REPUBLIC OF THE PHILIPPINES

NATIONAL POWER CORPORATION

(Pambansang Korporasyon sa Elektrisidad)

BID DOCUMENTS

Name of Project : **RENOVATION OF POWERHOUSE AND FACILITIES IMPROVEMENT FOR BATAN DPP**

Location : **BRGY. BATAN, RAPU-RAPU, ALBAY**

Specs No. : **LuzP21Z1350Sr**

Contents:

Design and Development Department

SECTION I

INVITATION TO BID

National Power Corporation
INVITATION TO BID
PUBLIC BIDDING – BCS 2023-0068

1. The NATIONAL POWER CORPORATION (NPC), through its approved Corporate Budget of CY 2023 intends to apply the sum of **(Please see schedule below)** being the Approved Budget for the Contract (ABC) to payments under the contract. Bids received in excess of the ABC shall be automatically rejected at Bid opening.

PR Nos./PB Ref No. & Description	Similar Contracts	Pre-bid Conference	Bid Submission / Opening	ABC/ Amt. of Bid Docs
S1-BAT23-001 / PB230201-JL00013 (PB2) Renovation of Powerhouse and Facilities Improvements for Batan Diesel Power Plant • PCAB License: License Category of at least **"Category D – General Building"** and registration classification of at least **"Small B – Building and Industrial Plant"**	Construction of Building and/or repair of building and other structures	20 February 2023 9:30 A.M	06 March 2023 9:30 A.M	₱ 2,325,000.00 / ₱ 5,000.00
S3-B1923-002 / S3-B0823-005 / PB230306-HG Supply and Delivery of GPE (Oil Spill Boom Containment Boom & Barrier) for Power Barge 119 & Power Barge 108	Supply and Delivery of Oil Spill Containment Boom and Barrier or Oil Spill Equipment or Supply of Marine Pollution Control Equipment	20 February 2023 9:30 A.M	06 March 2023 9:30 A.M	₱ 2,970,000.00 / ₱ 5,000.00
MG-A5M22-033 / PB230306-HG Supply, Delivery, Installation, Test and Commissioning of Stoplog at DWSG No. 1 for Agus 5 HEP • PCAB License: License Category of at least **"Category B – General Building"** and registration classification of at least **"Medium A – Building and Industrial Plant" or "Medium A – Structural Steel Works"**	Structural Works of Spillway Gates or Stoplogs of Hydroelectric Plants	20 February 2023 9:30 A.M	06 March 2023 9:30 A.M	₱ 41,000,000.00 / ₱ 25,000.00
Venue: Kañao Function Room, NPC Bldg. Diliman, Quezon City				

2. The NPC now invites bids for Items listed above. Delivery of the Goods is required **(see table below)** specified in the Technical Specifications. Bidders should have completed, within **(see table below)** from the date of submission and receipt of bids, a contract similar to the Project. The description of an eligible bidder is contained in the Bidding Documents, particularly, in Section II. (Instruction to Bidders).

PR No/s. / PB Ref No/s.	Delivery Period / Contract Duration	Relevant Period of SLCC reckoned from the date of submission & receipt of bids
S1-BAT23-001	One Hundred Twenty (120) Calendar Days	-
S3-B1923-002 / S3-B0823-005	One Hundred Twenty (120) Calendar Days	Ten (10) Years
MG-A5M22-033	Three Hundred (300) Calendar Days	-

3. Bidding will be conducted through open competitive bidding procedures using a non-discretionary "*pass/fail*" criterion as specified in the 2016 revised Implementing Rules and Regulations (IRR) of Republic Act (RA) No. 9184.

   Bidding is restricted to Filipino citizens/sole proprietorships, partnerships, or organizations with at least sixty percent (60%) interest or outstanding capital stock belonging to citizens of the Philippines, and to citizens or organizations of a country the laws or regulations of which grant similar rights or privileges to Filipino citizens, pursuant to RA 5183.

4. Prospective Bidders may obtain further information from National Power Corporation, Bids and Contracts Services Division and inspect the Bidding Documents at the address given below during office hours (8:00AM to 5:00PM), Monday to Friday.

5. A complete set of Bidding Documents may be acquired by interested Bidders from the given address and website(s) and upon payment of the applicable fee for the Bidding Documents, pursuant to the latest Guidelines issued by the GPPB. *Bidding fee may be refunded in accordance with the guidelines based on the grounds provided under Section 41 of R.A. 9184 and its Revised IRR.*

6. The National Power Corporation will hold Pre-Bid Conference **(see table above)** and/or through video conferencing or webcasting which shall be open to prospective bidders.

   Only registered bidder/s shall be allowed to participate for the conduct of virtual pre-bid conference. **Unregistered bidders** may attend the Pre-Bid Conference at the Kañao Room, NPC subject to the following:

   a. Only a maximum of two (2) representatives from each bidder / company shall be allowed to participate during the virtual pre-bid conference.
   b. A "No Face mask / No Entry" policy shall be implemented in the NPC premises. Face mask shall be 3-ply surgical or KN95 mask type.
   c. The requirements herein stated including the medium of submission shall be subject to GPPB Resolution No. 09-2020 dated 07 May 2020
   d. The Guidelines on the Implementation of Early Procurement Activities (EPA) shall be subject to GPPB Circular No. 06-2019 dated 17 July 2019

7. Bids must be duly received by the BAC Secretariat through (i) manual submission at the office address indicated below; (ii) online or electronic submission before the specified time stated in the table above for opening of bids. 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 14.

9. Bid opening shall be on Kañao Function Room, NPC Head Office, Diliman, Quezon City and/or via online platform to be announced by NPC. Bids will be opened in the presence of the bidders' representatives who choose to attend the activity.

10. The National Power Corporation 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 IRR of R.A. No. 9184, without thereby incurring any liability to the affected bidder or bidders.

11. For further information, please refer to:

Bids and Contracts Services Division,
Logistics Department

BIR Road cor. Quezon Avenue
Diliman, Quezon City
Tel Nos.: 8924-5211 and 8921-3541 local 5564/5211
Fax No.: 8922-1622
Email: bcsd@napocor.gov.ph /

12. You may visit the following websites:

For downloading of Bidding Documents: https://www.napocor.gov.ph/bcsd/bids.php

RENE B. BARRUELA
Vice President, Corporate Affairs Group and
Chairman, Bids and Awards Committee

SECTION II

INSTRUCTIONS TO BIDDERS

SECTION II - INSTRUCTIONS TO BIDDERS

1. Scope of Bid

NPC invites Bids for the **RENOVATION OF POWERHOUSE AND FACILITIES IMPROVEMENT FOR BATAN DPP**, with Project Identification Number **LuzP21Z1350Sr.**

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

2. Funding Information

The GOP through the source of funding as indicated below for CY 2022 in the amount of specified in the Invitation to Bid. The source of funding is the proposed Corporate Operating Budget of the National Power Corporation (NPC).

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

SECTION II - INSTRUCTIONS TO BIDDERS

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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.

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

8. Pre-Bid Conference

The Procuring Entity will hold a pre-bid conference for this Project on the specified date and time and either at its physical address and/or through videoconferencing/webcasting} as indicated in paragraph 6 of the **IB.**

9. Clarification and Amendment of Bidding Documents

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

10. Documents Comprising the Bid: Eligibility and Technical Components

10.1. The first envelope shall contain the eligibility and technical documents of the Bid as specified in **Form NPCSF-INFR-01 - Checklist of Technical and Financial Documents, Section VIII - Bidding Forms.**

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 **Form NPCSF-INFR-01 - Checklist of Technical and Financial Documents, Section VIII - Bidding Forms.**

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

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

12. Alternative Bids

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

13. Bid Prices

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

14. Bid and Payment Currencies

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

14.2. Payment of the contract price shall be made in Philippine Pesos.

15. Bid Security

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

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

16. Sealing and Marking of Bids

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

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

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

17. Deadline for Submission of Bids

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

18. Opening and Preliminary Examination of Bids

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

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

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

19. Detailed Evaluation and Comparison of Bids

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

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

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

20. Post Qualification

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

21. Signing of the Contract

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

SECTION III

BID DATA SHEET

SECTION III - BID DATA SHEET

ITB Clause	
5.2	For this purpose, contracts similar to the Project refer to contracts which have the same major categories of work, which shall be contracts/projects involving construction of building and/or repair of building and other structures. The Single Largest Completed Contract (SLCC) as declared by the bidder shall be verified and validated to ascertain such completed contract. Hence, bidders must ensure access to sites of such projects/equipment to NPC representatives for verification and validation purposes during post-qualification process. It shall be a ground for disqualification, if verification and validation cannot be conducted for reasons attributable to the Bidder.
7.1	Only a maximum of fifty percent (50%) of the Works may be subcontracted. All Subcontractors must be approved by NPC.
10.1	The list of on-going contracts (Form No. NPCSF-INFR-02) shall be supported by the following documents for each on-going contract to be submitted during Post-Qualification: 1. Contract/Purchase Order and/or Notice of Award 2. Certification coming from the project owner/client that the performance is satisfactory as of the bidding date. The bidder shall declare in this form all his on-going government and private contracts including contracts where the bidder (either as individual or as a Joint Venture) is a partner in a Joint Venture agreement other than his current joint venture where he is a partner. Non declaration will be a ground for disqualification of bid.
	The Statement of the bidder's Single Largest Completed Contract (SLCC) similar to the contract to be bid (Form No. NPCSF-INFR-03) shall be supported by the following documents to be submitted during Bid Opening: 1. Contract/Purchase Order 2. Owner's Certificate of Final Acceptance issued by the project owner other than the contractor or a final rating of at least Satisfactory in the Constructors Performance Evaluation System (CPES). In case of contracts with the private sector, an equivalent document (Ex. Official Receipt or Sales Invoice) shall be submitted.
10.3	The required License issued by the Philippine Contractors Accreditation Board (PCAB): License Category of at least **"CATEGORY D – GENERAL BUILDING"** and registration classification of at least **"SMALL B – BUILDING AND INDUSTRIAL PLANT"**

10.4	The list of key personnel shall include the following minimum requirements: **a. One (1) Project/Site Engineer** Registered Civil Engineer who had supervised at least a project similar in nature as to the type of the proposed project within the last five (5) years. Must have 3 years professional as Civil Engineer on similar project **b. One (1) Safety Officer 2** Construction Safety Officer who has completed at least forty (40) hours of Construction Safety and Health Training (COSH) from Occupational Safety and Health Center (OSHC) or Safety Training Organizations (STOs) accredited by the Department of Labor and Employment (DOLE) Valid Professional Regulations Commission (PRC) license for professional personnel, Construction Safety and Health Training Certificate from OSHC/STOs accredited by DOLE for the Safety Officer, shall be submitted and included as an attachment in the Standard Form NPCSF-INFR-09: List of Key Personnel Proposed to be Assign to the Contract. The above key personnel must either be employed by the Bidder or contracted by the Bidder to be employed for the contract to be bid.
10.5	The list of construction equipment (owned or leased) shall include the following minimum requirements: a. Welding Machine (at least 300 A) - 1 unit b. Concrete Mixer (at least 1 bagger) - 1 unit c. Oxy-acetylene gas cutter - 1 unit d. Bar cutter (at least 25mm ø capable) - 1 unit e. Concrete Vibrator (at least 3.5hP - 1 unit
10.6	Bidders shall also submit the following requirements in their first envelope, Eligibility and Technical Component of their bid: 1. Complete eligibility documents of the proposed sub-contractor, if any
10.7	The prospective bidders shall declare its Joint Venture partner during the purchase of bid/tender documents. Any single bidder/s who already procured/secured the bidding documents but want to avail the Joint Venture Agreement (JVA) shall inform the BAC in writing prior to the bid opening for records and documentation purposes. Failure to do so shall be a ground for disqualification/non-acceptance of its bid.
12	No further instructions
15.1	The bid security shall be in the form of a Bid Securing Declaration or any of the following forms and amounts: 1. The amount of not less than *2% of ABC*, if bid security is in cash, cashier's/manager's check, bank draft/guarantee or irrevocable letter of credit; 2. The amount of not less than *5% of ABC* if bid security is in Surety Bond.

19.2	Partial Bid is not allowed. The project is grouped in a single lot and the lot shall not be divided into sub-lots for the purpose of bidding, evaluation, and contract award.
20	a. Contract/Purchase Order and/or Notice of Award for the contracts stated in the List of all Ongoing Government & Private Contracts Including Contracts Awarded but not yet Started (NPCSF-INFR-02); b. Certification coming from the project owner/client that the performance is satisfactory as of the bidding date for all ongoing contracts stated in form NPCSF-INFR-02. c. The licenses and permits relevant to the Project and the corresponding law requiring it as specified in the Technical Specifications, if any.
21	The following documents shall form part of the contract: 1. Notice to Proceed 2. Construction schedule and S-curve 3. Manpower Schedule 4. Construction Methods 5. Equipment Utilization Schedule 6. Construction safety and health program of the contractor duly approved by the Bureau of Working Condition (BWC) of the Department of Labor and Employment (DOLE) or proof of submission to BWC 7. PERT/CPM.

SECTION IV

GENERAL CONDITIONS OF CONTRACT

SECTION IV – GENERAL CONDITIONS OF CONTRACT

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SECTION IV – GENERAL CONDITIONS OF CONTRACT

1. Scope of Contract

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

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

2. Sectional Completion of Works

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

3. Possession of Site

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

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

4. The Contractor's Obligations

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

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

5. Performance Security

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

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

6. Site Investigation Reports

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

7. Warranty

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

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

8. Liability of the Contractor

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

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

9. Termination for Other Causes

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

10. Dayworks

Subject to the guidelines on Variation Order in Annex "E" of the 2016 revised IRR of RA No. 9184, and if applicable as indicated in the **SCC**, the Dayworks rates in the Contractor's Bid shall be used for small additional amounts of work only when the

Procuring Entity's Representative has given written instructions in advance for additional work to be paid for in that way.

11. Program of Work

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

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

12. Instructions, Inspections and Audits

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

13. Advance Payment

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

14. Progress Payments

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

15. Operating and Maintenance Manuals

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

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

SECTION V

SPECIAL CONDITIONS OF CONTRACT

SECTION V – SPECIAL CONDITIONS OF CONTRACT

GCC Clause	
2	Sectional completion is not specified.
4	It shall also be the obligation and responsibility of the Contractor to carry out the Works properly and in accordance with this Contract, including but not limited to the following conditions: a. The Contractor shall conduct the Works with due regard to safety and health in accordance with its Construction Safety and Health Program (CSHP) duly approved by the Department of Labor & Employment (DOLE) and in compliance with the DOLE Department Order No. 13 – The Guidelines Governing Occupational Safety and Health in the Construction Industry. Failure to comply with the approved CSHP will be considered as non-compliance with the Contract and shall result to the imposition of Section 19, Violation and Penalties of the DOLE Department Order No. 13 and any appropriate sanctions such as, but not limited to: 1. Suspend the work until the Contractor complies with the approved CSHP with the condition that the work resumption will not incur additional cost to the Corporation; 2. Suspend payment of the portion of work under question; 3. Correct the situation by employing 3rd party and charge all expenses incurred to the Contractor's collectibles/securities; and 4. Report the condition to the Bureau of Working Conditions of the DOLE for their appropriate action. b. The Contractor shall be responsible for the strict compliance with the provision of the Philippine Laws affecting labor and operation of Work under the contract and shall be responsible for the payment of all indemnities arising out of any labor accident which may occur in the execution of the Works and for which he may be responsible under Republic Act 3428, as amended, known as the Workmen's Compensation Law. c. The Contractor is obliged to exercise due care so as not to endanger life and property in the vicinity of the Works where he operates in connection with this Contract. He shall be liable for all damages incurred in any manner by acts of negligence of his own, or his agents, employees, or workmen. d. It is the responsibility of the Contractor for the strict compliance with the requirements of the Philippine Clean Air Act of 1999 (R.A. 8749) and Philippine Clean Water Act of 2004 (R.A. 9275). The Contractor shall be liable for any damages/destructions to the environment including penalties that will be imposed by the Department of Environment and Natural Resources (DENR) arising from non-compliance of the requirements thereof. e. The Contractor shall be responsible for the strict compliance with the requirements of the Environmental Compliance Certificate (ECC) issued for this project (if any) and DENR Administrative Order No. 26.

	He shall be liable for any damages/destructions to the environment including penalties that will be imposed by the DENR arising from non-compliance thereof, in any manner by his acts or negligence, or by his agents, employees, or workmen in the execution of the Works. The Contractor may employ a Pollution Control Officer accredited with the DENR for the duration of the project, if so required by the DENR Administrative Order No. 26 f. It shall be the Contractor's responsibility for the correctness, accuracy and quality of works. NPC's approval does not relieve his contractual obligation and responsibility under this contract. g. Payment of all forms of taxes, such as value added tax (VAT) including municipal licenses and permits, and others that may be imposed by the Philippine Government or any of its agencies and political subdivisions in connection with the Contract shall be for the account of the Contractor. h. In general, the Contractor is totally responsible for the execution of the Works and therefore, takes upon himself all the technical, legal and economic risks and all obligations which could arise therefrom or connected therewith. The overall responsibility of the Contractor includes the responsibility for actions or omissions of his own personnel as well as the personnel of the sub-contractors.
4.1	NPC shall give access to the Site for the Contractor to commence and proceed with the works on the start date. The access to the site referred herein shall not be exclusive to the Contractor but only to enable him to execute the Work.
5	1. The following must be indicated in the performance bond to be posted by the Contractor: i. Company Name ii. Correct amount of the Bond iii. Contract/Purchase Order Reference Number iv. Purpose of the Bond: "To guarantee the faithful performance of the Principal's obligation to undertake *(Contract/Purchase Order Description)* in accordance with the terms and conditions of *(Contract No. & Schedule/Purchase Order No.)* entered into by the parties." 2. The bond shall remain valid and effective until the duration of the contract *(should be specific date reckoned from the contract effectivity)* plus sixty (60) days after NPC's acceptance of the last delivery/final acceptance of the project. 3. In case of surety bond, any extension of the contract duration or delivery period granted to the CONTRACTOR shall be considered as given, and any modification of the contract shall be considered as authorized, as if with the expressed consent of the surety, provided that such extension or modifications falls within the effective period of the said surety bond. However, in the event that the extension of the contract duration or delivery schedule would be beyond the effective period of the surety bond first posted, it shall be the sole obligation of the CONTRACTOR to post an acceptable Performance

	Security within ten (10) calendar days after the contract duration/delivery period extension has been granted by NPC. 4. Other required conditions in addition to the standard policy terms issued by the Bonding Company: i. The bond is a penal bond, callable on demand and the entire amount thereof shall be forfeited in favor of the Obligee upon default of the Principal without the need to prove or to show grounds or reasons for demand for the sum specified therein; ii. The amount claimed by the Obligee under this bond shall be paid in full and shall never be subject to any adjustment by the Surety; iii. In case of claim, the Surety shall pay such claim within sixty (60) days from receipt by the Surety of the Obligee's notice of claim/demand letter notwithstanding any objection thereto by the Principal.
6	No site investigation report.
7.2	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	No dayworks are applicable to the contract.
11.1	The Contractor shall submit the Program of Work to the Procuring Entity's Representative within Ten (10) calendar days of delivery of the Notice of Award/Letter of Acceptance.
11.2	The period between Program of Work updates is Thirty (30) calendar days. The amount to be withheld for late submission of an updated Program of Work is One percent (1%) of contract amount.
12	During contract implementation, the Procuring Entity shall conduct Constructors Performance Evaluation in accordance with Section 12, Annex E of the Revised Implementing Rules and Regulation of R.A. 9184 using the NPC Constructors Performance Evaluation System (CPES) Guidelines.

