall be constructed so they can be removed without hammering, wedging, or prying against the concrete. Form ties shall be approved by the Engineer and shall be of the snap cone or she-bolt with cone type. The spacing of form ties shall be designed to withstand concrete pressures without bulging, spreading, or lifting of the forms. The forms shall produce finished surface that are from off-sets, ridges, waves, and concave or convex areas.

Forms to be reused shall be thoroughly cleaned and repaired. Split, frayed, delaminated, or otherwise damaged forms shall not be used. All form panels shall be placed in a neat, symmetrical pattern with level and continuous horizontal joints. The Contractor shall place special attention on mating forms to previously placed walls so as to minimize steps or rough transitions. Form panels shall be of the largest practical size to minimize joints and to improve rigidly which is to be designed by the formworks engineer of the Contractor. For engineered wood, available panels sizes of 1.20 m x 2.70 m and 3.0 m x 2.40 m can be ordered. Beams and slabs supported by concrete columns shall be formed in a way that the column forms can be removed without disturbing the supports of the beams or slabs.

Wherever the top of a wall will be exposed to weathering, the forms on at least one side shall not extend above the top of the wall and shall be brought to true line and grade. At other locations, forms for concrete which is to be finished to a specified elevation, slope, or contour, shall be brought to a true line and grade, or a wooden guide strip shall be provided at the proper location on the forms so that the top surface can be finished with a screed or template. At horizontal construction joints in walls, the forms on one side shall not extend more than 7 m above the joints.

When necessary, temporary openings shall be provided at the bottom of column and wall forms and at other points in order to facilitate cleaning and inspection prior to concrete placement. Unless shown otherwise on the drawings, all salient corners and edges of beams, columns, walls, slabs, and curbs shall be provided with a 25 mm by 25 mm chamfer formed by a wood or metal chamfer strip.

Forms for exposed surfaces and all steel forms shall be coated with non-staining form release agent which shall be applied just prior to placement of steel reinforcement. After coating with industrial lubricants such as form oil, any surplus form release coating on the form surface shall be removed. Wood forms for unexposed surfaces may be thoroughly wetted with water in lieu of coating with industrial lubricant immediately before concrete placement, except in freezing weather form release coating shall be used. Should misalignment of forms or screeds, excessive deflection of forms, or displacement of reinforcement occur during concrete placement, immediate corrective measure shall be taken to ensure acceptable lines and surface to required dimensions and cross sections. If any forms bulge or show excessive deflection, in the opinion of the Engineer, the concrete shall be removed and the forms shall be rebuilt and strengthened.

**903.3.3.2.1 Foundations for Formwork**

Proper foundations on ground, such as mudsills, spread footings, or pile footings should be provided. If soil under mudsills is or may become incapable of supporting superimposed loads without appreciable settlement, it should be stabilized or other means of support should provided.

**903.3.3 Safety**

Forms must be strong and sound (made of good quality and durable materials) in order to carry the full load and side pressure from freshly placed concrete. To ensure that forms are safe, correctly designed and strong enough for the expected load, Occupational Safety and Health Administration (OSHA) regulations under Section 1926.703 Safety and Heath Regulations for Construction, American Concrete Institute 347 (ACI 347) – Guide to Formwork recommendations under Section 3.1 Safety Precautions in Construction and Section 3.2 Construction Practices and Workmanship, and local code requirements for formwork should be followed.

**903.3.4 Delivery, Storage, Maintenance and Handling**

Any formwork with steel components should be stored in a dry place. Avoid direct sunlight on timber forms. Store form materials and accessories above ground with a minimum height of 100 mm on framework or blocking without twist or bend, and shall be covered with a suitable waterproof of covering providing adequate air circulation and free from dirt, Store and handle form coating to prevent contamination in accordance with manufacturer’s recommendation. For maintenance of the forms, use stiff brush and clean water for the cleaning of forms. Use scrapers only as a last resort for maintenance purposes. Keep forms well-oiled tp prevent delamination of plywood or rusting of stell and always oil the edges.

**903.3.5 Removal of Forms**

Forms, false works and centering shall not be removed or disturbed until the concrete has attained sufficient strength to safely support all dead and live loads, or until the concrete has attained the minimum percentage of specified design strength listed in the Table below. Shoring beneath beams or slabs shall be left in place and reinforced as necessary to carry any construction equipment or materials placed thereon.

No forms shall be removed without the approval of the Engineer. In general and under normal conditions, the Engineer will approve removal of forms after the following time has elapsed:

|  |  |  |
| --- | --- | --- |
| **Description of Structural Member** | **Period of time** | **Minimum% of Design Strength** |
| Walls, column and vertical sides of beams | 1 to 2 days | 70% |
| Beam soffits (props left under) | 7 days | 80% |
| Soffits of slabs (props left under) | 3 days | 70% |
| Removal of props to slabs: Soffits of slabs, for slabs spanning upto 4.5 m | 7 days | 70% |
| Removal of props to slabs: Soffits of slabs, for slabs spanning over 4.5 m | 14 days | 70% |
| Removal of props to beams and arches: Centering under girders, beam frames and arches spanning up to 6.0m | 14 days | 80% |
| Removal of props to beams and arches: Centering under girders, beam frames and arches spanning over 6.0m | 21 days | 80% |

Order and method of removing formwork:

a. Shuttering forming the vertical faces of walls, beams and columns sides should be removed first as they bear no load but only retain the concrete.

b. Shuttering forming soffit of slabs should be removed next.

c. Shuttering forming soffit of beams, girders or other heavily loaded shuttering should be removed in the end.

Care shall be taken into consideration during form rem oval to avoid surface gouging, corner or edge breakage, or other damage to the concrete. Immediately after form removal, any damaged or imperfect work shall be repaired as specified by the Engineer.

**903.3.5.1 Removal of Forms for Special Structures**

In continuous structures, support should not be released in any span until the first and second adjoining spans on each side have reached the specified strength. For pre stressed concrete construction, pre-tensioning and post-tensioning of strands, cables or roads can be done with or without side forms of the member in place. Bottom forms and supporting shores or falsework should remain in place until the member is capable of supporting its dead load and anticipated construction loads, as well as any formwork carried by the member. Side forms that remain in place during the transfer of pre-stressing force should be designed to allow for vertical and horizontal movements of the cast member during the pre-stressing operation. In all cases, the deflections of members due to pre-stressing force and the elastic deformation of forms or falsework should be considered in the design and removal of the forms. For reasons of safety, when using post-tensioned, cast-in-place elevated slabs, the contractor should be careful to ensure that supporting shores do not fall out due to lifting of the slab during tensioning. For large structures where the dead load of the member remains on the formwork during pre-stressing, displacement of the dead load toward end supports should be considered in the design of the forms and shoring, including sills or other foundation support.

For concrete structures with direct or indirect contact with sea water, sea water or brackish water shall not come in direct contact with concrete prior to the age in days indicated in the Table shown below.

|  |  |
| --- | --- |
| **Requirements for the Removal of Formwork for Concrete in Contact with Sea Water or Brackish Water** | |
| **Water Salinity (ppm dissolved salts)**  **(parts per million or mg/l of dissolved salts)** | **Days to Elapse prior to Salt Water Contact (days)** |
| 0 to 10,000 | Normal Curing |
| 10,000 to 20,000 | 15 |
| 20,000 to 30,000 | 25 |
| Over 30,000 | 30 |

**903.3.6 Quality Control and Inspection**

Materials and components used for formworks shall be examined for damage or excessive deterioration before use. Reuse of forms shall be allowed only if found suitable after necessary repairs. In case of timber forms, the inspection shall not only cover physical damages but also signs of attacks by decay, rot or insect attack or the development of splits. Reuse of job-built forms shall be permitted only when specifically approved by the Engineer.

The Contractor shall allow the Engineer to inspect the completed formwork and reinforcement, before carrying out any work, including fixing reinforcement adjacent to formwork and erecting formwork adjacent to reinforcement, which will make access to the formwork faces or reinforcement difficult. The Contractor shall inform the Engineer 24 hours before carrying out such work.

**903.4 Method of Measurement**

Forms installed for the forming of cast-in-place concrete in accordance to shop drawings and design calculations shall be measured in square meters (m²) or when the contract stipulates that the payment for formworks and falseworks will be on lump sum basis, the pay item will include all materials and components used for fabrication, erection and removal of forms. The quantity to be paid for shall be the square meters of formwork used and accepted by the Engineer or the lump sum bid price in the Contract.

**903.5 Basis of Payment**

The quantity measured as prescribed above shall be paid for at the Contract Unit Price or lump sum price bid for the pay item listed below that is included in the Bill of Quantities. This unit price shall cover full compensation for all materials, labor, tools, equipment, and related services necessary for the design, construction and removal of formwork and falsework. Properly supported members is required until the concrete is cured, set and hardened is also part of the Contract Unit Price.

Payment will be made under:

|  |  |  |
| --- | --- | --- |
| Pay item Number | Description | Unit of Measurement |
| 903 (1) | Formworks and Falseworks | Lump Sum |
| 903(2) | Formworks and Falseworks | Square Meter |

**ITEM 1001 STORM DRAINAGE AND SEWERAGE SYSTEM**

**1001.1 Description**

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

**1001.2 Material Requirements**

**1001.2.1** Materials for storm drainage system shall meet the requirements specified in the following

Standard specifications:

Portland Cement ASTM C-150

Fine and Coarse Aggregate ASTM C-33

Reinforcing Steel ASTM A-615

Non-reinforced Concrete Pipes ASTM C-14

Reinforce Concrete Pipes ASTM C-76

(AASHTO M-86)

Cast Iron Pipes

(for conductors and Downspout) ASTM A-74

Galvanized Iron Pipes Schedule 40

(for conductors and Downspout) ASTM A-120

Polyvinyl Chloride (PVC)

(for conductors and Downspout) ASTM 2729

Where the covers for catch basins, junction boxes, manholes and canals for grating are

required same shall be made of wrought iron and of the dimensions as shown on the Plans.

**1001.2.2**

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

Cast Iron Pipes and Fittings ASTM A-74

Pig Lead (for securing

And sealing joints) ASTM B 29-77

Polyvinyl Chloride Pipes (PVC)

And Fitting (where called in Plans) ASTM D 1784

Solvent Cement (for securing

PVC joints) ASTM D 2564

Where PVC pipes and fittings are used, joints shall be secured with rubber “O” ring or solvent cement, as the case maybe. Oakum for joints in bell and spigot pipes shall be made from hemp fiber, braided or twisted and oil impregnated free from lumps, dirt and extraneous matter.

**1001.3 Construction Requirements**

**1001.3.1 Installation of Pipes**

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

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

b. **Laying of Pipes**. Proper facilities shall be provided for lowering and placing pipes into trenches in order to prelude damage. Laying of pipes shall start upgrade with the spigot end of bell-and-spigot pipe, or the tongue end of tongue-and groove pipe, positioned towards the direction alignments shown in the Plans. The spigots or tongues shall be adjusted in bells or grooves to provide uniform space around joints to receive mortar. Blocking or wedging between spigot and bell or between tongue and groove to attain proper spacing shall be allowed provided such blocking/wedging shall not interfere with the caulking; and shall not affect the water tightness of the joint.

c. **Bell and Spigot Joint for Drain Pipe**. The first pipe shall be properly bedded at the required grade. Just below the spigot of the first unit, a sufficient space shall be provided for engaging the bell end of the second pipe. The spigot shall be carefully cleaned with a wet brush and the upper exterior portion applied with mortar to such a thickness as to bring the inner surfaces of the abutting pipes flush and even. The bell end of the second pipe shall be cleaned with a wet brush and uniformly matched with the spigot of the first pipe so that the sections are closely fitted. After the second pipe is laid, the remainder of the joint shall be fitted with mortar, and a bead shall be formed around the outside of the joints with sufficient amount of mortar. The inside of the joints shall be wiped and finished smooth. The mortar head of the outside shall immediately protected with a cover of wet burlap of wet earth for at least three (3) days for curing.

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

joint and to form a bead on the outside.

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

f. **Leaded Joints of cast-Iron Pipes**. Joints of cast-iron pipes shall be packed with braided or twisted oil impregnated hemp or oakum, properly caulked around the joint. The packing shall be at least 200 mm. below the rim of the hub or bell and this space shall be filled with molten pig lead in one continuous pouring. The “ring” of the pig lead formed around the joint shall be properly caulked by appropriate caulking tools to render the joint watertight.

**1001.3.2 Concrete Structures**

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

**1001.3.3 Sewer Connections and Clean-outs**

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

b. Clean-outs or rodding holes consisting of cast iron extensions with long sweep elbow fittings shall be provided at the ends of runs and at every change of directions. Clean-outs shall be capped with cast brass ferrules with threads and screwed-on removable brass plugs. Clean-outs extended outside the building

and raised to the level of finished grade shall be terminated with the same cast brass ferrule with brass plug set into a concrete slab shall be 150 mm. thick and 300 mm. square, finish flush with grade.

**1001.3.4 Incidental Earthwork**

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

**1001.3.5 Inspection and Quality Control**

Materials shall be inspected and accepted as to quality before same are installed. Pipings installed in trenches shall first be inspected, tested and approved by the Engineer before these are covered or backfilled. All defects/ leaks disclosed by the water test shall be remedied to the satisfaction of the Engineer and any extra cost shall be at the expense of the Contractor.

**1001.4 Method of Measurement**

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

**1001.5 Basis of Payment**

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

Payment will be made under:

Pay Item No. Description Unit of Measurement

1001.2 (a) Pipe and fittings (kind and size) Linear Meter (Lm)

1001.2 (b) Concrete Gutter Linear Meter (Lm)

1001.2 (c) Concrete canal Linear Meter (Lm)

1001.2 (d) W.I. Grating and Accessories Linear Meter

1001.2 (e) Catch basin Each

1001.2 (f) Junction Box Each

**ITEM 1002 PLUMBING**

**1002.1 Description**

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

**1002.2 Material Requirements**

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

**1002.2.1 Water Supply Pipes and Fittings**

a. Pipes and fitting materials shall be galvanized iron pipe schedule 40 conforming to specification requirements defined in ASTM A – 120 with threaded connection. Under roads where necessary shall be suitably protected as shown on the Plans. Fittings shall be malleable iron Type II, galvanized iron conforming to specification requirements defined in ASTM A 338

b. **Valves** for water supply shall be bronze body with threaded ends rated 21.0 kgf/cm square. All valves shall be gate valves unless otherwise specified. Gate valves shall have solid wedge body and discs conforming to specification requirements defined in ASTM B – 62. Globe valves shall have plug type discs with ferule threaded ends and bronze body.

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

d. Water Meter where required to be furnished by the Contractor shall be of the type tested and approved by MWSS or local water service provider.

