PHILIPPINE BIDDING DOCUMENTS

Procurement of INFRASTRUCTURE PROJECTS

Government of the Republic of the Philippines

PROPOSED CONSTRUCTION OF PUV STOPS AT DON ANTONIO ALONG COMMONWEALTH AVENUE

Project number:
23-00132

Sixth Edition
July 2020

Preface

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

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

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

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

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

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

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

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

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

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

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

TABLE OF CONTENTS

Glossary of Terms, Abbreviations, and Acronyms

ABC – Approved Budget for the Contract.

ARCC – Allowable Range of Contract Cost.

BAC – Bids and Awards Committee.

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

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

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

BIR – Bureau of Internal Revenue.

BSP – Bangko Sentral ng Pilipinas.

CDA – Cooperative Development Authority.

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

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

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

CPI – Consumer Price Index.

DOLE – Department of Labor and Employment.

DTI – Department of Trade and Industry.

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

GFI – Government Financial Institution.

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

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

GOP – Government of the Philippines.

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

LGUs – Local Government Units.

NFCC – Net Financial Contracting Capacity.

NGA – National Government Agency.

PCAB – Philippine Contractors Accreditation Board.

PhilGEPS - Philippine Government Electronic Procurement System.

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

PSA – Philippine Statistics Authority.

SEC – Securities and Exchange Commission.

SLCC – Single Largest Completed Contract.

UN – United Nations.

Section I. Invitation to Bid

Notes on the Invitation to Bid

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

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

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

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

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

d. Any important bid evaluation criteria.

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

REPUBLIC OF THE PHILIPPINES
QUEZON CITY GOVERNMENT
BIDS AND AWARDS COMMITTEE FOR INFRASTRUCTURE & CONSULTANCY

2nd floor, Finance Building, Procurement Department, Quezon City Hall Complex, Elliptical Road, Quezon City

September 05, 2023

Invitation to Bid

No.	Project No.	Project Name	Location	Amount	Duration Cal. Days	Office	Source Fund
Buildings – Small A							
1	23-00028C	Proposed Rehabilitation of Police Station 15	Project 6	661,315.86	60	Department of Engineering	Engineering Department
Buildings – Small B							
2	23-00121	Proposed Rehabilitation of Quezon City Heritage House and Social Hall at Quezon Memorial Circle (Phase 2)	Central	1,919,278.40	60	Department of Engineering	Engineering Continuing
3	23-00122	Proposed Rehabilitation of QC Hall Yakap Day Care Center	Central	2,934,376.19	60	Department of Engineering	Engineering Continuing
4	23-00123	Proposed Construction of one (1) storey NOH-SCC Livelihood Center	Lourdes	3,617,765.44	90	Department of Engineering	Special Education Fund
5	23-00124	Proposed Rehabilitation of Perimeter Fence and Waterline System at San Jose High School	San Jose	5,947,437.69	90	Department of Engineering	Special Education Fund
6	23-00125	Proposed Installation of Airconditioning Units and Rehabilitation of Second Floor of QCPD Gymnasium inside Camp Karingal	Krus Na Ligas	7,675,971.24	30	Department of Engineering	Engineering Continuing
7	23-00126	Proposed Repainting of Exterior Walls and Rehabilitation of Exterior Windows and Ceiling (4th and 5th Floor) at Civic Center Building D	Central	8,075,810.83	90	Department of Engineering	Engineering Continuing
8	23-00127	Proposed Rehabilitation of Civic Center Building B Basement to Fourth Floor	Central	10,389,383.21	90	Department of Engineering	Engineering Continuing
9	23-00128	Proposed Construction of PUV Stop at ATI along Elliptical Road	Vasra	14,049,945.90	150	Department of Engineering	Dotr-Trust Fund

10	23-00129	Proposed Construction of PUV Stops at TUCP along Elliptical Road	Old Capitol Site	14,734,295.21	150	Department of Engineering	Dotr-Trust Fund
11	23-00130	Proposed Construction of PUV Stops at Tandang Sora Avenue along Commonwealth Avenue	Matandang Balara and Culiat	21,912,855.93	150	Department of Engineering	Dotr-Trust Fund
12	23-00131	Proposed Construction of PUV Stops at PHILCOA along Commonwealth Avenue	UP Campus and Old Capitol Site	22,253,310.84	150	Department of Engineering	Dotr-Trust Fund
13	23-00132	Proposed Construction of PUV Stops at Don Antonio along Commonwealth Avenue	Batasan Hills and Holy Spirit	24,330,245.01	150	Department of Engineering	Dotr-Trust Fund
14	23-00133	Proposed Construction of three (3) storey Multi-Purpose Building (Phase 2)	Project 6	25,196,844.06	270	Department of Engineering	OCM-20% Community Development Fund
15	23-00134	Proposed Construction of PUV Stops at Batasan along Commonwealth Avenue	Batasan Hills and Holy Spirit	26,406,576.22	150	Department of Engineering	Dotr-Trust Fund
16	22-00139D	Proposed Rehabilitation of San Bartolome Multi-Purpose Hall	San Bartolome	1,846,604.16	60	Engineering Department	OCM-20% Community Development Fund (Continuing Appropriation)
Buildings – Medium A							
17	23-00135	Proposed Construction of three (3) storey with Roof Deck Bernardo Social Hygiene Clinic (Phase 1)	Pinagkaisahan	34,444,561.71	180	Department of Engineering	OCM-20% Community Development Fund
18	23-00136	Proposed Construction of four (4) storey with Deck Bungad Multi-Purpose Building	Bungad	52,003,914.16	270	Department of Engineering	OCM-20% Community Development Fund-Continuing Appropriation
19	23-00137	Proposed Rehabilitation of Multi-Purpose Building at District 1	San Antonio	71,010,712.53	300	Department of Engineering	OCM-20% Community Development Fund-Continuing Appropriation
20	23-00103B	Proposed Construction of Multi-Purpose Open Field at Quezon Memorial Circle, Elliptical Road	Central	62,089,642.86	210	Department of Engineering	Engineering Department (Continuing Appropriation)
Buildings – Large A							
21	23-00138	Proposed Construction of eight (8) storey with Basement Bagbag Integrated High School Building including Land Development (Phase 2)	Bagbag	317,584,253.48	360	Department of Engineering	Special Education Fund

Parks – Small B							
22	23-00139	Proposed Development of Various Pocket Parks at Dr. Garcia Street corner Mo. Ignacia Avenue	Paligsahan	2,368,091.47	90	Parks Development & Administration Department	Engineering Continuing
Parks – Medium A							
23	23-00140	Proposed Development of Talayan Linear Park	Talayan	48,630,770.46	360	Parks Development & Administration Department	Engineering Continuing
Roads – Small A							
24	23-00022C	Proposed Rehabilitation (Surface Improvement) at San Lorenzo Ruiz Street	Talipapa	827,700.13	30	Department of Engineering	OCM-20% Community Development Fund
Roads – Small B							
25	23-00141	Proposed Rehabilitation of Pathwalk and Drainage at Area VII, Cluster 8, 9 and 10	Tatalon	2,041,967.33	30	Department of Engineering	OCM-20% Community Development Fund

1. The **QUEZON CITY LOCAL GOVERNMENT**, through *funding source of various years* intends to apply the sum stated above being the Approved Budget for the Contract (ABC) to payments under the contract *for the above stated Projects.* Bids received in excess of the ABC shall be automatically rejected at bid opening.

2. The **QUEZON CITY LOCAL GOVERNMENT** now invites bids for the above Procurement Project. Completion of the Works is required *as stated above*. Bidders should have completed a contract similar to the Project. The description of an eligible bidder is contained in the Bidding Documents, particularly, in Section II (Instructions to Bidders).

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 **QUEZON CITY LOCAL GOVERNMENT – BAC Secretariat** and inspect the Bidding Documents at the address given below *weekdays from **8:00 am. – 5:00 p.m.***

5. A complete set of Bidding Documents may be acquired by interested bidders on **6 September 2023 (Wednesday)** from given address and website/s below *and upon payment of a non-refundable fee for the Bidding Documents, pursuant to the latest Guidelines issued by the GPPB*. The Procuring Entity shall allow the bidder to present its proof of payment for the fees *presented in person.*

STANDARD RATES:

Approved Budget for the Contract	Maximum Cost of Bidding Documents (in Philippine Peso)
500,000 and below	500.00
More than 500,000 up to 1 Million	1,000.00
More than 1 Million up to 5 Million	5,000.00
More than 5 Million up to 10 Million	10,000.00
More than 10 Million up to 50 Million	25,000.00
More than 50 Million up to 500 Million	50,000.00
More than 500 Million	75,000.00

The following are the requirements for purchase of Bidding Documents;

1. PhilGEPS Registration Certificate (Platinum – 3 Pages)
2. Document Request List (DRL)
3. Authorization to purchase bidding documents
   3.1 Secretary's Certificate (for corporation)
   3.2 Special Power of Attorney (for sole proprietorship)
4. Notarized Joint Venture Agreement (if applicable)
5. Letter of Intent

It must be duly received by the BAC Secretariat at 2nd Floor, Procurement Department, Finance Building, Quezon City Hall Compound.

6. The ***QC- BAC- INFRASTRUCTURE & CONSULTANCY*** will hold a Pre-Bid Conference[1] on **September 14, 2023** at **9:00 AM** at **2nd Floor**, **Procurement Department-Bidding Room, Finance Building**, **Quezon City Hall Compound** or we encourage the prospective bidders to join through our **Virtual Conference (ZOOM APP)** which shall be open to prospective bidders.

   Virtual Conference (ZOOM APP)
   Meeting ID: 854 9489 0133
   Password: 273320

7. Bids must be duly received by the BAC Secretariat through manual submission at the office address as indicated below, on or before **September 28, 2023 – 9:00 AM**. Late bids shall not be accepted.

8. All bids must be accompanied by a bid security in any of the acceptable forms and in the amount stated in **ITB** Clause 16.

9. Bid opening shall be on **September 28, 2023 – 10:00 AM** at **2nd Floor**, **Procurement Department-Bidding Room, Finance Building**, **Quezon City Hall Compound** and/or via Zoom. Bids will be opened in the presence of the bidders' representatives who choose to attend the activity.

   Virtual Conference (ZOOM APP)
   Meeting ID: 810 3646 5257
   Password: 201522

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

10. The ***Quezon City Local Government*** reserves the right to reject any and all bids, declare a failure of bidding, or not award the contract at any time prior to contract award in accordance with Sections 35.6 and 41 of the 2016 revised Implementing Rules and Regulations (IRR) of RA No. 9184, without thereby incurring any liability to the affected bidder or bidders.

11. For further information, please refer to:

    ATTY. DOMINIC B. GARCIA
    OIC, Procurement Department
    2nd Floor, Procurement Department,
    Finance Building, Quezon City Hall Compound
    Elliptical Road, Barangay Central Diliman, Quezon City.
    Tel. No. (02)8988-4242 loc. 8506/8710
    Email Add: bacinfra.procurement@quezoncity.gov.ph
    Website: **www.quezoncity.gov.ph**

12. You may visit the following websites:

    For downloading of Bidding Documents: **https://quezoncity.gov.ph/public-notices/procurement/**

By:

ARCH. LUCILLE H. CHUA, fuap, piep
Chairperson, BAC-Infra and Consultancy

Section II. Instructions to Bidders

Notes on the Instructions to Bidders

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

1. Scope of Bid

The Procuring Entity, **Quezon City Government** invites Bids for the **PROPOSED CONSTRUCTION OF PUV STOPS AT DON ANTONIO ALONG COMMONWEALTH AVENUE,** with Project Identification Number **23-00132.**

[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).