	CPES ratings shall be used for the following purposes: a) eligibility screening/post-qualification; b) awarding of contracts; c) project monitoring & control; d) issuance of Certificate of Completion; and in adopting measures to further improve performance of contractors in the prosecution of government projects. Qualified Constructors Performance Evaluators (CPE) shall conduct project evaluation as follows: (a) During Construction - Except for those projects with a duration of 90 calendar days and below which may be subjected to at least one (1) visit, all projects shall be subjected to a minimum of two (2) evaluations to be performed by the CPE. The number of evaluations beyond the prescribed minimum shall be determined by the CPES-Implementing Unit based on the size, nature and complexity of the project and shall be subject to approval by the proper authorities within the agency. The first evaluation shall be performed when the project is at least thirty percent (30%) physically complete or as maybe required by the CPES-IU using the S-curve or other appropriate means to determine whether there is substantial work completed for evaluation. (b) Upon Completion - only one evaluation shall be performed by the CPE right after the Project Implementation Group reports one hundred percent (100%) completion of the project.
13	The maximum amount of advance payment is fifteen percent (15%) of the Contract Price and paid in lump sum.
14	No further instructions.
15.1	The date by which "as built" drawings and operating and maintenance manuals are required is within thirty (30) calendar days after completion of contract.
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 Five percent (5%) of contract amount.

SECTION VI

TECHNICAL SPECIFICATIONS

SECTION VI

TECHNICAL SPECIFICATIONS

PROJECT HIGHLIGHTS

SECTION VI - TECHNICAL SPECIFICATIONS

PH – PROJECT HIGHLIGHTS

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SECTION VI - TECHNICAL SPECIFICATIONS

PH – PROJECT HIGHLIGHTS

PH-1.0 PROJECT HIGHLIGHTS

PH-1.1 General

This section covers the general technical requirements for furnishing all supervision, labor, materials, supplies, tools and equipment in accordance with specifications contained herein and as shown on the accompanying drawings to complete the **RENOVATION OF POWERHOUSE AND FACILITIES IMPROVEMENT FOR BATAN DPP.**

The Contractor shall accept full responsibility for its work in the performance qualifications, specifications, documentation, reports, fabrication, corrosion protection, cleaning, shop testing, preparation for shipment, field testing, warranty provisions and compliance with the applicable codes and standards and the requirements of this specification.

The Contractor shall strictly observe the general requirements of the specification in conjunction with the specific requirements specified in the relevant specifications.

PH-1.2 Project Location

The project is located in the vicinity of existing Batan Diesel Power, Rapu-Rapu, Albay.

PH-1.3 Scope of Work

The works and services to be performed under this Contract shall essentially consist of, but not limited to the following:

Architectural Works

a) Concrete and Masonry Works;
b) Replacement of ceiling for Control Room and Comfort Room;
c) Fenestration works;
d) Expansion of Control Room including installation of vinyl quartz tiles;
e) Supply and installation of pre-painted corrugated roofing sheets;
f) Construction of CHB wall to the existing doors and window to be closed;
g) All other works and services required to complete the project.

Civil Works

a) Moving-in including furnishing, supervision, construction, operation and maintenance of general construction facilities and moving-out thereof after completion and acceptance;
b) Fabrication and installation of steel trusses, rafters, strut beam and others;

c) Construction of roof beam and column extension for the additional height of the engine area;
d) All other works and services required to complete the project.
e) Demobilization and removal/clearing the Contractor's equipment and construction camp/facilities

Electrical Works

a) Supply, Installation and Test of Lighting and Power System of the Powerhouse and Containerized Bunker house for Batan DPP;
b) Supply, Installation and Test of Kilowatt-hour Demand Meter and its accessories;
c) Dismantling of the existing circuit breakers inside the containerized bunker house and existing lighting fixtures & convenience outlets inside the powerhouse including electrical wires, switches, and other appurtenances and stocking to the designated stockyard to be provided by the end-user; and
d) All other works and services including those not specifically detailed herein but are required to complete the project.

Mechanical Works

The Supplier shall supply PS/ICC and/or BFP approved Portable Type Fire Extinguisher complete and ready for operation and shall be installed at their corresponding place of use as specified below and shown on the drawing.

a) Three (3) units of Portable Type Fire Extinguisher, Clean Agent (HCFC or Halotron I Type), 7.1 kg. (15.5 lbs), non-expiry, multi-shots, wall-hung type PS/ICC and/or BFP approved; and

Fire extinguisher shall be Philippine Standard/International Certificate of Competence and/or Bureau of Fire Protection Approved and of rechargeable cylinder with five (5) years guarantee against leak. The fire extinguisher cylinder shall be complete with release valve, dial gauge indicator, appropriate length of hose with nozzle and locking pin.

The 7.1 kg (15.5 lbs.) capacity wall-hung type fire extinguisher shall be complete with carrying handle and wall-mounting bracket.

Portable fire extinguisher shall be suitable for the protection against class ABC fires using Clean Agent (HydroChloroFluoroCarbon or Halotron I Type) that is environmentally safe and leaves no residue.

The fire extinguisher shall be check-weighed at interval of six (6) months from the date of delivery for a period of one (1) year and if found to be undercharged (unless used by an NPC personnel) shall be filled and recharged by the Supplier at no expense to NPC.

PH-1.4 Contract Period

The Supplier shall complete the works as herein specified within One Hundred Twenty (120) calendar days. The contract period is inclusive of seven (7) unworkable days considered unfavorable for the execution of the works. The total contract duration shall be reckoned from the date of contract effectivity as specified in the **Notice to Proceed**.

PH-1.5 Contractor's Classification

The Contractor must have a valid Philippine Contractors Accreditation Board (PCAB) license of at least **"CATEGORY D – GENERAL BUILDING"** and registration classification of at least **"SMALL B – BUILDING AND INDUSTRIAL PLANT".**

The Contractor must have undertaken contracts/projects such as building construction and/or repair of building and other structures.

PH-1.6 Minimum Required Personnel

For the duration of the contract, the Contractor shall have the following minimum required personnel assigned to the project:

a. One (1) Project Engineer

Registered Civil Engineer who had supervised at least a project similar in nature as to the type and cost of the proposed project within the last 10 years. Must have at least 3 years professional experience as Civil Engineer on similar project.

b. One (1) Safety Officer 2

Construction Safety Officer who has completed at least forty (40) hours of Construction Safety and Health Training (COSH) from Occupational Safety and Health Center (OSHC) or Safety Training Organizations (STOs) accredited by the Department of Labor and Employment (DOLE).

Valid Professional Regulations Commission (PRC) license for professional personnel. Construction Safety and Health Training Certificate from OSHC/STOs accredited by DOLE for the Safety Officer, certificate of accreditation including ID card issued by DPWH for Materials Engineer, shall be submitted and included as an attachment in the Standard Form NPCSF-INFR-09 List of Key Personnel Proposed to be Assign to the Contract.

The above key personnel must either be employed by the Bidder or contracted by the Bidder to be employed for the contract to be bid.

PH-1.7 Minimum Required Construction Equipment

The list of construction equipment (owned or leased) shall include the following:

a. Welding Machine (300 Amp) - 1 unit
b. Concrete Mixer (1-bagger) - 1 unit
c. Oxy-acetylene gas cutter - 1 unit
d. Bar cutter (25 mm Φ capable) - 1 unit
e. Concrete Vibrator (3.5 hp) - 1 unit

PH-1.8 Building/Occupancy Permit and other Licenses and Permits imposed for the Contract

All forms of taxes, such as value added tax (VAT) including Local Government Unit (LGU) licenses and permits, and others that may be imposed by the Philippine Government or any of its agencies and political

subdivisions in connection with Contract shall be for the account of the Contractor. NPC shall provide assistance to the Contractor in securing the needed documents for the permits/licenses or approvals.

Whenever Building/Occupancy Permit is required at the place where the subject building/structure is located or to be erected, the Contractor shall apply, process, submit and bear all costs and charges to the corresponding fees/incidental services of the required documents in securing a building permit.

For Building/Occupancy Permit purposes, the assigned Project Manager or designated representative of NPC shall be the signatory for the Owner's Representative/Procuring Entity and Full-time Inspector and Supervisor for the Construction Works. The Manager of the DDD or designated representative of NPC shall be the signatory of the Project Specifications and the drawings and design analysis/computation of Architectural, Structural, Electrical, Mechanical & Plumbing. While the Contractor will be the signatory for the Bill of Quantities/Cost Estimates. NPC may opt to require the contractor to provide the professional/eligible personnel to sign the permits especially but not limited to project with construct and design contract. The Contractor at his own expense shall bear all the costs and charges needed to comply with the said documents. The Contractor shall not be relieved on its responsibility with regards to the reliability and integrity of the project concern.

SECTION VI

TECHNICAL SPECIFICATIONS FOR ARCHITECTURAL WORKS

SECTION VI – TECHNICAL SPECIFICATIONS

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SECTION VI - TECHNICAL SPECIFICATIONS

AW-1.0 GENERAL ARCHITECTURAL REQUIREMENTS

AW-1.1 General

The work to be done under this section shall include the furnishing of all labor, materials, equipment, tools, storage and stockyards of the pertinent materials and structural components and other incidentals for all architectural works enumerated hereunder, as shown on the accompanying drawings or as otherwise directed.

The work shall be performed and completed with high quality workmanship, in accordance with generally accepted modern practice in carpentry fenestrations, tinsmithing, plumbing, painting, landscaping and masonry work, etc. notwithstanding any omission from these Specifications or drawings.

Materials and structural parts that the Contractor shall supply and install, and which will be incorporated in the structure shall be new and unused. They shall be suitable for their intended purpose and appropriately matched to each other complying with all applicable regulations, quality and dimensions standards. Defective work is not acceptable.

AW-1.2 Submission of Samples

At least one (1) month before the start of any installation or application of materials, the Contractor shall submit samples of materials for all sections for evaluation and approval. No work shall be done until after samples are approved by the NPC Representative in writing. All work must strictly conform to approved samples as to quality, texture, color and finish.

Failure of the Contractor to comply with the preceding stipulation shall not entitle them of any extension of time nor any claim whatsoever for any delay in the work after rectification due to disapproval of work.

To avoid unnecessary delay, it is suggested that the orders and/or purchase of imported or local materials shall be made within sufficient period in order that adequate supply is available at any time when needed.

AW-1.3 Substitution of Materials

The Contractor shall submit a written request for substitution of materials in lieu of those specified when deemed very necessary and urgent. Such request shall indicate the reasons for substitution. No substitute material shall be used without written authorization from the NPC Representative.

The Contractor shall submit written request for substitution at least one (1) month before such materials are actually needed. Such request shall be accompanied by samples to be substituted and corresponding certification.

No price increase will be allowed for a better kind of material.

AW-1.4 Certification of Materials

The Contractor shall submit to the NPC Representative signed certificates from manufacturer or sole distributor of equipment and materials to be furnished and installed by the Contractor, certifying as to the kind, quality, rated capacity, quantity, performance and other descriptions of the equipment and materials delivered under a receipt number and date. No equipment or materials shall be erected, installed or applied such as electrical fixtures and accessories, concrete reinforcing steel, cement, G.I. and C.I. pipes, valves and fittings, plumbing and sanitary fixtures, building materials and finishes, paint and waterproofing, etc., without the required certificates.

AW-1.5 Other works which even if not specifically mentioned in the Section and Bill of Quantities shall be included:

- The measurements for the execution and payment of the Works, including provisions of the measuring equipment and the engagement of labor
- Connecting up of water, gas and electricity from the mains of the site indicated by the NPC Representative to the points of use
- Provision of small equipment and tools
- Safeguarding the Works against surface water, which shall normally be reckoned with, and its possible necessary removal
- Protecting the Works from heat, wind and rain
- Protection and safety measures required
- Protecting the executed works and the items handed over the execution of same from damage and theft up to the time of acceptance
- Supplying of the operational materials
- Supplying of consumable stores
- Supplying of fitting dowels
- Supplying of simple type pipe covering, e.g., in the shape of pipe sheathings with corrugated cardboard and the like
- Supplying and fitting of pipe fastening elements, e.g., pipe clips, hangers, etc.
- installing and dismantling as well as providing all framework and scaffolds
- Making blackouts on concrete
- Chemical preservation of timber
- Instructing the operating and maintenance personnel

NOTE: The above provisions are general for all types of buildings. The Contractor shall be guided accordingly by the applicable provisions in the specifications and what is shown in the drawings for each type.

AW-1.6 Measurement and Payment

Measurement for payment for different items in **Architectural Works** will be based on the areas, lengths, volumes and quantity placed and accepted by the NPC Representative.

Payments for each architectural item will be made at the corresponding contract unit price per square meter, linear meter, cubic meter and number of pieces/sets, for the pertinent items under Architectural Works in the Bill of Quantities.

Payment shall constitute full compensation for all labor, materials, equipment, tools and incidentals necessary for the completion of each work.

AW-2.0 CONCRETE MASONRY WORKS

AW-2.1 General

The work to be done under this section shall include the furnishing of all labor, materials, equipment, tools and other incidentals to complete the work.

Concrete masonry units of the type and thickness indicated shall be provided and shall be properly coordinated with the work of other trades. The source of supply for material which will affect the appearance of the finished work shall not be changed after the work has started.

Masonry units shall be handled with care to prevent chipping and breakage. Storage piles shall be so located as to avoid being damaged by construction operations and traffic. Cement and lime shall be stored off the ground under watertight cover until ready for use. Damaged materials shall be rejected.

AW-2.2 Materials

Concrete Hollow Blocks shall be of standard manufacture, machine-vibrated, fine and even textured and well-defined edges.

Unless otherwise shown on the drawings, concrete hollow blocks to be used shall conform to the requirements of ASTM Specification C-129 Minimum Compressive Strength of not less than 4.48MPa average of the fine specimens.

Mortar Proportions:

Cement mortar for laying concrete hollow blocks shall consist of one (1) part Portland cement, one-fourth (1/4) part lime and three (3) parts sand. Only sufficient water to make a workable mix will be permitted.

a) Masonry grout for filling cells of concrete blocks shall consist of one (1) Portland cement, one-fourth (1/4) part lime, three (3) parts sand to which three (3) pea gravel is added by volume. Mortar materials shall be accurately measured by volume and thoroughly mixed until evenly distributed throughout the batch mechanical mix. The actual mixing time shall not be less than two minutes.
b) Intersecting hollow blocks walls and partitions shall be bonded by overlapping units on alternative course or by the use of 6.3mm (1/4") diameter ties at 610mm (24") O. C. every second course (maximum) anchored in filled cells.

Concrete lintel beams shall extend 305mm (12") beyond both sides of the opening and reinforced with four 12.7mm (1/2") bars placed over and below window openings.

a) Concrete studs, reinforced with one 12.7mm (1/2") diameter bar, shall be placed at both sides of all window and door openings.

b) All horizontal reinforcement shall be tied to vertical reinforcement.

c) Reinforcement shall be as specified in Section "Structural Steel".

Cement shall be Portland cement of approved brand conforming to ASTM Specifications C150, Type I or Type IP.

a) Lime shall be made with pulverized and quicklime or with hydrated lime.

b) Sand shall be clean, washed and free from deleterious substances.

c) Water for mixing shall be clean and potable.

AW-2.3 Installation

Laying of all masonry units shall be plumbed, leveled and accurately spaced. All units shall be wetted before laying. The block should be laid on full mortar bedding and in such a way that no cracks are formed between the blocks and the mortar at the time the blocks are placed. All joints should be filled with mortar at the time it is laid. Any horizontal and vertical CHB wall reinforcements shall be anchored to concrete works by means of 10mm (3/8") by 609mm (24") long dowels. Embedding of anchor bolts, expansion shields, conduits, etc. shall be done as the erection progresses.

Cutting and patching of masonry required to accommodate the work of other trades shall be performed by masonry mechanics.

Finishing of all hollow block wall surfaces to be applied with cement plaster will be cleaned and evenly wet slashed with a wash of neat cement and sand followed by 1:2 cement mortar mix 10mm (3/8") thick which shall be applied with a wooden float.

AW-2.4 Concrete Lintel

Unless otherwise indicated, provide concrete lintels over all openings in concrete unit masonry walls. Lintels shall be cast-in-place and reinforced with longitudinal bars at the bottom, and of sizes as indicated on the plans. Concrete works shall conform to Concrete Works of these Specifications.

AW-2.5 Testing of CHB

Test samples from every 500 units shall be taken at random from the CHB to be used before installation. The testing shall be performed by a laboratory approved by the NPC Representative and the cost thereof shall be charged to the account of the Contractor. Concrete hollow blocks represented by such samples, failing to meet the requirements under the latest edition ASTM 6129 shall be rejected.

AW-2.6 Measurement and Payment

Measurement and payment for **Concrete Hollow Blocks** including its reinforcing bars will be based on the area in place and accepted by the NPC Representative.

Payment will be made at the corresponding contract unit price per square meter for the pertinent items under Architectural Works in the Bill of Quantities.

Payment shall constitute full compensation for all labor, materials, equipment, tools and incidentals necessary for the completion of this work.

AW-3.0 PLASTERED PLAIN CEMENT FINISH

AW-3.1 General

The work to be done under this section includes furnishing of all labor, materials, equipment and other facilities and the satisfactory performance of all work necessary to complete all cement plaster finish.
Plaster mixture is applied in layers to masonry and reinforced concrete, surface to interior or exterior walls and ceilings.

AW-3.2 Materials

a) Portland cement conforming to the latest edition of ASTM Standards C-150.

Lime - Slaked quicklime or hydrated lime to make lime putty.

Sand - Natural sand, white or light grey, washed and cleaned, strong and free from injurious amount of dust and flaky particles.

Water - Clean and fresh contains no salt, potable and free from sulfur oil and other impurities that may cause discoloration of the finish.

b) Accessories for plaster work, includes nails, picture, moulds, casings, window stools, bases, etc.

AW-3.3 Application

The total thickness of masonry and plaster shall be 15mm (5/8"). For a three-coat plastering, the scratch coat and brown coat shall be at least 6.3mm (1/4") thick and the hard finish 3.2mm (1/8") thick with a minimum thickness of 1.6mm (1/16") at any point. For a two-coat work the base shall be 12.7mm (1/2") thick and the hard finish the same as for a three-coat work.

The lath for plastering shall be leveled, plumb and well secured to the backing material. The leveling elements installed would include grounds and screeds. For walls, a screed shall be installed at the base of the wall with its top about 102mm (4") above finish floor. The screed is run horizontally, leveled and set at the exact thickness of finished plaster. Around all openings and the intersection with the ceiling grounds are installed.

All anchorage for cabinets, furniture, stair, handrails, electrical outlets, etc., should be installed before plastering is started.

All internal corners should be reinforced by lapping wire lath.
Mixture for various coats should be checked to see that proportions are correct.

Manufacturer's directions for applying the various types of plaster should be followed scrupulously The NPC Representative should check whether they conform to end use of the plaster.

AW-3.4 Measurement and Payment

The measurement for payment for all **Plaster Plain Cement Finish** will be based on the area applied and accepted by the NPC Representative.

Payment will be made at the corresponding contract unit price per square meter for the pertinent item under architectural works in the Bill of Quantities.

Payment shall constitute full compensation for all labor, material including metal lath, equipment, tools and incidentals necessary for the completion of this work.

AW- 4.0 ROOFING SHEETS

AW- 4.1 General

The Contractor shall furnish all labor, materials, and operations including tools, other implements and accessories for the complete installation of roofing sheets wherever indicated in the drawings.

Installation shall be performed by skilled workmen in accordance with the construction and shop drawings and the manufacturer's standard.

Shop drawings and manufacturer's catalogue showing product standards and technical data will be provided by the Contractor to the NPC Representative for approval.

AW- 4.2 Materials

Material for roofing and siding sheets will be weather and chemical resistant. It shall be ductile zinc-aluminum coated metal sheet. Base metal shall be determined as specified in the drawing that shall range from 0.4 to 0.6mm thick. Bended sheets such as flat barge caps, flashings, ridge rolls, capping and moldings that serve as its accessory components shall have the same composition with the roofing and siding sheets of which minimum thickness base metal shall be 0.4mm. Gutters likewise shall have the same material composition with base metal thickness of 0.6mm unless otherwise specified in the drawing commonly as stainless. Sheets must be pre-painted, baked or cut to designer's choice.

AW- 4.3 Workmanship

Roofing sheets shall be securely fastened on steel purlins and channels by hook or strove bolts or self drilling screws or as required. Fasteners shall have a maximum distance of 0.30m O.C. along purlins.

Special care shall be given to the joints, lapping, bolting and setting of closers.