**1002.2.3 Approved Alternate Pipes and Fittings**

Pipes and fitting for sanitary and potable water lines as approved alternate shall be Unplasticized Polyvinyl Chloride Pipes and Fittings (UPVC). Pipes and fittings shall be made of virgin materials conforming to specification requirements defined in ASTMD – 2241 and PNS 65 : 1986. Fittings shall be molded type and designed for solvent cement joint connection for water lines and rubber O-ring seal joint for sanitary lines.

**1002.2.4 Septic Tank**

The septic tank shall be provided as shown on the Plans including all pipe vents and fittings. The various construction materials such as concrete masonry work shall conform to the corresponding Items of this Specifications. Inlet and outlet pipes shall conform to the latest edition of the National Plumbing Code.

**1002.2.5 Plumbing Fixtures and Fittings**

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

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

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

c. Urinal shall be china vitreous, wall-hung wash out urinal with extended shields and integral flush spreader, concealed wall hanger pockets 19 mm. top spud complete with fitting and mounting accessories model make and color shall be approved by the Engineer.

**1002.2.6 Bathroom and Toilet Accessories**

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

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

c. Floor drain shall be made of stainless steel beehive type measuring 100 mm. x 100 mm., and provided with detachable stainless strainer expanded metal lath type.

d. Toilet paper holder shall be vitreous china wall mounted. Color shall reconcile with the adjacent fixture and facing tile works.

f. Faucet(s) shall be made of stainless steel for internal used.

g. Hose-bib(s) shall be made of bronze cast finish.

**1002.2.7 Special Plumbing Fixtures**

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

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

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

d. X-ray developing tank shall be made of cast iron white porcelain finish with three (3) compartment x-ray processing tank, drain plug, open standing drain, 19 mm. IPS inlet spud complete with stand and mounting accessories.

e. Squat bowl(s) shall be vitreous china, wash down squat bowl with integral foot treads, pail flushtype. Color, make and type to be approved by the Engineer.

f. Grease traps shall be made of cast bronze with detachable cover and mounting accessories.

**1002.2.8 Roof Drains, Downspout, Overflow Pipes and Steel Gratings**

The Contractor shall provide, fit and/or install necessary drains with strainers, where shown on the Plans. Each drain with strainer shall fit the size of the corresponding downspout (or roof leader) over which it is to be installed and in conformity with the following schedule:

a. Scrupper drains (for balconies, parapet) shall be made of bronze base with flashing. Flange threaded outlet and convex with integral flashing clamp bolted to flange.

b. “Josam” type drains shall be made of bronze base semi-dome with large free area, flashing clampand integral gravel stopper. To be used at roof decks, canopies, gutters, and elsewhere indicatedon the Plans.

c. Downspouts when encased with concrete, unless otherwise shown on the Plans shall be polyvinylchloride (PVC). Whether indicated or specified to be cast iron or galvanized iron the same shall meet the specification requirement as herein described.

d. Overflow pipes shall be made of galvanized iron pipe measuring at least 13 mm. diameter and spaced 200 mm. on center.

e. Steel grating shall be made of wrought iron metals of design on shop drawings approved and surfaces to be coated with shop finish.

**1002.2.9 Fire Protection System**

a. Fire hose cabinets shall be locally available consisting of 38 mm. diameter valve hose rack with nipple 30 mm. rubber lined hose cable with standing 4268 kg/cm square, nozzle 38 mm. Diameter brass, chromium plated.

b. Fire stand pipe system shall consist of risers and hose valves. Pipe shall be extra strong black iron. Valves to be high grade cast bronze mounted with standing 79.40 kg. working pressure as indicated on the Plans.

c. Fire extinguisher shall be portable, suitable for Class A, B, C fires mounted inside cabinet. Cabinet shall be full flush mounting door with aluminum trim for glass plate, frame and box shall be made of gauge 14 galvanized iron sheet with white interior and red exterior baked enamel finish over primer paint. Cabinet to be wall mounted and size to be able to accommodate the defined components.

d. Yard Hydrant where shown on the Plans shall match the integrated Fire Department requirements. Outlet shall be single 63 mm. diameter gate valves with chain connected caps.

**1002.2.10 Built-in Appliances**

Built-in appliances such as urinal trough, lavatory and slope sink shall be made as indicated on the Plans, exposed surfaces to be tile wains coating complete with fitting accessories required as practiced in this specialty trade.

**1002.3 Construction Requirements**

The Contractor before any installation work is started shall carefully examine the Plans and shall investigate actual structural and finishing work condition affecting all his work. Where actual condition necessitates a rearrangement of the approved pipe lay-out, the Contractor shall prepare Plan(s) of the proposed pipe layout for approval by the Engineer.

**1002.3.1 Installation of Soil, Waste, Drain and Vent Pipes**

a. All cast iron soil and drainage pipes shall be pitch 6 mm. per 300 mm. but in no case flatter than 3mm per 300 mm.

b. Horizontal lines shall be supported by well secured length heavy strap hangers. Vertical lines shall be secured strongly by hooks to the building frame and a suitable brackets or chairs shall be provided at the floor from which they start.

c. All main vertical soil and waste stacks shall be extended full size to and above the roof line to act as vents, except otherwise indicated on the Plans.

d. Vent pipes in roof spaces shall be run as possible to underside of roof with horizontal piping pitched down to stacks without forming traps. Vertical vent pipes may be connected into one main vent riser above the highest vented fixtures.

e. Where an end or circuit vent pipe from any fixtures is connected to an vent line serving other fixtures, the connection shall be at least 1.20 meter above the floor on which the fixtures are located.

f. Horizontal waste line receiving the discharge from two (2) of more fixtures shall be provided with end vents unless separate venting of fixtures is noted on the Plans.

g. All changes in pipe sizes on soil and waste lines shall be made with reducing fittings or recessed reducers. All changes in directions shall be made by appropriate use of 45 degrees wyes, half wyes, long sweep quarter bends or elbows may be used in soil and waste lines where the change indirection of flow is from the horizontal to the vertical and on the discharge from waste closets. Where it becomes necessary to use short radius fittings in other locations the approval of the Engineer shall be obtained prior to installation of the same.

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

i. Vent pipe shall be flashed and made watertight at the roof with roof cement or approved equivalent. Flashing shall be turned down into pipes.

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

k. Overhead horizontal runs of pipes shall be hung with adjustable wrought iron pipe hanger spaced not over 3.0 meters apart.

**1002.3.2 Water Pipes, Fittings and Connections**

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

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

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

c. Mains and Branches

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

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

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

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

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

d. Drain Cocks

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

e. Threaded Pipe Joints

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

f. Expansion and Contraction of Pipes

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

g. Fire Standpipe System

Fire standpipe system shall consist of risers and hose valve. Pipe shall be extra strong black iron. Valves tube underwriter’s approval high grade cast bronze mounted.

h. Valves and hose Bibs

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

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

3. All connection to domestic hot water heaters shall be equipped with unions between valve and tanks.

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

1. Valves up to and including 50 mm. diameter shall be threaded ends, rough bodies and finished trimmings, except those on chromium plated brass pipe.
2. Valves 63 mm. in diameter and larger shall have iron bodies, brass mounted and shall have either screws or flange ends.
3. Hose bibs shall be made of brass with 12.5 mm inlet threads, hexagon shoulders and 19 mm. male.

**1002.3.3 Fixtures, Equipment and fastenings**

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

work manship as practiced.

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

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

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

chromium plate finish.

**1002.3.4 Pipe hangers, Inserts and Supports**

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

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

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

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

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

**1002.3.5 Plates and Flashing**

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

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

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

**1002.3.6 Protection and Cleaning**

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

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

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

**1002.3.7 Inspection, Warranty Test and Disinfection**

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

**1002.3.7.1 Drainage System Test**

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

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

c. Where only the portion of the system is to be tested, the test shall be conducted in the same manner as described for the entire system except that a vertical stack 3.0 meter highest horizontal line to be tested may be installed and filled with water to maintain sufficient pressure or water pump may be used to supply the required pressure.

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

**1002.3.7.2 Water Test on System**

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

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

**1002.3.7.3 Defective Work**

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

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

c. Caulking of screwed joints or holes will be permitted.

**1002.3.7.4 Disinfection**

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

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

c. After a contact period of not less than sixteen (16) hours, heavily chlorinated water shall be flushed from the system with potable water.

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

**1002.3.8 As-built Drawings**

Upon completion of the work, the Contractor shall submit two (2) sets of prints with all as-built changes shown on the drawings in a neat workmanship manner. Such prints shall show changes or actual installation and conditions of the plumbing system in comparison with the original drawings.

**1002.4 Method of Measurement**

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

**1002.5 Basis of Payment**

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

Payment shall be made:

Pay Item No . Description Unit of Measurement

1002 (a) Galvanized Iron Pipes lengths

and Fittings (size and sch)

1002 (b) PVC Pipes lengths

and Fittings (size and sch)

1002 (c) Plumbing Fixtures set

1002 (d) Roof Drain with Strainer set

1002 (e) Fire Hose cabinet set

1002 (f) Fire Extinguisher Class A, B,C

(kgs.)with Cabinet set

**ITEM 1003 CARPENTRY AND JOINERY WORKS**

**1003.1 Description**

The work under this Item shall consist of furnishing all required materials, fabricated wood work, tools equipment and labor and performing all operations necessary for the satisfactory completion of all carpentry and joinery works in strict accord with applicable drawings, details and this specifications.

**1003.2 Material Requirements**

**1003.2.1 Lumber**

Lumber of the different species herein specified for the various parts of the structure shall be well seasoned, sawn straight, sun dried or kiln dried and free from defects such as loose unsound knots, pitch pockets, sapwood, cracks and other imperfections impairing its strength, durability and appearance.

**1003.2.1.1 Grade of Lumber and Usage**

a. Stress grade is seasoned, closed-grained and high quality lumber of the specified specie free from defects and suitable for sustaining heavy loads.

Stress grade lumber shall be used for wooden structural members subject to heavy loads, and subfloor framing embedded or in contact with concrete or masonry.

b. Stress grade lumber of the specified specie is generally of high quality, of good appearance, without imperfections, and suitable for use without waste due to defects and suitable also for natural finish. Select grade lumber shall be used for flooring, sidings, facia and base boards, trims, mouldings, millwork, railings, stairs, cabinet work, shelvings, doors, windows and frames of openings.

c. Common grade lumber has minimum tight medium knot not larger than 25 mm. in diameter, with minimal imperfections, without sapwood, without decay, insect holes, and suitable for use with some waste due to minor defects and suitable also for paint finish. Common grade lumber shall be used for light framework for wall partitions, ceiling joist and nailers.

**1003.2.1.2 Lumber Species and Usage**

Unless otherwise specified on the Plans, the following lumber species shall be used as indicated:

a. **Yacal**(stress grade) for structural member such as post, girders, girts, sleepers door and window frames set or in contact with concrete or masonry.

b. **Guijo**(select grade) for door and window frames set in wooden framework, for stairs, for roof

framing supporting ceramic or cement tiles, floor joist and other wooden structural parts.

c. **Apitong**(common grade) for roof framing supporting light roofing materials such as galvanized iron,aluminum or PVC sheets, for wall framing, ceiling joist, hangers and nailers.

d. **Tanguile**(select grade) for doors and windows, facia and base boards, trims, mouldings, millwork,railings, stairs, cabinet work, shelvings, flooring and siding.

e. **Narra**(select grade) for stair railings, flooring boards, wall panels, base boards, trims, mouldings,cabinet work, mill work, doors and windows when indicated as such in the Plans.

f. **Dao** (select grade) for parts of the structure as enumerated under Section 1003.2.1.2 (e), when indicated as such on the Plans.

**1003.2.1.3 Moisture Content**

Rough lumber for framing and siding boards shall be air-dried or sun-dried such that its moisture content shall not exceed 22 percent. Dressed lumber for exterior and interior finishing, for doors and windows, millwork, cabinet work and flooring boards shall be kiln-dried and shall not have a moisture content in excess of14 percent at the time of installation in the structure.

**1003.2.1.4 Substitution in Lumber Specie**

Any lumber equally good for the purpose intended may be substituted for the specific kind subject to the prior approval of the Engineer, provided the substitution shall be of equal or better specie acceptable to the Engineer. In case of substitution with better specie, no additional cost therefore shall be allowed to the Contractor.

**1003.2.2 Plyboard**

Plyboard shall be good grade and made of laminated wood strips of uniform width and thickness bounded together with water resistant resin glue. The laminated core shall be finished both faces with select grade tanguile or red lauan veneers not less than 2 mm. thick similarly bonded to the core. The plyboard of not less than 19 mm. thick shall be free from defects such as split in veneer, buckling or warping.

**1003.2.3 Plywood**

Plywood shall conform to the requirements of the Philippine Trade Standards 631 – 02. Thickness of a single layer laminae shall not be less than 2 mm. The laminae shall be superimposed in layers with grains crossingat right angles in successive layers to produce stiffness. The face veneers shall be rotary cut from select grade timber. The laminae and face veneers shall be bonded with water resistant resin glue, hot pressed and pressure treated. Ordinary tanguile or red lauan plywood with good quality face veneers, 6 mm. thick shall be used for double walling and ceiling not exposed to moisture; waterproof or marine plywood shall be used for ceiling exposed to moisture such as at toilets and eaves, ceiling to be finished with acrytex.

**1003.2.4 Lawanit**

Lawanit, when required per plans, shall be 6 mm. thick, tempered or oil impregnated for moisture/ water resistance. Texture of lawanit shall be subject to the approval of the Engineer.

**1003.2.5 Materials other than Lumber**

**1003.2.5.1 Plastic Sheet**

When required for counter top, plastic sheet such as Formica shall not be less than 1.50 mm. thick and shall have hard, durable and glossy surface resistant to stain, abrasion and heat. Color and design shall be as selected from the manufacturer’s standard and approved by the Engineer.

**1003.2.5.2 Glue**

Glue shall be from water resistant resins which, upon hardening, shall not dissolve nor lose its bond or holding power even when soaked with water for extended period. Glue in powder form be in sealed container and shall be without evidence of lumping or deterioration in quality.

**1003.2.5.3 Fasteners**

Nails, screw, bolts and straps shall be provided and used where suitable for fixing carpentry and joinery works. All fasteners shall be brand new and of adequate size to ensure rigidity of connections.

a. Nails of adequate size shall be steel wire, diamond-pointed, ribbed shank and bright finish.

b. Screws of adequate size shall be cadmium or brass plated steel with slotted head.

c. lag screws of adequate size, for anchoring heavy timber framing in concrete or masonry, shall be galvanized steel.

d. Bolts and nuts shall be of steel having a yield point of not less than 245 Mpa. Bolts shall have a square heads and provided with standard flat steel washers and hexagonal nuts. Threads shall conform to American coarse thread series. The threaded portion shall be long enough such that the nut can be tightened against the bolted members without any need for blocking. The bolt’s threaded end shall be finished smooth for ease of engaging and turning of the nut.

e. Wrought iron straps or angles, when require in conjunction with bolts and lag screws to provide proper anchorage, shall be of the shape and size shown on the Plans.