2. Funding Information

2.1. The GOP through the source of funding as indicated below for **2023** in the amount of **Twenty-Four Million Three Hundred Thirty Thousand Two Hundred Forty-Five Pesos and 01/100 Ctvs. (P 24,330,245.01).**

2.2. The source of funding is:

a. LGUs, the Annual or Supplemental Budget, as approved by the Sanggunian.

3. Bidding Requirements

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

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

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

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

The Procuring Entity, as well as the Bidders and Contractors, shall observe the highest standard of ethics during the procurement and execution of the contract. They or through an agent shall not engage in corrupt, fraudulent, collusive, coercive, and

obstructive practices defined under Annex "I" of the 2016 revised IRR of RA No. 9184 or other integrity violations in competing for the Project.

5. Eligible Bidders

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

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

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

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

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

6. Origin of Associated Goods

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

7. Subcontracts

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

The Procuring Entity has prescribed that:

a. Subcontracting is not allowed.

7.1. *[If Procuring Entity has determined that subcontracting is allowed during the bidding , state:]* The Bidder must submit together with its Bid the documentary requirements of the subcontractor(s) complying with the eligibility criterial stated in **ITB** Clause 5 in accordance with Section 23.4 of the 2016 revised IRR of RA No. 9184 pursuant to Section 23.1 thereof.

7.2. *[If subcontracting is allowed during the contract implementation stage, state:]* The Supplier may identify its subcontractor during the contract implementation stage. Subcontractors identified during the bidding may be changed during the implementation of this Contract. Subcontractors must submit the documentary

requirements under Section 23.1 of the 2016 revised IRR of RA No. 9184 and comply with the eligibility criteria specified in **ITB** Clause 5 to the implementing or end-user unit.

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

8. Pre-Bid Conference

The Procuring Entity will hold a pre-bid conference for this Project on the specified date and time and either at its physical address on **September 14, 2023, 9:00 A.M. at 2nd Floor, Procurement Department-Bidding Room, Finance Building, Quezon City Hall Compound** and/or we encourage the prospective bidders to join through our **Virtual Conference (ZOOM APP) Meeting ID: 854 9489 0133 Password: 273320**

9. Clarification and Amendment of Bidding Documents

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

10. Documents Comprising the Bid: Eligibility and Technical Components

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

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

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

10.4. A List of Contractor's key personnel (e.g., Project Manager, Project Engineers, Materials Engineers, and Foremen) assigned to the contract to be bid, with their

complete qualification and experience data shall be provided. These key personnel must meet the required minimum years of experience set in the **BDS**.

10.5. A List of Contractor's major equipment units, which are owned, leased, and/or under purchase agreements, supported by proof of ownership, certification of availability of equipment from the equipment lessor/vendor for the duration of the project, as the case may be, must meet the minimum requirements for the contract set in the **BDS**.

11. Documents Comprising the Bid: Financial Component

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

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

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

12. Alternative Bids

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

13. Bid Prices

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

14. Bid and Payment Currencies

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

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

a. Philippine Pesos.

15. Bid Security

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

15.2. The Bid and bid security **in no case shall exceed One Hundred Twenty (120) calendar days from the date of opening of bids, unless duly extended by the bidder upon the request of the Head of the Procuring Entity (HoPE) of the Quezon City Local Government**. Any bid not accompanied by an acceptable bid security shall be rejected by the Procuring Entity as non-responsive.

16. Sealing and Marking of Bids

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

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

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

17. Deadline for Submission of Bids

The Bidders shall submit on the specified date and time and either at its physical address or through online submission as indicated in paragraph **5** of the **IB.**

18. Opening and Preliminary Examination of Bids

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

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

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

19. Detailed Evaluation and Comparison of Bids

19.1. The Procuring Entity's BAC shall immediately conduct a detailed evaluation of all Bids rated "*passed*" using non-discretionary pass/fail criteria. The BAC

shall consider the conditions in the evaluation of Bids under Section 32.2 of 2016 revised IRR of RA No. 9184.

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

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

20. Post Qualification

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

21. Signing of the Contract

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

Section III. Bid Data Sheet

Notes on the Bid Data Sheet (BDS)

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

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

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

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

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

Bid Data Sheet

<table>
<tr><th>ITB Clause</th><th></th></tr>
<tr><td>5.2</td><td>For this purpose, similar contracts shall refer to contracts which have the same major categories of work.</td></tr>
<tr><td>7.1</td><td>Subcontracting is not allowed.</td></tr>
<tr><td>10.3</td><td>No additional contractor license or permit is required

In addition, eligible bidders shall qualify or comply with the following:

1. Bidders with valid Philippine Contractors Accreditation Board (PCAB)

Type

Buildings – Small B</td></tr>
<tr><td>10.4</td><td>The minimum work experience requirements for key personnel are the following:

<table>
<tr><th>Qnty.</th><th>Key Personnel</th><th>General Experience</th><th>Relevant Experience</th></tr>
<tr><td>1</td><td>Project-in-Charge</td><td>3 years</td><td>3 years</td></tr>
<tr><td>1</td><td>General Foreman</td><td>3 years</td><td>3 years</td></tr>
<tr><td>1</td><td>Trade Engineer/Leadman for Civil Works</td><td>3 years</td><td>3 years</td></tr>
<tr><td>1</td><td>Trade Engineer/Leadman for Electrical Works</td><td>3 years</td><td>3 years</td></tr>
<tr><td>1</td><td>Safety Officer</td><td>3 years</td><td>3 years</td></tr>
<tr><td>1</td><td>DPWH duly accredited Materials Engineer</td><td>3 years</td><td>3 years</td></tr>
</table>

In addition, the bidder must execute an affidavit of undertaking duly notarized stating that the foregoing personnel shall perform work exclusively for the project until its completion. Please see attached bid forms.</td></tr>
<tr><td>10.5</td><td>The minimum major equipment requirements are the following:

<table>
<tr><th>Equipment</th><th>Capacity</th><th>Number of Units</th></tr>
<tr><td>Dump Truck</td><td>12 yd^3</td><td>2</td></tr>
<tr><td>Payloader</td><td></td><td>1</td></tr>
<tr><td>Bulldozer</td><td></td><td>1</td></tr>
<tr><td>Backhoe</td><td>0.80 cu.m.</td><td>1</td></tr>
<tr><td>Backhoe with Breaker</td><td>0.80 cu.m.</td><td>1</td></tr>
<tr><td>Plate Compactor</td><td>5 HP</td><td>1</td></tr>
<tr><td>One Bagger Mixer</td><td></td><td>1</td></tr>
<tr><td>Concrete Vibrator</td><td></td><td>2</td></tr>
<tr><td>Water Truck</td><td></td><td>1</td></tr>
</table>
</td></tr>
</table>

	<table><tr><td>Welding Machine</td><td></td><td>2</td></tr><tr><td>Cutting outfit</td><td></td><td>2</td></tr><tr><td>Truck Mounted Crane</td><td>41-45 mts</td><td>1</td></tr><tr><td>Vibro Hammer</td><td>272.22 hp</td><td>1</td></tr><tr><td>Generator Set (900W)</td><td></td><td>1</td></tr><tr><td>Bar Cutter</td><td></td><td>1</td></tr><tr><td>Bar Bender</td><td></td><td>1</td></tr><tr><td>Pumpcrete</td><td></td><td>1</td></tr><tr><td>Cargo Truck/Delivery Truck</td><td>(5T), All Models</td><td>1</td></tr><tr><td>Applicator Machine</td><td></td><td>1</td></tr><tr><td>Kneading Machine</td><td></td><td>1</td></tr><tr><td>Drilling Machine / Hammer</td><td>CP-55A</td><td>1</td></tr></table> ***In addition, the bidder must execute an affidavit of undertaking duly notarized stating that the foregoing equipment shall be used exclusively for the project until its completion. Please see attached bid forms.***
12	*[Insert Value Engineering clause if allowed.]*
15.1	The bid security shall be in the form of a Bid Securing Declaration with project number, or any of the following forms and amounts: a) The amount of not less than Php 486,604.90 or equivalent to two percent (2%) of ABC if bid security is in cash, cashier's/manager's check, bank draft/guarantee or irrevocable letter of credit; or b) The amount of not less than Php 1,216,512.25 or equivalent to 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 additional requirement.
21	**Additional Contract Documents relevant to the Project as required:** **1. Construction Schedule and S-curve,** **2. Manpower Schedule,** **3. Construction Methods,** **4. Equipment Utilization Schedule,** **5. PERT/CPM or other acceptable tools of project scheduling, shall be included in the submission of Technical Proposal.**

Section IV. General Conditions of Contract

Notes on the General Conditions of Contract

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

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

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

1. Scope of Contract

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

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

2. Sectional Completion of Works

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

3. Possession of Site

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

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

4. The Contractor's Obligations

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

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

5. Performance Security

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

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

6. Site Investigation Reports

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

7. Warranty

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

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

8. Liability of the Contractor

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

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

9. Termination for Other Causes

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

10. Dayworks

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

11. Program of Work

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

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

12. Instructions, Inspections and Audits

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

13. Advance Payment

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

14. Progress Payments

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

15. Operating and Maintenance Manuals

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

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

Section V. Special Conditions of Contract

Notes on the Special Conditions of Contract

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

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

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

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

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

Special Conditions of Contract

GCC Clause	
2	Completion of work shall be within 150 calendar days.
4.1	The Procuring Entity shall give possession of all parts of the Site to the Contractor upon receipt of the Notice to Proceed.
6	The site investigation reports are: *[list here the required site investigation reports.]*
7.2	*[Select one, delete the other.]* *[In case of permanent structures, such as buildings of types 4 and 5 as classified under the National Building Code of the Philippines and other structures made of steel, iron, or concrete which comply with relevant structural codes (e.g., DPWH Standard Specifications), such as, but not limited to, steel/concrete bridges, flyovers, aircraft movement areas, ports, dams, tunnels, filtration and treatment plants, sewerage systems, power plants, transmission and communication towers, railway system, and other similar permanent structures:]* Fifteen (15) years. *[In case of semi-permanent structures, such as buildings of types 1, 2, and 3 as classified under the National Building Code of the Philippines, concrete/asphalt roads, concrete river control, drainage, irrigation lined canals, river landing, deep wells, rock causeway, pedestrian overpass, and other similar semi-permanent structures:]* Five (5) years. *[In case of other structures, such as bailey and wooden bridges, shallow wells, spring developments, and other similar structures:]* Two (2) years.
10	Dayworks are applicable at the rate shown in the Contractor's original Bid.
13	The amount of the advance payment is no more that fifteen percent (15%) of the Contract Price subject to approval by the HOPE and compliance with the conditions under RA 9184 and its IRR.
14	No further instructions.
15.1	The date by which operating and maintenance manuals are required is *thirty (30) days* The date by which "as built" drawings are required as part of final payment
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 ten (10%) percent of the contract price.

Section VI. Specifications

Notes on Specifications

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

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

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

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

Sample Clause: Equivalency of Standards and Codes

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

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

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

Republic of the Philippines
Quezon City
KAGAWARAN NG INHINYERYA
(CITY ENGINEERING DEPARTMENT)
Civic Center Building B, Quezon City Hall Compound, Elliptical Road
Diliman, Central 1100 Quezon City
Trunkline: +63 2 8988 4242

PROJECT TITLE : **PROPOSED CONSTRUCTION OF PUV STOPS AT DON ANTONIO ALONG COMMONWEALTH AVENUE**

LOCATION : **BARANGAY BATASAN HILLS AND HOLY SPIRIT, QUEZON CITY**

TECHNICAL SPECIFICATIONS

I. GENERAL REQUIREMENTS

A. Comply with the current and existing laws, ordinances and applicable codes, rules and regulations, and standards. Any works performed contrary to the existing laws, rules and regulations, ordinances and standards without notice shall bear all cost arising therefrom.