AW- 4.4 Measurement and Payment

Measurement and payment for **Roofing Sheet** will be based on the projected area inspected and accepted by the NPC Representative. No measurement & payment will be made on hidden areas covered by side & end overlaps, the cost for these being included in the projected area.
Payment will be made at the corresponding unit price per square meter for pertinent items under Architectural Works in the Bill of Quantities.

AW-5.0 DOWNSPOUTS AND ROOF DRAINS

AW-5.1 Scope of Works

a) Downspouts

Downspouts shall be 150 mm diameter unplasticised PVC, or as indicated in the drawings complete with fittings and accessories down to the catch basin and water storage tank.

b) Roof Drain

Roof drain shall be of high grade, strong, stainless. Casting shall be free from blowholes, porosity hard spots, excessive shrinkage, cracks, or other injurious defects shall be smooth and well cleaned both inside and outside and all fin sand roughness removed. Roof drains shall conform to the diameter of downspouts. Roof drains shall be provided at the upper end of all downspouts.

AW-5.2 Measurement and Payment

a) Downspouts

Measurement for payment will be based on the length installed and accepted.

b) Roof Drains

Measurement for payment for Roof Drain will be based on the number of sets installed and accepted.

Payment shall constitute full compensation for labor, materials, equipment, tools and incidentals necessary for the completion of the work.

AW-6.0 WOOD DOORS

AW-6.1 General

The work to be done under this section include the furnishing of materials tools and equipment and performing labor required to complete flush type hollow core doors and other wood doors as shown on the drawings or as specified.

Doors shall be thoroughly seasoned, kiln-dried wood and pressure preservative treated. Wood doors shall be products of reputable, nationally known manufacturers approved by the NPC Representative.
All doors shall be of the type and size indicated in the drawings and as specified herein. The top and bottom edges of all wood doors shall be given a coat of water-resistant coating after cutting and fittings, and prior to installation.

AW-6.2 Samples

Sample shall be submitted showing the corner sections of wood doors and jambs.

AW-6.3 Workmanship

The Contractor shall take special care in the manufacturing and assembly process of joint work. All joint works shall be done in accordance with accepted practices and shall be accurate and clean so as the joined elements fit perfectly together.

AW-6.4 Materials

Flush Type - Hollow Core Plywood shall be of first-class quality marine plywood and the color shall be approved by the NPC Representative.

Framing shall be kiln-dried treated Tanguile for exterior framing and kiln-dried Tanguile for exposed edge framing.

Panel Type Tanguile, KD shall be used for panel doors, stiles and rails; grain and color suitable for natural finish.

Jambs shall be S4S Yakal, common to all doors.

AW-6.5 Installation

a) Each door shall be accurately cut, trimmed and fitted to its frame and hardware.

b) Allowance shall be given for painter's finish and possible swelling or shrinkage.

c) Clearance shall not exceed 3.2mm (1/8") at lock and hanging stiles and at top; and, 6.3mm (1/4") at bottom.

d) All corners shall be rounded to 0.07mm (1/26") radius. Lock and rail edges shall be slightly beveled.

e) The screws for hardware shall not be driven, but merely started by driving and then screwed home.

f) All doors shall operate freely and with all hardware properly adjusted and functioning.

g) Doors shall be installed complete with finishing hardware, e.g. doorknob with key, hinges, doorstop, etc.

AW-6.6 Measurement and Payment

Measurement and payment for **Wood Doors** will be based on the number of sets installed and accepted by the NPC Representative.
Payment will be made at the corresponding contract unit price per set for the pertinent item under Architectural Works in the Bill of Quantities.

Payment shall constitute full compensation for all labor, materials, equipment, tools and incidentals necessary for the completion of this work.

No measurement of payment for door jambs, payment being included in set.

AW-7.0 PAINTING AND VARNISHING

AW-7.1 General

The work to be executed under this section shall include the furnishing of all materials, labor, tools and ladders, scaffolding and other facilities necessary for the satisfactory performance of all work necessary to complete all painting and finishing of all surfaces throughout the interior and exterior of the building, except as otherwise specified.

The Contractors, providing the labor, materials or both for this project are specifically referred to the General Contract plans, to the General Conditions of the specifications, to all the Sections of the Specifications and to the various other sub-contract documents which may affect the completion of any sub- contract work. In the absence of a complete agreement between sub-contractors, supply dealers or others affected by the construction of this project, the General Contractor shall be held responsible for the co-ordination of all the work.

The Contractor shall examine all sections of this specification and perform all paintings called for therein.

All woodwork in ceiling, partitions, handrails, cabinet work, grill work, mouldings and others as specified by the NPC Representative shall be painted/varnished.

AW-7.2 Inspection of Surfaces

Before starting the work, the Contractor shall inspect all surfaces to be painted. If the surfaces cannot be put in proper condition to receive paint by customary cleaning methods or sanding or sparkling, the Contractor shall notify the NPC Representative in writing. The NPC Representative will cause these defects to be reminded. The commencing of the work by the Contractor indicates his acceptance of the surfaces to be painted and assumes responsibility for the rectification of any unsatisfactory finishing, resulting from his negligence.

AW-7.3 Materials

All paint materials shall meet the requirements of the Philippine National Standard Specifications for Paintings.
Paints shall be brought to the Site in tightly closable, convenient, original containers, if nothing to the contrary is stipulated in the Specifications. The containers shall be marked in a durable manner with the following particulars:

- Maker
- Paint and relevant thinner
- Gross and net weights
- Date of supply by the maker's factory

The openings of the containers shall leave enough room for a stirring appliance.

All containers shall be kept tightly closed until the contents are to be used. Immediately prior to use of the contents and before pouring into smaller containers for working purposes, any skin shall be removed and the contents stirred thoroughly, if necessary, with a stirring appliance.

Paints, thinners and filling cements which are not required for immediate use shall be protected against the action of frost and heat.
Only thinners supplied by the makers of the paint or those described by them as suitable shall be use for adjusting paints to working consistency. The instructions of the maker shall be followed in this respect.

Paint and filling cements shall be used in accordance with the maker's instructions.

The Contractor shall obtain from the manufacturer and shall submit to the NPC Representative a paint manufacturer's guarantee for the quality of each painting material and that each coat of paint is compatible with previous and subsequent coats.

Paints which do not have to be prepared by mixing several constituents just prior to use shall be brought to the Site in such a state of readiness that they need only be adjusted to brushing or spraying consistency to meet the relevant working conditions (e.g., temperature), by adding the particular thinners in accordance with the maker's instructions.
With the exceptions of ready-mixed materials in original containers, all mixing shall be done at the job site. No materials are to be reduced or changed except as specified by the Manufacturer of said materials.

The quality of the paints shall be such that they form no solid sediment and at most a slight skin in unopened original containers within 6 months - calculated from the marker's delivery date. A paint which has formed a solid sediment or more than just a slight skin in the unopened original containers by the time of use or which cannot be processed satisfactorily shall not be used. A sediment shall be regarded as solid if it cannot be dispelled quickly and completely by stirring.

The use of white zinc (lithophones) will not be allowed.

A place will be designated by the NPC Representative for the storage of paint materials and tools. Whenever it may be necessary to change the location of this storage place, the Contractor shall promptly move to the newly designated place. The storage space floor shall be adequately protected from damage and from paint. Paint shall be covered at all times, safeguards taken to prevent fire.

AW-7.4 Colors and Samples

All colors shall be subjected to the approval of the NPC Representative. Tinting of matching colors shall be done under the supervision of the NPC Representative. In all cases, a sample shall be applied on the job and the

NPC Representative must give his approval before work is commenced. If required, three panels, 200 mm x 250 mm (8" x 10") of each color and finish

shall be prepared in advance, with the NPC Representative. "Of color selected" shall be understood as all coats specified herein.

AW-7.5 Workmanship

All work shall be done by skilled mechanics with high quality workmanship. All paints shall be evenly applied so as to be free from sags, runs, crawls or other defects. All painting materials shall be meet the requirements of stress and shall be in accordance with the relevant standards. All coatings shall be of proper consistency and well brushed out so as to show the minimum of brush marks, except varnish and enamel which shall be uniformly flowed on. All brushes shall be clean and in good condition, with heavy brushes preferred. Light brushes shall not be permitted.

Paint shall be thoroughly stirred so as to keep the pigment evenly in suspension when paint is being applied.

No painting shall be done under conditions that are unsuitable for the production of good results. No oil painting shall be done in damp weather.

Application of succeeding coats shall strictly follow the over-coating times specified by the paint manufacturer. If no specific data are available, all coats shall be thoroughly dry before painting shall be applied. At least twenty-four (24) hours shall be allowed between coats. Exterior painting under damp/wet conditions is not allowed.

Painting coat as specified are intended to cover the surfaces perfectly, if surfaces are not fully covered, further coat shall be applied to attain the desired evenness of the paint application.

All parts of moldings and ornament shall be left clean and true to details.

All finish shall be uniform as to sheen, color and texture, except when glazing is required.

AW-7.6 Protection

The Contractor shall protect the work of all other trades against damage or injury by his employees, or by his materials, tools or utensils used in connection with this contract. Any damage done by him shall be repaired at his own expense, without additional compensation beyond the contract price.

The Contractor shall note that some damage to paintwork during shipment, storage, and building-in and particularly during grouting of the steel lining is unavoidable and the application of all protective treatment shall be programmed accordingly. Care shall be taken to remove salt crystal liable to become deposited during the sea transport and/or storage at seaport by thorough washing with clean fresh water. Before any coat of paint is applied, the surface shall be prepared as hereunder described, so that it is clean and free from all deleterious matter and completely dry.

The Contractor shall be responsible for the complete shop and field coats. Shop coats shall be checked for good quality and where necessary, before proceeding with the painting or coating operations at Site, the Contractor shall

clean and repair, including smooth trowel, all shop coats which are defective or damaged.

Protect all parts of the building from paint drops by using clean drop cloths and remove all paint inadvertently placed or dropped on exposed surfaces without damage to same. Close various spaces while painting and exclude dust until finish is dry.

Plumbing systems shall not be used to wash paint brushes or containers.

Temporary or permanent welding shall not be permitted on areas where the welding will damage paint or other protective coatings, unless the areas of coatings which would be damaged thereby are accessible for repairing and inspection. Materials which have been painted shall be handled with care and protected as necessary to preserve the coating in good conditions.

AW-7.7 Paint Application

Materials, which are subject to working instructions, shall be treated according to these instructions, unless stipulated differently by the relevant paint manufacturer:
Paint, gloss and coating may be worked manually or by machines, unless a particular execution has been stipulated in the Specifications.

Paint, gloss and coat shall be bond firmly and be of even surface without scars and strips.

The surface shall be smooth, if not otherwise stipulated in the Specifications, such as finely or coarsely granulated.

Any paint, gloss or coating shall be applied without filling to create a uniform surface or, when gloss is being applied, a flowing surface with the required materials according to instruction manuals, of white or light shade, unless otherwise stated in the Specifications.

Top finish shall be high gloss, unless otherwise stated in the Specifications.

If flat levels are to be formed, the prime coated surfaces shall be completely being covered with suitable undercoat filler ribbed and smoothed.

Primer protective coating shall be applied on woodwork according to manufacturer's instruction. If several coats are requested, the preceding coat shall need to be dried before applying the subsequent one. This does not apply for wet-on-wet techniques.

Drying periods prescribed by the manufacturer shall be observed, for open surfaces, as well as for edges or irregular surfaces. All edges at doors, windows, skirting, sockets, etc., shall be of sharp and straight line.

New concrete and masonry surfaces must be thoroughly naturalized either by brush or spray with a solution of 2 kg. of zinc sulfate to each gallon of water.

Surfaces so treated shall be tested to ascertain that alkalinity is removed; otherwise a second treatment with the same solution shall be applied. Within

24 hours after drying, all crystals on the surface must be brushed off applying the prime coat.

Metal works shall be kept clean and free from corrosion following installation. Abraded surfaces shall be retouched prior to finish painting, using the same type of paint as prime coat. Galvanized metals shall be weathered or pickled with the approved metal primer in accordance with printed instruction of the manufacturer.

Where components parts of steel or aluminum alloys meat, joints shall be sealed so that no moisture can penetrate between the contact surfaces.

Rivet and bolt heads, protruding corners, sharp section edges and places of difficult access shall be pre-treated.

The paint shall be applied in coats which are as uniform as possible.

The first priming coat shall be applied by brush. Further coats shall be applied by brush if nothing to the contrary is stipulated in the Specifications. Smaller and specially shaped brushes shall be used for rivet and bolt heads, protruding corners, sharp section edges and places of difficult access.

When applying paints by spray-gun, the object to be sprayed shall not be contaminated by water or oil in the compressed air.

In paint systems involving coats, the various coats of paints shall be distinguishable from each other by their shade.

All coats of print shall be applied only to clean, dry and non-greasy surfaces. In multi-coat paint systems, the coat last applied shall always be sufficient dry, free from any superficial moisture and from dust and dirt before applying the next text coat; only when using the moist oil type of paints may it be necessary for the previous coat to be hard dry.

The Contractor shall inform the NPC Representative in good time before starting to apply the next coat so that the NPC Representative shall have the opportunity of approving the previous coat.

Painting work shall not be carried out at a temperature below +5 °C and above 50 °C. In addition, painting work shall not be carried out on surface affected by the action of rain, fog and moisture or water of condensation; work started on such surfaces may not be continued until the surfaces to be painted are completely dry.

AW-7.8 Painting Systems

All surfaces which are required by the Finish Schedules or specifications to be painted, or otherwise finished, shall be given coats of paints or varnish as specified herein. Individual directions printed on the label of the approved paint and varnish shall be strictly followed. Paint thinner or linseed oil of the same brand as the paint to be thinned shall be used.

All materials, supplies and articles furnished shall be the standard products of superior quality. All constituent materials shall conform to the applicable provisions of the latest edition of ASTM Specifications.

The following list indicates painting materials of special compositions considered suitable for various parts of the works.

Concrete and Plastered Surface

Any concrete, cement plaster exposed to high humidity 3 coats of a highly weather-resistant synthetic resin-based paint. The first coat shall contain from 5% to 20% thinner as the surface requires.

All concrete (walls, foundations, etc.) backfilled with soil or submerged.

- 1 coat of coal-tar epoxy.
- 2 coats of a mineral-filled water-resistant coat-tar epoxy.

Concrete, cement plaster, etc. exposed to oil, surface shall be dry, if possible sandblasted, clean and slightly roughened.
- 1 coat with a plastic-modified hydraulic mortar.
- 2 coats of an oil-resistant synthetic resin-based paint.

Concrete exposed to Mechanical and Chemical attack.

- 1 coat of colorless 2- pack epoxy-based paint; this shall contain from 10% to 20% thinner as the surface requires.
- 2 coats of 2-pack epoxy-based paint.

Concrete flooring exposed to mechanical wear and oil.

- 3 coats of chlorinated rubber-based paint. The first coat shall contain 15% thinner.

Internal concrete, plastered walls exposed to abrasion.

- 3 coats of an oil-free, synthetic resin-based, dust-binding paint.

Concrete flooring subject to minor mechanical wall.
- 2 coats of an oil-free, synthetic resin-based, dust-binding paint.

Internal plastered ceilings and walls.

- 2 coats of a polyvinyl-acetate dispersion type, non-chalking paint. First coat shall contain up to 30% thinner of clean, fresh water as the surface requires.

<u>Wooden Surfaces</u>

a) Exterior Parts – N/A

b) Surface shall be smoothed down with adhesive; if machine sanding is involved, a sanding is involved, a sanding sealer to bind the fibres shall be applied; the surface shall also be dry and free from dust.

- 1 coat of fungicide and bactericide ingredients after first coat.
- 2 coats of synthetic resin-based lacquer with white active pigments.

c) Interior Parts - Application of varnish on wooden interior walls, partitions, T&G ceiling panelling and closets/cabinets.

All materials, supplies and articles furnished shall be the standard products of a known manufacturer approved by the NPC Representative.

1) First Coat. Fill open grained wood with natural wood paste fillers, as is, or mixed with oil-wood stain to obtain desired shade. Apply along the grain within 30 minutes. Let dry overnight and sand lightly.

2) Second Coat. Apply any one (1) of the colors of oil-wood stain: oak, walnut, marble, and mahogany. Dry overnight and sand lightly.

3) Third Coat. Spray required coats of lacquer sanding sealer. Let dry for 30 minutes and sand to smooth.

4) Choice of any of the following topcoats:

- Clear flat lacquer - for standard flat effect.
- Clear dead flat lacquer - for complete flat lacquer.
- Super dead flat lacquer - for complete flat lacquer.
- Clear gloss lacquer - for standard gloss effect.
- Water white gloss lacquer - for brilliant crystal-clear effect.
- Versatile spar varnish - for glossy thick coating also applicable for exterior wood surfaces.

When spraying under high humid conditions, add up to ten per cent (10%) by volume of lacquer thinner retarder to prevent blushing of lacquer products.

Steel Surfaces

Details are given General Technical Requirements.

AW-7.9 Measurement and Payment

Payment shall be based on what is called for in the Bidding Form.

AW-8.0 FIBER CEMENT BOARD

AW-8.1 General

The work to be done under this section includes the furnishing of all labor, materials, equipment, tools and other facilities necessary to complete the work.

Boards for walls of the type and thickness indicated shall be properly installed and coordinated with the work of other trades.

AW-8.2 Materials

Fiber cement board for wall shall be of Portland cement, sand, cellulose fiber and water autoclaved, immune to water damage, fire resistant, durable, rot and termite proof.

AW-8.3 Handling and Storage

Boards shall be stacked on edge or laid flat on a smooth surface. Edges and corners shall be protected from chipping. To ensure optimum performance, store sheets under cover and keep dry prior to fixing.

AW-8.4 Installation

Fiber cement boards shall be fixed by a qualified installer as recommended by the manufacturer.

AW-8.5 Framing

Steel channel shall be used at maximum spacing of 600mm x 600mm O.C. B.W. Six (6) millimeter thick board shall be fixed to metal frame with 2mm Ø galvanized fiber cement nail.

AW-8.6 Measurement and Payment

Measurement for payment for Fiber Cement Board will be based on what is required on the Bill of Quantities.

AW-9.0 SUSPENSION SYSTEM

AW-9.1 General

The Contractor shall furnish all materials, labor and equipment necessary to install complete suspension system for plaster ceiling, acoustic board, perimeter for light diffuser and necessary anchorage.

The Contractor shall submit to the NPC Representative for approval, samples and shop drawings illustrating fully the construction and methods of installation. Work shall be performed only upon written approval of the samples and drawings by the NPC Representative.

AW-9.2 Materials

Components shall be manufactured from prime quality hot-dipped galvanized steel according to BS 2989 and JIS G3302 Standards with Z18 zero spangle zinc coating (180/m^2). The exposed flange is capped with pre-coated metal strip with polyester coating of 20-25 microns dry film thickness.

Main (1-1/4" x 1") and intermediate (1") runners for all suspension system, unless otherwise required, shall be galvanized steel Snap-On T-runners, satin silver color. The runner shall be installed 600mm on centers supported at every 1200mm by wire or steel strap hangers. The grid shall be leveled to within 1/500.

AW-9.3 Workmanship

The installation and workmanship shall be in full accordance with manufacturer's specifications and shall be made by workmen experienced in this kind of work. Acoustical tiles shall be clipped to the ceiling suspension system with galvanized spring clips. Tile shall fit closely to adjoining walled beams, columns, pilasters and cut neatly around all openings in the ceiling.

AW-9.4 Measurement and Payment

Measurement for payment for **Suspension System** will be based on what is required on the Bill of Quantities.

SECTION VI

TECHNICAL SPECIFICATIONS FOR CIVIL WORKS

SECTION VI – TECHNICAL SPECIFICATIONS

CW – CIVIL WORKS

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TECHNICAL SPECIFICATIONS

CW – CIVIL WORKS

CW-1.0 GENERAL CONSTRUCTION FACILITIES

CW-1.1 Scope

This section covers the construction and/or maintenance of access roads, drainage system and other appurtenant structures, moving-in of the Contractor's construction equipment, setting up of the Contractor's camp and the disposition of the Contractor's various facilities at the end of the Contract.