**1003.3 Construction Requirements**

**1003.3.1 Quality of Materials**

All materials to be incorporated in the carpentry and joinery works shall be of the quality specified under Section 2. Before incorporation in work, all materials shall have been inspected/ accepted by the Engineer or his authorized representative.

**1003.3.2 Storage and Protection of Materials**

Lumber and other materials shall be protected from dampness during and after delivery at the site. Materials shall be delivered well in advance of actual need and in adequate quantity to prelude delay in the work. Lumber shall be piled in orderly stack at least 150 mm. above ground and at

sheltered place where it will be of least obstruction to the work.

**1003.3.3 Shop Drawings**

Shop drawings complete with essential dimensions and details of construction, as may be required by the Engineer in connection with carpentry and joinery work, shall be submitted for approval before proceeding with the work.

**1003.3.4 Rough Carpentry**

Rough carpentry covers timber structural framing for roof, flooring, siding, partition and ceiling.

a. Framing shall be stress grade or common grade lumber of the specie specified under Section.

b. Rough carpentry shall be done true to lines, levels and dimensions. It shall be squared, aligned, plumbed and well fitted at joints.

c. Trusses and other roof framing shall be assembled, fitted and set to exact location and slope

indicated on the Plans.

d. Fasteners, connectors and anchors of appropriate type and number shall be provided and fitted where necessary.

e. Structural members shall not be cut, bored or notched for the passage of conduits or pipes without prior approval of the Engineer. Members damaged by such cutting or boring shall be reinforced by means of specifically formed and approved steel plates or shapes, otherwise, damaged structural members shall be removed and replaced to the satisfaction of the Engineer.

f. Timber framing in contact with concrete or masonry shall be treated with termite-proofing solution and after drying coated with bituminous paint.

**1003.3.5 Finished Carpentry**

Finished carpentry covers works on flooring, siding and ceiling board, stairs, cabinets, fabricated woodwork, millwork and trims

a. Framing lumber shall be select grade, free from defects and where exposed in finished work, shall be selected for color and grain.

b. Joints of framing shall be tenoned, mortised or doweled where suitable, closely fitted and secured with water resistant resins glue. Exterior joints shall be mitered and interior angles coped.

c. Panels shall be fitted, allow for contraction or expansion and insure that the panels remain in place without warping, splitting and opening of joints.

d. Plyboard shall be as specified under Section 1003.3.2.3 unless otherwise indicated on the Plans.

e. Plywood shall be specified under Section 1003.2.4.

f. Exposed edges of plywood or plywood for cabinets shall be provided with select garde hardwoodstrips, rabbetted as necessary, glued in place and secured with finishing nails. To prevent splitting, hardwood for trims shall be drilled before fastening with nails or screws.

g. Fabricated woodwork shall be done preferably at the shop. It shall be done true to details and

profiles indicated on the Plans. Where set against concrete or masonry, woodwork shall be installedwhen curing is completed

h. Exposed wood surfaces shall be free from disfiguring defects such as raised grains, stains, un even planning, sanding, tool marks and scratches. Exposed surfaces shall be machine or hand sanded toan even smooth surface, ready for finish.

**1003.4 Method of Measurement**

All carpentry actually installed shall be measured and determined by Subsections 1003.3.3 and 1003.3.5 as provided in the Bill of Quantities accepted to the satisfaction of the Engineer.

**1003.5 Basis of Payments**

The Items measured and determines as provided in subsection 1003.4 shall be paid for at the unit bid price which payment constitute full compensation of material, labor and incidentals necessary to complete this item.

Payment shall be made under:

Pay Item Number Description Unit of Measurement

1003 (a) Rough carpentry (framing, square meter

Roof, flooring, partition, ceiling)

1003 (b) Finished carpentry (cabinets, square meter

cabinets, railings, etc.)

**ITEM 1004 HARDWARE**

**1004.1 Description**

This Item shall consist of furnishing and installing all building hardware required to: (1) ensure rigidity of joints/ connections of the different parts of the structure; and (2) equip in a satisfactory operating condition parts of the structure such as doors, windows, cabinets, lockers, drawers and other similar operating parts as indicated on the Plans and in accordance with this specifications.

**1004.2 Material Requirements**

**1004.2.1.1 Rough Hardware**

All rough hardware such as nails, screws, lag screws, bolts and other related fasteners required for carpentry work shall be first class quality and locally available.

**1004.2.2 Finishing Hardware**

All finishing hardware consisting of locksets, latches, bolts and other devices, door closers, knobs, handles, hinges, and other similar hardware shall be first class quality available locally and conforming with the following specification.

**1004.2.2.1 Door Locksets**

Door locks appropriate for particular functions shall be of durable construction, preferably the product of single reputable manufacturer for consistent quality and master keying.

**1004.2.2.1.1**

Cylindrical lockset for swing wood door shall of sturdy construction and knob design. The cylindrical case shall be made of steel, zinc coated & dichromate dip. The knobs, latch, strike & pin tumbler assembly shall be cast brass or bronze. The spring and spindle shall be steel, zinc coated. The pins and the key, shall be retracted by knob from either side except when the outside knob is locked by key in the outside knob or by the turn / push button on the inside knob.

**1004.2.2.1.2**

Mortise lock for swing door shall have cast bronze latch bolt with steel compression spring, cast bronze deadbolt with hardened steel inserts, wrought bronze or brass knobs heavy gauge and cold formed steel operation levers. The pin tumbler cylindrical assembly shall be cast bronze or brass and fitted with 5 spring pressed nickel silver pins. Mortise lock used in conjunction with fire exit bolts shall have armored fronts.

**1004.2.2.1.3**

Unit of monolock for swing door shall be factory assembled in one piece, with knobs and escutcheons attached, ready for installation. All parts of unit lock shall be non-ferrous metal. Frame shall be one piece cast bronze of extruded brass, front shall be flat for door 35 mm thick and believed for door 45 mm thick, and latch bolt shall be pivoted swing type with minimum 26 mm throw. Cylinder shall be extruded brass with 5spring-pressed pins and keys shall be nickel silver.

**1004.2.2.1.4**

Dead lock for sliding door shall be mortise of surface mounted type to suit particular application.

**1004.2.2.1.4.1**

Mortise type dead lock shall have cast bronze case, front, latch bolts, strike and cylinder. Operation of deadbolt shall be by drop handles from either side. When locked by key from outside, or by thumb knob from inside, drop handle will not operate the dead bolt.

**1004.2.2.1.4.2**

Surface type deadlock shall have cast bronze case, strike and cylinder. Interlocking vertical bolt shall be hardened steel operated by key from outside and thumb turn from inside. Strike shall be angle type.

**1004.2.2.1.5**

Deadlock for swinging door shall be tubular design with mechanism made of heavy gauge cold-rolled steel, zinc coated and dischromated. Dead bolt strike and pin tumbler cylinder shall be bronze. Dead bolt, with atleast 25 mm throw, shall be operated by key from outside and thumb from inside.

**1004.2.2.1.6**

Lock for door of emergency / fire exit (panic hardware) shall be cast bronze or brass and heavy duty locking device coupled with a horizontal crossbar. Latch shall be operated by key from outside and by crossbar from inside. Locking device shall be surface or mortise type suitable for a particular application. Inactive leaf of double doors or emergency / fire exit shall be fitted with vertical road actuated by crossbars, such vertical rod providing two point locking, bottom and overhead.

**1004.2.2.1.7**

Lock for drawers and cabinets shall be bronze or brass with latch operated by key through a pin-tumbler cylinder 22 mm in diameter. Back plate of the lock shall be provided with four screw holes for mounting.

**1004.2.2.1.8**

Hasplock, when required as indicated on the Plans shall be hinge hasp with integral padlock. The hinge hasp shall be zinc coated wrought steel, 47.5 mm in width and 100 mm in length when closed. The integral padlock shall be pin tumbler type with solid or laminated zinc-coated wrought steel case with hardened steel shackle securely attached to the draw bolt.

**1004.2.2.2 Door Closers**

a. All door closer shall be cast bronze provide with a key valve or cap valve for making

necessary adjustment.

b. The following table shall serve as guide in determining door closer sixes.

Door Maximum Width Size of Closer

0.76 m Size 2

0.90 m Size 3

1.07 m Size 4

1.20 m Size 5

1.37 m Size 6

Use large size where unusual conditions exist.

**1004.2.2.3 Hinge**

Hinge unless otherwise indicated on the Plans shall be brass coated wrought iron steel for interior doors and wrought bronze for exterior doors with non-rising loose steel pins with button tips and mounting screws of the same materials.

**1004.2.2.4 Sliding Door Hardware**

Sliding door hardware shall be four-wheel ball bearing trolley on overhead track. Track is of rolled steel formed steel or extruded aluminum. Bearing is of plan steel balls or steel rollers. Wheels shall be steel, brass, rubber or plastic as the case maybe.

**1004.2.2.5 Miscellaneous Hardwares**

**1004.2.2.5.1 Flush Bolt**

Flush / extension flush type bolt shall be made of stainless steel with proper suitable to the door specified.

**1004.2.2.5.2 Barrel blots**

Barrel blots shall be of wrought steel brass coated with an attachment of at least 4-screws.

**1004.2.2.5.3 Door Pull and Push Silencer**

Door pull and push plate shall be made of stainless steel with concealed attachments.

**1004.2.2.5.4 Hook, Bumper and Silencer**

Hook, bumper and silencer shall be made of extruded brass or bronze, dull chrome finish with at least 2screw attachments.

**1004.2.2.5.5 Furnitures and Cabinets Hardware**

Furniture and cabinet hardware line piano hinge, invisible hinge, floor pivot hinge, cabinet door cache, shall be made from extruded brass or bronze with dull chrome finish, of sizes and type suited for use.

**1004.2.2.5.6 Push Plate**

Push plate for metal door shall be made of stainless steel with concealed attachment.

**1004.3 Construction Requirements**

**1004.3.1 Submittals**

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

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

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

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

**1004.3.2 Packaging and Marking**

**1004.3.2.** Each article shall be individually package in the manufacturers commercial carton /

container properly marked or labeled so as to be readily identified and delivered to the project site in the original manufacturers containers / package.

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

**1004.3.3 Storage and Protection**

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

**1004.3.4 Installation of Hardware**

a. All hardware shall be installed in a neat workmanship manner following the manufacturers

instruction manual to fit details as indicated on the Plans.

b. Except as indicated or specified otherwise, fasteners furnished with the hardware shall be

used to fasten hardware in a place.

c. After installation works are completed the hardware shall be protected from paints, stains,

blemishes and other damage until the work are properly turned over and accepted.

d. All hardware shall be properly checked and adjusted in the presence of the engineer and

all hinges, locks, catches, bolts, pulls, closers and other miscellaneous items shall operate

properly.

e. After hardware are properly checked and adjusted keys shall be properly identified with

key tags turned over to the Engineer.

**1004.3.5 Keying**

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

**1004.4 Method of Measurement**

Work prescribed in this Section shall not be measured as follows:

(1) Cost incurred in furnishing the following Items such as ITEM 1003, Carpentry and Joinery, ITEM1004, Hardware; and shall not be measured and paid separately, same shall be deemed to be included in the cost of Items of work, as part of the Contractor‟s Bill of Quantities.

**1004.5 Basis of Payment**

The accomplished work item shall be paid for at the appropriate unit price of the particular pay item shown in the Bill of Quantities which price and payment shall constitute full compensation for furnishing and maintaining such items as provided in Subsection 1004.4.

**ITEM 1007 ALUMINUM GLASS DOORS**

**1007.1 Description**

This Item shall consist of furnishing all aluminum glass doors materials, labor, tools and equipment required in undertaking the proper installation as shown on the Plans and in accordance with this Specification.

**1007.2 Material Requirements**

1007.2.1 Frame and panel members shall be fabricated from extruded aluminum sections true to details with clean, straight, sharply defined profiles and free defects impairing strength or durability. Extruded aluminum sections shall conform to the specification requirements as defined in ASTM B 211.

1007.2.2 Screws, nuts, washers, bolts, rivets and other miscellaneous fastening devices shall be made of non-corrosive materials such as aluminum, stainless steel, etc.

1007.2.3 Hardware for fixing and locking devices shall be closely matched to the extruded aluminium section and adaptable to the type and method of opening.

1007.2.4 Vinyl weather strip shall be first class quality flexible vinyl forming an effective seal and without adverse deformation when installed.

1007.2.5 Pile weather strip shall be silicon treated and free from residual wetting agents and made of soft fine as wool, fur, etc.

1007.2.6 Glazing shall conform to the requirement specified in Item 1012, Glass and Glazing.

**1007.3 Construction Requirements**

For all assembly and fabrication works the cut ends shall be true and accurately jointed, free of burrs and rough edges. Cut-out recesses, mortising, grinding operation for hardwares shall be accurately made and properly reinforced when necessary.

1007.3.1 Installation Procedure

1007.3.1.1 Main frame shall consist of head sill and jamb stiles specifically designed and machined to inter fit and to be joined at corners with self-threading screws.

1007.3.1.2 Frame sill shall be stepped and slope with offset weep holes foe efficient drainage to the exterior.

1007.3.1.3 Door shall be accurately joined at corners assembled and fixed rigidly to ensure weather tightness.

1007.3.1.4 Aluminum glass door and main frame shall be installed in a prepared opening to be set plumb, square, level and true to details.

1007.3.1.5 All joints between metal surface and masonry shall be fully caulked to ensure weather tightness.

1007.3.1.6 Sliding type door panel shall be equipped with concealed roller overhead tracks with bottom guide.

1007.3.1.7 Double action type door panel shall be equipped with heavy duty hinges that will control the door leaf in a close or open position.

1007.3.1.8 Weather strip shall be furnished on edges at the meeting stiles of doors.

1007.3.1.9 Where aluminum is to be in contact with steel concrete cinder, block, tile, plaster or other similar masonry construction the aluminum surface shall be back painted before erection with abituminous paint.

1007.3.2 Shop Finish

Exposed aluminum surfaces shall be electro type hard coats.

1007.3.3 Protection

a. All aluminum parts shall be protected adequately to ensure against damaged during transit

and construction operations.

b. Aluminum parts in contact with steel members shall be properly insulated by a coat or zinc

chromate primer applied to the steel or by application of bituminous paint.