B. Drawings, specifications, codes and standards are minimum requirements. Where requirements differ, the more stringent apply.

C. Should there be any change(s) in drawings or specifications, it is required to comply with the governing regulations, notify the implementing agency.

D. Photographs shall be taken as, when and where directed at intervals of not more than one month. The photographs shall be sufficient in number and location, to record the exact progress of the works. The photographs shall be retained and will become the property of the Government.

E. Site verification / inspection shall be conducted to validate the scope of works. No extra compensation and extension of time shall be given due to negligence or inadvertence.

F. The quality of materials shall be of the best grade of their respective kinds for the purpose. The work shall also be performed in the best and most capable manner in strict accordance with requirements of the plans and details. All materials not conforming to the requirements of these specifications shall be considered as defective.

G. All equipment and installations shall meet or exceed minimum requirements of the standards and codes.

H. Mobilization and Demobilization (if applicable)

1. Mobilization shall include all activities and related costs for transportation of personnel, equipment, and operating supplies to the site; establishment of offices, buildings, and other necessary general facilities for the operations at the site.

2. Demobilization shall include all activities and costs for transportation of personnel, equipment, and supplies not anymore required within the construction site including the disassembly, removal and site clean-up of offices and other facilities assembled on the site specifically for this contract.

I. Execute work in strict accordance with the best practices of the trades in a thorough, substantial, workmanlike manner by competent workmen. Provide a competent, experienced, full-time supervisor who is authorized to make decisions on behalf of the Contractor.

J. Temporary Facilities and Utilities

1. All facilities shall be near the job site, where necessary and shall conform to the best standard for the required types.

2. Temporary facilities shall be provided and maintained including sanitary facilities and first aid stations.

3. Temporary utilities shall be sufficiently provided until the completion of the project such as water, power and communication.

23-00132

4. Temporary enclosure shall be provided around the construction site with adequate guard lights, railings and proper signage.

5. Temporary roadways shall be constructed and maintained to sustain loads to be carried on them during the entire construction period.

6. Upon completion of the work, the temporary facilities shall be demolished, hauled-out and disposed properly.

K. Adequate construction safety and health protection shall be provided at all times during the execution of work to both workers and property.

1. A fully-trained Medical Aide shall be employed permanently on the site who shall be engaged solely to medical duties.

2. The medical room shall be provided with waterproofing; it could be a building or room designated and used exclusively for the purpose and have a floor area of at least 15 square meters and a glazed window area of at least 2 square meters.

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

4. Additional safety precautions shall be provided in the event of a pandemic. Protocols set forth by the government shall be strictly followed.

5. Construction safety shall consist of construction canopy and safety net.

L. Necessary protections to the adjacent property shall be provided to avoid untoward incidents / accidents.

M. Final cleaning of the work shall be employed prior to the final inspection for the certification of final acceptance. Final cleaning shall be applied on each surface or unit of work and shall be of condition expected for a building cleaning and maintenance program.

II. SITE WORKS

A. All grades, lines, levels and dimensions shall be verified as indicated on the plans and details. Any discrepancies or inconsistencies shall be reported before commencing work.

B. This Item shall consist of the removal wholly or in part, and satisfactory disposal of all buildings, fences, structures, old pavements, abandoned pipe lines, and any other obstructions which are not designated or permitted to remain, except for the obstructions to be removed and disposed of under other items in the Contract.

Removal and/or demolition of existing structures shall be done in accordance to safety procedures.

C. All excavations shall be made to grade as indicated in the plans. Whenever water is encountered in the excavation process, it shall be removed by pumping, care being taken that the surrounding soil particles are not disturbed or removed.

The Contractor shall notify the Engineer sufficiently in advance of the beginning of any excavation so that cross-sectional elevations and measurements 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.

23-00132

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.

D. All excavated materials, so far as suitable, shall be utilized as backfill. The surplus materials shall be disposed of 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.

All backfills shall be placed in layers not exceeding to 150mm in thickness and each layer shall be thoroughly compacted by wetting, tamping and rolling.

E. Soil Poisoning. There are two methods usually adopted in soil poisoning which are as follows:

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

2. Drenching. When soil show termite infestation, this method shall be applied. The building area shall be thoroughly drenched with Liquid Termicide Concentrate working solution at the rate of 24 liters per square meter.

III. CIVIL / STRUCTURAL WORKS

A. CONCRETE WORKS

1. Delivery, Storage, and Handling: All materials shall be so delivered, stored, and handled as to prevent the inclusion of foreign materials and the damage of materials by water or breakage. Package materials shall be delivered and stored in original packages until ready to be used. Packages or materials showing evidence of water or other damage shall be rejected.

2. Unless otherwise specified herein, concrete works shall conform to the requirements of the ACI Building Code. Full cooperation shall be given on trades to install embedded items. Provisions shall be made for setting items not placed in the forms. Before concrete is placed, embedded items shall have been inspected and tested for concrete aggregates and other materials shall have been done.

3. Materials

a. Cement for concrete shall conform to the requirements of specifications for Portland Cement (ASTM C – 150).

b. Water used in mixing concrete shall be clean and free from other injurious amounts of oils, acids, alkaline, organic materials or other substances that may be deleterious to concrete or steel.

c. Fine aggregates shall be beach or river sand conforming to ASTM C33, "Specification for Concrete Aggregates". Sand particle shall be course, sharp, clean free from salt, dust, loam, dirt and all foreign matters.

d. Coarse aggregates shall be either natural gravel or crushed rock conforming to the "Specifications for Concrete Aggregates (ASTM C33). The minimum size of aggregates shall be larger than one fifth (1/5) of the narrowest dimensions between sides of the forms within which the concrete is to be cast nor larger than three fourths (3/4) of the minimum clear spacing between reinforcing bars or between reinforcing bars and forms.

4. Proportioning and Mixing

   a. Proportioning and mixing of concrete shall conform to the requirements for Item 405 of the standard specification with the following proportions:

      Cement: Sand: Gravel
      Class "A" - 1: 2: 3
      Class "B" - 1: 2: 4
      Class "C" - 1: 2 ½

      23-00132

   b. Concrete mixture to be used for concrete shall conform with the structural requirements.

   c. Mixing – concrete shall be machine mixed. Mixing shall begin within 30 minutes after the cement has been added to the aggregates.

5. Forms

   a. General – Forms shall be used whatever necessary to confine the concrete and shape it to the required lines, or to insure the concrete of contamination with materials caving from adjacent, excavated surfaces. Forms shall have sufficient strength to withstand the pressure resulting from placement and vibration of the concrete, and shall be maintained rigidly in correct position. Forms shall be sufficiently tight to prevent loss or mortar from the concrete. Forms shall be ¼" (6mm) thick ordinary plywood and form lumber.

   b. Cleaning of Forms – before placing the concrete, the contact surfaces of the formed hall be cleaned of encrustations of mortar, the grout or other foreign material.

   c. Removal of Forms – forms shall be removed in a manner which will prevent damage to the concrete. Forms shall not be removed without approval. Any repairs of surface imperfections shall be formed at once and airing shall be started as soon as the surface is sufficiently hard to permit it without further damage.

6. Placing Reinforcement:

   Steel reinforcement shall be provided as indicated, together with all necessary tie wires, 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 used in such manner that they will not be exposed or contribute in any way, to the discoloration or deterioration of the concrete.

7. Conveying and Placing Concrete:

   a. Conveying – concrete shall be conveyed from mixer to forms as rapidly as applicable, by methods which will prevent segregation, or loss of ingredients. There will be no vertical drop greater than 1.5 meters except where suitable equipment is provided to prevent segregation and where specifically authorized.

   b. Placing – concrete shall be worked readily into the corners and angles of the forms and around all reinforcement and imbedded items without permitting the material to segregate, concrete shall be deposited as close as possible to its final position in the forms so that flow within the mass does not exceed two (2) meters and consequently segregation is reduced to a minimum near forms or embedded items, or elsewhere as directed, the discharge shall be so controlled that the concrete may be effectively compacted into horizontal layers not exceeding 30 centimeters in depth within the maximum lateral movement specified.

c. Time interval between mixing and placing. Concrete shall be placed before initial set has occurred and before it has contained its water content for more than 45 minutes. No concrete mix shall be placed before 60 complete revolution of the machine mixer. 23-00132

d. Consolidation of Concrete – concrete shall be consolidated with the aid of mechanical vibrating equipment and supplemented by the hand spading and tamping. Vibrators shall not be inserted into lower cursed that have commenced initial set; and reinforcement embedded in concepts beginning to set or already set shall not be disturbed by vibrators. Consolidation around major embedded parts shall by hand spading and tamping and vibrators shall not be used.

e. Placing Concrete through reinforcement – In placing concrete through reinforcement, care shall be taken that no segregation of the coarse aggregate occurs. On the bottom of beams and slabs, where the congestion of steel near the forms makes placing difficult, a layer of mortar of the same cement-sand ratios as used in concrete shall be first deposited to cover the surfaces.

8. Curing

a. General – All concrete shall be moist cured for a period not less than seven (7) consecutive days by an approved method or combination applicable to local conditions.

b. Moist Curing – The surface of the concrete shall be kept continuously wet by covering with burlap plastic or other approved materials thoroughly saturated with water and keeping the covering spraying or intermittent hosing.

9. Finishing

a. Concrete surfaces shall not be plastered unless otherwise indicated. Exposed concrete surfaces shall be formed with plywood, and after removal of forms, the surfaces shall be smooth, true to line and shall present or finished appearance except for minor defects which can be easily repaired with patching with cement mortar, or can be grounded to a smooth surface to remove all joint marks of the form works.

b. Concrete Slabs on Fill. The concrete slabs on fill shall be laid on a prepared foundation consisting of sub grade and granular fill with thickness equal to the thickness of the overlaying slab except when indicated.

B. MASONRY WORKS

1. Masonry Units (Concrete Hollow Blocks):

a. 100mm thick for all interior walls and 150mm thick for all exterior walls unless otherwise indicated.

b. Use 400 psi for non-load bearing blocks and 700 psi for load bearing blocks where required.

c. Where full height walls are constructed with concrete hollow blocks, these shall extend up to the bottom of beam or slab unless otherwise indicated on plans. Provide stiffener columns and lintel beams as specified in the structural drawings or as specified or as deemed required to assure a stabilized wall due to height and other considerations.

2. Sand:

S-1, washed, clean and greenish in color.

3. Mortar:

   One part Portland cement and two parts sand and water but not more than three parts sand and water.

4. Reinforcement

   The concrete hollow blocks shall be reinforced with 10mm diameter deformed bar, spaced not more than 0.8m on centers, both ways.

5. Plaster bond:

   The mixture of cement plaster for concrete hollow block wall finishes indicated in the drawings shall be one part Portland cement and three parts sand.

6. Floor Topping Preparation for Tilework. One part Portland cement and two parts sand and water but not more than three parts sand and water.

C. METAL FABRICATION

1. Materials:

   a. Steel and Iron. If not specified otherwise, use standard mill-finished structural steel shapes or bar iron in compliance with AISC Specifications for Design, Fabrication and Erection of Structural Steel for buildings.

   b. Bolts, Nuts, Studs and Rivets. ASTM A 307 and A 325.

   c. Screws. Fed. Spec FF-S-85, Fed. Spec FF-S-92, and Fed. Spec. FF-S-111.

   d. Metal Purlins. High grade galvanized steel with minimum tensile strength of 275 MPa, 1.4mm in thickness or approved equal.