CW-1.2 Moving-in

The Contractor shall bring to the site all his necessary construction equipment and plant and install all stationary construction equipment and plant at location and in the manner approved by the NPC. The Contractor shall submit sufficient detailed plans showing the proposed location of such stationary equipment and plant and other pertinent data. No installation of such stationary equipment shall be undertaken unless the corresponding plans have been approved by the NPC.

CW-1.3 Contractor's Camp Facilities

The Contractor shall provide and grade his camp site, construct his camp, employee housing, warehouse, machine and repair shops, fuel storage tanks and provide such related facilities and sanitary conveniences that the Contractor deems necessary for maintaining health, peace and order in the camp and work areas. The areas that may be used by the Contractor within the plant site shall be designated by the NPC.

The Contractor shall provide, maintain and operate, under competent direction, such camps and facilities as are necessary for the housing, feeding and accommodation of his employees.

CW-1.4 Water Supply

The Contractor shall, at his own expense, be responsible for the supply, installation, operation and maintenance of a safe and adequate supply of drinking and domestic water. Whenever there is a possibility of contamination of the water supply for drinking and domestic purposes, chlorination or some other approved methods of sterilization shall be carried out. The installation and maintenance of these services shall be subject to the approval of the NPC.

CW-1.5 Sewerage Disposal and Sanitation

The Contractor shall, at his own expense, be responsible for the installation operation and maintenance of an adequate sewerage disposal and sanitation system and shall provide adequate toilet and wash-up facilities for his employees at his camp and in the areas where work is being carried out.
The Contractor shall execute the work with due regard to adequate sanitary provisions and applicable codes and shall take all necessary steps to prevent

the pollution of water in any spring, river, or other sources of water supply. All toilets or wash-up facilities shall be subject to the prior and continuing approval of the NPC.

CW-1.6 Fire Protection

The Contractor shall observe all necessary precautions against fire, shall provide and maintain at his own expense, portable fire-fighting equipment he may deem necessary, and shall comply with all applicable laws of the Philippines relating thereto.

In the event of an uncontrollable fire occurring in the area of the Contractor's operation, the Contractor shall have to extinguish the fire immediately at his own expense, to the full extent of the manpower and equipment employed under the contract at the time of the fire.

The Contractor shall indemnify NPC against all liabilities, claims, damages and/or lawsuits arising thereto.

CW-1.7 Construction Power

The Contractor shall be responsible for providing his own electric power supply required for construction and erection/installation. If power is available from NPC and should the Contractor elect to utilize the NPC's power supply, he shall make an arrangement with NPC concerned group as to the billing rates and other requirements needed for direct connection to NPC.

CW-1.8 Camp Security

The Contractor shall provide his own security force to the extent that he deems necessary for maintaining peace and order in the camp and work areas and to safeguard materials and equipment. Nothing under the provisions of this paragraph shall relieve the Contractor from full responsibility for the maintenance of peace and order and protection of life and property in all areas where he operates.

CW-1.9 Construction Material Storage

The Contractor is required to put up warehouse(s) with capacities sufficient to store the construction materials required in the work. The warehouse(s) shall be specifically for this contract, notwithstanding his other facilities in the site that may serve the purpose.

CW-1.10 Removal of Camp and Construction Facilities

After the completion of the work covered by the contract and prior to acceptance of the completed work, the entire camp facilities of the Contractor, including its water supply system, electric distribution system, quarters, warehouses, shops, dining halls, commissaries, temporary shed and other facilities therein shall be removed by the Contractor. The site shall be cleared and cleaned as directed by the NPC.

CW-1.11 Measurement and Payment

No separate measurement and payment will be made for the Contractor's Construction Facilities. The entire cost thereof shall be included in the various pay items in the Bill of Quantities.

CW-2.0 CARE OF WATER DURING CONSTRUCTION

CW-2.1 Scope

In accordance with the specifications contained in this section or otherwise directed, the Contractor shall construct and maintain all necessary temporary drainage ditches and other temporary protective works and he shall also furnish, install, maintain and operate necessary pumping equipment and other devices to protect construction operations free from water coming from any source, including rain.

CW-2.2 Drainage and Dewatering

The Contractor shall be responsible for dewatering foundation areas so that work can be carried out on a suitably dry condition. The Contractor shall construct drainage ditches, holes, culverts, furnish, maintain and operate at his own expense all necessary pumps and other dewatering devices to keep all work areas free from water.

After the work is completed and before it is accepted by the NPC, the Contractor shall remove all pumping equipment and shall remove, fill or plug all temporary drainage structures as directed, all at his expense.

CW-2.3 Measurement and Payment

No separate measurement and payment will be made for the Care of Water During Construction operations. The cost of furnishing, constructing, maintaining, operating and removing of temporary drainage structures, pumping system and other dewatering devices necessary to keep construction operations free from water, shall be included in the various pay items in the Bill of Quantities for structures where such care of water is required.

CW-3.0 ENVIRONMENTAL REQUIREMENTS FOR CIVIL WORKS

CW-3.1 Scope

This section pertains to the environmental and safety provisions, requirements and conditions that shall govern during the execution of all civil works under this project.

CW-3.2 General Conditions

The Contractor shall ensure compliance with the applicable environmental and safety regulations, as well as ECC conditions, during installation/construction of this project through the implementation of measures that include, but not limited to, the following:

a) Designate a Safety Officer and a Pollution Control Officer who shall respectively handle all safety and environmental concerns of the project.

b) Prepare and submit Construction Safety and Health Plan (CSHP).

c) Properly manage debris and various waste generated during installation/construction, such as the following:

- Dispose of demolition and construction debris in a designated or NPC approved disposal area(s);
- Stockpile (and cover if possible) or haul to the designated and/or pre-developed dump sites (spoil disposal areas) that shall be provided with suitable drainage – equipped with sediment traps, stripped top soil, spoils from quarry/borrow sites and excavated materials;
- Segregate solid wastes, such as empty cement sacks, scraps of tin or wood, used wires and other domestic garbage, for recycling or storage in NPC-approved temporary storage areas and further disposal to LGU-designated disposal sites.
- Properly handle, store and dispose-off, through DENR-accredited transporter/treater, hazardous wastes i.e. used oils, paints, thinner, etc.

d) Limit construction activities that generate excessive noise to daytime works only to prevent nuisance to nearby residents during rest hours.

e) As far as practicable, undertake site stripping, grading and excavations during dry weather.

f) Construction/Installation shall be carried-out in a manner where landslides and erosions are minimized.

g) Avoid unnecessary opening/clearing of areas outside construction sites or destruction of vegetative cover, especially cutting of existing trees; and to re-vegetate disturbed areas.

h) Implement biological control measures such as maintenance of vegetation buffers (i.e. sodding of grass, planting of creeping vines, herbs, shrubs and trees) to shield streams/rivers from sedimentation; planting of vegetative cover over erodible surfaces; and planting of exposed sloping areas with shallow-rooted species like grasses, herbs or creepers.

i) Locate fill slopes and spoil heaps away from drainage routes and properly remove/dispose the same as soon as practicable.

j) Preserve or replace, if practicable, natural drainage patterns (when disturbed by civil works) with appropriate drainage channels.

k) Convey oil-contaminated wastewater from workshops, garages, or gas filling stations through an oil trap (i.e. improvised oil-water separator) prior to discharge.

l) Spray water, wherever and whenever necessary, to minimize dust generation.

m) Provide PPEs and other safety provisions required by DOLE, for its project/site works.

n) Take all necessary steps to prevent the pollution of groundwater and/or water bodies in the vicinity of the project site.

CW-3.3 Measurement and Payment

No separate measurement and payment will be made for the Contractor's compliance to the foregoing. The entire cost thereof shall be included in the various pay items in the Bill of Quantities.

CW-4.0 CONCRETE

CW-4.1 Scope

In accordance with the specifications contained in this section, the Contractor shall furnish all materials, labor, equipment and tools and perform all concreting works in accordance with the drawings, or as otherwise directed.

CW-4.2 Class of Concrete

Class of concrete or strength shall be as indicated on the drawings, which shall conform to the minimum requirement for compressive strength indicated on the provision of NSCP for Concrete and, in no case, shall not be less than 20.7 MPa.

CW-4.3 Materials

CW-4.3.1 Cement

Cement for concrete works shall be furnished by the Contractor and shall conform to the requirements of the latest edition of the Standard Specifications for Portland Cement (ASTMC150).

Unless otherwise specified, cement shall be ordinary Portland Cement. Type I or Type 1P for general construction which concrete is not in contact with soils or ground water and Type II for concrete in contact with soil or ground water.

Changing of brand or type of cement within the same structure will not be permitted unless with prior permission and approval obtained from the NPC.

CW-4.3.2 Reinforcing Steel

The Contractor shall furnish all reinforcing steel of the sizes shown on the drawings and in accordance with the herein specifications for reinforcing steel.

CW-4.3.3 Water

Water for use in concrete shall be subject to the approval of the NPC. It shall not be salty and shall be reasonably clear and free from oil, acid, injurious alkali or vegetable matter.

CW-4.3.4 Aggregates

All coarse and fine aggregates shall consist of hard, tough, durable and clean, uncoated particles. All foreign materials and dust shall be removed by processing. Aggregates shall generally be rounded and reasonably free from thin, flat and elongated particles in all sizes and well graded from coarse to fine.

CW-4.3.5 Formwork

Timber, lumber and plywood to be used for falsework and formwork shall be sound and shall comply with the requirements of this specifications. Use forms where a smooth form finish is required. Lumber shall be square-edged or

tongue-and-groove boards, free or raised grain, knotholes and the other surfaces defects. Steel when used shall conform to the requirements of the ASTM A36. Steel form surfaces shall not contain irregularities, dents, or sags.

Forms shall be wood, plywood, or steel. Wood forms for surfaces exposed to view in the finished structure and requiring a smooth form finish, shall be plywood. For unexposed surfaces, undressed square-edge lumber may be used. Forms for surfaces requiring special finishes shall be plywood, or shall be lined with plywood, a non-absorptive, hard-pressed fiberboard, absorptive-type lining or other suitable material. Plywood, other than for lining, shall be concrete-form plywood free of raised grain, torn surfaces, worn edges, patches, or other surface defects, which would impair the texture of the concrete surface. Surfaces of steel forms shall be free from irregularities, dents, and sags.

CW-4.4 Storage of Materials

CW-4.4.1 Cement and Aggregates

All cement shall be stored, immediately upon delivery at the Site, in weatherproof building that will protect the cement from dampness. The floor shall be adequately raised from the ground and in buildings placed in the locations approved by NPC. Provisions for storage shall be ample, and the shipments of cement as received shall be separately stored in such a manner that allows the earliest deliveries to be used first and to provide easy access for identification and inspection of each shipment. Storage buildings shall have capacity for storage of sufficient quantity of cement to allow sampling at least twelve (12) days before the cement is to be used. Bulk cement, if used, shall be transferred to elevated air tight and weatherproof bins. Stored cement shall meet the test requirements at any time after storage when NPC orders retest. At the time of use, all cement shall be free flowing and free of lumps.

Handling and storing of concrete aggregates shall be such that segregation or inclusion of foreign materials is sufficiently prevented. NPC may require that aggregates be stored on separate platforms at satisfactory locations.

In order to secure greater uniformity of concrete mix, NPC may require that the coarse aggregate be separated into two or more sizes. Different sizes of aggregates shall be stored in separate bins or in separate stockpiles and relatively away from each other to prevent the material at the edges of the piles from intermixing.

CW-4.4.2 Reinforcing Steel

Reinforcing steel shall be stored in accordance with the specifications for reinforcing steel.

CW-4.5 Concreting

CW-4.5.1 General

The written approval of the NPC shall be secured prior to any concreting work. All concrete shall be poured on dry and cleaned surfaces.

CW-4.5.2 Formwork Construction

Forms shall be installed mortar and watertight, true to the dimensions, lines and grades of the structure and with the sufficient strength, rigidity, shape and surface smoothness as to leave the finished works true to the dimensions shown on the drawings or required by NPC and with the surface finish as specified.

The inside surfaces of forms shall be cleaned of all dirt, mortar and foreign material. Forms, which will subsequently be removed, shall be thoroughly coated with a release agent or coating prior to its use. The release agent shall be commercial quality form oil or other approved coating which will permit the ready release of the forms and will not discolor the concrete.

Formwork for concrete placed underwater shall be watertight.

Forms shall be constructed so that the form surface of the concrete does not undulate excessively in any direction. Undulations exceeding either 2 mm or 1/270 of the center distance between studs, joints, form stiffeners, form fasteners, or wales will be considered to be excessive. Should any form of the forming system, even though previously approved for the use, produce a concrete surface with excessive undulations, its use shall be discontinued until modifications, satisfactory to NPC's Representative, have been made.

Portions of concrete structures with surface undulations in excess of the limits herein stated may be rejected by the NPC.

Form fasteners consisting of bolts, clamps or other devices shall be used as necessary to prevent spreading of the forms during concrete placement. The use of ties consisting of twisted wire loops to hold the forms in position will not be permitted.

All formworks shall be provided with adequate clean-out openings to permit inspection and easy cleaning after all reinforcement has been placed. Where forms for continuous surfaces are placed in successive units, the forms shall be fitted over the completed surface to obtain accurate alignment of the surface and to prevent leakage of mortar. Panel forms shall be constructed so that they can be removed without damaging the concrete. All exposed joints, edges, and external corners shall be chamfered a minimum of 20 mm unless specified otherwise herein. Forms for heavy girders and similar members shall be constructed with a proper camber.

Coating: Before placing the concrete, the contact surface of forms shall be coated with a non-staining mineral oil or suitable non-staining form coating compound or shall be given two coats of nitrocellulose lacquer, except as specified otherwise. Mineral oil shall not be used on forms for surfaces, which are to be painted. For surfaces not exposed to view in the finished structure, sheathing may be wetted thoroughly with clean water. All excess coating shall be removed by wiping with cloths. Reused forms shall have the contact surfaces cleaned thoroughly. Those that have been coated shall be given an additional application of the coating. Plaster waste molds shall be layered with two coats of the thin shellac or lacquer and coated with soft or thinned non-staining grease.

Tolerance and Variations: The Contractor shall set and maintain concrete forms to ensure that, after removal of the forms and prior to patching and finishing, no portion of the concrete work will exceed any of the tolerances specified. Variations in floor levels shall be measured before removal of supporting shores. The Contractor shall make the necessary corrective measures for the variations resulting from deflection, or when the latter affects concrete quality or curing. The tolerances specified shall not exceed by any portion of the concrete surfaces; the specified variation for one element of the structure shall be considered unacceptable when it permits another element of the structure to exceed its allowable variations. Except as otherwise specified herein, tolerances shall conform to ACI 347.

CW-4.5.3 Placing Reinforcement

Reinforcing steel and embedded items shall be properly and securely installed prior to the placing of concrete.

In no case shall concreting start without prior inspection and approval by the NPC of the placed reinforcement and other embedded items.

CW-4.5.4 Mixing Concrete

Mixing of concrete shall conform to the requirements of ACI Code for Concrete Construction.

CW-4.5.5 Placing Concrete

Concrete shall be conveyed from mixers to the forms or to the place of deposit as rapidly as possible and by methods that will prevent segregation or loss of ingredients. There shall be no vertical drop greater than 1.5 meters except where suitable equipment like metal pipe or tremie is used. The pipe or tremie shall be kept full of concrete and its end shall be kept buried in the newly placed concrete. Chutes through which concrete is delivered to the structure in a thin, continuously exposed flow will not be permitted except for very limited or isolated sections of the work.

Earth surfaces, upon which concrete shall be placed, shall be cleaned, dry and thoroughly compacted before placing the concrete.

Rock surface, upon which concrete shall be placed, shall be thoroughly cleaned of loose or semi-detached or unsound rock particles. Before placing concrete, all surfaces shall be wetted thoroughly to keep them in a completely moist condition, after which leveling mortar of the same cement ratio as the concrete mix complete contact between concrete and the leveled surface.

CW-4.5.6 Finishing Concrete

After the concrete has been deposited, distributed and vibrated, the concrete shall be struck off and screened by mechanical means approved by the NPC. The finishing machine shall be of the screening and troweling type designed and operated both to strike off and to consolidate. Hand finishing may be employed when suitable finishing machines are not available. Finishing of concrete shall be done, as directed, to the satisfaction of the NPC.

All finished surfaces shall be tested with 3 meters straight edge and any variation of the surface from the desired crown or cross section shall be properly corrected.

CW-4.5.7 Removal of Forms

Formwork shall not be removed without the permission of NPC; where such permission, however, shall not relieve the Contractor of its responsibility for the safety of the work. Blocks and bracing shall be removed at the time the forms are removed and in no case shall any portion of the wood forms be left in the concrete.

Falsework removal for continuous structures shall be as directed by NPC but in which case shall be temporarily supported such that the structure is gradually subjected to its working stresses. False work shall not be released in any span until the strength specified hereunder is attained.

When concrete strength tests are to be used as basis for the removal of forms and supports, the compressive strength of concrete must meet the following minimum requirements:

	Min. Time	Min.% Strength
Centering under girders and beams	14 days	80%
Sides of beams and all vertical surfaces	1 day	70%
Floor Slabs	14 days	80%

The site shall be cleared of all debris and refuse resulting from work.

CW-4.5.8 Curing and Protection

Concrete shall be cured for a period of not less than fourteen (14) consecutive days by keeping the surfaces of concrete continuously (not periodically) wet. Where tongue and groove forms were used and left in place of curing, they shall be kept wet at all times prevent opening at the joints and drying out of the concrete.

CW-4.5.9 Sampling and Testing of Concrete

The Contractor shall furnish all materials, either separately or mixed, as required by NPC. Selection of materials and the making of test specimens shall be made under the supervision of NPC and delivered to NPC laboratory or any NPC-accredited testing agency at the Contractor's expense.
The expense of making and curing all concrete specimens including the materials comprising the concrete specimens shall be borne by the Contractor. The cost of shipping and testing the concrete shall likewise be at the expense of the Contractor.

No concreting work on the project will be permitted to be done until NPC signifies in writing that, following the performance of the necessary tests, he gives his approval to the use of all materials involve in making the concrete.

As work progresses, test cylinders shall be fabricated from the concrete samples and tested in accordance with ASTM C31 and ASTM C39. At least one set of four (4) cylinders shall be made from each 10 cu.m of the concrete placed of each class. Also at least one set shall be made per day for each class of concrete placed each day.

Two (2) cylinders shall be tested at 28 days for specification compliance and one shall be tested at 7 and 14 days respectively for information. The acceptance test result shall be the average of the strength of the two cylinders tested at 28 days.

The compressive strength of the concrete shall be deemed acceptable if the average of any consecutive strength tests equals or exceeds the specified design strength (fc'), provided no individual test falls below the fc' by more than 3.50 MPa(500 psi) if fc' is equal or less than 5,000psi (35Mpa); or by more than 0.10f'c, if fc' is more than 5,000 psi (35Mpa).

Concrete deemed to be not acceptable using the above criteria maybe rejected unless the Contractor can provide evidence, by means of core tests, that the quality of concrete represented by the failed test result is acceptable in place. Three (3) cores shall be taken in accordance with ASTM C42 and soaked for 24 hours prior to testing. Concrete in the area represented by the cores will be deemed acceptable if the average strength of the cores is equal to at least 85% of and no single core is less than 75% of the specified strength.

CW-4.5.10 Tolerances and Repair for Concrete Construction

Concrete structures shall be constructed to the lines shown on the drawings or where so required to suit actual field requirements. Any structure that does not conform to such lines shall be repaired or removed and made anew by the Contractor at no additional cost to the Corporation.

Repairs shall be made at surface imperfections due to faulty placing of concrete and cuts on the structures due to the removal of excess concrete on the lines shown on the drawings. Such repairs shall be made immediately after early stripping of the forms, after the imperfections have been identified and the methods of repair appropriately established.

CW-4.5.11 Second Stage Concrete

The second stage of concrete finishing shall be done only after the final installation of all pertinent equipment, anchorages, pipings, conduits and other embedded items as may be required for all electromechanical works.