1007.3.4 Cleaning

a. The Contractor does not only protect all entrance units during construction but also

responsible for removal of protective materials and cleaning aluminum surfaces.

b. Aluminum shall be thoroughly cleaned with plain water with kerosene or gasoline and then

wipe surfaces using clean cotton fabric. No abrasive cleaning agents shall be permitted.

**1007.4 Method of Measurement**

Aluminum glass door, fully equipped with fixing accessories and locking devices shall be measured in square

meters base on actual in place installed as shown on the Plans accepted to the satisfaction of the Engineer.

**1007.5 Basis of Payment**

The area in square meters of aluminum glass doors installed including main frame and ready for service asprovided in Item 1007.4 shall be the basis of payment based on the unit bid or contact unit price.

Pay Item Number Description Unit of Measurement

1007 Aluminum Glass door square meter (sq.m.)

Sliding type, designated as

D – on the schedule

**ITEM 1008 ALUMINUM GLASS WINDOWS**

**1008.1 Description**

This Item shall consist of furnishing all aluminum glass window materials, labor, tools and equipment required in undertaking the proper installation as shown on the Plans and in accordance with this Specification.

**1008.2 Material Requirements**

1008.2.1 Frame and panel members shall be fabricated from extruded aluminum section true to details with clean, straight, sharply defined profiles and free from defects impairing strength or durability. Extruded aluminum section shall conform to the specification requirements defined in

ASTM B 211.

1008.2.2 Screws, nuts, washers, bolts, rivets and other miscellaneous fastening devices shall be made of non-corrosive materials such as aluminum, stainless steel, etc.

1008.2.3 Hardware for fixing and locking devices shall be closely matched to the extruded aluminium section and adaptable to the type and method of opening.

1008.2.4 Weather strip shall be first class quality flexible vinyl forming an effective seal and without adverse deformation when installed.

1008.2.5 Glazing shall conform to the requirements specified in Item 1012.

1008.2.6 Pile weather strip shall be silicon treated and free from residual wetting agents made of soft fine hair as on wool, fur, etc.

**1008.3 Construction Requirements**

For all assembly and fabrication works the cut end shall be true and accurate, free of burrs and rough edges. Cut-outs recesses, mortising and grinding operation for hardware’s shall be accurately made and properly reinforced.

1008.3.1 Installation Procedure

1008.3.1.1 Main frame shall consist of head, sill and jamb.

1008.3.1.2 Window sash

1008.3.1.3 Window panel shall be jointed at corners with miter and fixed rigidity to ensure weather tightness.

1008.3.1.4 Sliding windows shall be provided with nylon sheave. Sliding panels shall be suspended with concealed roller overhead tracks with bottom guide pitch outward and slotted for complete drainage. The sliding panels shall be provided with interior handles. The locking device shall be spring loaded extruded latch that automatically engages special frame hips.

1008.3.1.5 Casement window type shall be provided with two hinges fabricated from extruded aluminum alloy. They shall open on stay arms having adjustable sliding friction shoes to control window panel operations. Locking device shall be one arm action handle for manual operations complete with strike plate.

1008.3.1.6 All joints between metal surface and masonry shall be fully caulked.

1008.3.1.7 Aluminum parts in contact with steel members shall be properly insulated by a coat of zinc chromate, primer/ bituminous paint applied to the steel surface.

1008.3.1.8 Weather strip shall be furnished on edges at the meeting stiles.

1008.3.2 Shop Finish

Exposed aluminum surfaces shall be electrotype hard coats such as anodize, satin, etc.

1008.3.3 Protection

All aluminum parts shall be protected adequately to ensure against damage during transit and construction phase.

1008.3.4 Cleaning

1008.3.4.1 The Contractor does not only protect all entrance units during the construction phase but shall also be responsible for removal of protective materials and cleaning the aluminum surface including glazing before work is accepted by the Engineer.

1008.3.4.2 Aluminum shall be thoroughly cleaned with kerosene or gasoline, diluted with water and then wipe surface using clean cloth rugs.

1008.3.4.3 No abrasive cleaning materials shall be permitted in cleaning surface.

**1008.4 Method of Measurement**

Aluminum glass window fully equipped with fixing accessories and locking devices shall be measured in square meters base on actually in place installed and accepted to the satisfaction of the Engineer.

**1008.5 Basis of Payment**

The area of aluminum glass doors in square meters ready for service as provided in the Bill of Quantities shall be the basis of payment based on the unit bid or contact unit price which price and payment constitute all materials, labor including incidentals.

Payment will be made under:

Pay Item Number Description Unit of Measurement

1008 (1 ) Aluminum Awning Windows square meter (m2)

1008 (2) Aluminum Casement Windows square meter (m2)

**ITEM 1010 WOODEN DOORS**

**1010.1 Description**

This Item shall consist of Furnishing all materials, hardware, plant, tools, labor and services necessary for complete fabrication and installation of wooden doors and window of the type and size as shown on the Plans and in accordance with the following specifications and applicable specifications under Item 1003 on Carpentry and Joinery Works.

**1010.2 Material Requirements**

**1010.2.1** Lumber

Lumber of doors, window and jambs, and panels when required, shall be kiln-dried with moisture content of not more than 14% and shall be of the specie indicated on the Plans and/ or specified under Item 1003 on Carpentry and Joinery Works.

**1010.2.2** Plywood

Plywood for veneer of solid core and hollow core flush doors shall be 3-ply, rotary cut, 6 mm. thick ordinary plywood, Class B grade. Marine or waterproof plywood, rotary cut, 3-ply, 6 mm. thick shall be used for flush doors at toilets and bathrooms or at places where these are exposed to moisture.

**1010.2.3** Adhesive

Adhesive shall be water resistant resins and shall be non-staining.

**1010.2.4** Glass

Glass for window panes shall be 3 mm. thick, smoked or industry type unless otherwise shown on the Plans or indicated in the Schedule of Doors and Windows.

**1010.2.6** Hardware

Hardware shall be as specified under Item 1004 on Building Hardware.

**1010.3 Construction Requirements**

**1010.3.1** Fabrication

Wooden doors and windows, including frames, shall be fabricated in accordance with the designs and size shown on the Plans. The fabricated products shall be finished square, smooth sanded and free from damage or warping.

a. Flush Type Hollow Core Doors

Flush type hollow core doors shall be adequately framed with stiles and top and bottom rails having a minimum thickness of 44 mm. and width of 75 mm. Two intermediate rails at least 44 mm. wide shall be provided for stiffness. The stiles and the top and bottom rails shall be rabbeted at least 10 mm. wide to receive the 6 mm. thick plywood veneer. A lock block shall be provided at each stile, long enough to connect to the two intermediate rails and at least 75 mm. wide for mounting the lockset. The plywood veneer shall be glued and nailed to the framing with 25 mm. long finishing nails space at not more than 150 mm. on centers.

b. Flush Type Solid Core Doors

Flush type solid core doors shall be fabricated in the same manner as the hollow core type

except that spaces between stiles and rails shall be filled and fitted with wood blocks of the

same specie and of uniform thickness thinner by about the thickness of the plywood

veneers. The filler blocks shall be secured to either stiles or rails by nails. Stiles and rails of

flush type doors shall be joined by means of blind mortise and tendon joint, tightly fitted,

glued and locked with bamboo pin 5 mm. round.

c. Panel Doors

Stiles and rails of panel doors shall have a minimum thickness of 44 mm. and width of 140

mm. Rails minimum thickness of 44 mm and width of 140 mm. Rails shall be framed to stiles by

mortise and tenon joints. Rabbets or grooves of stiles and rails to receive panels shall be

6.5 mm. wide and 20 mm. deep. Integral mouldings formed on both faces of stiles and rails

framing the panels shall be true to shape and well defined. Intersections of mouldings shall

be mitered and closely fitted.Panels of the same specie and having a minimum thickness of 20 mm. shall be bevelled around its edges up to a minimum width of 50 mm. both faces. The beveled edges shall closely fit into the groove of stiles and rails, but free to move to prevent splitting when shrinkage occurs.

**1010.3.2** Installation

a. Frames shall be set plumb and square in concrete/ masonry work or framework of walls or

partitions. Frames set in concrete or masonry shall be painted with hot asphalt at its contact

surface and provided with two rows of common wire nails 100 mm. long for anchorage. The

nails shall be staggered and spaced at 300 mm. on center along each row. Frame set in

concrete shall be installed in place prior to concrete work. Frames set in masonry work may be installed after laying of hollow concrete blocks, bricks oradobe. Space between frames and masonry shall be fully filled with cement mortar proportioned 1:3.

b. Hinged Doors

Hinged doors, whether panel or flush type with standard height of 2100 mm. and width of not

more than 900 mm. shall be hung with four loose-pin butt hinges, 100 mm. x 100 mm. Swing

out exterior doors shall be hung with four fast-pin butt hinges. Two hinges shall be fitted 150

mm. from top and bottom edge of door. The other two hinges shall be fitted at third points

between top and bottom hinges. Care should be taken to ensure that the hinges are fitted such

that their pins are aligned for ease of pin insertion and smoothness of operation. For added

smoothness pins should be lightly greased. Hammering of hinges to attain proper alignment

shall not be allowed. For wider and heavier doors such as narra panel doors, an additional hinge shall be fitted 100mm. below the top hinge to counteract the door tilting action. Mounting screws shall be screwed in place in their entire length, not forced into place by hammering. Hammering of screw into place shall not be permitted.

c. Lock Installation

Locks of doors shall be fitted at the same height, centered 1000 mm. above the finished floor

level. Locks shall be installed in conformity with the templates and instructions supplied with

locksets. Holes for mounting locks shall be properly formed to provide snug fit and rigid

attachment of the locks to the doors. Strike plates shall be fitted on the door frame in true

alignment with the lock latch.

**1010.4 Method of Measurement**

Frames of doors and windows shall be measured and paid for on the basis of number of sets completely installed and accepted by the Engineer. Doors and windows shall be measured and for based on the number of square meters or set involved in the completed and accepted installation. Payment per square meter shall include cost of required hardware and all incidental expenses, but exclusive of locks for doors. Locks shall be paid for per set completely installed.

**1010.5 Basis of Payment**

The different pay items under Wooden Doors and Windows shall be designated the following number, description and unit of measure.

Payment shall be made under;

Pay Item Number Description Unit of Measurement

1010 (a) Doors (Flush or Panel) set

1010 (b) Door Locks set

**ITEM 1011 – ROLLING UP DOORS**

**1011.1 Description**

This item shall consist of furnishing all plant, labor, tools, equipment and rolling up door required as shown on the Plans and in accordance with this Specification.

**1011.2 Material Requirements**

Rolling up door shall be surfaced mounted type designed for exterior service opening as indicated on the Plans. Component parts shall conform with the following material specifications:

1. Curtain – shall be manufactured of interlocking curved or flat slats, rolled from galvanized and bonderized steel, aluminum or stainless steel as the case maybe. Slats shall be of size and thickness to withstand 0.957 KPawindload.

Curtain is composed of:

1. Interlocking slats shall roll up on a drum supported at head of opening on brackets and shall be balanced by helical springs.
2. Endlocks – shall be malleable iron riveted to each ends of slats. These are called continuous when they reinforce both ends of all slats, alternate when every other slat.
3. Bottom bar – shall be manufactured from two equal sized angles, minimum 3 mm thick bolted back to back with appropriate half slat at lowest edge of curtain. In addition, exterior door shall have compressible and replaceable rubber or vinyl weather seal attached to bottom rail.

2. Counter balance barrel assembly – shall include spring barrel which serves as load carrying beam encases counter balance mechanism and provide axis around curtain coils. Asit arises barrel rings are involute shapes of malleable iron to assure proper counter balance for all points of travel. Oil tempered torsion type counter balance springs are wound from heat treated steel, to provide accuracy in balancing door.

3. Hood – shall be manufactured from 0.60 mm thick (minimum) galvanized sheet metal, flanged at top for attachment to header and flanged at bottom to provide longitudinal stiffness. Hood shall enclose curtain coil and counter balance mechanism.

4. Brackets – shall be made of precisely formed plate with permanently sealed ball bearings, designed to enclose end of the curtain coil and provide support for counter balance pipe at each end.

5. Guides – shall be fabricated from structural steel angles or precision roll formed channels and angles. Especially adaptable for doors exposed to heavy wind pressure. Designed with groove depths varying from 50 mm to 150 mm depending upon the width of the door, and set cut from the face of the wall to facilitate the travel of the curtain.

**1011.3 Construction Requirements**

Doors shall be mechanically operated and with provision for manual operation by means of hand chain. Accessories needed for the satisfactory performance of the door shall be built-in with the unit.

**1011.3.1 Erection/Installation**

1. Set and install structural steel angels properly aligned, plumb, level, square true to profile section and rigidly anchored with adjacent concrete surface walls.
2. Allow all adjacent items of work to be completed before any installation work is started except the installation of structural steel angels.
3. Assemble rolling up doors in accordance with the manufacturer’s instruction manual or as indicated in the shop drawing approved.
4. All anchors and insets for guide, brackets and other accessories shall be located accurately.

**1011.3.2 Locking Devices**

Curtain shall be located at each end of bottom bar by concealed slide bolts which shall engage a lock wedge in each guide. A plunger type cylinder lock is provide as standard equipment.

**1011.3.3 Warranty**

Upon completion and before final acceptance of the equipment; the Contractor shall furnish the DPWH/Owner a written guaranty stating that the rolling up door equipment and accessories are free from defects. The guaranty shall be for the period of one (1) year from the date of final acceptance of the work. Any part of the equipment that becomes defective during the term of the guaranty shall be replaced and made good by the Contractor at his own expense a manner satisfactory to the DPWH/Owner.

**1011.3.4 Method of Measurement**

The work executed under this item shall be measured by actual units of rolling up door installed at jobsite complete and ready for service. The computed unit shall bear type o materials and area of opening covered and shall be accepted by the Engineer.

**1011.3.5 Basis of Payment**

The accepted work qualified and provided in the Bill of Quantities shall be paid for at the unit Bid price which constitutes full compensation for furnishing all materials, labor, tools, equipment and other incidentals necessary to complete this Item.

Payment shall be made under:

Pay Item Description Unit of Measurement

Number Measurement

1011 (a) Rolling up door (indicate

Metal door size and type of

Curtain slats) unit/set

**ITEM 1014 PREPAINTED METAL SHEETS**

**1014.1 Description**

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

**1014.2 Material Requirements**

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

**1014.2.1 Pre-Painted Roofing Sheets**

Pre-painted roofing sheets shall be fabricated from cold rolled galvanized iron sheets specially tempered steel for extra strength and durability. It shall conform to the material requirements defined in PNS 67:1985.Profile section in identifying the architectural moulded rib to be used are as follows: regular corrugatedQuad-rib, Tri-wave, Rib-wide, twin-rib, etc. Desired color shall be subject to the approval of the Architect/Engineer.