2. Fabrication:

   By mechanics skilled in the trade and in accordance with the manufacturer's directions. Metalwork shall be fabricated to allow for expansion and contraction of materials. Provide welding and bracing of adequate strength and durability, with tight, flush joints, dressed smooth and clean. Complete with bolts and nuts.

3. Metal Surfaces:

   Surfaces shall be clean and free from all scale, flake, rust and rust pitting; well-formed and finished to shape and size, with sharp lines, angle and smooth surface. Shearing and punching shall leave clean true lines and surfaces. Weld or rivet permanent connections. Weld and flush rivets shall be used and finished flush smooth on surfaces that will be exposed after installation. Do not use screws or bolts where they can be avoided; when used, heads shall be countersunk, screwed up tight and threads nicked to prevent loosening.

4. Construction:

   Thickness of metals and details of assembly and supports shall give ample strength and stiffness for the minimum loads specified or indicated. Joints exposed to weather shall be formed to exclude water.

5. Welding:

   Use welding electrode E70xx and perform welding, welding inspection and corrective welding in accordance with AWS D1.1. Weld in a manner to prevent permanent distortion of the connected parts. Weld continuously along the entire area of contact (except where tack welding is permitted. Do not tack weld exposed to connections). Grind smooth visible weld in finished installation.

D. MOISTURE PROTECTION

1. WATERPROOFING

23-00132

a. Cementitious waterproofing powder mix shall be cement-based, aggregate-type, heavy duty, waterproof coating for reinforced concrete surface and masonry exposed to water. Additive binders shall be of special formulation of acrylic polymers and modifiers in liquid form used as additive with cement-based powder mix that improves adhesion and mechanical properties. Water shall be clean, clear and potable.

b. Concrete surface to be applied with waterproofing shall be structurally sound, clean and free of dirt, loose mortar particles, paint films, oil, protective coats, efflorescence, laitance, etc. All defects shall be properly corrected and carefully formed to provide a smooth surface that is free of marks and properly cured prior to application works.

c. Furnish all labor, materials, equipment, plant and other facilities required to complete all waterproofing work as shown on the drawings and herein specified. All applications shall be strictly performed by an approved waterproofing Contractor.

d. Test waterproofed area by seventy-two (72) hours and check for any seepages.

Note: Thickness should be as per Manufacturer's Specifications and Installation depending on the areas to be applied with.

IV. ARCHITECTURAL WORKS

A. FLOOR FINISHES

1. **Ceramic Tiles.** Unglazed ceramic tiles shall be hard, dense tiles of homogeneous composition. Its color and characteristics area determined by the materials used in the body, the method of manufacture and the thermal treatment.

   Tile work shall not be started until roughing-ins for sanitary/plumbing, electrical and other trades have been completed and tested. The work of all other trades shall be protected from damage.

2. **Granite Tiles**

B. WALL FINISHES AND PARTITIONING

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

   Finish coat shall be pure Portland cement properly graded conforming to the requirements and mixed with water to approved consistency and plasticity.

C. CARPENTRY WORKS

Lumber of different species for the various parts of the structure shall be well-seasoned, sawn straight, sundried 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.

Rough lumber for framing and siding boards shall be air-dried or sundried 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 of 14 percent at the time of installation in the structure.

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.

23-00132

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 crossing at 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, and ceiling to be finished with acrytex.

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.

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 adequate size to ensure rigidity of connections.

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

2. Screws of adequate size shall be aluminum or brass plated steel with slotted head.

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

4. Bolts and nuts shall be of steel having a yield point of not less than 245 Mpa. Bolts shall have square heads and provided with standard flat steel washers and hexagonal nuts. Threads shall conform to American coarse thread series. Threaded portion shall be long enough so 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 the nut.

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

D. PAINTING WORKS

1. Paint Materials. All types of paint material and other related products shall be subject to test as to material composition by the Bureau of Research and Standard, DPWH or the National Institute of Science and Technology.

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

3. Skim coat. Skim coat shall be fine powder type material like kalsomine that can be mixed into putty consistency, with oil-based primers and paints to fill minor surface dents and imperfections.

4. Paint Schedule.

   a. Exterior Masonry Wall (plain cement plastered finish to be painted)

      i. 1 coat skim coating, 1 coat primer, 2 coats elastomeric paint finish

   b. Interior Masonry Wall (plain cement plastered finish to be painted)

      i. 1 coat skim coating, 1 coat primer, 2 coats latex paint finish

   c. Interior Dry Wall

      i. 1 coat primer, 2 coats latex paint finish

   d. Ceiling Boards

i. 1 coat primer, 2 coats latex paint finish

e. Slab Soffit

i. 1 coat primer, 2 coats latex paint finish

f. Metal / Steel Surfaces

23-00132

i. 1 coat primer, 2 coats epoxy enamel finish

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

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

   Concrete and masonry surfaces shall be coated with concrete neutralizer and allowed to dry before any painting primer coat is applied. When surface is dried apply first coating. Hairline cracks and unevenness shall be patched and sealed with approved putty or patching compound. After all defects are corrected apply the finish coats as specified on the Plans (color scheme approved).

   Metal shall be clean, dry and free from mill scale and rust. Remove all grease and oil from surfaces. Wash, unprimed galvanized metal with etching solution and allow it to dry. Where required to prime coat surface with Red Lead Primer same shall be approved by the Engineer.

   In addition, the Contractor shall undertake the following:

   a. Voids, cracks, nick etc. will be repaired with proper patching material and finished flushed with surrounding surfaces.

   b. Marred or damaged shop coats on metal shall be spot primed with appropriate metal primer.

   c. Panting and varnishing works shall not be commenced when it is too hot or cold.

   d. Allow appropriate ventilation during application and drying period

   e. All hardware will be fitted and removed or protected prior to painting and varnishing works.

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

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

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

7. Application shall be as per paint Manufacturer's specification and recommendation.

8. Provide all drop cloth and other covering requisite for protection of floors, walls, aluminum, glass, finishes and other works.

9. All applications and methods used shall strictly follow the Manufacturer's Instructions and Specifications.

10. All surfaces including masonry wall shall be thoroughly cleaned, puttied, sandpapered, rubbed and polished; masonry wall shall be treated with Neutralizer.

11. All exposed finish hardware, lighting fixtures and accessories, glass and the like shall be adequately protected so that these are not stained with paint and other painting materials prior to painting works.

12. All other surfaces endangered by stains and paint marks should be taped and covered with craft paper.

23-00132

V. ELECTRICAL WORK

PANEL MOUNTING STRUCTURE

(i) The PV solar panel mounting metallic structure should be fixed mount L2 or L3 structure where required with 12 Gauge thickness, mounted on concrete base 6 inches above ground level. The tilt angle should set to year-round compromise (Equal to latitude).

(ii) The entire mechanical structure should be hot dipped galvanized and powder coated for longer life of the structure. Structure should be hot dip galvanized up to 90 microns.

(iii) The Surface azimuth angle of PV Module 180o and the Tilt angle (slope) of PV Module should be according to the site location.

(iv) The mounting structure must be engineered for wind resistance and safety as per geographical location of site.

(v) Module should be fixed with the frame through SS bolts. The bolts should be tightened at the required angle.

(vi) The Nuts, Bolts & Washers for modules & Mounting structures must be stainless steel material with appropriate gauge.

(vii) Shading shall be avoided all over the year (around) from 30 minutes after the sunrise to 30 minutes before sunset (For installation purpose only).

(viii) To allow regular cleaning of the solar modules, they should be easily accessible for personnel (For installation purpose only).

PV MODULE

(i) The provided PV Module should be of best quality available in market. The PV module should have over nineteen percent (19%) cell efficiency.

(ii) The PV module(s) shall contain Mono crystalline (PERC) silicon solar cells.

(iii) The PV module have an ability to Works well with high-voltage input Inverters/ charge controllers

(iv) The PV Panel must have clear anodized aluminum frame with Anti-reflection cover glass.

(v) The power output of the module(s) under STC should be at optimum level.

(vi) The operating voltage corresponding to the power output must be mentioned.

(vii) The open circuit voltage of the PV modules under STC must be mentioned.

(viii) The terminal box on the module should have a provision for opening for replacing the cable, if required and it should be waterproof

(ix) The Solar Panel shell meet the requirement set in IEC 61215:2000, IEC61730, IEC TS 62941.

(x) A specification sheet containing the following details should be laminated on module so as to be clearly visible from front/back side.

(a) Name of the manufacturer or distinctive logo.

23-00132

(b) Model or Type No.

(c) Serial number

(d) Year of manufacturing

(e) Peak Watt Ratting

(f) Voltage and Current at Peak Power

(g) Open Circuit Voltage

(h) Short Circuit Current

(i) Maximum input voltages

(xi) Limited performance guarantees: panel power, in standard conditions, should not be less than 90% of nominal power for first 10-years of operation and at least 80% for the 20 years of operation with 12-year product warranty and 25year linear power warranty.

(xii) Solar panel should have to pack for safe transportation on non-metallic roads.

POWER AND CONTROL CABLES

Power Cables of adequate rating as per IEC standard shall be required for interconnection of:

- Modules/panels within array
- Array & Hybrid Inverter
- Charge Controller & Battery
- Automatic Distribution Box & Loads

i) The cable shall be A grade, heavy duty, stranded flexible copper conductor, PVC type A insulated, galvanized steel wire/strip armored, flame retardant low smoke (FRLS) extruded PVC type ST-1 outer sheathed. The cables shall, in general conform to IS-1554 P+I & other relevant standards.

ii) External cables should be specifically adapted to outdoor exposure (see IEC 60811). Especially the outer insulation must be sunlight (UV)-resistant, weatherproof and designed for underground installation. Preferably rubber coated and PE-coated cables shall be used.

iii) The temperature resistance of all interconnecting wires and cables should be > 75° C. The minimum acceptable cross-section of the wire in each of the following sub-circuits is as in ISO IEC prescription:

23-00132

iv) Notwithstanding the ISO /IEC requirements, all wires must be sized accordingly to keep line voltage losses to less than 3% between PV generator and battery, less than 1% between battery and charge regulator, and less than 3% between battery and load, all of them at the maximum current conditions. (Specifically for service providers)

v) All wiring shall be color-coded (and/ labeled in case of service providers)

vi) All supplied wires must be in UV-resistant conduits or be firmly fastened to the building and/or support structure. Cable binders, clamps and other fixing material must also be UV-resistant, preferably made of polyethylene. (For the case of service providers)

vii) All connections should be properly terminated, soldered and/or sealed using MC4 connectors for outdoor and indoor elements. Relevant codes and operating manuals must be followed.