CW-4.6 Measurement and Payment

Measurement for payment for Concrete, except concreting works that are associated to various construction and/or installation/erection works (i.e. equipment foundation and pedestals, perimeter wall footing and posts, etc.) included in the Bill of Quantities under separate pay item, will be based on the volume of concrete placed and accepted within the neat lines of the structure as shown on the drawings or in accordance with the manner of measurement set forth in the various sections of the Technical Provisions. No deduction will

be made for rounded or beveled edges or space occupied by the metal items 10 sq. cm. or less in cross section, embedded in concrete.

Payment will be made at the corresponding contract unit price for the various items of concrete shown in the Bill of Quantities. Payment shall cover all costs for furnishing all labor, materials, including equipment and tools required for concreting work. Payment shall also include non-shrink cementitious grout and epoxy grout inside foundation block out and above engine base plate and care of water.

No separate measurement for payment will be made for formworks of which the cost shall be included in concreting works.

CW-5.0 REINFORCING STEEL

CW-5.1 Description

This work shall consist of furnishing, fabricating, and placing of steel reinforcement of the type, size, shape and grade required in accordance with these specifications and in conformity with the requirements shown on the Drawings or as directed by the NPC.

CW-5.2 Material Requirement

All material shall conform to the requirements hereinafter given. Certified test reports (mill test or other) shall be submitted to the NPC for all reinforcement steel used. These tests shall show the results of all chemical and physical tests made.

CW-5.2.1 Bar Reinforcement

Reinforcement bars for concrete shall be hot-rolled, weld able, deformed billet-steel bars conforming to the requirements specified in ASTM A615 and PNS 49 unless shown on the Drawings or as required by the NPC. The use of the cold twisted bars is not permitted. Bar reinforcement shall be shipped in standard bundles, tagged and marked in accordance with the Code of Standard Practice of the Concrete Reinforcement Steel Institute.

CW-5.2.2 Sampling

The NPC's Representative will sample reinforcement bars at the source of supply or at the point of distribution, and the Contractor shall notify the NPC in sufficient time in advance to permit sampling and testing before shipment is made. Three (3) samples from each size shall be taken at random representing five (5) tons or fraction thereof of each size.

CW-5.3 Construction Requirement

CW-5.3.1 Order List for Bent Bars

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

Shop Drawings for Reinforcing Steel (ACI 315): Indicate bending diagrams, assembly diagrams, splicing and laps of bars, shapes, dimensions and details of bar reinforcing, accessories and concrete cover. Do not scale dimensions from structural drawings to determine lengths of reinforcing steel.

CW-5.3.2 Fabrication

Bent bar reinforcement shall be cold bent as shown on the drawings or as required by the NPC. Bars shall be bent around circular pin having the following diameters (D) in relation to the diameter of the bar (d):

Bars 6mmΦ to 20mmΦ inclusive	D=6d
Bars 25mmΦ and 28mmΦ	D=8d
Bars 32mmΦ and greater	D=10d

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

CW-5.3.3 Protection of Material

Steel reinforcement shall be protected at all times from injury. When placed in the work, it shall be free from dirt, detrimental scale, paint, oil or other foreign matter. However, when steel has on its surface easily removable and detrimental rust, loose scale or dust, it shall be cleaned by a satisfactory method, approved by the NPC.

Store reinforcement of the different sizes in racks raised above the ground with accurate identification. Protect reinforcing steel from contaminants such as grease, oil and dirt.

CW-5.3.4 Placing and Fastening Reinforcement & Miscellaneous Material (ACI-301)

All reinforcement bars, stirrups, hanger bars, wire fabric, spirals and other reinforcing materials shall be provided as indicated in the drawing or required by the specification, together with all necessary wire ties, chairs, screws, supports, and other devices necessary to install and secure the reinforcement properly. All reinforcement, when placed, shall be free from rust, scale, oil, grease, clay, and other coatings, and foreign substances that would reduce or destroy the bond. Rusting of reinforcement shall not reduce the effective cross sectional area of the reinforcement to the extent that the strength is reduced beyond specified values. Heavy, thick rust or loose, flaky rust shall be removed by rubbing with burlap or other approved method, prior to placing. Reinforcement that has bends not shown on the project drawings or on approved shop drawings, or is reduced in section by rusting such that its weight is not within permissible ASTM tolerances, shall not be used. All reinforcement shall be supported and wired together to prevent displacement by construction loads or by the placing of concrete. Unless directed otherwise by the NPC, reinforcement shall not be bent after being partially embedded in hardened concrete. Detailing of reinforcing shall conform to ACI 315. Where cover over reinforcing steel is not specified or indicated, it shall be in accordance with ACI 318.

All steel reinforcement shall be accurately placed in position shown on the drawings or as required by the NPC and firmly held there during the placing and setting of the concrete. Bars shall be tied at all intersections except where spacing is less than 30 mm in each direction, when alternate intersections shall be tied. Ties shall fasten on the inside.

Distance from the forms shall be maintained by means of stays, blocks, hangers or other approved supports. Blocks for holding reinforcement from contact with the forms shall be pre-cast mortar blocks of approved shape and dimensions or approved chairs. Layers of bars shall, be separated by pre-cast mortar blocks or by other equally suitable devices. The use of pebbles, pieces of broken stone or brick, metal pipe and wooden blocks or metal chairs shall not be permitted. Unless otherwise shown on the Drawings or required by the NPC, the minimum distance between bars shall be 40mm. Reinforcement in any member shall be placed and then inspected and approved by the NPC before the placing of concrete commences. Bundled bars shall be tied together at not more than 1.80 meters intervals.

Reinforcement shall be placed accurately and secured. It shall be supported by suitable chairs and spaces or by metal hangers. On the ground, and where otherwise subject to corrosion, concrete or other suitable non-corrodible material shall be used for supporting reinforcement. Where the concrete surface will be exposed to the weather in the finished structure or where rust would impair the appearance or finish of the structure, all reinforcement supports, within specified concrete cover, shall be galvanized or made of a suitable non-corrodible material.

All placement or movement of reinforcing steel after placement, to positions other than indicated or specified, shall be subject to the approval of the NPC.

Concrete protection for reinforcement shall be as indicated, or if not indicated, in accordance with ACI 318.

The minimum concrete cover for reinforcement specified in the bid documents shall takes precedence over all permissible reinforcement placement variations; nothing in the variations listed below is to be constructed as permitting violation or compromise thereof:

a.	Height of bottom bars	±6mm above form
b.	Lengthwise positioning	±50mm of bars
c.	Spacing bars in walls and solid slabs	±25mm
d.	Spacing bars in beams and footings	±6mm
e.	Height of top bars	±6mm
f.	Stirrup spacing:	
	(1) For any one stirrup	±25mm
	(2) For over-all group	±25mm of stirrup

Anchors and bolts; including but not limited to those for the machine and equipment bases: frames or edgings, hangers and inserts, door bucks, pipe supports, pipe sleeves, pipe passing through walls, metal ties, conduits, flashing reflects, drains and all other materials in connection with the concrete construction shall, where practicable be placed and secured in position when the concrete is placed. Anchor bolts for machines shall be set to templates, shall be plumbed carefully and checked for location and elevation with an instrument, and shall be held in position rigidly to prevent displacement while concrete is being placed.

CW-5.3.5 Splicing

Splicing of reinforcement shall be in accordance with ACI 318, except as indicated otherwise or modified herein. Where splices in addition to those indicated on the drawings are necessary, they shall be approved by the NPC prior to their use. Splices shall not be made in beams, girders, and slabs at points of maximum stress. Butt Splicing shall preferably be used over lapping for bar sizes larger than 32 mmΦ. Splices to be welded shall conform to AWS D1.4; certification of weld ability of the reinforcement by the manufacturer, shall be submitted to the NPC. If the Contractor elects to use butt splicing of reinforcing, he shall submit complete details of the process to be used by the NPC. If the butt splices are used the Contractor shall ensure that the splice meets the requirements specified herein by performing at least three splices which shall be submitted for tests to a testing laboratory that has been approved for such testing by the NPC. The cost of these shall be borne by the Contractor.

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

Unless otherwise shown on the Drawings, bars shall be lapped a minimum distance of:

Splice Type	Grade 40 Min.Lap	But Not Less Than
Tension	24d	300mm
Compression	20d	300mm

Where d is the diameter of the bar. In lapped splices, the bars shall be placed in contact and wired together. Lapped splices will not be permitted at locations where the concrete section is insufficient to provide a minimum clear distance of one and one-third the maximum size of coarse aggregate between the splice and the nearest adjacent bar. Welding of reinforcing steel shall only be done if detailed on the Drawings or if authorized by the NPC in writing. Spiral reinforcement shall be spliced by lapping at least one and half (11/2) turns or by butt-welding unless otherwise shown on the drawings.

CW-5.4 Measurement and Payment

The quantity to be paid for shall be the calculated theoretical number of kilograms of reinforcement steel bars as determined from the net length of the steel shown on the drawings, incorporated in the concrete and accepted.
The weight of deformed bars will be computed from the theoretical weight of the same nominal size as shown in the following tabulation:

Designation	Size (mm)	Weight (kg/m)
#2	6	0.222
#3	10	0.616
#4	12	0.888
#5	16	1.579

#6	20	2.468
#8	25	3.854
#9	28	4.833
#10	32	6.313
#11	36	7.991

Clips, ties, separators and other and related materials used for positioning and fastening the reinforcement in place as required by the NPC shall not be included in the weight-calculated payment under this item. If bars are substituted upon the Contractor's request and as a result, more steel is used than specified – only the amount specified shall be included.

When laps are made for splices, other than those shown on the drawings or required by the NPC and for the convenience of the Contractor, the extra steel shall not be measured nor paid for.

The accepted quantity shall be paid at the corresponding unit price for the item, Reinforcing Steel as shown in the Bill of Quantities which price and payment shall be made in full compensation for furnishing materials, labor, equipment and incidentals necessary to complete this item.

CW-6.0 STRUCTURAL STEEL

CW-6.1 General

This section covers the fabrication, erection, and shop painting of structural steel in accordance with the AISC "Manual of Steel Construction" referred to herein. In the AISC "Manual of Steel Construction" referred to herein, the Specification for Design, Fabrication, and Erection of Structural Steel for Buildings," and "Structural Joints using A325 or A490 Bolts" shall be considered a part thereto.

CW-6.1.1 Submittals

Shop Drawings of all structural steel in five (5) copies for approval prior to fabrication of structural steel with complete information necessary for the fabrication and erection of the component parts of the structure including the location, type and size of all bolts and welds, member sizes and lengths, camber & connector details, blocks, copes, and cuts. Include all welds by standard welding symbols.

Erection Plan consists of descriptive data to illustrate the structure steel erection procedure including the sequence of erection and temporary shoring and bracing, and written description of the detailed sequence of all welding, including each welding procedure to be performed.

Certificates of Conformance for the following:

- Bolts, Nuts and Washers
- Welding Electrodes and Rods
- Paint
- Steel
- Certified Test Reports

Chemical Analysis and Tensile Strength Test of structural steel in accordance to ASTM A53.

For high strength bolts and nuts, the Contractor shall also submit chemical analysis, including tensile strength and hardness tests as required by ASTM A325.

CW-6.1.2 Delivery and Storage

All materials shall be handled, shipped and stored in a manner that will prevent distortion or other damages. Materials shall be stored in a clean and properly drained location and out of contact with the ground. Damaged materials shall be replaced or, when permitted by NPC, may be repaired in an approved manner at no additional cost to NPC.

CW-6.2 Materials

All the materials shall be of the best quality of their kind, well graded and within the allowable distortions. They shall be free from flakes, corrosion, scale of fragments that could reduce the resistance and durability or injure the external appearance.

Except as modified herein, blast clean surfaces in accordance with SSPC SP6. Wash clean surfaces that become contaminated with rust, dirt, oil, grease or other contaminants with solvents until thoroughly clean. Ensure that steel to be embedded in concrete and surfaces when assembled, are free from rust, grease, dirt and other foreign matter.

CW-6.2.1 Steel

Materials shall conform to the respective specifications specified herein. Materials not otherwise specified herein shall conform to the AISC "Manual of Steel Construction".

Structural Steel:	ASTM A36
Steel Pipe:	ASTM A53, Type E or S, Grade B, ASTM A501
Steel W-Shape Piles (Soldier Piles):	ASTM A328

CW-6.2.2 Bolts, Nuts and Washers:

All bolts, nuts and washers shall be of hot-dip galvanized steel, in accordance with the following:

Bolts:	ASTM A307, Grade C or ASTM A36 for Anchor Bolts; ASTM A325 for Fastening Bolts
Nuts:	ASTM A563, Grade A, heavy hex style, except nuts less than 38mm may be provided in hex style
Washers:	ANSI B18.22.1, Type B

CW-6.2.3 Accessories:

Welding electrodes and steel structural members shall use:

Rods	E70XX electrodes
Non-shrink Grout	ASTM C827, non-metallic

CW-6.3 Execution

CW-6.3.1 Fabrication

Structural steel fabrication shall be in accordance with the applicable provisions of the Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings as set forth in the AISC "Manual of Steel Construction".

CW-6.3.2 Welding of Structural Steel Work:

All welding works shall be as indicated in the drawings and shall conform to AWS D1.1 - 77 "Structural Welding Code". Unless specified on the drawings,

fillet welds shall be a minimum of 5 mm (3/16") and welding electrodes shall be with a tensile strength of 485 MPa.

All welding works shall be executed by the AWS D1.1 qualified welders, welding operators and trackers, whose workmanship shall be subject to the approval of NPC.

CW-6.3.3 Shop Painting

Except as otherwise specified, shop prime surfaces of all structural steel, except steel to be embedded in concrete or mortar. Surfaces to be welded shall not be coated within 12 mm from the specified top of the weld prior to welding. Insure that the surfaces are thoroughly dry and clean when the paint is applied. Do not paint on wet weather except under cover. Do not apply paint to steel, which is at a temperature that will cause blistering or porosity, or will otherwise be detrimental to the life of the paint. Apply paint with high quality workmanship, and coat all joints and crevices thoroughly. Prior to assembly, paint all surfaces that will be concealed or inaccessible after assembly.

Shop prime coat surfaces as soon as possible after cleaning. Apply one coat of inorganic zinc to a minimum dry film thickness of 100 microns.

- Field painting: When the erection work is complete, the heads of field bolts, all welds and any surface from which the shop coat of paint has become worn off or has otherwise become defective, shall be cleaned and thoroughly covered with one coat of shop coat paint. When the paint applied for touching up bolt heads and abraded surfaces has become thoroughly dry, apply two field coats of marine epoxy paint subject to the approval of NPC.

- Marking: Prior to erection, members shall be provided with a painted erection mark. In addition, connecting parts assembled in the shop for remaining holes in field connections shall be matched marked with scratch and notch marks. Do not locate erection markings on areas to be welded. Do not locate erection markings in areas that will decrease member strength or cause stress concentrations.

CW-6.3.4 Erection

Except as modified herein, erect steel in accordance with the AISC "Manual of Steel Construction". Where parts cannot be assembled or fitted properly as a result of errors in fabrication or of deformation due to handling or transportation, report such condition immediately to the NPC's Representative and obtain approval there from for the methods of correction for straightening, including members of steel conforming to ASTM A514.

Drain Steel work properly; fill pockets in structures exposed to the weather with an approved waterproof material.

Provide safety belts and lines for workmen aloft on high structures unless safe working platforms or safety nets are provided.

When calibrated wrenches are used for tightening bolts, calibrate them at least one each working day using not less than three typical bolts of each diameter. Do not use impact torque wrenches to tighten anchor bolts set in concrete.

Connections: Connections shall be executed as shown on drawing. In case, connections are not detailed, it shall be designed in accordance with AISC "Manual of Steel Construction". Build connections into the existing work. Punch, sub-punch and ream, or drill bolt holes.

Tolerances: Structural steel shall be furnished and installed to the lines and levels as shown on the drawings.

Any structure that does not conform shall be repaired, removed and/or erected anew by the Contractor at no additional cost to NPC.
Tolerances on structural steel shall be in accordance with the "Code of Standard Practice" of the AISC "Manual of Steel Construction".

CW-6.3.5 Tests and Inspections

Visual Inspection of Welding: After the welding is completed, hand or power wires brush welds, thoroughly clean them before the inspector makes the check inspection. Inspect welds with magnifiers under strong, adequate light for surface cracking, porosity, and slag inclusions; excessive roughness; unfilled craters; gas pockets; undercuts; overlaps; size and insufficient throat and concavity. Inspect the preparation of groove welds for adequate throat opening and for snug positioning of backup bars.

Non-Destructive Testing[1]: In accordance with AWS D1.1 Twenty-five percent (25%) of the total number of joints, as selected by the NPC, shall be tested. If more than 20 percent of welds contain defects identified by testing, then all welds shall be tested by radiographic or ultrasonic testing, and to be approved by the NPC. When all welds made are required to be tested, magnetic particle testing shall be used only in areas inaccessible to either radiographic or ultrasonic testing. Retest defective areas after repair.

CW-6.4 Measurement and Payment

Measurement for payment for structural steel shall be based on the total kilogram of structural steel placed and accepted.

Payment will be made at the contract unit price for the item Structural Steel in the Bill of Quantities, which payment shall constitute full compensation for furnishing all labor, materials and equipment necessary to complete the item.

[1] Not applicable on non-critical structures/joints and as directed/required by NPC Design Engineer.

CW-7.0 DRAINAGE SYSTEM AND APPURTENANT STRUCTURES

CW-7.1 Scope

In accordance with the specifications contained herein, the Contractor shall furnish all materials, labor, equipment and tools, perform all required excavation and backfill, install all pipes and construct canals and ditches, as the case may be, where indicated on the drawings or where directed conforming with the lines and grades as established in the field by the NPC. The Contractor shall also construct or install, where required, appurtenant structures like street inlet, street inlet-catch basin combination, manhole, catch basin for downspouts, drainage outlets, etc. as well as joints and connections as may be required to complete the system.

CW-7.2 Materials

CW-7.2.1 Non-Reinforced Concrete Drainage Pipes

Non-reinforced concrete drainage pipes shall meet the requirements of ASTM C14.

One pipe length shall be taken at random representing a group of fifty (50) pipes or fraction thereof of the same size and shall be submitted for test. Any group represented by corresponding test specimens that do not meet the strength and other test requirements shall not be used in the work.

CW-7.2.2 Reinforced Concrete Drainage Pipes

Reinforced concrete drainage pipes shall meet the design and test requirements for Class II Reinforced Concrete Pipes in accordance with ASTM C76 and ASTM C497.

One (1) pipe length shall be taken at random representing a group of fifty (50) pipes or fraction thereof of the same size and shall be submitted for test. Any group represented by corresponding test specimens that do not meet the strength and other requirements shall not be used in the work.

CW-7.2.3 Concrete Covered Rectangular Ditch

Cement, reinforcing steel, aggregate and water to be used for the construction of concrete covered rectangular ditch and open rectangular canal shall conform to the requirements set forth in Section CW-4.0 – Concrete. Foundation base material for concrete canal shall be sand and gravel.

CW-7.2.4 Bedding Material

A. For Stable Soil and Rock Foundation

Bedding material for sewerage and drainage pipes in stable soil and rock foundation, as determined by NPC, shall consist of sand or natural sandy soil in which all the materials passes a 9.5 mm (3/8") sieve but not more than 10% passes a 0.074 mm (No. 200) sieve.

B. For Unstable Foundation

Bedding for sewerage and drainage pipes in soft and unstable foundation as determined by the NPC, shall consist of 13.79MPa concrete cradle in conformity with the dimensions shown on the drawings, or as determined by the NPC.

C. Foundation under Roadways and Parking Areas

Bedding for sewerage and drainage pipes crossing under roadways and parking areas with pipe cover (excluding concrete or asphalt pavement) of 60.9 cm (2 ft.) or less shall consist of 13.79MPa concrete cradle in conformity with the dimensions shown on the drawings, or as determined by the NPC.

CW-7.3 Construction

CW-7.3.1 Concrete Canal

Concrete canal, open or covered, shall be constructed in accordance with the lines and grades shown on the drawings. Class of concrete shall be as indicated on the drawings or directed by the NPC.