**1014.2.2**

Gutters, Valleys, Flashing Hip and Ridge roll shall be fabricated from gauge 24 (.600 mm thick) cold-rolled plain galvanized iron sheets specially tempered steel. Profile section shall be as indicated on the Plans.

**1014.2.3**

Fastening hardware shall be of galvanized iron straps and rivets. G.I. straps are of .55 mm thick x 16 mm wide x 267 mm long (gauge 26 x 5/8” x 10-1/2”) and standard rivets.

**1014.2.4**

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

a) Base Metal Thickness Designated Gauge

.400 mm thick Gauge 28

.500 mm thick Gauge 26

.600 mm thick Gauge 24

.800 mm thick Gauge 22

b) Protective Coatings Thickness

1. Zinc 34.4 microns

(244 gm/m2)

2. Paint coatings

Top coat 15.20 microns

Bottom coat 6.8 microns

c) Overall thickness with protective coats

.400 mm .428-451 mm

.500 mm .532-651 mm

.600 mm .638-651 mm

d) Length of roofing sheets – available in cut to length long span length up to 18.29 meters.

e) Special length and thickness are available by arrangements.

**1014.3 Construction Requirements**

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

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

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

**1014.3.2 Installation Process**

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

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

3. For walling applications follows the procedure for roofing. Allow a minimum end of 100 mm (4”) for vertical walling.

**1014.3.2 Gutters, Valleys, Flashing ridge and Hip rolls**

Gutters, valleys, flashing ridge and hip rolls be fastened where indicated on the Plans by self-tapping screws or galvanized iron straps and rivets.

**1014.3.3 End Laps**

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

**1014.3.4 Anchorage/Fastening**

1. Prepainted steel roofing sheets shall be fastened to the wood purlins with standard length G.I. straps an drivets.

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

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

4. Side lap fastener use self drilling screw No. 10 by 16 mm long hexagonal head with neoprene washer.

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

6. Valleys fastened to steel supports use self drilling screws, hexagonal head with neoprene washer. Drill size is 5 mm diameter.

**1014.3.5 Cutting of Sheets**

In cutting prepainted steel roofing sheets and accessories to place the already installed or laid in position, the area around holes or cuts shall be masked to shield the paint from hot fillings.

**1014.3.6 Storage and Protection**

Prepainted steel roofing. Walling products and accessories should be delivered to the jobsite in strappe bundles. Sheets and/or bundles shall be neatly stacked in the ground and it left in the open it shall be protected by covering the stack materials with loose tarpaulin.

**1014.4 Method of Measurement**

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

**1014.5 Basis of Payment**

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

Payment shall be made under:

Pay Item Number Description Unit of Measurement

1014 (a) Prepainted metal sheets m²

**ITEM 1027 CEMENT PLASTER FINISH**

**1027.1 Description**

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

**1027.2 Material Requirements**

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

1027.2.1 **Cement**

Portland cement shall conform with the requirements as defined in Item 700 – Hydraulic Cement.

1027.2.2 **Hydrated Lime**

Hydrated lime shall conform with the requirements as defined in Item 701 – Hydrated Lime.

1027.2.3 **Fine Aggregates**

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

**1027.3 Construction Requirements**

1027.3.1 **Mixture**

a) Mortar mixture for brown coat shall be freshly prepared and uniformly mixed in the proportion by volume of one (1) part Portland Cement, three (3) parts sand and one fourth (1/4) part hydrated lime.

b) Finish coat shall be pure Portland cement properly graded conforming to the requirements of Item 700,Hydraulic Cement and mixed with water to approved consistency and plasticity.

1027.3.2 **Surface Preparation**

a) After removal of formworks reinforced concrete surfaces shall be roughened to improve adhesion of cement plaster.

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

1027.3.3 **Application**

a) Brown coat mortar mix shall be applied with sufficient pressure starting from the lower portion of the surface to fill the grooved and to prevent air pockets in the reinforced concrete/ masonry work and avoid mortar mix drooping. The brown coat shall be lightly broomed/ or scratch before surface had properly set and allowed to cure.

b) Finish coat shall not be applied until after the brown coat has seasoned for seven days and corrective measures had been done by the Contractor on surfaces that are defective. Just before the application ofthe finish coat, the brown coat surface shall be evenly moistened with potable water. Finish coat shall be floated first to a true and even surface, then trowel in a manner that will force the mixture to penetrate into the brown coat. Surfaces applied with finish coat shall then be smooth with paper in a circular motion to remove trowel marks, checks and blemishes. All cement plaster finish shall be 10 mm. thick minimum, on vertical concrete and/ or masonry walls. Whenever indicated on the Plans to be “simulated red brick finish”, the Contractor shall render brick design on plaster surface before brown coat had properly set and then allowed to dry. Cement plaster shall not be applied directly to:

a) Concrete or masonry surface that had been coated with bituminous compound and,

b) Surfaces that had been painted or previously plastered.

**1027.3.4 Workmanship**

Cement plaster finish shall be true to details and plumbed. Finish surface shall have no visible junction marks where one (1) day’s work adjoins the other. Where directed by the Engineer or shown on the Plans vertical and horizontal groove joints shall be 25 mm wide and 10 mm deep.

**1027.4 Method of Measurement**

All cement plaster finish shall not be measured in square meters or part thereof for work actually completed in the building.

**1027.5 Basis of Payment**

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

Payment will be made under:

Pay Item No. Description Unit of Measurement

1027 (a) Cement plaster finish Square Meter (m2)

1027 (b) Simulated red brick (Wall) Square Meter (m2)

**PART E ELECTRICAL WORKS**

**ITEM 1100 CONDUITS, BOXES & FITTINGS**

**1100.1 Description**

This Item shall consist of the furnishing and installation of the complete conduit work consisting of electrical conduits; conduit boxes such as junction boxes, utility boxes, octagonal and square boxes; conduit fittings

such as couplings, locknuts and bushing and other electrical materials needed to complete the conduit roughing-in works.

**1100.2 Material Requirements**

All materials shall be brand new and shall be of the approved type meeting all the requirements of the Philippine Electrical Code and bearing the Philippine Standard Agency (PSA) mark. The electrical materials to be used shall be of the standard products of the manufacturers regularly engaged in the production of equipment and materials required for this project and shall be the manufacturer’s latest standard design that complies with the specification requirements. The Contractor shall submit for approval a complete description of all materials and equipment to be used before commencing the work. The descriptions shall include catalogue numbers, illustrations, diagrams, dimensional data, etc., as required to describe fully the materials.

Conduits

(a) Rigid Steel Conduit shall be electrical metal tubing (EMT) conduit, hot dip galvanized,

conforming to ANSI Standard C80.1, or “American Standard Specifications for Steel Conduit, zinc coated” unless shown otherwise in the drawings. The conduit fittings and covers shall be

galvanized, threaded, or cadmium plated, grey iron or malleable iron castings. Composite rubber gasket shall be provided in all openings requiring covers. Outlets and pull boxes shall be of the sizes and types shown in the Plan.

(b) Rigid PVC Conduit shall be NEMA TC2, type EPC-PVC and shall be schedule 40. Enamel

coated steel conduits and conduits with rough inner surfaces are not acceptable.

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

**1100.3 Construction Requirement**

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

Conduits

Conduits should be cut square with hacksaw and ends reamed. Running or non-tapered threads

shall not be used. Each run of conduit between boxes or equipment shall be electrically continuous. Threads shall conform to the American Standard for tapered pipe threads. In making bends only conduit bending apparatus will be used. The use of a pipe tee or vise for bending conduits shall notbe permitted. Conduits entering slip holes in boxes shall be secured with a locknut on each side of the box wall and terminated with a bushing.

All joints between lengths of conduits and threaded connections to boxes, fittings and equipment enclosures shall be made watertight. Conduits shall be sloped towards drain points. Conduits shall be rigidly supported and braced to avoid shifting during placement of concrete. Conduits extendingout of floors, walls, or beams shall be at right angles to the surfaces.

Spacing of conduits shall be such as to permit the flow of concrete between them. A minimum spacing of not less than 5 cm. shall be maintained, except where conduits enter boxes. Where conduits are placed in two or more layers or rows, the conduits in the upper or inner layers shall be placed directly over or behind the lower or outer layers, respectively.

Conduits terminating at the face of concrete for initial or future extensions as exposed runs shall be terminated with plugged couplings set flush with the floor, ceilings or wall. Galvanized iron plugs shall be provided for conduits, which are to be extended in the future. Where it is not practical to employ flush couplings, the conduit ends shall be suitably boxed or otherwise protected and plugged. Conduits running in floors and terminating at motors or other equipment mounted on concrete bases shall be brought up to the equipment within the concrete base wherever possible. Conduit boxes shall be flush with the finished wall with covers and openings easily accessible. The Contractor shall remove and reset all boxes not properly installed or shifted out of line during concreting to the satisfaction of the Engineer.

Conduit Boxes & Fittings Each outlet in the drawing or raceway system shall be provided with an outlet box to suit the conditions encountered. Boxes for exposed work or in wet locations shall be of the cast metal type having threaded hubs. Boxes for concealed work shall be the cadmium-plated or zinc-coated sheet metal type. Each box shall have sufficient volume to accommodate the number of conductors entering the box.. Boxes shall not be less than 50 mm deep unless shallower boxes are required by structural conditions that are specifically approved by the Engineer.

Ceiling and bracket outlet boxes shall not be less than 100 mm octagonal except that smaller boxes may be used where required by the particular fixtures to be installed. Switch and receptacle boxes shall be approximately 100 mm x 50 mm x 50 mm. Telephone outlets shall be 100 mm square except that 100 mm x 54 mm x 40 mm boxes may be used where only one raceway enter the outlet. Boxes installed in concealed locations shall be set flush with the finished surfaces and shall be provided with the proper extension rings or plaster covers where required.

Boxes shall be installed in a rigid and satisfactory manner and shall be supported by bar hangers in frame construction, or shall be fastened directly with wood screws on wood. Location of outlets shown on the drawings are approximates; the Contractor shall study the building plans in relation to the spaces and equipment surrounding each outlet so that the lighting fixtures are symmetrically located according to the room layout. When necessary, with the approval of the Consultant, outlets shall be relocated to avoid interference with mechanical equipment or structural features.

Conduit Boxes & Fittings Provide conduit boxes for pulling and splicing wires and outlet boxes for installation of wiring devices. As a rule, provide junction boxes or pull boxes in all runs greater than 30 meters in length, for horizontal runs. For other lengths, provide boxes as required for splices or pulling. Pull boxes shall be installed in conspicuous but accessible locations. Support boxes independently of conduits entering by means of bolts, red hangers or other suitable means. Conduit boxes shall be installed plumb and securely fastened. They shall be set flush with the surface of the structure in which they are installed where conduits are run concealed.

All convenience and wall switch outlet boxes for concealed conduit work shall be deep, rectangular flush type boxes. Four inch octagonal flush type boxes shall be used for all ceiling light outlets and shall be of the deep type where three or more conduits connect to a single box Floor mounted outlet boxes required shall be waterproof type with flush brass floor plate and brassbell nozzle. All boxes shall be painted with anti-rust red lead paint after installation. All conduits shall be fitted with approved standard galvanized bushing and locknuts where they enter cabinets and conduitboxes. Junction and pull boxes of code gauge steel shall be provided as indicated or as required to facilitate the pulling of wires and cables.

**1100.4 Method of Measurement**

The work under this Item are inclusive in Item 1101 (Wires and Wiring Devices) and shall be measured either by lengths, pieces, pairs, lot and actually placed and installed as shown on the Plans.

**1100.6 General Specifications**

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

**1100.7 Specifications on:**

1. Lightning Fixtures and Lamp

All lightning fixtures and lamps of type and sizes as specified and listed on the Lighting Fixture

Schedule and shall be furnished and installed complete. Incandescent lamps shall be inside frosted lamp, 230 volts, and wattage as indicated. All Fluorescent lamps shall be 40 watt, pre-heat type, rapid start, cool white color characteristics and shall have complete high frequency electronic ballast, 230 volt. Fixtures are designated by letters and illustrations shall be indicative of the general type desired and shall not restrict selection to fixtures of any particular manufacturer. Fixtures of similar design and equivalent light distribution and brightness characteristics having equal finish and quality maybe acceptable but subject to the approval of the Engineer.

2. Material Requirements

All materials to be used shall conform to the BPS specification

3. Construction Requirements

All grounding system installation shall be executed in accordance with the approved plans.

Grounding system shall include building perimeter ground wires, ground rods, clamps, connectors, ground wells and ground wire taps as shown in the approved design.

**1100.8** Auxiliary Systems

All auxiliary systems such as telephone and intercom system, time clock system, fire alarm system and public address/paging system installations shall be done in accordance with the approved design. All materials to be used shall conform to the Bureau of Product Standards (BPS) specifications.

**1100.9** Important requirement regarding supervision of the work and submission of certificate of completion. All wiring installation herein shall be done under the direct supervision of a licensed Electrical Engineer at the expense of the Contractor. The Contractor shall submit the request for the Clearance to Proceed duly approved by the owner’s representative.

**1100.10** Test and Guarantee

Upon completion of the electrical construction work, the Contractor shall provide all test equipment and personnel and to submit written copies of all test results. The Contractor shall guarantee the electrical installation are done and in accordance with the approved Plans and specification. The Contractor shall guarantee that the electrical system are free from all grounds from all defective workmanship and materials and will remain so for a period of one year from date and acceptance of works. Any defect shall be remedied by the Contractor at his own expense.

**ITEM 1101 WIRES AND WIRING DEVICES**

**1101.1 Description**

This Item shall consist of the furnishing and installation of all wires and wiring devices consisting of electrical wires and cables, wall switches, convenience receptacles, heavy duty receptacles and other devices shown on the approved Plans but not mentioned in this Specification.