Inverters

The DC power produced is fed to inverter for conversion into AC. In a grid interactive system AC power should be fed to the grid at three phase buses. Inverter should comply with IEC 61683/IS 61683 for efficiency and measurements and should comply IEC 60068-2 (1, 2, 14, 30) / Equivalent BIS Standard for environmental testing. Inverter should supervise the grid condition continuously and in the event of grid failure (or) under voltage (or) over voltage, Solar System should be disconnected to share with
National Grid circuit Breaker / Auto switch provided in the inverter. Two types of inverters i.e., Grid Tie and Hybrid Inverters has been recommended based on the site design. Technical specifications of both the inverters have been mentioned below: -

Grid-Tied Inverters/ On-Grid Inverters

Important Features/Protections required in the Grid-Tie Inverter are-

i) The grid-connected inverters shall comply with UL 1741 standard.

ii) Power generated from the solar system during the day time is utilized fully by powering the all building loads and feeding excess power to the grid as long as grid is available. In cases, where solar power is not sufficient due to more demand or cloud cover etc. the building loads should be served by drawing power from the grid. The inverter should always give preference to the Solar Power and will use Grid power only when the Solar Power is insufficient to meet the load requirement.

iii) The output of the inverter must synchronize automatically its AC output to the exact AC voltage and frequency of the grid.

iv) Inverter equipped with array ground fault detection option. 23-00132

v) Grid voltage should also be continuously monitored and in the event of voltage going below a pre-set value and above a pre-set value, the solar system should be disconnected from the grid within the set time. Both over voltage and under voltage relays should have adjustable voltage (50% to 130%) and time settings (0 to 5 seconds). vi) Metal Oxide Visitors (MOVs) should also be provided on DC and AC side of the inverter.

vi) The inverter control unit should be so designed so as to operate the PV system near its maximum Power Point (MPP), the operating point where the combined values of the current and voltage of the solar modules result in a maximum power output.

vii) The inverter should be a pure sine way inverter for a grid interactive PV system. ix) The degree of protection of the outdoor inverter panel should be at least IP-65.

viii) x) Typical technical features of the suggested inverters must mention as per following sequence.

- Continuous output power rating (1.1 times for 60seconds)
- Nominal AC output voltage and frequency
- Accuracy of AC voltage control ±1%
- Accuracy of frequency control ±0.5%
- Grid Frequency Control range +/- 3 Hz
- Maximum Input DC Voltage range
- MPPT Range DC
- Ambient temperature -10 deg C to 55 deg C
- Humidity 95 % non- condensing
- Protection of Enclosure IP-65 (minimum)
- Grid Voltage tolerance -20 % and + 15 %
- Power factor control 0.95 inductive to 0.95 capacitive
- No-load losses < 1% of rated power
- Inverter efficiency (minimum) plus 97%
- Liquid crystal display should at least be provided on the inverters front panel or on separate data logging/display device to display following

a. DC Input Voltage

b. DC Input current

c. AC Power output(kW)

d. Current time and date

e. Time active

f. Time disabled

g. Time Idle

h. Temperatures (C)

i. Converter status

23-00132

• Following should also be displayed like Protective function limits, Over voltage, AC under voltage, Over frequency, under frequency, ground fault, PV starting voltage, PV stopping voltage, over voltage delay, under voltage delay over frequency, ground fault delay, PV starting delay, PV stopping delay.)

ix) Nuts & bolts and the inverter enclosure should have to be adequately protected taking into consideration the atmosphere and weather prevailing in the area.

x) Dimension and weight of the inverter should be indicated by the bidder in the offer.

xi) All doors, covers, panels and cable exits should be gasketed or otherwise designed to limit the entry of dust and moisture. All doors should be equipped with locks. xvi. Operation Mode:

a. Night or sleep mode: where the Inverter is almost completely turned off, with just the timer and control system still in operation, losses shall be less than 2 W per 5 kW.

b. Standby mode: where the control system continuously monitors the output of the solar generator until pre-set value is exceeded (typically 10 W).

c. Operational of MPP tracking mode: the control system continuously adjusts the voltage of the generator to optimize the power available. The power conditioner should automatically re-enter standby mode input power reduces below the standby mode threshold. Front panel should provide display of status of the inverter.

GRID TIED HYBRID INVERTER

Hybrid inverter(s) (system configuration) with provision for net-metering and battery back-up, should convert DC power produced by SPV modules in to AC power and adjust the voltage & frequency levels to suit the local grid conditions. Pure Sine wave output. Ground Fault Protection. Residual Current Detection (RCD) protection. Monitoring software for real-time status display and fault control. The unit should be able to operate in a high ambient temperature environment. Efficiency must be 96% or above at full load. The inverter must conform to the latest edition of IEC 61727, IEC 61000-6-1, IEC 610006-2, IEC 62109 and IEC 62116 standards Other important Features/Protections required in the INVERTER

i) The grid-connected hybrid inverters shall comply with UL 1741 standard.

ii) Power generated from the solar system during the daytime should be utilized fully by powering the critical building loads and feeding excess power to the grid as long as grid is available. In cases, where solar power is not sufficient due to more demand or cloud cover etc. the building loads should be served by drawing power from the grid. The inverter should always give preference to the Solar Power and will use

Grid/DG power only when the Solar Power is insufficient to meet the load requirement.

iii) The output of the hybrid inverter must synchronize automatically its AC output to the exact AC voltage and frequency of the grid.

iv) Inverter equipped with array ground fault detection option. 23-00132

v) The offered On-Grid Inverter must be of Hybrid type has an ability to synchronize with battery bank as backup system.

vi) On-grid hybrid Inverters should have anti-islanded features built in and should continuously monitor the condition of the grid and in the event of grid failure; the inverter automatically switches to off-grid supply within 20-50 milliseconds and synchronize with battery bank and fulfil shortcoming from battery bank as PV-Battery hybrid system. The solar system should be resynchronized with the grid within two minutes after the restoration of grid or DG set.

vii) Grid voltage should also be continuously monitored and in the event of voltage going below a pre-set value and above a pre-set value, the solar system should be disconnected from the grid within the set time. Both over voltage and under voltage relays should have adjustable voltage (50% to 130%) and time settings (0 to 5 seconds).

viii) The inverter control unit should be so designed so as to operate the PV system near its maximum Power Point (MPP), the operating point where the combined

ix) values of the current and voltage of the solar modules result in a maximum power output.

x) The inverter should be a true sine wave for a grid interactive PV system.

xi) The degree of protection of the outdoor inverter panel should be at least IP-65.

xii) Typical technical features of the suggested inverters must mention as per following sequence.

- Continuous output power rating (1.1 times for 60seconds)
- Nominal AC output voltage and frequency
- Accuracy of AC voltage control ±1%
- Accuracy of frequency control ±0.5%
- Grid Frequency Control range +/- 3 Hz
- Maximum Input DC Voltage range
- MPPT Range DC
- Battery Input voltages + 48 VDC or Plus
- Ambient temperature -10 deg C to 55 deg C
- Humidity 95 % non- condensing
- Protection of Enclosure IP-55 (minimum)
- Grid Voltage tolerance -20 % and + 15 %
- Power factor control 0.95 inductive to 0.95 capacitive
- No-load losses < 1% of rated power
- Inverter efficiency (minimum) plus 97%

- Following should also be displayed like Protective function limits, Over voltage, AC under voltage, Over frequency, under frequency, ground fault, PV starting voltage, PV stopping voltage, over voltage delay, under voltage delay over frequency, ground fault delay, PV starting delay, PV stopping delay.)

23-00132

SYNCHRONIZING EQUIPMENT

Solar PV systems should be provided with synchronizing equipment having three input for comparison i.e. grid supply vs. solar output, DG output vs solar output so as to connect the Solar PV systems in synchronism with grid or DG. In case of grid failure, solar PV system should be disconnected from the grid and out of synchronization for a period DG supply is not restored. PV system should be synchronized with the DG supply after DG is started.

PROTECTIONS AND CONTROL

i. PV system software and control system should be equipped with islanding protection as described above. In addition to disconnection from the grid (islanding protection i.e. on no supply) , under and over voltage conditions , PV systems should be provided with adequate rating fuses, fuses on inverter input side (DC) as well as output side (AC) side for overload and short circuit protection and disconnecting switches to isolate the DC and AC system for maintenances are needed. Fuses of adequate rating should also be provided in each solar array module to protect them against short circuit.

ii. A manual disconnect switch and change over switch beside automatic disconnection to grid should also be provided at utility end to isolate the grid connection by the utility personal to carry out any maintenance. This switch should be locked by the utility personal.

INTEGRATION OF PV POWER WITH GRID:

The output power from Solar PV system would be fed to the Hybrid inverter which feed some portion to battery bank for backup in case of grid failure and major portion converts DC produced by SPV array to AC and feeds it into the main electricity grid after synchronization. In case of grid failure, or low or high voltage, solar PV system shall be out of synchronization and shall be disconnected from the grid and feed power to the load as PV-Battery backup hybrid system. Once the DG set comes into service PV system shall again be synchronized with DG supply and load requirement would be met to the extent of availability of power. The connection of the grid connected SPV power plant with the existing power supply system is shown in the diagram stated below

HARMONICS STANDARD:

As per the standard of IEEE 519, the permissible individual harmonics level shall be less than 3% (for both voltage and current harmonics) and Total Harmonics Distortion (THD) for both voltage and current harmonics of the system shall be less than 5%.

23-00132

BATTERY BOX

i) The battery bank should be housed in a vented compartment that prevents users from coming in contact with batteries terminals. This compartment should be strong enough to accommodate the weight of the batteries. A mechanism to prevent opening and entry of the batteries should be provided.

ii) The entire enclosure must be constructed to last at least twenty years without maintenance and should be protected against corrosion. The battery Bank enclosure should have a clean and neat appearance.

BATTERY

Lithium-ion batteries of appropriate capacity with complete battery management system should be used in hybrid and off grid system where required.

The following testing information must be provided by the bidders:

i) Charge/Discharge Efficiency

ii) ii) Self-Discharge

iii) The batteries must conform to the latest edition of IEC 62133 and/or IEC 61960 (whichever is applicable).

iv) The battery bank should provide backup to a critical load of building.

v) The battery must ensure safe and reliable operation in the whole range of ambient temperatures from -10° C to + 50° C.

vi) The maximum permissible self-discharge rate is 5 percent of rated capacity per month at 25 C.

vii) Cycle life of the batteries must be greater then 6000 when discharged down to depth of discharge (DOD) of 80% percent discharge rate.

viii) The battery shall have a certificate of compliances, issued by a recognized laboratory. ix) Batteries should be packaged in order to withstand transportation on non-metallic road.

ix) The performance guarantee shall cover at least 05 years.

MISCELLANEOUS ITEMS FOR INSTALLATION

EARTHING MATERIAL:

i. Earthing is essential for the protection of the equipment & manpower. Two main grounding must be used for power equipment protection are:

- DC Earthing.
- AC Earthing.

ii. DC and AC earthing should be installed separately where required as per standard.

iii. In case of equipment earth all the non-current carrying metal parts are bonded together and connected to earth to prevent shock to the man power & also the protection of the equipment in case of any accidental contact.

iv. To prevent the damage due to lightning the terminal of the lightning protection must be earthed separately. The provision for lightning & surge protection of the solar PV power source is required to be made as per standard.

v. In case the solar PV Array could not installed close to the equipment to be powered & a separate earth has been provided for solar PV Panel. vi. Earth resistance shall not be more than 3 ohms. It shall be ensured that all the earths are bonded together to make them at the same potential.

vii. `The Earthing conductor rating shall be rated for the maximum short circuit current. & shall be 1.56 times the short circuit current. The area of cross-section shall not be less than 2.5 sq. mm in any case.

viii. The array structure of the PV modules shall be grounded properly using adequate numbers of earthing pits. All metal casing/ shielding of the plant shall be thoroughly grounded to ensure safety of the power plant.

WIRING PVC/GI CHANNEL DUCTS

A product of good quality standard material with suitable size to be provided / used.

FLEXIBLE PVC PIPE
The flexible PVC pipe should be of good quality material with suitable size should be used.

COMBINER BOX
Combiner Box should be manufactured through GI material with 100% copper strip in it for termination of PV Arrays must be IP65 for outdoor installation.

JUNCTIONS BOXES OR COMBINERS
Dust, water and vermin proof junction boxes of adequate rating and adequate terminal facility made of fire-resistant Plastic (FRP) shall be provided for wiring.
Each solar shall be provided with fuses/ Circuit breakers of adequate rating to protect the solar arrays from accidental short circuit.