CW-7.3.2 Appurtenant Structures

Appurtenant structures like street inlet, street inlet-catch basin combination, manhole, catch basin for downspouts, catch basin for intersecting perforated PVC pipes, septic tank, drainage outlets, etc. shall be constructed at locations indicated on the plans or at the other convenient locations designated by the NPC. All appurtenant structures shall be of 17.30 MPa concrete unless otherwise shown on the drawings.

CW-7.3 Pipe Installation

CW-7.3.1 General

Before any drain pipe is installed, the sand or concrete bedding shall have been prepared and approved in accordance with the grade, shape, and dimensions shown on the drawings, or as directed by the NPC. No pipe over 45.7 cm (18") in diameter shall be laid on concrete bedding until seven (7) days have been elapsed after placing the concrete bedding. Pipes under 45.7 cm (18") in diameter may be laid after five (5) days elapsed after placing the concrete bedding.

All drain pipes shall be laid carefully, hubs upgraded, ends fully and closely jointed, and true to the lines and grades given. Succeeding pipe shall be jointed to the previously laid pipe, correct in alignment and grade. Any pipe, which has been damaged during installation or before acceptance of the work, shall be replaced and laid by the Contractor at his expense.

CW-7.3.2 Non-Reinforced and Reinforced Concrete Drainage Pipes

Whenever possible, concrete pipes shall be handled and installed with the aid of mechanical equipment and not just rolled or pushed into the trench from the bank. For small pipes, rope slings may be placed at both ends of the pipes and

the rope slowly paved out until the pipe rests on the trench bed. proper and careful handling and laying should be observed at all times to prevent unnecessary structural damage to the pipe, especially at the pipe ends.

For pipes on sand bedding, before joining the next pipe length to the last pipe already laid, the bottom of the trench shall be excavated to the shape, size and location of the collar below the joint. The next pipe section shall then be securely attached to the previously laid pipe seeing to it the correct alignment and grade is always attained. Same procedures shall be observed for the remaining pipes.

All pipe joints shall be filled with stiff mortar composed of one (1) part cement and two (2) parts clean sand and enough water. The inside part of the joint shall be plastered properly to bring the inside surfaces of jointed pipe ends flush even. Sufficient mortar shall be placed on the outside surface of joint to form a bead around the joint. Plastering work shall be as directed and approved by the NPC. After initial set, the mortar on the outside surface shall be protected from air and sunlight with a cover thoroughly wetted earth or burlap. Curing of the joint shall be done for a period of at least seven (7) days within which no backfill shall be placed on the installed pipeline.

CW-7.4 Measurement and Payment

CW-7.4.1 Concrete Rectangular Ditch

Measurement for payment for rectangular ditch and other channels will be based on the number of linear meters of canal constructed and accepted.

Payment will be made at the corresponding contract unit price per linear meter of the pertinent items shown in the Bill of Quantities. Payment shall constitute full compensation for furnishing all labor, materials, equipment and tools necessary for the construction of the concrete canal including attendant excavation and backfill.

CW-7.4.2 Concrete Drainage Pipes and PVC Pipes

Non-reinforced and reinforced concrete drain pipes, and PVC pipes in place and accepted will be measured by the linear meter along the centerline of the pipeline.

The quantities measured as provided above, completely installed and accepted, will be paid at the contract unit price for each size and kind of pipe shown in the Bill of Quantities. Payment shall constitute full compensation for furnishing all labor, material, equipment and tools for fabricating, hauling, installing and jointing of pipes. Payment shall also include the cost of attendant excavation, bedding and backfilling.

CW-7.4.3 Appurtenant Structures

Measurement for payment of appurtenant structures like street inlet, street inlet-catch basin combination, manhole, catch basin for downspouts, septic tank, drainage outlets, etc. will be based on the number of structures constructed/installed and accepted.

The Contractor will be paid at the contract unit price for the pertinent item for each appurtenant structure shown in the Bill of Quantities. Such payment shall cover all costs for furnishing all equipment, labor, materials and tools necessary to complete the construction of the aforementioned appurtenant structures. Payment also includes the cost of attendant excavation and backfill, furnishing, scheduling, cutting, bending and placing of reinforcing steel.

CW-7.4.4 Bedding

Measurement for payment for sand or natural sandy soil bedding and concrete cradle will be based on the number of cubic meters of materials placed and accepted.

Payment will be made at the corresponding contract unit price for the item. Sand Bedding for Pipes, and item, Concrete Cradle for Pipes, in the Bill of Quantities, which payment shall constitute full compensation for furnishing all labor, materials, equipment and tools necessary to complete the items.

SECTION VI

TECHNICAL SPECIFICATIONS FOR ELECTRICAL WORKS

PART I - TECHNICAL SPECIFICATIONS

EW - ELECTRICAL WORKS

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EW - ELECTRICAL WORKS

EW-1.0 GENERAL

This section covers the technical and associated requirements for the complete lighting and power system including other appurtenances for the Re.

All electrical equipment shall be installed in accordance with the relevant sections of this specification. The Contractor shall submit all related drawings and document deemed necessary, prior to the execution of the work, subject to the approval of NPC.

The works shall be performed and completed in a satisfactory manner in accordance with generally accepted modern engineering practice.

EW-2.0 SCOPE OF WORK

The scope of electrical work covers the furnishing of all labor, materials, equipment, tools and other necessary incidentals required which shall essentially consist of all electrical equipment and materials enumerated herein:

1. Supply, Installation and Test of Lighting and Power System of the Powerhouse and Containerized Bunkerhouse for Batan DPP;

2. Supply, Installation and Test of Kilowatt-hour Demand Meter and its accessories;

3. Dismantling of the existing circuit breakers inside the containerized bunker house and existing lighting fixtures & convenience outlets inside the powerhouse including electrical wires, switches, and other appurtenances and stocking to the designated stockyard to be provided by the end-user; and

4. All other works and services including those not specifically detailed herein but are required to fully complete the project.

In addition, the following shall be provided by the Contractor:

1. Provision of services of a highly qualified and competent Electrical Engineer with experience in the implementation of electrical works to perform/direct supervision during installation and test of all supplied devices, including cabling works; and

2. Conduct of inspection to verify and assess the extent of the related and incidental works needed to implement the project competently and efficiently.

The Contractor shall bear full responsibility that the materials have been designed and fabricated in accordance with all codes, standards, and applicable governmental regulations and performs under the conditions and to the standards specified herein.

EW-3.0 STANDARD OF MATERIALS

All materials to be used in the work shall be new, of high quality, free from all defects and of proven acceptability for the purpose of intended. Unless otherwise specified, materials shall conform to the latest applicable standard issued by the following authorities:

1. American National Standards Institute (ANSI)
2. Institute of Electrical and Electronic Engineers (IEEE)
3. Underwriter's Laboratory (UL)
4. National Electrical Manufacturer's Association (NEMA)
5. National Electrical Code (NEC)
6. Philippine Electrical Code (PEC)

Other recognized national standards maybe accepted if, in the opinion of NPC representatives, such will guarantee a quality not inferior to that guaranteed by the above standards.

In case of conflicting requirements between authorities cited above and those specified, such disagreement shall be resolved by representative of which his decision shall be final.

EW-4.0 LIGHTING AND POWER SYSTEM

The lighting system covered by this specification shall include all indoor and outdoor lighting system of an electric generating plants and/or switchyard. Lighting system includes outlets (convenience and power), switches, associated conduits and cables, lighting fixtures (indoor, outdoor and emergency), fittings, distribution panelboards, lighting transformers, contactors, timers, etc.

The devices/materials furnished shall be in accordance with, but not limited to, the latest issues of the Applicable Codes and Standards, including all addenda, in effect at time of purchase order unless otherwise stated in this specification.

All materials and parts which are not specifically mentioned herein but are necessary for the proper installation, assembly and safe operation of the lighting system shall be identified by the Contractor and furnished by the Contractor at no cost to the NPC. Any cost involve are deemed to be included in the price for the Lighting System.

EW-4.1 Technical Requirements and Characteristics

Lighting fixtures shall be controlled and switched locally approximately as shown on the drawings.

Normal lighting/small power outlet and emergency lighting systems shall consist of:

a. 240 VAC, 1-phase, 60Hz, normal station lighting system, including outlets (indoor and outdoor) and emergency lighting system;

b. Automatic Stand-alone Emergency Lamp (12 VDC), dual lamp, portable type emergency station lighting system for warehouse, door entrances, guardhouse. This emergency lighting system must be switched on automatically in the event of a lighting failure.

The normal station lighting/small power and convenience outlet system, and the automatic stand-alone lamps power shall be supplied from the powerhouse 240 Volt AC lighting and power panelboard.

Replacement of fixture bulbs or tubes shall be possible without disconnecting any part of the power supply and risk of touching live parts of the installation.

EW-4.2 Lighting and Power Panelboard

The lighting and power panelboard shall be flush mounted rated at 240V, 60Hz, operating on a single-phase system.

Circuit breaker shall be quick-make, quick-break, thermal magnetic and trip indicating type with rating as required by connected load.

Nameplate shall be black plastic with engraved white letter. The Contractor shall be responsible for the proper identification and labelling of all branch circuits.

EW-4.3 Luminaires (Lighting Fixtures) and Accessories

The Contractor shall submit for approval complete photometry data and type of lighting fixture to be installed together with the shop drawings.

All luminaires when installed shall be free of leaks, warps, dents and other irregularities.

The hangers and brackets of all kinds for safety and proper installation of lighting fixtures shall be furnished and installed by the Contractor at his own expense.

The housings shall be fabricated of steel sheet, corrosion resistant, good ventilation and easy installation.

Samples and catalogues of all luminaires to be supplied shall be submitted for NPC's review and approval prior to the order. No luminaire shall be installed without approval of NPC.

Luminaires shall be wired with approved fixture wire, 90°C insulation. Each fixture shall be wired to a single point with an adequate slack for proper connection. All luminaires shall be protected from damage during installation. Any broken luminaire, receptacles, stems and the like, shall be replaced with new parts, at no cost to NPC.

Types of luminaires to be supplied, installed and tested are as follows:

Lighting Luminaires

a. Fixture Type A

IP20 Recessed Type Lighting Fixture with mirror finish aluminum reflector, 1200 mm x 600mm zinc phosphate steel sheet housing, 2 x 18 watts, cool white high output LED lamp tube luminaires.

b. Fixture Type B

IP65 Water and Dust Proof Lighting Fixture with polycarbonate housing and 2 x 16 watts, 1200mm, high output LED tubelight

c. Fixture Type C

Compact LED Lamps (1 x 9 watts) shall be rated 230V, 60 Hz, operations, with cool white, and frosted finish. Lamp holders shall be IP20 surface mounted, E27 base type.

d. Fixture Type D

Compact LED Lamps (1 x 18 watts) shall be rated 230V, 60 Hz, operations, with cool white, and frosted finish. Lamp holders shall be IP20 surface mounted, E27 base type.

e. Emergency Lighting Fixture

The Contractor shall supply and install the automatic stand-alone emergency lamp of the self-contained battery unit as specified herein.

When the AC main supply is interrupted, the lamps shall be automatically switched ON with a time delay of 1 second to the battery-powered operation. Lamps shall be switched OFF when the batteries are discharged at the low-level voltage (below 7.5V). The charging system of both maximum-constant voltage and constant current shall be able to recharge the completely discharged batteries to their full capacity within 20 hours or less. The charging system shall cut-off automatically and instantaneously upon reaching fully charged state.
Batteries shall be of long life, maintenance free, sealed lead acid type. The batteries shall have sufficient capacity to operate the lamps at full luminous efficiency for up to 3 hours after failure of the main supply.

Rated input voltage of the automatic stand-alone emergency lamps shall be 240 VAC, 1-phase, 60 Hz. Rated Output of the batteries shall be 12 Volt DC.

EW-4.4 Conductors

Conductors shall be stranded annealed copper conductor suitable for continuous temperature of 90°C when used in wet or dry location and 75°C when exposed to oil or coolant. The minimum size of conductor to be used shall be 3.5mm^2.

Insulation shall be suitable for wet and dry location, fungi resistant and ultra violet stable.

All conductors shall be moisture and heat resistant, flame retardant polyvinyl chloride insulation, chemical and abrasion resistant nylon sheath.

The conductor specification shall meet ASTM specification, PNS 35, UL standard 83 and requirements of PEC.

The Contractor shall submit catalogues and/or brochures showing details of insulation and ampacity ratings of all types of conductors to be supplied for approval of NPC.

EW-4.4.1 Conductor Installation

Conductors pulled through conduits shall be supported in an approved manner so as to avoid damage to the insulation. Grease or oily substances shall not be used to facilitate the passage of the conductor in conduits.
The pull shall be applied only by means of approved grips and the end portion, which has been marked or deformed by the grip, shall be cut-off by the Contractor.

All cable runs shall be continuous and all termination shall be at the terminal boards, equipment, etc. No splices are allowed in conduit or cable tray.

Prior to installation of conductors, conduits and cable trays shall be thoroughly cleaned to prevent damage to conductors during installation. After conductors have been installed, it shall be tested for continuity and insulation resistance and shall be tagged with respective conductor number.

EW-4.5 Conduit

All embedded and concealed in ceiling conduits, boxes and fitting required for the power and control conductors including all necessary hardware and accessories such as screws, bolts, concrete inserts, clamps, locknuts, couplings shall be furnished by the Contractor. The required quantities of various items of conduits and associated materials shall be furnished in accordance with the installation requirements.

During installation, due precaution shall be taken to protect the conduit and threads from mechanical injury. The ends of the conduit shall be sealed in an approved manner. Conduit runs shall be sealed by the use of caps and discs or plugs. The seals shall be maintained, except during inspection and tests, until the conductor is pulled in. Conduit shall be check to be free from obstructions by pulling a wooden mandrel of appropriate size through the conduit.

Conduits running in floors and terminating at equipment mounted on concrete bases shall be brought up to the equipment within the concrete bases, wherever possible.

All joints between lengths of conduits and threaded connection to boxes, fittings and equipment enclosures shall be made watertight.

Conduits installed outdoors running underground shall be buried to a minimum of 0.6 m.

Non-Metallic Conduits

Non-metallic conduit shall be made of un-plasticized polyvinyl chloride (uPVC) smooth walled inside and outside, colored red-orange, schedule 40.

The uPVC conduits shall be non-corrosive and weatherproof, resistant to the attacks of acids and alkalis and must have a self-extinguishing property hence shall not support combustion. It shall resist corrosion, rust and scale.

EW-4.6 Junction / Utility and Pull Boxes

Junction / Utility Boxes

All junction/utility boxes for concealed work shall be of hot dip galvanized steel or un-plasticized polyvinyl Chloride. All wall boxes on exposed work shall be of aluminum blasted cast iron.

Utility boxes shall be firmly anchored in place and where required provided with fixture supports. The Contractor shall provide special supports for recessed lighting fixtures, etc. Suitable expansion screws shall be used for securing boxes to solid masonry and approved type toggles for securing to hallow masonry units.

Pull Boxes

Pull boxes shall be installed at all necessary points, to prevent damage to the insulation or other damage that might result from pulling resistance or for other reasons related to improper installation. All pull boxes shall be made of galvanized sheet steel not less than 2mm or un-plasticized polyvinyl chloride. Where pull boxes are used in connection with exposed conduits, plain covers attached to the pull box with a suitable number of countersunk flathead machine screws may be used.

EW-5.0 Kilowatt-Hour Demand Meter

This specification covers the technical and associated requirements for the kilowatt-hour meter including instrument transformer and accessories required for the electric generating plants.

EW-5.1 Technical Characteristics and Requirements

The kilowatt-hour meter shall be furnished and installed by the Contractor as shown on the bid drawings complete with housing and associated metering instruments transformers (current and potential transformers) of appropriate burden and accuracy and other accessories for outdoor metering purposes. It shall be capable to measure the power generated by the plant and feedback power. It shall be designed to operate continuously for the normal life of the meter in an outdoor tropical location exposed to various elements which might affect the meter accuracy and reliability.

The Kilowatt-hour meter shall have the following features:

1. Pilferage Proof
2. Tamper Proof
3. Wrong Wiring Alarm

4. Current Flow display
5. Can withstand the temperature of -20°C to +70°C and Humidity of up to 95% non-condensing
6. With back light display
7. With built-in battery for LCD display and back-up battery
8. TOU Programmable Ready
9. Measure display (True RMS voltage, Current, Calendar, Time, etc.)

The kilowatt-hour meter and the required metering instruments shall be pole mounted and to be supplied complete with stainless steel bracket, bolts, etc. required for mounting onto flat-faced pole where pole drilling is permitted.

The Contractor shall submit for approval the brochures and/or catalogues with complete technical specification of the kilowatt-hour meter including accessories to be supplied prior to delivery at site.

EW-5.1 Technical Specifications

Kilowatt-Hour Demand Meter

ITEM	DESCRIPTION	NPC REQUIREMENTS	CONTRACTOR'S DATA
E-3.1	Manufacturer	By Contractor	
E-3.2	Accuracy Class	Class 0.3 or better	
E-3.3	Number of Phase	1	
E-3.4	Wire	2	
E-3.5	Voltage, V	240	
E-3.6	Current Range	Class 200	
E-3.7	Frequency, Hz	60	
E-3.8	Register Type	LCD	
E-3.9	TOU (Time of Use)	Programmable Ready	
E-3.10	Soft Switches	Available	
E-3.11	LCD Display	Programmable	
E-3.12	Power Consumption	By Contractor	
E-3.13	The Kilowatt-hour meter to be provided is certified and approved by ERC	Yes	

EW-6.0 MEASUREMENT OF PAYMENT

Measurement of payment for all electrical works shall be based on the bid price of each item as shown in the Bill of Quantities – Electrical Works, Section VII of the Tender Documents. The cost of each item shall cover all works required and described in the pertinent provisions of the specifications and bid drawings.