**1101.2 Material Requirements**

Wires and cables shall be of the approved type meeting all the requirements of the Philippine Electrical Code and bearing the PSA mark unless specified or indicated otherwise, all power and lighting conductor shall be insulated for 600 Volts. All wires shall be copper, soft drawn and annealed, smooth and cylindrical form and shall be centrally located inside the insulation. All wiring devices shall be standard product of reputable electrical manufacturers. Wall switches shall be rated at least 10A, 250 Volts and shall be spring operated, flush, tumbler type. Duplex convenience receptacles shall be rated at least 15A, 250 Volts, flush, parallel slot single heavy duty receptacles shall be rated at least 20 A, 250 Volts, wire, flush, polarize type. Conductors in conduits shall be moisture and heat-resistant rubber or thermoplastic insulated. In drylocations, wires and cables shall be type THW for sizes 8 mm. and smaller and type THW or THHN for sizes14 sq. mm. and larger. In damp or wet locations as defined by the Philippine Electric Code, wires and cables shall be type THW. All conductors shall have 600 volts insulation unless otherwise specified in the drawings. Wire shall be stranded copper for 5.5 mm. diameter and larger sizes. Wires for the telephone and signalling systems shall be twisted telephone wires, thermoplastic insulated. The number and sizes shall be as specified in the drawings.

**1101.3 Construction Requirements**

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

All conductors of convenience outlets and lighting branch circuit home runs shall be wired with a minimum of3.5 mm. in size. Circuit homeruns to panel boards shall not be smaller than 3.5 mm. but a homerun to panel board more than 30 meters shall not be smaller than 5.5 mm. No conductor shall be less than 2 mm. in size. All wires of 14 mm. and larger in size shall be connected to panel and apparatus by means of approved typelugs or connectors of the solder less type, sufficiently large enough to enclose all strands of the conductor sand securely fasten. They shall not loosen under vibration of normal strain. All joints, taps and splices on wires larger than 14 mm. shall be made of suitable solderless connectors of the approved type and size. They shall be taped with rubber and PVC tapes providing insulation no less than that of the conductors.

No splices or joints shall be permitted in either feeder or branch conductors except within outlet boxes or accessible junction boxes (pull boxes). All joints in branch circuit wiring shall be made mechanically and electrically secured by approved splicing devices taped with rubber and PVC tapes in a manner which will make their insulation as that of the conductor. All wall switches and receptacle shall be fitted with standard bakelite face plate covers. Device plate for flush

mounting shall be installed with all four edges in continuous contract finished wall surfaces without the use ofc oiled wire or similar devices. Plaster fillings will not be permitted. Plate installed in wet locations shall be gasketed. When more than one switch or device is indicated in a single location gang plate shall be used.

**1101.3.1 Quality Assurance Provisions**

All installation shall be completed on or before final acceptance of the project including the tests and commissioning. Equipment shall be demonstrated to operate in accordance with the requirements of this specification. The Contractor shall furnish all instruments, tools and personnel required for the tests. As an exception to requirements that may be stated elsewhere in the contract agreement, the Engineer shall be given five (5) working days notice prior to each test. All defects disclosed as a result of such test that are due to the Contractor and shall be remedied to the satisfaction of the Engineer.

1. Devices subject to Manual Operation

Each device subject to manual operation shall be tested five (5) times demonstrating satisfactory operation each time.

(b) Test on 600 Volts Wiring

Test of all 600 volts wiring to verify that no circuits or accidental grounds exist. Perform insulation resistance test on all wiring using an instrument which apply a voltage of approximately 500 volts to provide a direct reading of resistance; minimum resistance shall be 250,000 ohms that the resistance to ground is not excessive. Test each ground rod for resistance to ground before making any connections to the rod, then tie entire grounding system together and test for resistance to ground. Make resistance measurements in normally dry weather condition, not less than 48 hours after rainfall. Submit written results of each test to the Engineer and indicate the locations of the rod as well as the resistance and soil conditions at the time of the measurements were made.

**1101.4 Method of Measurement**

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

**1101.5 Basis of Payment**

All work performed and measured and as provided for in his Bill of Quantities shall be paid for at the Unit Bid or contract unit price which payment shall constitute full compensation including labor, materials, tools and incidentals necessary to complete this Item.

Payment shall be made under:

Pay Item Number Description Unit of Measurement

1101 (1) Electric wire (size), conduits with Fittings meter

1101 (2) Single pole tumbler switch set

1101 (3) Two-gang Tumbler switch set

1101 (4) Three-gang Tumbler switch set

1101 (5) Three-way tumbler switch set

1101 (6) Duplex convenience outlet set

1101 (7) Heavy duty convenience receptacle set

1101 (8) Standard Telephone outlet Bakelite cover set

1101 (9) Window type air conditioning Outlet 3-prong polarized type set

1101 (10) Bare copper wire meters

1101 (11) Grounding clamp for electric wire pieces

1101 (12) Messenger wire meters

1101 (13) Guy wire meters

1101 (14) Vibrating bell set

1101 (15) Traffic Light Control Panel set

1101 (16) Traffic Light metal enclosures Complete with red & green light provided with reflectors & 152 mm diameter vibrating bell set

1101 (17) Service entrance assembly with Reinforced concrete Pedestal pole with anchor bolt set

1101 (18) Meter base assembly exposed rigid RCP with weather cap & grounding rod copper weld 20 mm. diameter x 3 m.set

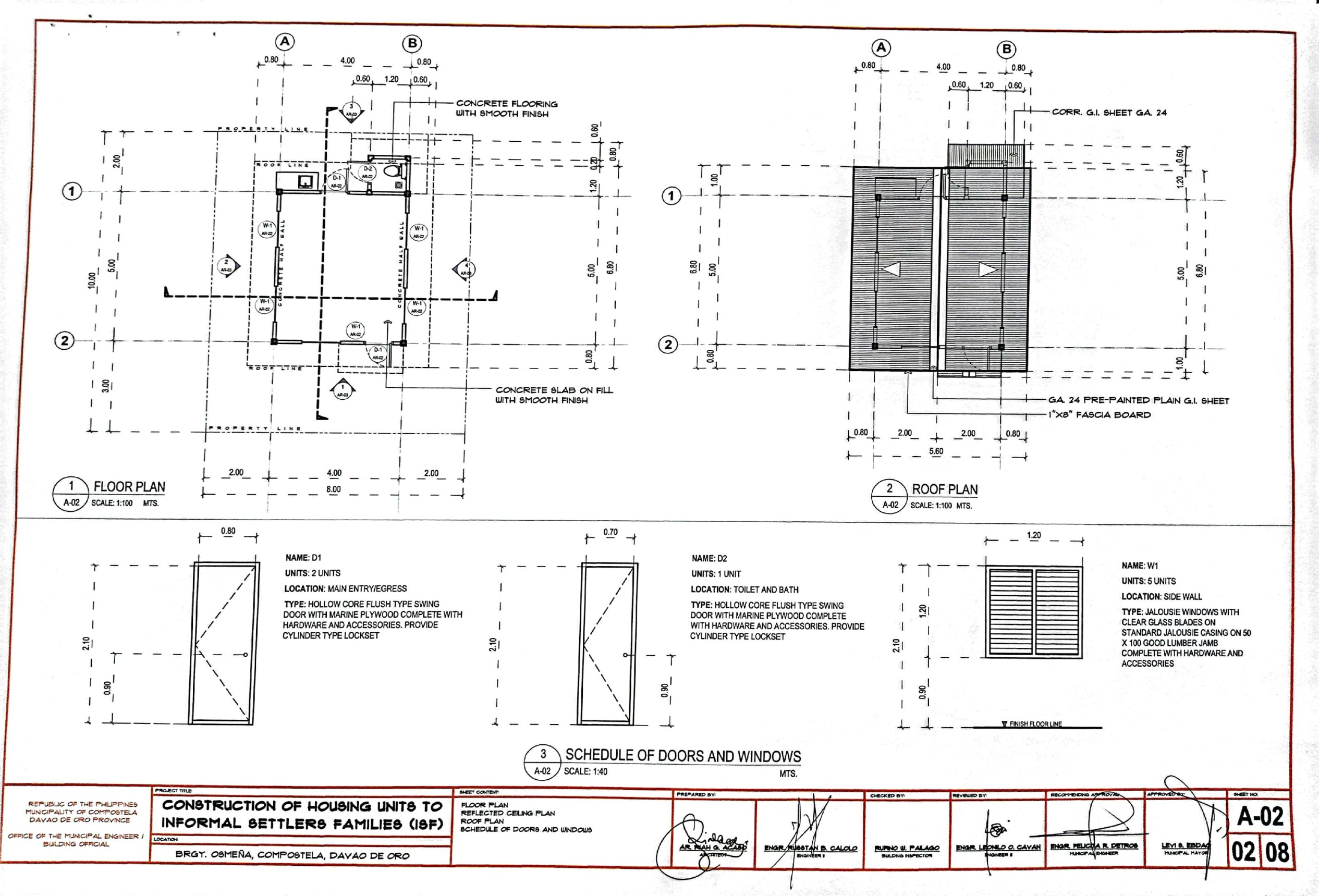
1101 (19) Apitong or approved equal Creosoted wood pole of std. length with anchor rod & log set

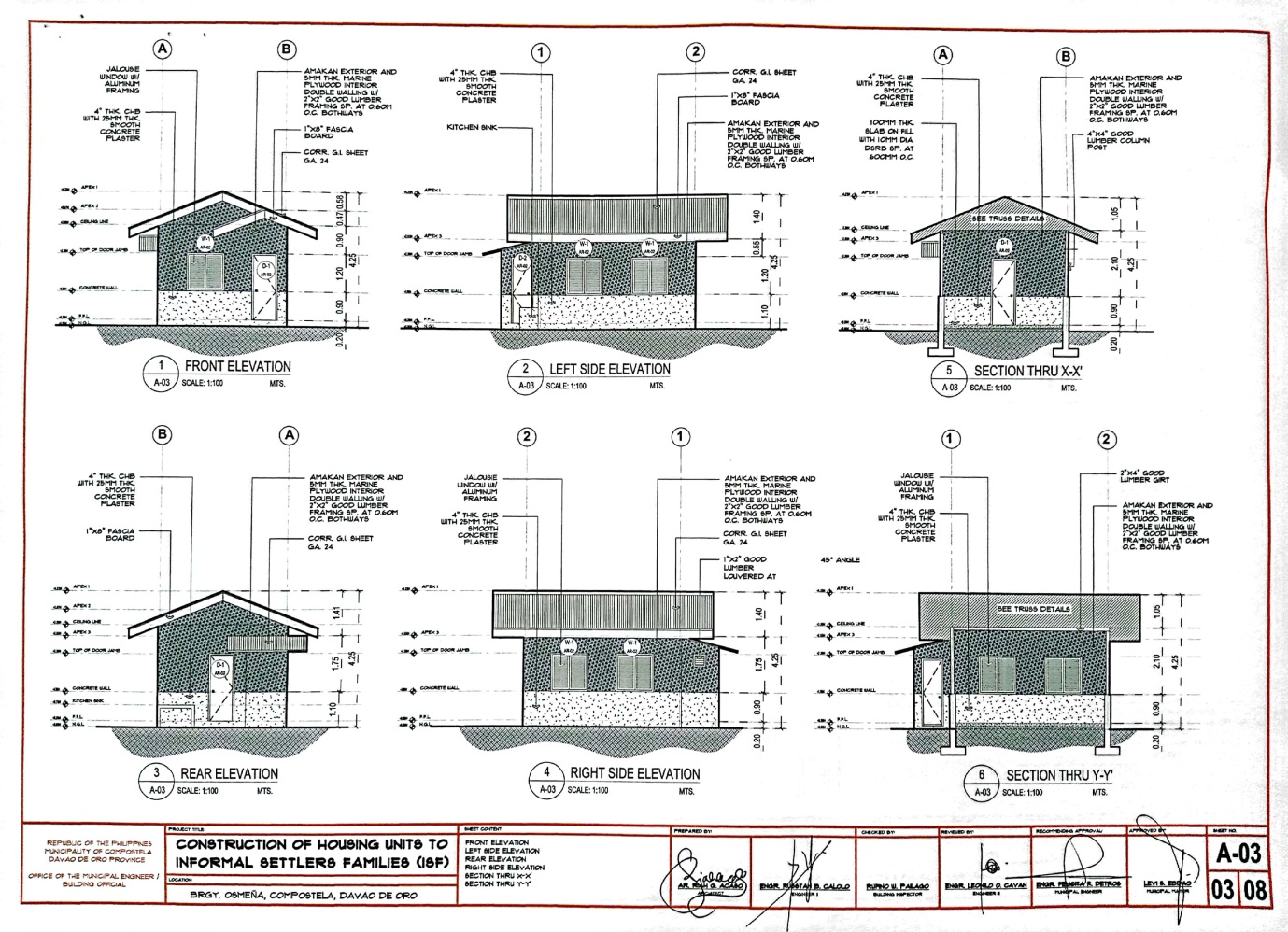
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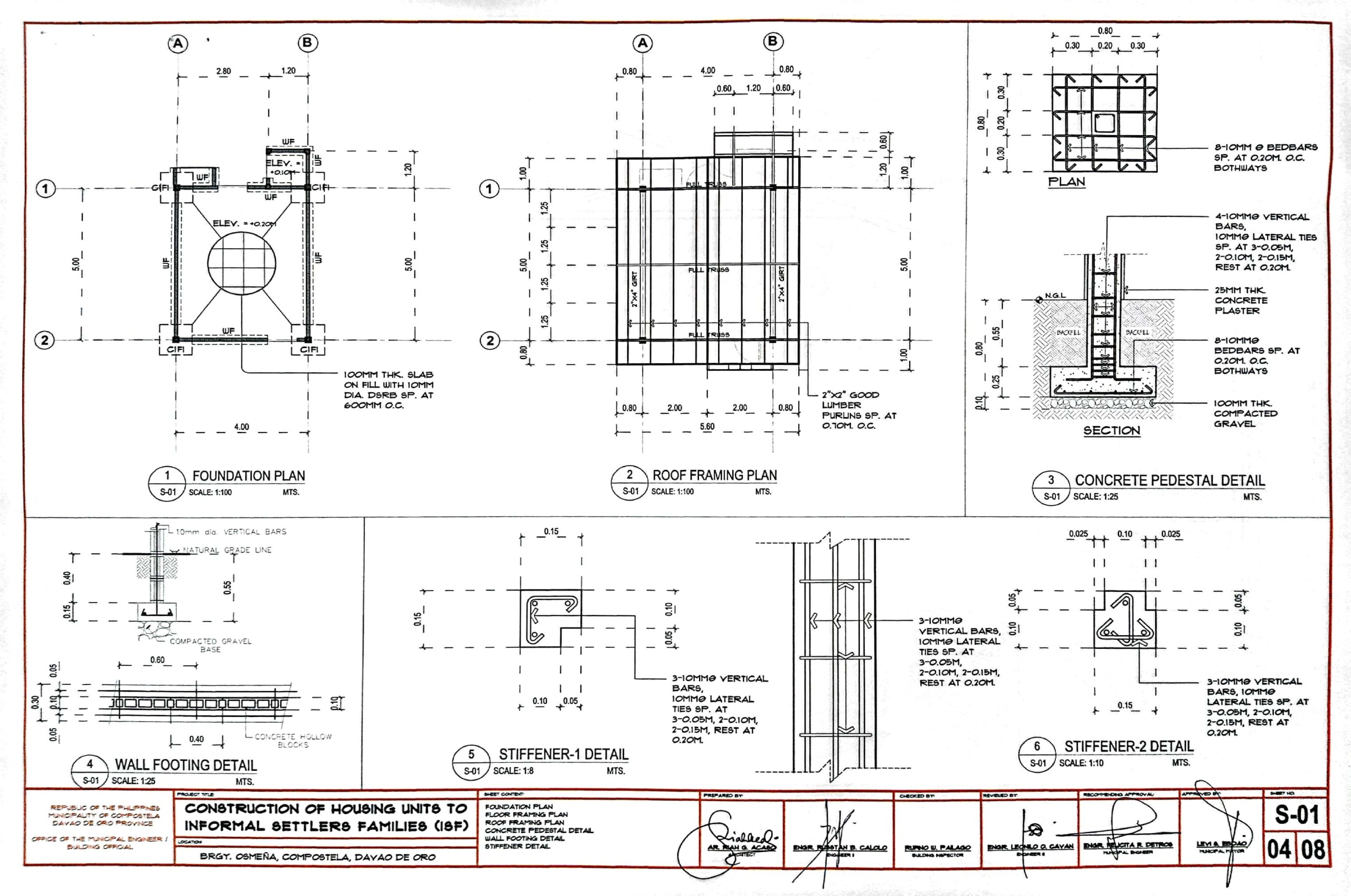
# Section VII. Drawings