CIVIL WORKS
The following civil works should be carried out.

i. Site grading, levelling, drilling exploratory bore holes and consolidation of the area pertaining to the installation of SPV modules.

ii. Embedment of structures suitable for mounting PV modules.

iii. Lying of earthing equipment /structures and connecting to the main ground as per the statutory requirements.

iv. Construction of control room

v. Cutting of cable trenches etc. wherever necessary

23-00132

OTHER FEATURES:

(i) The PV Module(s) should be warranted for a minimum period of 10 years from the date of supply, inverter with five years and the battery should be warranted for a period of 5 years from the date of installation. The warranty card to be supplied with the system must contain the details of the system. The manufacturers can also provide additional information about the system and conditions of warranty as necessary.

(ii) Adequate space should be provided behind the PV module/array for allowing unobstructed airflow for passive cooling.

(iii) Cable of appropriate size should be utilized to keep electrical losses to a bare minimum.

(iv) The control electronics should not be installed directly with the battery. All wiring should be in proper conduit of capping casing. Wire should not be hanging loose.

(v) Instruction and O&M manuals

- Two copies of Instruction and Operation and Maintenance Manual in English and the local language should be provided with the system.
- The manual shall be furnished at the time of dispatch of the equipment and shall include the following aspects:

a. Precautions during unpacking

b. Instructions for handling at site.

c. Erection drawings with written assembly instructions that would enable the Purchaser to carry out erection with his own personnel if opted by him.

d. Detailed instructions and procedures for the installation operation and maintenance.

e. Pre-commissioning tests.

f. About solar PV system – its components and expected performance.

g. Principle of Operation of various equipment

h. Safety and reliability aspects

i. About power conditioning unit's software and controls

j. Clear instructions on regular maintenance and trouble shooting of solar power plant.

k. Name and address of the person or service centre to be contacted in case of failure or complaint.

23-00132

l. Outline dimension drawings showing relevant cross sectional views, earthing details, constructional features. Rated voltages and current etc.

ITEM 502 – CONCRETE CURB AND GUTTER
DESCRIPTION

This Item shall consist of the construction of curb and gutter either Precast or Cast in place, made of concrete in accordance with this Specification at the location, and in conformity with the lines, grades, dimensions and design, shown on the Plans or as required by the Engineer-in-charge.

MATERIAL FOR BED COURSE
Bed course materials as shown on the Plans shall consist of cinders, sand, slag, gravel, crushed stone, or other approved porous material of such grading that all the particles will pass through 12.5 mm (1/2 inch) sieve.

CONCRETE
Concrete shall be of the class indicated on the Plans and shall conform to the requirements of Item 405, Structural Concrete.

EXPANSION JOINT FILLER
Expansion joint filler shall conform to the requirements of AASHTO M 153/ joint materials.

CEMENT MORTAR
Cement mortar shall consist of one part of Portland cement and two parts of fine aggregates with water added as necessary to obtain the required consistency. The mortar shall be used within 30 minutes of preparation.

BONDING COMPOUND
Where bonding compound is used, it shall conform to AASHTO M 200.

FORMS
Forms shall be of wood or metal as approved by the Engineer and shall extend to the full depth of the concrete. All forms shall be straight, free from warps and of adequate strength to resist distortion.

ITEM SPL 10a/10b – THERMOPLASTIC MARKINGS (WHITE/YELLOW)

MATERIAL REQUIREMENTS

Reflectorized thermoplastic pavement material shall be homogeneously composed of pigment, filler, resins, and glass reflectorizing spheres.
The thermoplastic materials shall be available to both white and yellow.
Glass Beads (Pre-mix) shall be uncoated and shall comply with the following requirements:
Refractive Index, min. – 1.5
Spheres Percent, min. – 90

23-00132

Gradation:

Sieve, mm	Mass Percent Passing
0.850	100
0.600	75 – 95
0.425	-
0.300	15 – 35
0.180	-
0.150	0 – 5

ITEM 514 - SHOTCRETE (CONCRETE SPRAY)

514.1 Description

This item shall consist of mixing and placing one or more courses of shotcrete on a prepared slope surface in accordance with this specification and in conformity with the lines, grades, dimensions and cross-sections shown on the plans or as established by the Engineer.

514.2 Material Requirements

514.2.1 Air-Entraining Admixtures (wet mix only)

Air-entraining admixtures shall conform to AASHTO M 154.

514.2.2 Chemical Admixtures (wet mix only)

Water-reducing, retarding, set-accelerating, and hydration stabilizing admixtures, or combinations thereof, shall conform to AASHTO M 194. Hydration stabilizing admixtures shall conform to AASHTO M 194, type B or D.

514.2.3 Concrete Coloring Agents

Concrete coloring agents shall conform to ASTM C 979. Coloring agents composed of synthetic or natural inorganic iron oxides shall only be used.

514.2.4 Curing Material

Curing Material shall conform to the following:

a)	Burlap cloth	AASHTO M 182
b)	Waterproof paper	AASHTO M 171
c)	Polyethylene film	AASHTO M 171
d)	Liquid membrane forming compounds	AASHTO M 148, type 1-D or 2

514.2.5 Hydraulic Cement

Hydraulic cement shall conform to the requirements of Item 700, Hydraulic Cement.

Cement brands or types shall not be mixed.

514.2.6 Penetrating Stain

Penetrating stain shall conform to the following:

a)	Weatherometer on base material, ASTM G 23	1000 h

b)	Acrylic dispersion	73.4% of nonvolatile vehicle
c)	Viscosity	58±.2 Krebs units
d)	Solids volatile content	40.3 Stain

shall be stored according to the manufacturer's recommendations. 23-00132

514.2.7 Reinforcing Fibers

Deformed steel or fibrillated polypropylene fibers conforming to ASTM C 1116 shall be used.

514.2.8 Reinforcing Steel

Reinforcing steel shall conform to the requirements of Item 710. Reinforcing Steel and Wire Rope.

514.2.9 Shotcrete Aggregate

Fine aggregate shall be rounded particles conforming to AASHTO M 6, class B including the reactive aggregate supplementary requirement, except as amended or supplemented by the following:

a. Material passing No. 200 sieve, AASHTO T 11	3% max.
b. Sand equivalent value, AASHTO T 176, alternate method no. 2, reference method	75 min.

Lightweight fine aggregate shall conform to AASHTO M 195.

Coarse aggregate shall conform to AASHTO M 80, class B, except as amended or supplemented by the following:

a. Los Angeles abrasion, AASHTO T 96	40% max
b. Adherent coating, ASTM D 5711.	1% max.

Aggregates shall be combined to meet the designated gradation in Table 514-1.

Table 514-1
Shotcrete Gradation Limits for Combined Aggregates

Sieve Size	Percent by Mass Passing Designated Sieve (AASHTO T 27 & T 11)		
	Grading Designation		
	A	B	C
19 mm	-	-	100
12.5 mm	-	100	80-95
9.5 mm	100	90-100	70-90
4.75 mm	95-100	70-85	50-70
2.36 mm	80-100	50-70	35-55
1.18 mm	50-85	35-55	20-40
600 µm	25-60	20-35	10-30
300 µm	10-30	8-20	5-17
150 µm	2-10	2-10	2-10

514.2.10 Water

Water shall conform to the requirements of Item 714. Water.

514.2.11 Polyvinyl Chloride (PVC) Pipes

PVC drainpipes shall be furnished and installed including necessary fittings as shown on the drawings or as directed by the Engineer. The PVC drainpipes shall also be 40 mm diameter un-elasticized or as approved by the Engineer.

514.3 Construction Requirements

514.3.1 Composition (Shotcrete Mix Design).
Shotcrete mixtures shall be designed and produced conforming to Table 514-2.

Table 514-2
Composition of Shotcrete

23-00132

Type of Shotcrete Process	Minimum Cement Content (Kg/m^3)	Maximum W/C Ratio	Air Content Range %	Minimum 28-day Strength (Mpa)
Wet	325	0.55	NA	28
Dry	325	0.50	NA	28
Wet (Air - Entrained)	325	0.45	5min.	28
Dry (Air-Entrained)	325	0.45	5min.	28

Shotcrete mixtures shall also conform to the following ACI specifications:

a. ACI 506R Guide to Shotcrete

b. ACI 506.1 State of the Art Report on Fiber Reinforced Shotcrete

c. ACI 506.2 Specifications for Proportioning Application of Shotcrete

Mix design shall be verified with trial mixes prepared from the same source proposed for use. The following shall be submitted for acceptance before placing shotcrete:

1. Proposed shotcrete mix design with mix proportions. Dosage and type of any admixture shall be included with proposed mix design.

2. Results of shotcrete preconstruction testing.

3. Proposed method for applying shotcrete

4. Other information necessary to verify compliance with ACI506.2.

5. Shotcrete materials certifications.

6. Fiber samples, if used.

7. Description of proposed equipment for mixing and placing shotcrete. Manufacturer's instructions, recommendations, literature, performance, and test data shall all be included. In addition to meeting equipment requirements in ACI 506, the following shall also be provided:

   a. Water Supply System

   For dry mix, a job site water storage tank shall be provided. It shall be provided with a positive displacement pump with a regulating valve that is accurately controlled to provide water at the required pressure and volume.

   b. Mixing

   Equipment capable of handling and applying shotcrete containing the specified maximum size aggregate and admixtures shall be used. An

air hose and blow pipe shall be provided to clear dust and rebound during shotcrete application.

514.3.2 Hydration Stabilizing Admixtures 23-00132

When hydration stabilizing admixtures are used to extend the allowable delivery time for shotcrete, admixtures shall be included in the shotcrete mix design. Dosage shall be based on the time needed to delay the initial set of the shotcrete for delivery and discharge on the job. Design discharge time limit shall be included in the dosage submittal. The maximum allowable design discharge time shall be 3.5 hours.

An approved and compatible hydration activator shall be used at the discharge site to ensure proper placement and testing.

Dosage required to stabilize shotcrete shall be determined using job site material and field trial mixtures. The extended-set admixture shall control the hydration of all cement minerals and gypsum.

When requested, the admixture manufacturer shall provide the service of a qualified person to assist in establishing the proper dose of extended-set admixture and shall make dosage adjustments required to meet changing job site conditions.

514.3.3 Preconstruction Testing

Preconstruction shotcrete field trials shall be conducted before starting shotcrete production.

1. Field Trials. Test panels shall be constructed from 600 millimeter by 600 millimeter by 150 millimeters wood forms. Each proposed nozzleman shall produced shotcrete panels on two vertical wood forms. The test panels shall be cured according to AASHTO T 23 except that the panels shall not be immersed in water or curing compound.
2. Coring. Six 75-millimeter diameter cores shall be taken from each test panel according to AASHTO T 24. The ends of the cores shall be trimmed according to AASHTO T 24 to make cores at least 75 millimeters long
3. Compressive Strength Testing. The cores shall be soaked in water for 40 hours immediately before testing. Three cores from each test panel shall be tested four days after the field trial and the remaining three cores shall be tested 28 days after the field trial. Tests shall be performed according to AASHTO T 23.
4. Mix Design Acceptance. Test data and a visual description of each core shall be submitted. Details concerning presence of voids, sand pockets, lamination, and other inadequacies shall be included. Acceptance of the mix design shall be based on preconstruction field trials and test results. The visual quality of the cores shall not be lower than Grade 2 according to shotcrete grading requirements of ACI506.2.