SECTION VII

BILL OF QUANTITIES

SECTION VII

BILL OF QUANTITIES FOR ARCHITECTURAL WORKS

SECTION VII - BILL OF QUANTITIES
(ARCHITECTURAL WORKS)

Item No.	Description of Work or Materials	Work to Be Done	Ref	Unit	Estimated Quantity	Unit Price in Pesos (Words and Figures)	Total Amount (In Figures)
1.0	**WALL SYSTEM AND FINISHES**						
1.1	100mm thk. CHB wall including mortas and reinforcing bars	furnish & lay	Refer to NPC TS & Drawing	sq.m.	**40.00**	_____ _____(P_____)	_____(P_____)
1.2	Plastering Plain cement plaster wall finish including preparation	furnish & apply	Refer to NPC TS & Drawing	cu.m.	**80.00**	_____ _____(P_____)	_____(P_____)
2.0	**FLOOR FINISHES**						
	Vinyl quartz tiles 300x300mm including bonding materials	furnish & install	Refer to NPC TS & Drawing	sq.m.	**7.50**	_____ _____(P_____)	_____(P_____)
3.0	**ROOFING AND BUILDING BLANKETS**						
3.1	Roofing Sheet: 0.5mm base metal thk pre-painted long span G.I. roofing sheet including fasteners, sealant and 0.5mm thk pre-painted bended sheets such as barge cap flashing, ridge roll including fasteners, sealants, hardware, accessories and accessories	furnish & install	Refer to NPC TS & Drawing	sq.m.	**283.00**	_____ _____(P_____)	_____(P_____)
3.2	Gutter: 0.6mm thk pre-painted gutter including fasteners, sealants, hardware, accessories and retouching paint	furnish & install	Refer to NPC TS & Drawing	l.m.	**53.00**	_____ _____(P_____)	_____(P_____)
3.4	Fascia Board 1/2" x 1/2" x 12' Fiber cement board including steel frame, hardware and accessories	furnish & install	Refer to NPC TS & Drawing	l.m.	**51.00**	_____ _____(P_____)	_____(P_____)
3.5	3" Downspout S1000 including joint fittings, solvents and brackets	furnish & install	Refer to NPC TS & Drawing	l.m.	**51.00**	_____ _____(P_____)	_____(P_____)

Name of Firm

Name and Signature of Authorized Representative

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SECTION VII - BILL OF QUANTITIES
(ARCHITECTURAL WORKS)

Item No.	Description of Work or Materials	Work to Be Done	Ref	Unit	Estimated Quantity	Unit Price in Pesos (Words and Figures)	Total Amount (In Figures)
3.6	Roof Drain: removable stainless wire basket strainer	furnish and install	Refer to NPC TS & Drawing	pc.	14	_____ _____(P_____)	_____(P_____)
4.0	**CEILING SYSTEM**						
	6mm thk marine plywood on standard metal furring spaced @ 0.40 O.C., B.W. and metal hangers spaced @ 0.80 O.C., B.W.	furnish and install	Refer to NPC TS & Drawing	sq.m.	58	_____ _____(P_____)	_____(P_____)
5.0	**FENESTRATION**						
5.1	Doors						
	a. D-2 (900mm x 2100mm) Flush Type Wooden Door, marine plywood both sides, 2"x5" hard wood jamb, including heavy duty loose pin hinges, door knob/lockset and painting	furnish and install	Refer to NPC TS & Drawing	set	2	_____ _____(P_____)	_____(P_____)
	b. D-3 (600mm x 2100mm) Flush Type Wooden Door, marine plywood both sides, 2"x5" hard wood jamb, including heavy duty loose pin hinges, door knob/lockset and painting	furnish and install	Refer to NPC TS & Drawing	set	1	_____ _____(P_____)	_____(P_____)
5.2	Windows						
	a. W-1 (1200mm x 900mm) Glass and aluminum fixed window 6mm thk clear glass with 20x20 square aluminum glazing bead 50x100mm anodized aluminum frame silicon sealant sound proofing	furnish and install	Refer to NPC TS & Drawing	set	1	_____ _____(P_____)	_____(P_____)

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SECTION VII - BILL OF QUANTITIES
(ARCHITECTURAL WORKS)

Item No.	Description of Work or Materials	Work to Be Done	Ref	Unit	Estimated Quantity	Unit Price in Pesos (Words and Figures)	Total Amount (In Figures)
	b. CL - Concrete Louver Blocks (250x250mm or 200x200mm) pre-cast concrete	furnish and install	Refer to NPC TS & Drawing	sq.m.	**25**	_____ _____(P_____)	_____(P_____)
6.0	**PAINTING**						
6.1	All concrete surfaces	furnish and apply	Refer to NPC TS & Drawing	sq.m.	**210**	_____ _____(P_____)	_____(P_____)
6.2	All wooden surfaces	furnish and apply	Refer to NPC TS & Drawing	sq.m.	**109**	_____ _____(P_____)	_____(P_____)
	SUB-TOTAL AMOUNT OF BID (ARCHITECTURAL WORKS)					_____ _____(P_____)	_____(P_____)

Name of Firm | Name and Signature of Authorized Representative | Designation

SECTION VII

BILL OF QUANTITIES FOR CIVIL WORKS

SECTION VII - BILL OF QUANTITIES (CIVIL WORKS)

Item No.	Description of Work or Materials	Work to Be Done	Reference	Unit	Estimated Quantity	Unit Price in Pesos (Words and Figures)	Total Amount (In Figures)
1.0	**Renovation of Powerhouse**						
1.1	Concrete, 20.7 Mpa	furnish & place	Refer to NPC TS & Drawing	cu.m.	**5**	_____ _____(P_____)	_____(P_____)
1.2	Reinforcing Steel Bars	furnish, cut, bend schedule & install	Refer to NPC TS & Drawing	kgs	**620**	_____ _____(P_____)	_____(P_____)
1.3	Structural Steel (A36) Including angle bars, gusset and base plates, rafters and structural steel for canopy	furnish, fabricate and install	Refer to NPC TS & Drawing	kgs.	**2972**	_____ _____(P_____)	_____(P_____)
1.4	16mmØ DSB Tension Rod with turn buckle	furnish & install	Refer to NPC TS & Drawing	lot	**1**	_____ _____(P_____)	_____(P_____)
1.5	Anchor Bolts (16mm ø x 250mm with standard nuts and washers)	furnish & install	Refer to NPC TS & Drawing	pc	**40**	_____ _____(P_____)	_____(P_____)
1.6	Anchor Bolts (12mm ø x 150mm with standard nuts and washers)	furnish & install	Refer to NPC TS & Drawing	pc	**44**	_____ _____(P_____)	_____(P_____)
1.7	Portable Fire Extinguishers, HCFC or Halotron I, 7.1 kg. (15.5 lbs.), non-expiry, multi shots, wall hung type with bracket and mounting accessories, PS/ICC and/or BFP approved	furnish & install	Refer to NPC TS & Drawing	pc	**3**	_____ _____(P_____)	_____(P_____)
	SUB-TOTAL AMOUNT OF BID (CIVIL WORKS PORTION)					_____ _____(P_____)	_____(P_____)

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Name of Firm

_____
Name and Signature of Authorized Representative

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SECTION VII

BILL OF QUANTITIES FOR ELECTRICAL WORKS

ELECTRICAL WORKS

Item No.	Description of Work or Materials	Work to Be Done	Ref.	Unit	Estimated Quantity	Unit Price in Pesos (Words and Figures)	Total Amount
EW-1.0	**PANELBOARD**						
a.	**MAIN DISTRIBUTION PANELBOARD** 1 - 200AF/175AT, 2-Pole Main MCCB with branch circuits of: 1 - 100AF/70AT, 2-Pole MCB 1 - 100AF/60AT, 2-Pole MCB 2 - 50AF/25AT, 2-Pole MCB 9 - 50AF/20AT, 2-Pole MCB 2 - 50AF/15AT, 2-Pole MCB	Furnish, Install and Test	EW-TS & BD	set(s)	1	_____ _____(P_____) P_____	
b.	**LIGHTING AND POWER PANELBOARD** 1 - 100AF/60AT, 2-Pole Main MCCB with branch circuits of: 7 - 50AF/20AT, 2-Pole Main MCB	Furnish, Install and Test	EW-TS & BD	set(s)	1	_____ _____(P_____) P_____	
EW-2.0	**LIGHTING FIXTURES**						
a.	Fixture Type A IP20 Recessed Type Lighting Fixture with Mirror Finish Aluminum Reflector, 1200 mm x 600 mm Zinc Phosphate Steel Sheet Housing, 2 x 18 watts, Cool White, High Output LED Lamp Tube Luminaires	Furnish, Install and Test	EW-TS & BD	set(s)	7	_____ _____(P_____) P_____	
b.	Fixture Type B IP65 Water and Dust Proof Lighting Fixture with Polycarbonate Housing and 2x16W LED Tube Light	Furnish, Install and Test	EW-TS & BD	set(s)	8	_____ _____(P_____) P_____	
c.	Fixture Type C IP20 1 x 9 watts Cool White, Classic Globe Shape, Frosted Finish, E27 Base Compact LED Lamp	Furnish, Install and Test	EW-TS & BD	set(s)	1	_____ _____(P_____) P_____	

ELECTRICAL WORKS

Item No.	Description of Work or Materials	Work to Be Done	Ref.	Unit	Estimated Quantity	Unit Price in Pesos (Words and Figures)	Total Amount
	d. Fixture Type D IP20 1 x 18 watts Cool White, Classic Globe Shape, Frosted Finish, E27 Base Compact LED Lamp	Furnish, Install and Test	EW-TS & BD	set(s)	14	_____ (P_____)	P _____
	e. Fixture Type E (2 x 2W LED Emergency Lighting Fixture with Built-in Sealed Lead Acid Battery	Furnish, Install and Test	EW-TS & BD	set(s)	3	_____ (P_____)	P _____
EW-3.0	**OUTLETS AND SWITCHES INCLUDING PLATE COVER FLUSH-MOUNTED, GROUNDING TYPE**						
	a. Universal Convenience Outlet, Duplex, 16A, 250V	Furnish, Install and Test	EW-TS & BD	set(s)	10	_____ (P_____)	P _____
	b. Outlet for ACU, Single Receptacle, 25 A, 230 V, 1-phase	Furnish, Install and Test	EW-TS & BD	set(s)	3	_____ (P_____)	P _____
	c. Outlet for Emergency Lighting Fixture, Single Receptacle, 16 A, 230 V, 1-phase	Furnish, Install and Test	EW-TS & BD	set(s)	3	_____ (P_____)	P _____
	d. Outlet for Space Heater/Battery Charger, Single Receptacle, 16 A, 230 V, 1-phase	Furnish, Install and Test	EW-TS & BD	set(s)	3	_____ (P_____)	P _____
	e. Single Pole Wall Switch, 10A, 250 V	Furnish, Install and Test	EW-TS & BD	set(s)	1	_____ (P_____)	P _____
	f. Duplex Pole Wall Switch, 10A, 250 V	Furnish, Install and Test	EW-TS & BD	set(s)	2	_____ (P_____)	P _____

ELECTRICAL WORKS

Item No.	Description of Work or Materials	Work to Be Done	Ref.	Unit	Estimated Quantity	Unit Price in Pesos (Words and Figures)	Total Amount
	g. Three Way Wall Switch, 10A, 250 V	Furnish, Install and Test	EW-TS & BD	set(s)	4	_____ (P_____)	P _____
	h. Boxes, Fittings, and Accessories	Furnish and Install	EW-TS & BD	lot	1	_____ (P_____)	P _____
EW-4.0	**INSULATED COPPER CONDUCTORS INCLUDING TERMINAL LUGS, CONNECTORS, CABLE TIES, IDENTIFICATION TAGS, ETC.**						
	a. 80 mm^2, 600 V, Heat Resistant Thermoplastic, (THWN/THHN-2), Copper Conductor	Furnish and Lay	EW-TS & BD	lot	1	_____ (P_____)	P _____
	b. 22 mm^2, 600 V, Heat Resistant Thermoplastic, (THWN/THHN-2), Copper Conductor	Furnish and Lay	EW-TS & BD	lot	1	_____ (P_____)	P _____
	c. 14 mm^2, 600 V, Heat Resistant Thermoplastic, (THWN/THHN-2), Copper Conductor	Furnish and Lay	EW-TS & BD	lot	1	_____ (P_____)	P _____
	d. 8.0 mm^2, 600 V, Heat Resistant Thermoplastic, (THWN/THHN-2), Copper Conductor	Furnish and Lay	EW-TS & BD	lot	1	_____ (P_____)	P _____
	e. 3.5 mm^2, 600 V, Heat Resistant Thermoplastic, (THWN/THHN-2), Copper Conductor	Furnish and Lay	EW-TS & BD	lot	1	_____ (P_____)	P _____
EW-5.0	**EMBEDDED AND/OR NON-EMBEDDED CONDUITS INCLUDING BOXES, LOCKNUTS, ELBOWS, BOLTS AND OTHER FITTINGS**						

ELECTRICAL WORKS

Item No.	Description of Work or Materials	Work to Be Done	Ref.	Unit	Estimated Quantity	Unit Price in Pesos (Words and Figures)	Total Amount
	a. 50 mmØ uPVC	Furnish and Lay	EW-TS & BD	lot	1	_____ (P_____)	P_____
	b. 25 mmØ uPVC	Furnish and Lay	EW-TS & BD	lot	1	_____ (P_____)	P_____
	c. 20 mmØ uPVC	Furnish and Lay	EW-TS & BD	lot	1	_____ (P_____)	P_____
	d. Boxes, Locknuts, Elbows, Bolts and other fittings	Furnish and Lay	EW-TS & BD	lot	1	_____ (P_____)	P_____
EW-6.0	**GROUNDING MATERIALS**						
	a. Ground Rod, Copper Bonded, 16mmØ x 3m with Ground Clamp	Furnish, Install	EW-TS & BD	set(s)	1	_____ (P_____)	P_____
EW-7.0	**KILOWATT-HOUR METER**						
	a. 240V, Single-phase Kilowatt-hour Meter	Furnish and Install	EW-TS & BD	set(s)	1	_____ (P_____)	P_____

Name of Firm

Name and Signature of Authorized Representative

Designation

ELECTRICAL WORKS

Item No.	Description of Work or Materials	Work to Be Done	Ref.	Unit	Estimated Quantity	Unit Price in Pesos (Words and Figures)	Total Amount
EW-8.0	**DISMANTLING OF THE EXISTING CIRCUIT BREAKERS INSIDE THE CONTAINERIZED BUNKER HOUSE AND EXISTING LIGHTING FIXTURES & CONVENIENCE OUTLETS INSIDE THE POWERHOUSE INCLUDING ELECTRICAL WIRES, SWITCHES, AND OTHER APPURTENANCES AND STOCKING TO THE DESIGNATED STOCKYARD TO BE PROVIDED BY THE END-USER**	Dismantle and Stock	EW-TS & BD	lot	1	_____ (P_____)	P _____

SUB-TOTAL AMOUNT OF BID (ELECTRICAL WORKS) _____ (P_____) P _____

Name of Firm

Name and Signature of Authorized Representative

Designation

SECTION VIII

BIDDING FORMS

SECTION VIII – BIDDING FORMS

TABLE OF CONTENTS

Standard Form No: NPCSF-INFR-01

Checklist of Technical & Financial Envelope Requirements for Bidders

A. THE 1ST ENVELOPE (TECHNICAL COMPONENT) SHALL CONTAIN THE FOLLOWING:

1. ELIGIBILITY DOCUMENTS

a. (CLASS A)

➢ Any of the following:

- PhilGEPS Certificate of Registration and Membership under Platinum Category in accordance with Section 8.5.2 of the IRR;

OR:

- The following updated and valid Class "A" eligibility documents enumerated under "Annex A" of the Platinum Membership:
  - Registration Certificate from the Securities and Exchange Commission (SEC) for corporations, Department of Trade and Industry (DTI) for sole proprietorship, or Cooperative Development Authority (CDA) for cooperatives;
  - Mayor's/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.

    In cases of recently expired Mayor's/Business permits, it shall be accepted together with the official receipt as proof that the bidder has applied for renewal within the period prescribed by the concerned local government unit, provided that the renewed permit shall be submitted as a post qualification requirement in accordance with Section 34.2 of the Revised IRR of RA 9184.
  - 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.
  - Tax clearance per Executive Order 398, Series of 2005, as finally reviewed and approved by the BIR;
  - Valid Philippine Contractors Accreditation Board (PCAB) license and registration for the type and cost of the contract for this Project or Special PCAB License in case of Joint Ventures.

OR:

- A combination thereof.

➢ Statement of all its ongoing government and private contracts if any, whether similar or not similar in nature and complexity to the contract to be bid *(NPCSF-INFR-02)*

➢ The Statement of the bidder's Single Largest Completed Contract (SLCC) similar to the contract to be bid, and whose value, adjusted to current prices using the Philippine Statistics Authority (PSA) consumer price index, must be at least 50% of the ABC *(NPCSF-INFR-03)* complete with the following supporting documents:

- Contract
- Owner's Certificate of Final Acceptance issued by the project owner other than the contractor or a final rating of at least Satisfactory in the Constructors Performance Evaluation System (CPES). In case of contracts with the private sector, an equivalent document (Ex. Official Receipt or Sales Invoice) shall be submitted

(The Single Largest Completed Contract (SLCC) as declared by the bidder shall be verified and validated to ascertain such completed contract. Hence, bidders must ensure access to sites of such projects/equipment to NPC representatives for verification and validation purposes during post-qualification process.

It shall be a ground for disqualification, if verification and validation cannot be conducted due to inaccessibility of the site for whatever reason or fault of the bidder.)

- Special PCAB License in case of Joint Ventures
- Duly signed computation of its Net Financial Contracting Capacity (NFCC) at least equal to the ABC *(NPCSF-INFR-04)*;

b. (CLASS B)

- Valid Joint Venture Agreement, if applicable *(NPCSF-INFR-05)*

2. *Technical Documents*

- Bid Security, any one of the following:
  - Bid Securing Declaration (*NPCSF-INFR-06c*)

    OR
  - Cash or Cashier's/Manager's check issued by a Universal or Commercial Bank – 2% of ABC;

    OR
  - Bank draft/guarantee or irrevocable letter of credit issued by a Universal or Commercial Bank: *(NPCSF-INFR-06a) - 2% of ABC;*

    OR
  - Surety Bond callable upon demand issued by a reputable surety or insurance company *(NPCSF-INFR-06b) - 5% of ABC, with*
    - Certification from the Insurance Commission as authorized company to issue surety
- Duly signed, completely filled-out and notarized Omnibus Sworn statement (Revised) (NPCSF-INFR-07), complete with the following attachments:
  - For Sole Proprietorship:
    - Special Power of Attorney
  - For Partnership/Corporation/Cooperative/Joint Venture:
    - Document showing proof of authorization (e.g., duly notarized Secretary's Certificate, Board/Partnership Resolution, or Special Power of Attorney, whichever is applicable)
- Organization Chart for the project *(NPCSF-INFR-08)*
- Duly Signed List of Contractor's Key Personnel (based on the minimum key personnel) with complete supporting documents *(NPCSF-INFR-09,10a,10b & 11)*
- Duly Signed List of Contractor's Equipment (owned, leased or under purchase agreement (*NPCSF-INFR-12), with*
  - Proof of ownership and/or certificate of availability issued by Equipment Lessors
- Complete eligibility documents of proposed sub-contractor, if applicable

B. THE 2ND ENVELOPE (FINANCIAL COMPONENT) SHALL CONTAIN THE FOLLOWING:

- Duly signed Bid Letter indicating the total bid amount in accordance with the prescribed form (*NPCSF-INFR-13)*
- Duly signed and completely filled-out Bill of Quantities *(Section VII)* indicating the unit and total prices per item and the total amount in the prescribed Bill of Quantities form.
- Duly Signed Detailed Estimates for each items of work showing the computations in arriving at each item's unit prices used in coming up with the bid (*NPCSF-INFR-14)*
- Summary sheets indicating the direct unit prices of construction materials, labor rates and equipment rental rates used in coming up with the bid (*NPCSF-INFR-15)*

CONDITIONS:

1. *Each Bidder shall submit one copy of the first and second components of its Bid. NPC 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.*
2. *A Bidder not submitting bid for reason that his cost estimate is higher than the ABC, is required to submit his letter of non-participation/regret supported by corresponding detailed estimates. Failure to submit the two (2) documents shall be understood as acts that tend to defeat the purpose of public bidding without valid reason as stated under Section 69.1.(i) of the revised IRR of R.A. 9184.*

Standard Form Number: NPCSF-INFR-02

List of All Ongoing Government and Private Contracts Including Contract Awarded But Not Yet Started

Business Name : _____
Business Address : _____

Name of Contract/Location/ Project Cost	a. Owner's Name b. Address c. Telephone Nos.	Nature of Work	Contractor's Role		a. Date Awarded b. Date Started c. Date of Completion or Estimated Completion Time	Value of Outstanding Works
			Description	%		
Government						
Private						
					Total Cost	

The bidder shall declare in this form all his on-going government and private contracts including contracts where the bidder (either as individual or as a Joint Venture) is a partner in a Joint Venture agreement other than his current joint venture where he is a partner. Non declaration will be a ground for disqualification of bid.

Note : This statement shall be supported with the following documents for all the contract(s) stated above which shall be submitted during Post-qualification:

1. Contract/Purchase Order and/or Notice of Award
2. Certification coming from the project owner/client that the performance is satisfactory as of the bidding date.

Submitted by : _____
(Printed Name & Signature)
Designation : _____
Date : _____

Standard Form Number: NPCSF-INFR-03

The Statement of the bidder's Single Largest Completed Contract (SLCC) similar to the contract to be bid

Business Name : _____
Business Address : _____

Name of Contract	a. Owner's Name b. Address c. Telephone Nos.	Nature of Work	Contractor's Role		a. Amount at Award b. Amount at Completion c. Duration	a. Date Awarded b. Contract Effectivity c. Date Completed
			Description	%		

Notes:
1. The bidder must state only one (1) Single Largest Completed Contract (SLCC) similar to the contract to be bid.
2. Supporting documents such as Contract/Purchase Order and any of the following: Owner's Certificate of Final Acceptance issued by the project owner other than the contractor; *or* A final rating of at least Satisfactory in the Constructors Performance Evaluation System (CPES); *or* Official Receipt (O.R); *or* Sales Invoice for the contract stated above shall be submitted during Bid Opening.