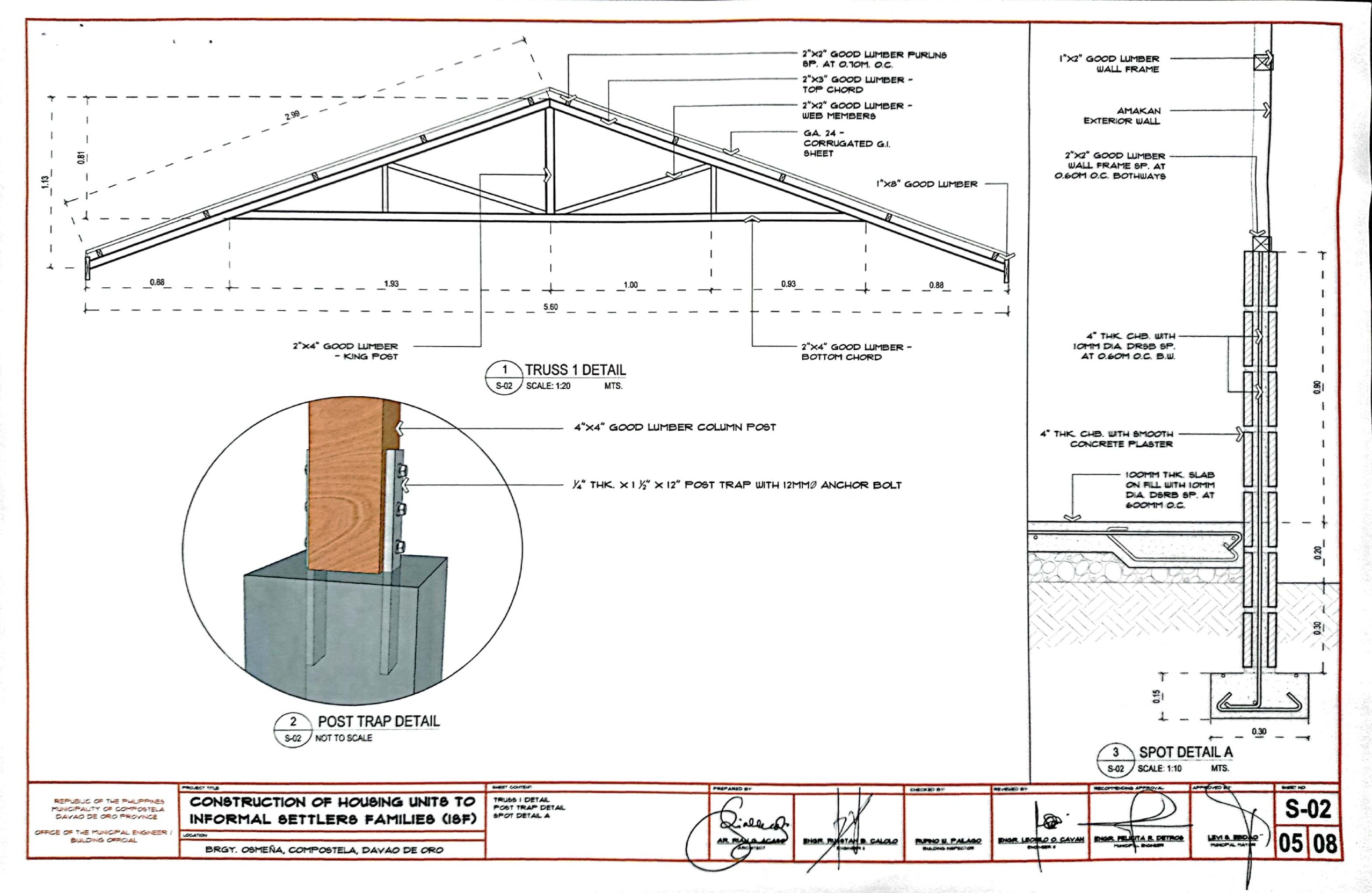
*[Insert here a list of Drawings. The actual Drawings, including site plans, should be attached to this section, or annexed in a separate folder.]*