Field quality control test reports shall be submitted after performing the tests. The following information shall be included in the reports:

1. Sample identification including mix design and test panel number and orientation.

2. Date and time of sample preparation including curing conditions and sample dimensions.

3. Date. time. and type of test.

4. Complete test results including load and deformation data during testing, pictures of sample before and after testing, and any unusual occurrences observed.

5. Location of steel reinforcement, if used, covered by shotcrete.

514.3.4 **Shotcrete Construction**

Shotcrete application shall be according to ACI506R and the following:

1. Surface Preparation.

For earth surfaces, all loose rock sharp protruding edges as well as dirt. grease, oil scale and other contaminations shall be carefully removed. Any seepage water entering shall be dealt with by suitable means, such as drainage boring with grouted pipe nipples connected to pipe, sealing measures, etc which shall be approved by the Engineer. Installation of weepholes shall follow the locations shown on the plans or as directed by the Engineer.

For previously placed shotcrete surfaces, curing compound shall be removed by sandblasting. Approved depth gauges to indicate the thickness of the shotcrete layers shall be installed. Depth gauges shall be installed on 2-meter centers longitudinally and transversely with no less than two gauges per increment of surface area to receive the shotcrete. All surfaces shall be moistened.

2. Temperature and Weather Conditions.

23-00132

The temperature of the shotcrete mix shall be maintained between 10 DC and 30 DC. Shotcrete shall be placed when the surface and ambient temperature is at least 5 °c and rising. Shotcrete operations shall not be performed during high winds and heavy rains.

3. Mixing

Thorough mixing of aggregates, cement, admixtures and water shall be ensured for all shotcrete mix.

4. Deliveries and Sampling

Sampling and testing requirements shall conform to Table 514-3. All equipment shall be furnished and the temperature, unit mass, air content, slump, and other tests to verity specification compliance shall be performed before and during each placement operation.

If hydration stabilizing admixtures is used, the slump shall be determined before placement. Concrete with a slump loss of more than 50 mm as compared to the slump recorded at the batch plant shall not be used.

Sample shall be taken from every batch of shotcrete mixture after at least 0.20 m3 are discharge and before placing any of the batches. When continuous mixing is used, take sample from approximately every 7.5 m 3 . The air content shall be tested according to AASHTO T 152 or T 196.

A single compressive strength test result is the average result from 2 cylinders cast from the same load and tested at 28 days. Remove and replace concrete if the compressive strength test results are less than 90 percent of specified design strength at the specified test age.

If three (3) successive samples are tested and compliance with the specifications is indicated, screening tests may be reduced to an approved frequency. Initial testing frequency shall be resumed if a test shows a failing temperature, air content, slump or when directed by the Engineer.

5. Shotcrete Application.

a. Shotcrete shall be applied within 45 minutes of adding cement to the mixture.
b. Layer thickness of each shotcrete application shall be limited to 50 millimeters. Thicker applications may be approved if the Contractor can demonstrate that no sloughing or sagging is occurring. If additional thickness is required. the applied surface shall be broomed or scarified and allow the layer to harden. The surface shall be dampened before applying an additional layer. Shooting shall be discontinued or shield the nozzle stream if wind causes separation of ingredients during shooting.
c. Laitance, loose material, and rebound shall be removed. Rebound shall be promptly removed from the work area.
d. Construction joints shall be tapered to a thin edge over a distance of at least 300 millimeters. Joint surface shall be wetted before placing additional shotcrete on the joint. Square construction joints shall not be used.
e. Shotcrete shall be finished as specified on the plan. The quantities of shotcrete mix to be discharged at the nozzle shall be determined based on the dimensions shown on the plans or as required by the Engineer. The surface of existing structures shall be protected before shooting of shotcrete mix. Rebound and hardened overspray shall be removed from

final shotcrete surfaces and from areas not intended for shotcrete placement.

f. Minimum slump of wet-mix shotcrete shall be 25 mm.

514.3.5 Curing Shotcrete

Curing the surface shall immediately begin after the free surface water has evaporated and the finishing is completed. If the surface of the shotcrete begins to dry before the selected curing method can be implemented, shotcrete surface shall be kept moist using a fog spray without damaging the surface.

Surfaces to be rubbed shall be kept moist after forms are removed. It shall be cured immediately following the first rub.

23-00132

All shotcrete shall be cured uninterrupted for at least 7 days.

For intermediate shotcrete surfaces or if a stained or finished final surface is required, the shotcrete surface shall be kept continuously wet by ponding, spraying, or covering with material that is kept continuously and thoroughly wet. Covering material may consist of cotton mats, multiple layers of burlap, or other approved material that does not discolor or otherwise damage the shotcrete and thereafter shall be covered with a waterproof sheet material that prevents moisture loss from the shotcrete. The widest sheets practical shall be used. Adjacent sheets shall be lapped at least 150 mm, and shall tightly seal all seams with pressure sensitive tape, mastic, glue, or other approved methods. All materials shall be secured so that wind does not displace them. Sheets that are broken or damaged shall be immediately repaired.

If stained or finished surface is not required, curing compound shall be applied to the final exposed shotcrete surface. The liquid membrane method shall not be used on surfaces that will receive a rubbed finish. Use on construction joint surfaces shall be permitted only if the compound is removed by sandblasting before placement of shotcrete against the joint. Only Type 2, white-pigmented, liquid membrane shall be used on surfaces not exposed to view in the completed work. Type 1 or 1-D clear curing compounds shall be used on other surfaces. Membrane curing solutions containing pigments shall be mixed before use. It shall be continuously agitated during application. Equipment capable of producing a fine spray shall be used. The curing compound shall be applied at a minimum rate of 0.25 liter per square meter in one or two uniform applications. If the solution is applied in 2 applications, the first application shall be followed with the second application within 30 minutes, and shall be applied at right angles to the first application. If the membrane is damaged by rain or other means during the curing period, a new coat shall be applied immediately over the damaged areas.

Shotcrete shall be maintained at a temperature above 5° C until shotcrete has achieved a minimum compressive strength of 5.2 MPa.

ENGR. ALEXIS DENVER M. DELIVA
Planning and Design Division

ENGR. CHRISTIAN A. CLEOFE
Planning and Design Division

Section VII. Drawings

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

Section VIII. Bill of Quantities

Notes on the Bill of Quantities

Objectives

The objectives of the Bill of Quantities are:

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

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

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

Daywork Schedule

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

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

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

Provisional Sums

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

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

Signature Box

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

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

PROJECT TITLE : **PROPOSED CONSTRUCTION OF PUV STOPS AT DON ANTONIO ALONG COMMONWEALTH AVENUE**

LOCATION : **BARANGAY BATASAN HILLS AND HOLY SPIRIT, DISTRICT 2, QUEZON CITY**

PROJECT NO. : **23 - 00132**

DURATION : **One Hundred Fifty (150) Calendar Days**

BREAKDOWN OF COST

ITEM NO.	DESCRIPTION	ESTIMATED DIRECT COST	TOTAL MARK-UP		VAT	TOTAL INDIRECT COST	TOTAL COST
			%	VALUE			
PART I	GENERAL REQUIREMENTS						
PART II	OTHER GENERAL REQUIREMENTS						
PART III	CIVIL AND ELECTRICAL WORK						
PART A	EARTHWORKS						
PART B	PLAIN AND REINFORCED CONCRETE WORKS						
PART C	FINISHING AND OTHER CIVIL WORKS						
PART D	MISCELLANEOUS STRUCTURES						
PART E	ELECTRICAL WORKS						
	TOTAL OF PART III						
GRAND TOTAL							

T O T A L C O S T ₱_____

LUMP SUM BID IN WORDS : _____

Contractor : _____

BILL OF QUANTITIES
(Building Construction/Rehabilitation Project)

PROJECT TITLE : PROPOSED CONSTRUCTION OF PUV STOPS AT DON ANTONIO ALONG COMMONWEALTH AVENUE

LOCATION : BARANGAY BATASAN HILLS AND HOLY SPIRIT, DISTRICT 2, QUEZON CITY

PROJECT NO. : 23 - 00132

DURATION : One Hundred Fifty (150) Calendar Days

ITEM CODE	DESCRIPTION	QUANTITY	UNIT	ESTIMATED DIRECT COST	MARK-UP IN %		TOTAL MARK-UP		VAT	TOTAL INDIRECT COST	TOTAL COST	UNIT COST
					OCM	PROFIT	%	VALUE				
PART I	**GENERAL REQUIREMENTS**											
A.1.1(8)	Provision of Field Office for the Engineer (Rental Basis)	5	month									
	TOTAL OF PART I											
PART II	**OTHER GENERAL REQUIREMENTS**											
B.4(1)	Layout and Staking	420	sq.m.									
B.5	Project Billboard/Signboard	1	each									
B.7(1)	Occupational Safety and Health Program	5	month									
B.9	Mobilization / Demobilazation	1	l.s									
B.20	Temporary Enclosure	1	l.s.									
B.24	Scaffolding	1	l.s.									
	TOTAL OF PART II											
PART III	**CIVIL AND ELECTRICAL WORK**											
PART A	**EARTHWORKS**											
800(1)	Clearing and Grubbing	420	sq.m.									
803(1)a	Structure Excavation (Solid Rock)	59	cu.m.									
804(1)a	Embankment from Structure Excavation	16	cu.m.									
804(4)	Gravel Fill	24	cu.m.									
807(9)	Permeable Paver Block	346	sq.m.									
1500(1)	Sand Bedding	12	cu.m.									
	SUB-TOTAL OF PART A											

ITEM CODE	DESCRIPTION	QUANTITY	UNIT	ESTIMATED DIRECT COST	MARK-UP IN %		TOTAL MARK-UP		VAT	TOTAL INDIRECT COST	TOTAL COST	UNIT COST
					OCM	PROFIT	%	VALUE				
PART B	**PLAIN AND REINFORCED CONCRETE**											
514(3)	Shotcrete	1,471	sq.m.									
900(1)c	Structural Concrete, Class A, 28 days, 4000 psi	51	cu.m.									
901(1)	Lean Concrete (Ready Mix, 28 Days)	23	cu.m.									
902(1)a	Reinforcing Steel (Deformed), Grade 40	2,211	k.g.									
902(1)	Reinforcing Steel (Deformed), Grade 60	2,444	k.g.									
903(2)	Formworks and Falseworks	93	sq.m.									
	SUB-TOTAL OF PART B											
PART C	**FINISHING AND OTHER CIVIL WORKS**											
1014(2)	G.I. Metal Sheets Plain with Chicken Wire Mesh	1,471	sq.m.									
1016(1)a	Waterproofing, Liquid	485	sq.m.									
1018(7)a	Directional Block Tactile Tiles	31	sq.m.									
1018(7)b	Warning Block Tactile Tiles	65	sq.m.									
1032(1)a	Painting Works, Masonry/Concrete	582	sq.m.									
1032(1)c	Painting Works, Steel	1,121	sq.m.									
1047(1)	Structural Steel, Wide Flange (A36)	36,628	k.g.									
1047(5)d	Metal Structure Accessories, Steel Plates	2,066	k.g.									
1047(8)a	Structural Steel, Metal Channel	42,709	k.g.									
1047(4)a	Metal Structure Accessories, Anchor Bolts	108	each									
SPL-AWBRS	Bike Repair Station	2	set									
SPL-AWCM07	Hard Wood Composite Wall Panel	79	sq.m.									
SPL-AWCM08	Hard Wood Composite Wall Panel with Charging Station	10	sq.m.									
SPL-AWCM9	Sign Board	129	sq.m.									
SPL-AW0543	PUV Stop Signage	2	set									
	SUB-TOTAL OF PART C											
PART D	**MISCELLANEOUS STRUCTURES**											
600(4)	Curb & Gutter (Cast in Place)	261	l.m.									
612(1)	Reflectorized Thermoplastic Pavement Markings White	26	sq.m.									
	SUB-TOTAL OF PART D											