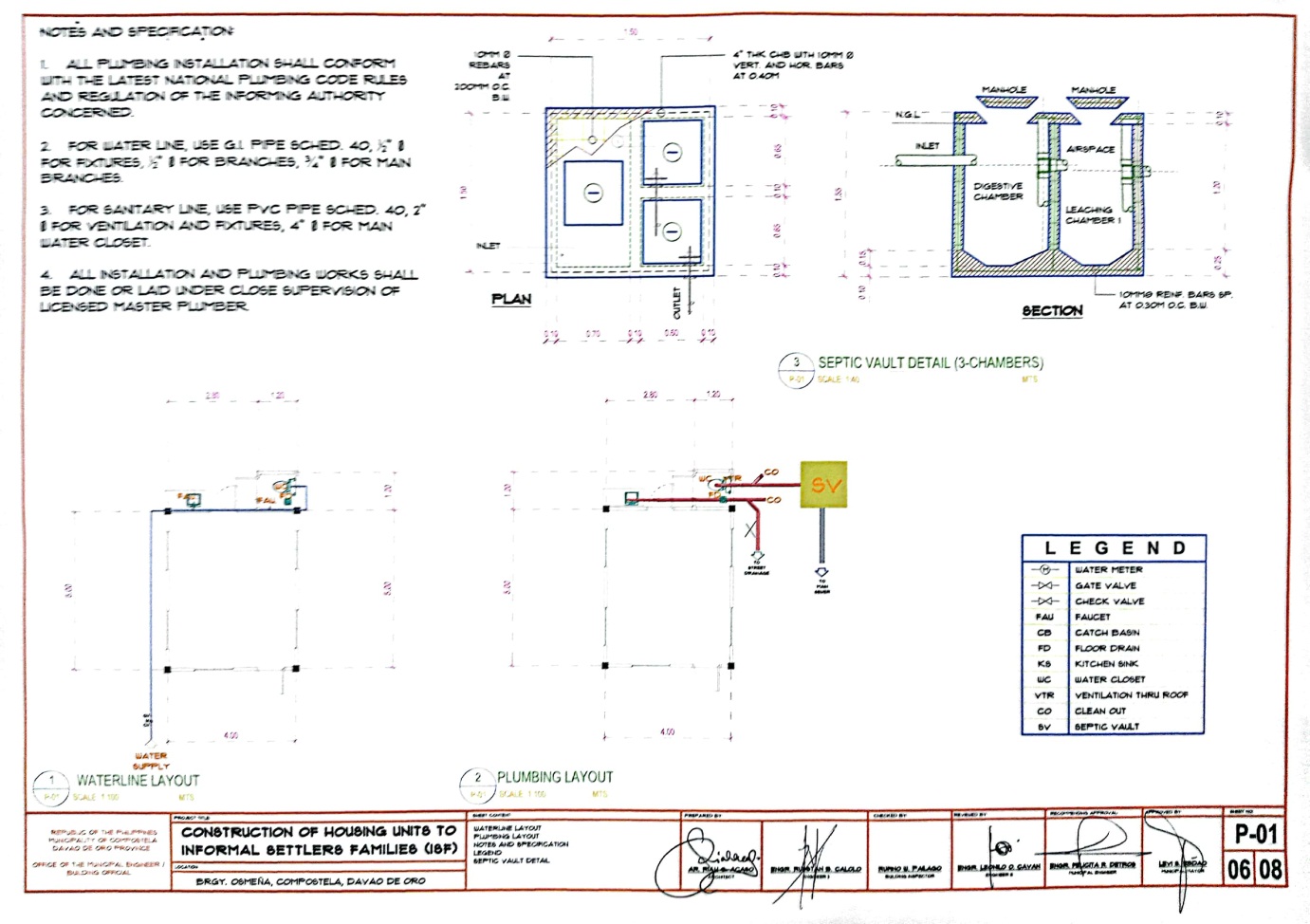


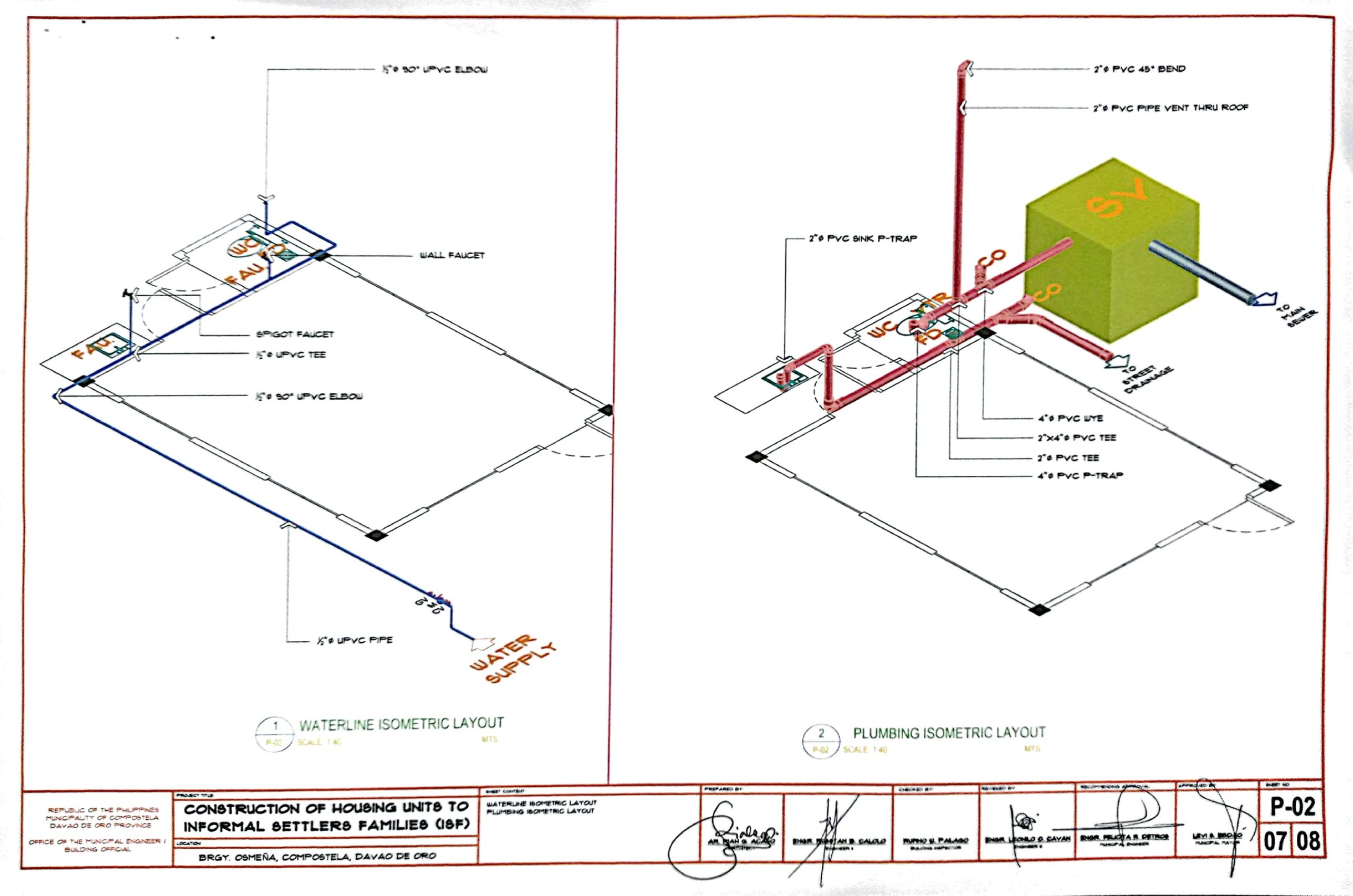


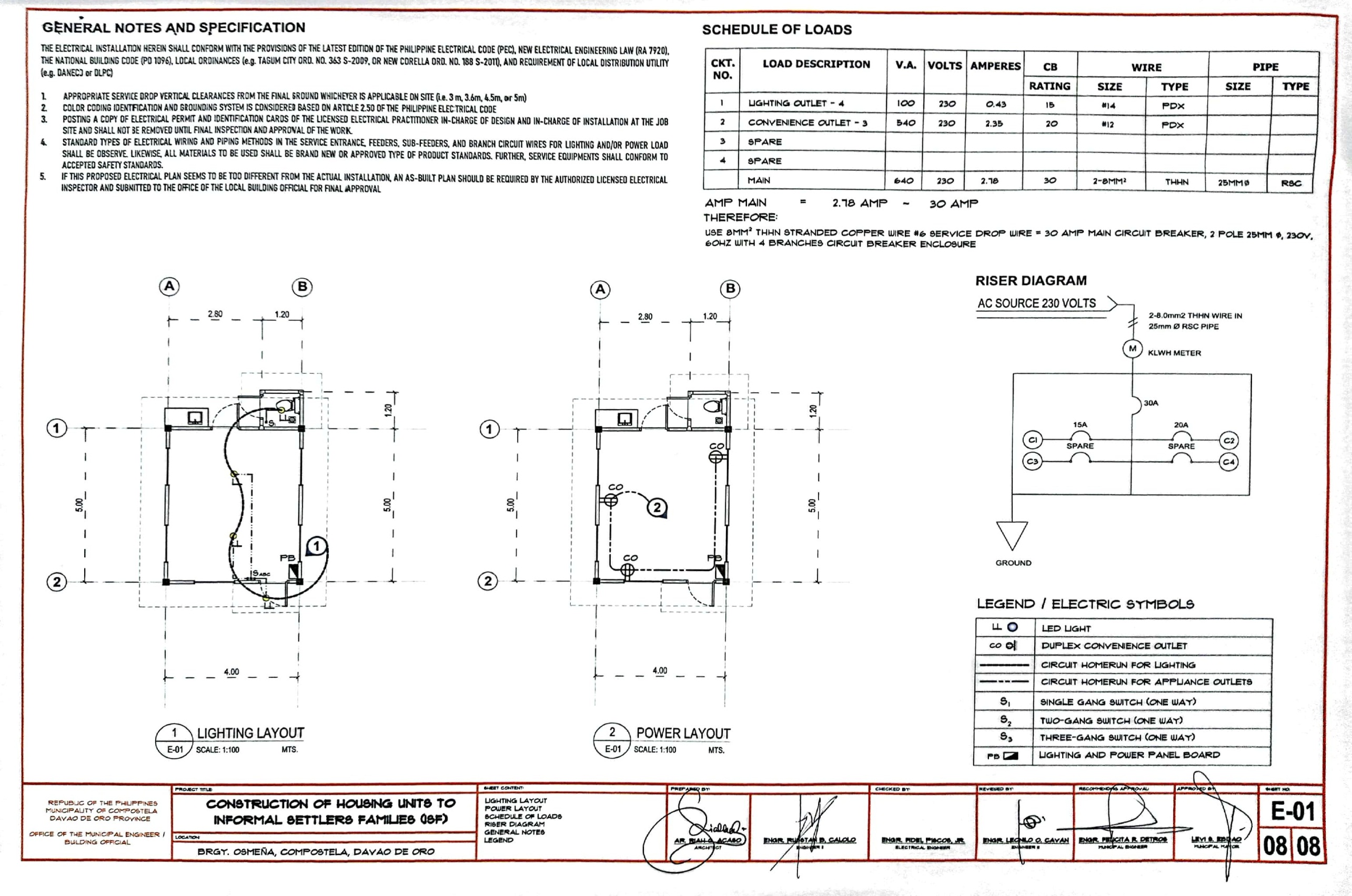












# Section VIII. Bill of Quantities

**Project Title: *Construction of Housing Units to Informal Settlers Families (ISF)***

**ABC (Php): *5,523,808.69***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Project Title: ***Construction of Housing Units to Informal Settlers Families (ISF)*** | | | | | |
| ABC (Php): ***5,523,808.69*** | | | | | |
| Item No. | Description of Works | Quantity | Unit | Unit Price (In words & figures) | Total Price (In words & figures) |
| 1. | I. Mobilization / Demobilization | 1 | lot |  |  |
| 2. | II. Concrete Works  a. Footing/ Column | 40.6 | Cu.m. |  |  |
| 3. | III. Masonry Works  CHB Walling | 644.96 | Sq.m. |  |  |
| 4. | IV. Carpentry Works  Carpentry and Joinery | 1,307.9 | Sq.m |  |  |
| 5. | Windows and Accessories | 208.8 | Sq.m. |  |  |
| 6. | V. Roofing Works  Roof Covering | 591.6 | Sq.m |  |  |
| 7. | VI. Electrical Works  Load Side | 1 | lot |  |  |
| 8. | Line Side | 1 | lot |  |  |
| 9. | VII. Plumbing Works  Water Line | 1 | lot |  |  |
| 10. | Sanitary Line and Fixture | 1 | lot |  |  |
| 11. | Septic Tank | 1 | lot |  |  |
| ***GRAND TOTAL (In words and Figures)*** | | | | |  |

Note: Total cost of line item includes cost of Contractor’s Profit, VAT Tax, others

|  |  |  |
| --- | --- | --- |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Name of Bidder | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Authorized Signatory | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Date |

# Section IX. Checklist of Technical and Financial Documents

**Checklist of Technical and Financial Documents**

|  |  |  |
| --- | --- | --- |
| 1. **TECHNICAL COMPONENT ENVELOPE** | | |
| ***Class “A” Documents*** | | |
| *Legal Documents* | | |
|  | * + - 1. Valid PhilGEPS Registration Certificate (Platinum Membership) (all pages);   **or** | |
|  | * + - 1. 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** | |
|  | * + - 1. 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** | |
|  | 1. Tax clearance per E.O. No. 398, s. 2005, as finally reviewed and approved by the Bureau of Internal Revenue (BIR). | |
| *Technical Documents* | | |
|  | 1. 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** | |
|  | 1. 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** | |
|  | 1. 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** | |
|  | 1. 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** | |
|  | 1. Project Requirements, which shall include the following: | |
|  | * 1. Organizational chart for the contract to be bid; | |
|  | * 1. 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; | |
|  | * 1. 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;   2. Affidavit of Site Inspection;   3. Construction schedule and S-curve;   4. Manpower schedule;   5. Construction methods;   6. Equipment utilization schedule;   7. Construction Safety and Health Program approved by DOLE – to be submitted on the first billing;   8. PERT/CPM **and** | |
|  | 1. 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. | |
|  | 1. Mayor’s Permit (Municipality of Compostela) | |
|  | 1. Bidder’s Fee (Official Receipt) | |
|  |  | |
| *Financial Documents* | | |
|  | 1. 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** | |
|  | 1. The prospective bidder’s computation of Net Financial Contracting Capacity (NFCC). | |
| ***Class “B” Documents*** | | |
|  | 1. 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. | |
| 1. **FINANCIAL COMPONENT ENVELOPE** | | |
|  | | 1. Original of duly signed and accomplished Financial Bid Form; **and** |
| *Other documentary requirements under RA No. 9184* | | |
|  | | 1. Original of duly signed Bid Prices in the Bill of Quantities; **and** |
|  | | 1. 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** |
|  | | 1. Cash Flow by Quarter. |

**Bidding Forms**

**Bid Form for the Procurement of Infrastructure Projects**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

#### BID FORM

Date : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Project Identification No. : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

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

1. We have no reservation to the PBDs, including the Supplemental or Bid Bulletins, for the Procurement Project: *[insert name of contract];*
2. We offer to execute the Works for this Contract in accordance with the PBDs;
3. The total price of our Bid in words and figures, excluding any discounts offered below is: *[insert information]*;
4. The discounts offered and the methodology for their application are: *[insert information]*;
5. The total bid price includes the cost of all taxes, such as, but not limited to: *[specify the applicable taxes, e.g. (i) value added tax (VAT), (ii) income tax, (iii) local taxes, and (iv) other fiscal levies and duties],* which are itemized herein and reflected in the detailed estimates,
6. Our Bid shall be valid within the a period stated in the PBDs, and it shall remain binding upon us at any time before the expiration of that period;
7. If our Bid is accepted, we commit to obtain a Performance Security in the amount of *[insert percentage amount]* percent of the Contract Price for the due performance of the Contract, or a Performance Securing Declaration in lieu of the the allowable forms of Performance Security, subject to the terms and conditions of issued GPPB guidelines for this purpose;
8. We are not participating, as Bidders, in more than one Bid in this bidding process, other than alternative offers in accordance with the Bidding Documents;
9. We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal Contract is prepared and executed; and
10. We understand that you are not bound to accept the Lowest Calculated Bid or any other Bid that you may receive.
11. We likewise certify/confirm that the undersigned, is the duly authorized representative of the bidder, and granted full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for the [Name of Project] of the [Name of the Procuring Entity*].*
12. We acknowledge that failure to sign each and every page of this Bid Form, including the Bill of Quantities, shall be a ground for the rejection of our bid.

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Legal Capacity: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Duly authorized to sign the Bid for and behalf of: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**STATEMENT OF THE BIDDER OF ALL ITS ONGOING GOVERNMENT AND PRIVATE CONTRACTS, INCLUDING CONTRACTS AWARDED BUT NOT YET STARTED**

Business Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Business Address: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Name of Contract | Date of Contract | Contract Duration | Owner’s Name & Address | Nature of Work | Contractor’s Role | | Total Contract Value at Award | Estimated Comple-tion Time | Estimated Contract Value at Comple-tion | % of Accomplish-ments | | Value of Outstanding Works |
| Descrip-tion | % of Participa-tion | Planned | Actual |
| *GOVERNMENT* |  |  |  |  |  |  |  |  |  |  |  |  |
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| *PRIVATE* |  |  |  |  |  |  |  |  |  |  |  |  |
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|  | | | | | | | | | | *TOTAL* | |  |

Note: This statement shall be supported with:

1. Notice of Award
2. Contract Agreement

Submitted by: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Printed Name and Signature

Designation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**STATEMENT OF SINGLE LARGEST COMPLETED CONTRACTS (SLCC)**

Business Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Business Address: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Name of Contract | Date of Contract | Owner’s Name & Address | Nature of Work | Contractor’s Role | | Total Contract Value at Award | Date of Completion Time | Total Contract Value at Completion |
| Description | % of Participa-tion |
| Government |  |  |  |  |  |  |  |  |
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| Private |  |  |  |  |  |  |  |  |
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Note: This statement shall be supported with:

1. Notice of Award and/or Notice to Proceed
2. Contract Agreement
3. Certificate of Final Acceptance or Constructors Performance Evaluation System (CPES) of at least satisfactory rating.

Submitted by: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Printed Name and Signature

Designation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**NFCC COMPUTATION**

1. Summary of the Applicant Supplier’s/Distributor’s/Manufacturer’s assets and liabilities on the basis of the attached income tax return and audited financial statement, stamped “RECEIVED” by the Bureau of Internal Revenue or BIR authorized collecting agent, for the immediately preceding year and a certified copy of Schedule of Fixed Assets particularly the list of construction equipment.

|  |  |  |
| --- | --- | --- |
|  |  | Year 20\_\_ |
| 1. | Total Assets |  |
| 2. | Current Assets |  |
| 3. | Total Liabilities |  |
| 4. | Current Liabilities |  |
| 5. | Net Worth (1-3) |  |
| 6. | Net Working Capital (2- 4) |  |

1. The Net Financial Contracting Capacity (NFCC) based on the above data is computed as follows:

NFCC = [(Current Asset – Current Liabilities) (15)] minus value of all outstanding works under ongoing contracts including awarded contracts yet to be started

NFCC = P \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Submitted by:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name of Supplier / Distributor / Manufacturer

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature of Authorized Representative

Date : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Bid Securing Declaration Form**

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

***\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***

REPUBLIC OF THE PHILIPPINES)

CITY OF \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) S.S.

**BID SECURING DECLARATION**

**Project Identification No.: *[Insert number]***

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

I/We, the undersigned, declare that:

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

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

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

*[Insert signatory’s legal capacity]*

Affiant

***[Jurat]***

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

**Omnibus Sworn Statement (Revised)**

***[shall be submitted with the Bid]***

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

REPUBLIC OF THE PHILIPPINES )

CITY/MUNICIPALITY OF \_\_\_\_\_\_ ) S.S.

**AFFIDAVIT**

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

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

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

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

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

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

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

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

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

1. [Name of Bidder] is authorizing the Head of the Procuring Entity or its duly authorized representative(s) to verify all the documents submitted;
2. *[Select one, delete the rest:]*

*[If a sole proprietorship:]* The owner or sole proprietor is not related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

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

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

1. *[Name of Bidder]* complies with existing labor laws and standards; and

1. *[Name of Bidder]* is aware of and has undertaken the responsibilities as a Bidder in compliance with the Philippine Bidding Documents, which includes:
   1. Carefully examining all of the Bidding Documents;
   2. Acknowledging all conditions, local or otherwise, affecting the implementation of the Contract;
   3. Making an estimate of the facilities available and needed for the contract to be bid, if any; and
   4. Inquiring or securing Supplemental/Bid Bulletin(s) issued for the *[Name of the Project]*.

1. *[Name of Bidder]* did not give or pay directly or indirectly, any commission, amount, fee, or any form of consideration, pecuniary or otherwise, to any person or official, personnel or representative of the government in relation to any procurement project or activity.
2. **In case advance payment was made or given, failure to perform or deliver any of the obligations and undertakings in the contract shall be sufficient grounds to constitute criminal liability for Swindling (Estafa) or the commission of fraud with unfaithfulness or abuse of confidence through misappropriating or converting any payment received by a person or entity under an obligation involving the duty to deliver certain goods or services, to the prejudice of the public and the government of the Philippines pursuant to Article 315 of Act No. 3815 s. 1930, as amended, or the Revised Penal Code.**

**IN WITNESS WHEREOF**, I have hereunto set my hand this \_\_ day of \_\_\_, 20\_\_ at \_\_\_\_\_\_\_\_\_\_\_\_, Philippines.

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

*[Insert signatory’s legal capacity]*

Affiant

***[Jurat]***

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

**FOR YOUR INFORMATION!**

**BIDDERS/SUPPLIERS/CONTRACTOR’S**

**ARTICLE 17 – PERMIT FEE FOR PRIVATE CONTRACTORS**

**Section 85 – DEFINITION OF TERMS**

1. **“CONTRACTOR” –** includes persons, natural or juridical, not subject to professional tax under Section 139 of the Local Government Code, whose activity consist essentially of the sale of all kinds of goods or services for a fee, regardless of whether or not the performance of the service calls for the exercise or use of the physical or mental faculties of such contractor or his/her employees or supplier, manufacturer of heavy or light equipment and the likes.

**SECTION 86 – TAX ON BUSINESS SITUATED OUTSIDE THE MUNICIPALITY**

A tax shall be imposed to any person or entity whose business is situated outside the Municipality after participating a public bidding or other modality of procurement have been awarded the contract subject to the existing tax schedule promulgated for the purpose and the nature of business as defined herein.

The total contract cost shown in the Purchase Order and or Contract Agreement shall be the amount subject to tax. Corresponding deduction shall be made for each transaction and for any and all voucher made as payment of obligation incurred after full delivery of goods and services and acceptance thereof.

**SECTION 87 – IMPOSITION OF CONTRACTOR PERMIT FEE**

That any individual, person, company, corporation or having juridical entity shall secure necessary permit and **shall pay a Contractor Permit Fee of One Percent (1%) based on the Project Cost.**

**SECTION 88 – TIME OF PAYMENT**

The fee is imposed shall be payable before issuance of Notice to Proceed or Notice of Award or shall be made before the commencement of the work.

***As per 2022 Revised Omnibus Revenue Code of the Municipality of Compostela.***