ITEM CODE	DESCRIPTION	QUANTITY	UNIT	ESTIMATED DIRECT COST	MARK-UP IN %		TOTAL MARK-UP		VAT	TOTAL INDIRECT COST	TOTAL COST	UNIT COST
					OCM	PROFIT	%	VALUE				
PART E	**ELECTRICAL WORKS**											
1100 (10)	Conduits, Boxes & Fittings	1	l.s									
1101 (33)	Wires and Wiring Devices	1	l.s									
1102 (1)	Panelboard with Main and Branch Breakers	1	l.s									
1103 (1)	Lighting Fixtures and Lamps	1	l.s									
1102 (18)	Solar Panel with Inverter, battery, and other devices	1	l.s									
	SUB-TOTAL OF PART E											
	TOTAL OF PART III											
	GRAND TOTAL											

Section IX. Checklist of Technical and Financial Documents

Notes on the Checklist of Technical and Financial Documents

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

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

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

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

Checklist of Technical and Financial Documents

I. TECHNICAL COMPONENT ENVELOPE

Class "A" Documents

Legal Documents

☐ (a) Valid PhilGEPS Registration Certificate (Platinum Membership) (all pages);
and

☐ (b) Registration certificate from Securities and Exchange Commission (SEC), Department of Trade and Industry (DTI) for sole proprietorship, or Cooperative Development Authority (CDA) for cooperatives or its equivalent document;
and

☐ (c) Mayor's or Business permit issued by the city or municipality where the principal place of business of the prospective bidder is located, or the equivalent document for Exclusive Economic Zones or Areas;
and

☐ (e) Tax clearance per E.O. No. 398, s. 2005, as finally reviewed and approved by the Bureau of Internal Revenue (BIR).

Technical Documents

☐ (f) Statement of the prospective bidder of all its ongoing government and private contracts, including contracts awarded but not yet started, if any, whether similar or not similar in nature and complexity to the contract to be bid *(please see attached prescribed forms required by the QC – BAC for Infrastructure and Consultancy)*; **and**

☐ (g) Statement of the bidder's Single Largest Completed Contract (SLCC) similar to the contract to be bid, except under conditions provided under the rules with an attached Notice of Award, Notice to Proceed, Contract and Certificate of Acceptance *(please see attached prescribed form required by the QC – BAC for Infrastructure and Consultancy)*; **and**

☐ (h) Philippine Contractors Accreditation Board (PCAB) License;
or
Special PCAB License in case of Joint Ventures;
and registration for the type and cost of the contract to be bid; **and**

☐ (i) Original copy of Bid Security. If in the form of a Surety Bond, submit also a certification issued by the Insurance Commission;
or
Original copy of Notarized Bid Securing Declaration; **and**

(j) Project Requirements, which shall include the following:

☐ a. Organizational chart for the contract to be bid;

☐ b. List of contractor's key personnel (*e.g.*, Project Manager, Project Engineers, Materials Engineers, and Foremen), to be assigned to the contract to be bid, with their complete qualification and experience data *(please see attached prescribed form required by the QC – BAC for Infrastructure and Consultancy)*;

☐ c. List of contractor's major equipment units, which are owned, leased, and/or under purchase agreements, supported by proof of ownership or certification of availability of equipment from the equipment

lessor/vendor for the duration of the project, as the case may be *(please see attached prescribed form required by the QC – BAC for Infrastructure and Consultancy)*; **and**

☐ (k) Original duly signed Omnibus Sworn Statement (OSS);
and if applicable, Original Notarized Secretary's Certificate in case of a corporation, partnership, or cooperative; or Original Special Power of Attorney of all members of the joint venture giving full power and authority to its officer to sign the OSS and do acts to represent the Bidder.

Additional Technical Requirements:

- ☐ Certificate of Site Inspection or Affidavit of Site Inspection as part of Omnibus Sworn Statement
- ☐ Affidavit of Undertaking for Key Personnel and Equipment *(please see attached prescribed form required by the QC – BAC for Infrastructure and Consultancy)*
- ☐ Equipment Utilization Schedule
- ☐ Manpower Schedule
- ☐ Construction Schedule and S-Curve
- ☐ PERT-CMP
- ☐ Construction Methods

Financial Documents

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

☐ (m) The prospective bidder's computation of Net Financial Contracting Capacity (NFCC) *(please see attached prescribed form required by the QC – BAC for Infrastructure and Consultancy).*

Class "B" Documents

☐ (n) If applicable, duly signed joint venture agreement (JVA) in accordance with RA No. 4566 and its IRR in case the joint venture is already in existence;
or
duly notarized statements from all the potential joint venture partners stating that they will enter into and abide by the provisions of the JVA in the instance that the bid is successful.

II. FINANCIAL COMPONENT ENVELOPE

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

Other documentary requirements under RA No. 9184

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

☐ (q) Duly accomplished Detailed Estimates Form, including a summary shee indicating the unit prices of construction materials, labor rates, and equipmen rentals used in coming up with the Bid; **and**

☐ (r) Cash Flow by Quarter.

PROJECT TITLE : **PROPOSED CONSTRUCTION OF PUV STOPS AT DON ANTONIO ALONG COMMONWEALTH AVENUE**

LOCATION : **BARANGAY BATASAN HILLS AND HOLY SPIRIT, DISTRICT 2, QUEZON CITY**

PROJECT NO. : **23 - 00132**

DURATION : **One Hundred Fifty (150) Calendar Days**

BREAKDOWN OF COST

ITEM NO.	DESCRIPTION	ESTIMATED DIRECT COST	TOTAL MARK-UP		VAT	TOTAL INDIRECT COST	TOTAL COST
			%	VALUE			
PART I	GENERAL REQUIREMENTS						
PART II	OTHER GENERAL REQUIREMENTS						
PART III	CIVIL AND ELECTRICAL WORK						
PART A	EARTHWORKS						
PART B	PLAIN AND REINFORCED CONCRETE WORKS						
PART C	FINISHING AND OTHER CIVIL WORKS						
PART D	MISCELLANEOUS STRUCTURES						
PART E	ELECTRICAL WORKS						
	TOTAL OF PART III						
GRAND TOTAL							

T O T A L C O S T ₱_____

LUMP SUM BID IN WORDS : _____

Contractor : _____

BILL OF QUANTITIES
(Building Construction/Rehabilitation Project)

PROJECT TITLE : PROPOSED CONSTRUCTION OF PUV STOPS AT DON ANTONIO ALONG COMMONWEALTH AVENUE

LOCATION : BARANGAY BATASAN HILLS AND HOLY SPIRIT, DISTRICT 2, QUEZON CITY

PROJECT NO. : 23 - 00132

DURATION : One Hundred Fifty (150) Calendar Days

ITEM CODE	DESCRIPTION	QUANTITY	UNIT	ESTIMATED DIRECT COST	MARK-UP IN %		TOTAL MARK-UP		VAT	TOTAL INDIRECT COST	TOTAL COST	UNIT COST
					OCM	PROFIT	%	VALUE				
PART I	**GENERAL REQUIREMENTS**											
A.1.1(8)	Provision of Field Office for the Engineer (Rental Basis)	5	month									
	TOTAL OF PART I											
PART II	**OTHER GENERAL REQUIREMENTS**											
B.4(1)	Layout and Staking	420	sq.m.									
B.5	Project Billboard/Signboard	1	each									
B.7(1)	Occupational Safety and Health Program	5	month									
B.9	Mobilization / Demobilazation	1	l.s									
B.20	Temporary Enclosure	1	l.s.									
B.24	Scaffolding	1	l.s.									
	TOTAL OF PART II											
PART III	**CIVIL AND ELECTRICAL WORK**											
PART A	**EARTHWORKS**											
800(1)	Clearing and Grubbing	420	sq.m.									
803(1)a	Structure Excavation (Solid Rock)	59	cu.m.									
804(1)a	Embankment from Structure Excavation	16	cu.m.									
804(4)	Gravel Fill	24	cu.m.									
807(9)	Permeable Paver Block	346	sq.m.									
1500(1)	Sand Bedding	12	cu.m.									
	SUB-TOTAL OF PART A											

ITEM CODE	DESCRIPTION	QUANTITY	UNIT	ESTIMATED DIRECT COST	MARK-UP IN %		TOTAL MARK-UP		VAT	TOTAL INDIRECT COST	TOTAL COST	UNIT COST
					OCM	PROFIT	%	VALUE				
PART B	**PLAIN AND REINFORCED CONCRETE**											
514(3)	Shotcrete	1,471	sq.m.									
900(1)c	Structural Concrete, Class A, 28 days, 4000 psi	51	cu.m.									
901(1)	Lean Concrete (Ready Mix, 28 Days)	23	cu.m.									
902(1)a	Reinforcing Steel (Deformed), Grade 40	2,211	k.g.									
902(1)	Reinforcing Steel (Deformed), Grade 60	2,444	k.g.									
903(2)	Formworks and Falseworks	93	sq.m.									
	SUB-TOTAL OF PART B											
PART C	**FINISHING AND OTHER CIVIL WORKS**											
1014(2)	G.I. Metal Sheets Plain with Chicken Wire Mesh	1,471	sq.m.									
1016(1)a	Waterproofing, Liquid	485	sq.m.									
1018(7)a	Directional Block Tactile Tiles	31	sq.m.									
1018(7)b	Warning Block Tactile Tiles	65	sq.m.									
1032(1)a	Painting Works, Masonry/Concrete	582	sq.m.									
1032(1)c	Painting Works, Steel	1,121	sq.m.									
1047(1)	Structural Steel, Wide Flange (A36)	36,628	k.g.									
1047(5)d	Metal Structure Accessories, Steel Plates	2,066	k.g.									
1047(8)a	Structural Steel, Metal Channel	42,709	k.g.									
1047(4)a	Metal Structure Accessories, Anchor Bolts	108	each									
SPL-AWBRS	Bike Repair Station	2	set									
SPL-AWCM07	Hard Wood Composite Wall Panel	79	sq.m.									
SPL-AWCM08	Hard Wood Composite Wall Panel with Charging Station	10	sq.m.									
SPL-AWCM9	Sign Board	129	sq.m.									
SPL-AW0543	PUV Stop Signage	2	set									
	SUB-TOTAL OF PART C											
PART D	**MISCELLANEOUS STRUCTURES**											
600(4)	Curb & Gutter (Cast in Place)	261	l.m.									
612(1)	Reflectorized Thermoplastic Pavement Markings White	26	sq.m.									
	SUB-TOTAL OF PART D											

ITEM CODE	DESCRIPTION	QUANTITY	UNIT	ESTIMATED DIRECT COST	MARK-UP IN %		TOTAL MARK-UP		VAT	TOTAL INDIRECT COST	TOTAL COST	UNIT COST
					OCM	PROFIT	%	VALUE				
PART E	**ELECTRICAL WORKS**											
1100 (10)	Conduits, Boxes & Fittings	1	l.s									
1101 (33)	Wires and Wiring Devices	1	l.s									
1102 (1)	Panelboard with Main and Branch Breakers	1	l.s									
1103 (1)	Lighting Fixtures and Lamps	1	l.s									
1102 (18)	Solar Panel with Inverter, battery, and other devices	1	l.s									
	SUB-TOTAL OF PART E											
	TOTAL OF PART III											
	GRAND TOTAL											


Republic of the Philippines
gppb
Government Procurement Policy Board