Submitted by _____
(Printed Name & Signature)
Designation : _____
Date : _____

Standard Form Number: NPCSF-INFR-04

NET FINANCIAL CONTRACTING CAPACITY (NFCC)

A. Summary of the Bidder's/Contractor's assets and liabilities on the basis of the income tax return and audited financial statement for the immediately preceding calendar year are:

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

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

NFCC = [(Current assets minus current liabilities) x 15] minus the value of all outstanding or uncompleted portions of the projects under ongoing contracts, including awarded contracts yet to be started coinciding with the contract for this Project.

NFCC = P _____

Herewith attached is certified true copy of the audited financial statement, stamped "RECEIVED" by the BIR or BIR authorized collecting agent for the immediately preceding calendar year.

Submitted by:

_____
Name of Bidder/Contractor

_____
Signature of Authorized Representative

Date : _____

Standard Form Number: NPCSF-INFR-05

JOINT VENTURE AGREEMENT

KNOW ALL MEN BY THESE PRESENTS:

That this JOINT VENTURE AGREEMENT is entered into by and between: _____, of legal age, *(civil status)* _____, authorized representative of _____ and a resident of _____.

– and –

_____, of legal age, *(civil status)* _____, authorized representative of _____ a resident of _____.

That both parties agree to join together their capital, manpower, equipment, and other resources and efforts to enable the Joint Venture to participate in the Bidding and Undertaking of the hereunder stated Contract of the **National Power Corporation.**

NAME OF PROJECT	**CONTRACT AMOUNT**
_____	_____

That the capital contribution of each member firm:

NAME OF FIRM	CAPITAL CONTRIBUTION
1.	₱
2.	₱

That both parties agree to be jointly and severally liable for their participation in the Bidding and Undertaking of the said contract.

That both parties agree that _____ and/or _____ shall be the Official Representative/s of the Joint Venture, and are granted full power and authority to do, execute and perform any and all acts necessary and/or to represent the Joint Venture in the Bidding and Undertaking of the said contract, as fully and effectively and the Joint Venture may do and if personally present with full power of substitution and revocation.

That this Joint Venture Agreement shall remain in effect only for the above stated Contract until terminated by both parties.

_____	_____
Name & Signature of Authorized Representative	*Name & Signature of Authorized Representative*
_____	_____
Official Designation	*Official Designation*
_____	_____
Name of Firm	*Name of Firm*

Witnesses

1. _____ 2. _____

[Jurat]

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

If the bidder is a joint venture, one of the requirements is the submission of a valid joint venture agreement.

This Surety executing this instrument hereby agrees that its obligation shall be valid for 120 calendar days after the deadline for submission of Bids as such deadline is stated in the Instructions to Bidders or as it may be extended by the Employer, notice of which extension(s) to the Surety is hereby waived.

PRINCIPAL _____ SURETY _____

SIGNATURE(S) _____ SIGNATURES(S) _____

NAME(S) AND TITLE(S) _____ NAME(S) _____

SEAL _____ SEAL _____

Standard Form Number: NPCSF-INFR-06a

FORM OF BID SECURITY (BANK GUARANTEE)

WHEREAS, *(Name of Bidder)*_____ (hereinafter called "the Bidder") has submitted his bid dated *(Date)*_____ for the *[name of project]* (hereinafter called "the Bid").

KNOW ALL MEN by these presents that We *(Name of Bank)*_____ of *(Name of Country)*_____ having our registered office at _____ (hereinafter called "the Bank" are bound unto National Power Corporation (hereinafter called "the Entity") in the sum of *[amount in words & figures as prescribed in the bidding documents]* for which payment well and truly to be made to the said Entity the Bank binds himself, his successors and assigns by these presents.

SEALED with the Common Seal of the said Bank this _____ day of _____ 20___.

THE CONDITIONS of this obligation are that:

1) if the Bidder withdraws his Bid during the period of bid validity specified in the Bidding Documents; or

2) if the Bidder does not accept the correction of arithmetical errors of his bid price in accordance with the Instructions to Bidder; or

3) if the Bidder, having determined as the LCB, fails or refuses to submit the required tax clearance, latest income and business tax returns and PhilGEPs registration certificate within the prescribed period; or

4) if the Bidder having been notified of the acceptance of his bid and award of contract to him by the Entity during the period of bid validity:

   a) fails or refuses to execute the Contract; or

   b) fails or refuses to submit the required valid JVA, if applicable; or

   c) fails or refuses to furnish the Performance Security in accordance with the Instructions to Bidders;

we undertake to pay to the Entity up to the above amount upon receipt of his first written demand, without the Entity having to substantiate its demand, provided that in his demand the Entity will note that the amount claimed by it is due to the occurrence of any one or combination of the four (4) conditions stated above.

The Guarantee will remain in force up to 120 days after the opening of bids or as it may be extended by the Entity, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this Guarantee should reach the Bank not later than the above date.

DATE _____ SIGNATURE OF THE BANK _____

WITNESS _____ SEAL _____

_____
(Signature, Name and Address)

Standard Form Number: NPCSF-INFR-06b

FORM OF BID SECURITY (SURETY BOND)

BOND NO.: _____ DATE BOND EXECUTED: _____

By this bond, We *(Name of Bidder)* _____ (hereinafter called "the Principal") and *(Name of Surety)* _____ of *(Name of Country of Surely)* _____, authorized to transact business in the Philippines (hereinafter called "the Surety") are held and firmly bound unto National Power Corporation (hereinafter called "the Employer") as Obligee, in the sum of *(amount in words & figures as prescribed in the bidding documents)*, callable on demand, for the payment of which sum, well and truly to be made, we, the said Principal and Surety bind ourselves, our successors and assigns, jointly and severally, firmly by these presents.

SEALED with our seals and dated this _____ day of _____ 20 _____

WHEREAS, the Principal has submitted a written Bid to the Employer dated the _____ day of _____ 20 _____, for the _____ (hereinafter called "the Bid").

NOW, THEREFORE, the conditions of this obligation are:

1) if the Bidder withdraws his Bid during the period of bid validity specified in the Bidding Documents; or

2) if the Bidder does not accept the correction of arithmetical errors of his bid price in accordance with the Instructions to Bidder; or

3) if the Bidder, having determined as the LCB, fails or refuses to submit the required tax clearance, latest income and business tax returns and PhilGEPs registration certificate within the prescribed period; or

4) if the Bidder having been notified of the acceptance of his bid and award of contract to him by the Entity during the period of bid validity:

   d) fails or refuses to execute the Contract; or

   e) fails or refuses to submit the required valid JVA, if applicable; or

   f) fails or refuses to furnish the Performance Security in accordance with the Instructions to Bidders;

then this obligation shall remain in full force and effect, otherwise it shall be null and void.

PROVIDED HOWEVER, that the Surety shall not be:

a) liable for a greater sum than the specified penalty of this bond, nor

b) liable for a greater sum that the difference between the amount of the said Principal's Bid and the amount of the Bid that is accepted by the Employer.

Standard Form No: NPCSF-INFR-06c

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

BID-SECURING DECLARATION
RENOVATION OF POWERHOUSE AND FACILITIES IMPROVEMENT FOR BATAN DPP (LuzP21Z1350Sr)

To: **National Power Corporation**
BIR Road cor. Quezon Ave.
Diliman, Quezon City

I/We[1], the undersigned, declare that:

1. *I/We* understand that, according to your conditions, bids must be supported by a Bid Security, which may be in the form of a Bid-Securing Declaration.
2. *I/We* accept that: (a) *I/we* will be automatically disqualified from bidding for any contract with any procuring entity for a period of two (2) years upon receipt of your Blacklisting Order; and, (b) *I/we* will pay the applicable fine provided under Section 6 of the Guidelines on the Use of Bid Securing Declaration, within fifteen (15) days from receipt of the written demand by the Procuring Entity for the commission of acts resulting to the enforcement of the Bid Securing Declaration under Sections 23.1 (b), 34.2, 40.1 and 69.1, except 69.1 (f) of the IRR of R.A. 9184; without prejudice to other legal action the government may undertake.
3. *I/We* understand that this Bid-Securing Declaration shall cease to be valid on the following circumstances:
   (a) Upon expiration of the bid validity period, or any extension thereof pursuant to your request;
   (b) *I am/we are* declared ineligible or post-disqualified upon receipt of your notice to such effect, and (i) *I/we* failed to timely file a request for reconsideration or (ii) *I/we* filed a waiver to avail of said right;
   (c) *I am/we are* declared as the bidder with the Lowest Calculated and Responsive Bid, and *I/we* have furnished the performance security and signed the Contract.

IN WITNESS WHEREOF, *I/we* have hereunto set my hand this ____ day of ____ 20____ at _____, Philippines.

_____
[Name and Signature of Bidder's Representative/ Authorized Signatory] [Signatory's legal capacity]
Affiant

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

[1] *Select one and delete the other. Adopt same instruction for similar terms throughout the document.*

Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

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

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

8. *[Name of Bidder]* is aware of and has undertaken the responsibilities as a Bidder in compliance with the Philippine Bidding Documents, which includes:

   a. Carefully examining all of the Bidding Documents;

   b. Acknowledging all conditions, local or otherwise, affecting the implementation of the Contract;

   c. Making an estimate of the facilities available and needed for the contract to be bid, if any; and

   d. Inquiring or securing Supplemental/Bid Bulletin(s) issued for the *[Name of the Project]*.

9. *[Name of Bidder]* did not give or pay directly or indirectly, any commission, amount, fee, or any form of consideration, pecuniary or otherwise, to any person or official, personnel or representative of the government in relation to any procurement project or activity.

10. In case advance payment was made or given, failure to perform or deliver any of the obligations and undertakings in the contract shall be sufficient grounds to constitute criminal liability for Swindling (Estafa) or the commission of fraud with unfaithfulness or abuse of confidence through misappropriating or converting any payment received by a person or entity under an obligation involving the duty to deliver certain goods or services, to the prejudice of the public and the government of the Philippines pursuant to Article 315 of Act No. 3815 s. 1930, as amended, or the Revised Penal Code.

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

[Insert NAME OF BIDDER OR ITS AUTHORIZED REPRESENTATIVE]
[Insert signatory's legal capacity]
Affiant

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

Standard Form No: NPCSF-INFR-07

Omnibus Sworn Statement (Revised)

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

AFFIDAVIT

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

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

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

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

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

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

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

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

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

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

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

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

   [If a partnership or cooperative:] None of the officers and members of *[Name of Bidder]* is related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project

Standard Form Number: NPCSF-INFR-08

CONTRACTOR'S ORGANIZATIONAL CHART FOR THE CONTRACT

Submit Copy of the Organizational Chart that the Contractor intends to use to execute the Contract if awarded to him. Indicate in the chart the names of the Project Manager, Project Engineer, Foreman and other Key Engineering Personnel.

Attach the required Proposed Organizational Chart for the Contract as stated above

NOTES:

1. *This organization chart should represent the "Contractor's Organization" required for the Project, and not the organizational chart of the entire firm.*
2. *Each such nominated engineer/key personnel shall comply with and submit duly accomplished forms NPCSF-INFR-10a, NPCSF-INFR-10b and NPCSF-INFR-11.*
3. *All these are required to be in the Technical Envelope of the Bidder.*

Standard Form Number: NPCSF-INFR-09

LIST OF KEY PERSONNEL PROPOSED TO BE ASSIGNED TO THE CONTRACT

(Based on the Minimum Key Personnel Required in the Bidding Documents)

Business Name: _____

Business: _____

_____

		DESIGNATION				
1	Name					
2	Address					
3	Date of Birth					
4	Employed Since					
5	Experience					
6	Previous Employment					
7	Education					
8	PRC License					

Required Attachments:

1. *Certificate of Employment, Bio Data and Construction Safety and Health Training Certificate of the Safety Officer*
2. *Certificate of Employment, Bio Data and valid PRC License of the (professional) personnel*

Submitted by: _____

(Printed Name & Signature)

Designation: _____

Date: _____

One of the requirements from the bidder to be included in its Technical Envelope is a list of contractor's key personnel (based on the minimum key personnel required in the bidding documents) to be assigned to the contract to be bid, with their complete qualification and experience data (including the key personnel's signed written commitment to work for the project once awarded the contract).

Standard Form Number: NPCSF-INFR-10a

KEY PERSONNEL'S CERTIFICATE OF EMPLOYMENT
(PROFESSIONAL PERSONNEL)

_____
Issuance Date

THE PRESIDENT
National Power Corporation
BIR Road cor. Quezon Ave.
Diliman, Quezon City

Dear Sir:

I am *(Name of Nominee)*_____ a Licensed _____ Engineer with Professional License No. _____ issued on *(date of issuance)*_____ at *(place of issuance)*_____.

I hereby certify that *(Name of Bidder)*_____ has engaged my services as *(Designation)*_____ for the *(Name of Project)*_____, if awarded to it.

As *(Designation)*_____, I supervised the following completed projects similar to the contract under bidding:

NAME OF PROJECT	OWNER	COST	DATE COMPLETED

At present, I am supervising the following projects:

NAME OF PROJECT	OWNER	COST	DATE COMPLETED

In case of my separation for any reason whatsoever from the above-mentioned Contractor, I shall notify the National Power Corporation at least twenty one (21) days before the effective date of my separation.

As *(Designation)*_____, I know I will have to stay in the job site all the time to supervise and manage the Contract works to the best of my ability, and aware that I am authorized to handle only one (1) contract at a time.

I do not allow the use of my name for the purpose of enabling the above-mentioned Contractor to qualify for the Contract without any firm commitment on my part to assume the post of *(Designation)*_____ therefor, if the contract is awarded to him since I understand that to do so will be a sufficient ground for my disqualification as *(Designation)*_____ in any future National Power Corporation bidding or employment with any Contractor doing business with the National Power Corporation.

_____
(Name and Signature)
AFFIANT

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

One of the requirements from the bidder to be included in its Technical Envelope is a list of contractor's key personnel (viz. Project Manager, Project Engineer, Construction Safety Officer, Foremen, etc), to be assigned to the contract to be bid, with their complete qualification and experience data (including the key personnel's signed written commitment to work for the project once awarded the contract).

Standard Form Number: NPCSF-INFR-10b

KEY PERSONNEL'S CERTIFICATE OF EMPLOYMENT
(CONSTRUCTION SAFETY AND HEALTH OFFICER)

_____
Issuance Date

THE PRESIDENT
National Power Corporation
BIR Road cor. Quezon Ave.
Diliman, Quezon City

Dear Sir:

I am *(Name of Nominee)* _____ an Construction Safety & Health Officer with Certificate No. _____ issued on *(date of issuance)* _____ at *(place of issuance)* _____.

I hereby certify that *(Name of Bidder)* _____ has engaged my services as Construction Safety & Health Officer for the *(Name of Project)* _____, if awarded to it.

I am the Construction Safety & Health Officer of the following completed projects similar to the contract under bidding:

NAME OF PROJECT	OWNER	COST	DATE COMPLETED

At present, I am the Construction Safety & Health Officer of the following projects:

NAME OF PROJECT	OWNER	COST	DATE COMPLETED

In case of my separation for any reason whatsoever from the above-mentioned Contractor, I shall notify the National Power Corporation at least twenty one (21) days before the effective date of my separation.

As Construction Safety & Health Officer, I know I will have to stay in the job site all the time and aware that I am authorized to handle only one (1) contract at a time.

I do not allow the use of my name for the purpose of enabling the above-mentioned Contractor to qualify for the Contract without any firm commitment on my part to assume the post of Construction Safety & Health Officer, if the contract is awarded to him since I understand that to do so will be a sufficient ground for my disqualification as Construction Safety & Health Officer in any future National Power Corporation bidding or employment with any Contractor doing business with the National Power Corporation.

_____
(Name and Signature)
AFFIANT

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

One of the requirements from the bidder to be included in its Technical Envelope is a list of contractor's key personnel (viz. Project Manager, Project Engineer, Construction Safety Officer, Foremen, etc), to be assigned to the contract to be bid, with their complete qualification and experience data (including the key personnel's signed written commitment to work for the project once awarded the contract).

Standard Form Number: NPCSF-INFR-11

KEY PERSONNEL
(FORMAT OF BIO-DATA)

Give the detailed information of the following personnel who are scheduled to be assigned as full-time field staff for the project. Fill up a form for each person.

1. Name : _____
2. Date of Birth : _____
3. Nationality : _____
4. Education and Degrees : _____
5. Specialty : _____
6. Registration : _____
7. Length of Service with the Firm : _____ Year from _____ (months) _____ (year)
   To _____ (months) _____ (year)
8. Years of Experience : _____
9. If Item 7 is less than ten (10) years, give name and length of service with previous employers for a ten (10)-year period (attached additional sheet/s), if necessary:

Name and Address of Employer	Length of Service
_____	_____ year(s) from _____ to _____
_____	_____ year(s) from _____ to _____
_____	_____ year(s) from _____ to _____

10. Experience:

    This should cover the past ten (10) years of experience. (Attached as many pages as necessary to show involvement of personnel in projects using the format below).

One of the requirements from the bidder to be included in its Technical Envelope is a list of contractor's key personnel (viz. Project Manager, Project Engineer, Construction Safety Officer, Foremen, etc), to be assigned to the contract to be bid, with their complete qualification and experience data (including the key personnel's signed written commitment to work for the project once awarded the contract).

1. Name : _____

2. Name and Address of Owner : _____

3. Name and Address of the Owner's Engineer (Consultant) : _____

4. Indicate the Features of Project (particulars of the project components and any other particular interest connected with the project): _____

5. Contract Amount Expressed in Philippine Currency : _____

6. Position : _____

7. Structures for which the employee was responsible : _____

8. Assignment Period : from _____ (months) _____ (years)
: to _____ (months) _____ (years)

_____
Name and Signature of Employee

It is hereby certified that the above personnel can be assigned to this project, if the contract is awarded to our company.

_____ _____
(Place and Date) (The Authorized Representative)

One of the requirements from the bidder to be included in its Technical Envelope is a list of contractor's key personnel (viz. Project Manager, Project Engineer, Construction Safety Officer, Foremen, etc), to be assigned to the contract to be bid, with their complete qualification and experience data (including the key personnel's signed written commitment to work for the project once awarded the contract).

Standard Form Number: NPCSF-INFR-12

LIST OF EQUIPMENT, OWNED OR LEASED AND/OR UNDER PURCHASE AGREEMENTS

(Based on the Minimum Equipment Required in the Bidding Documents)

Business Name: _____

Business: _____

_____

Description	Model/Year	Capacity / Performance / Size	Plate No.	Motor No. / Body No.	Location	Condition	Proof of Ownership / Lessor or Vendor
A. Owned							
i.							
ii.							
iii.							
iv.							
v.							
B. Leased							
i.							
ii.							
iii.							
iv.							
v.							
C. Under Purchase Agreements							
i.							
ii.							
iii.							
iv.							
v.							

Submitted by: _____

(Printed Name & Signature)

Designation: _____

Date: _____

One of the requirements from the bidder to be included in its Technical Envelope is the list of its equipment units pledged for the contract to be bid, based on minimum equipment required in the bidding docs. which are owned (supported by proof/s of ownership), leased, and/or under purchase agreements (with corresponding engine numbers, chassis numbers and/or serial numbers), supported by certification of availability of equipment from the equipment lessor/vendor for the duration of the project

Standard Form No. : NPCSF-INFR-13

BID LETTER

Date: _____

To: **THE PRESIDENT**
National Power Corporation
BIR Road cor. Quezon Ave.
Diliman, Quezon City

We, the undersigned, declare that:

(a) We have examined and have no reservation to the Bidding Documents, including Addenda, for the Contract **RENOVATION OF POWERHOUSE AND FACILITIES IMPROVEMENT FOR BATAN DPP (LuzP21Z1350Sr)**.

(b) We offer to execute the Works for this Contract in accordance with the Bid Documents, Technical Specifications, General and Special Conditions of Contract accompanying this Bid;

The total price of our Bid, excluding any discounts offered below is: *[insert information]* _____;

The discounts offered and the methodology for their application are: *[insert information]* _____;

(c) Our Bid shall be valid for a period of *[insert number]* _____ days from the date fixed for the Bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

(d) If our Bid is accepted, we commit to obtain a Performance Security in the amount of *[insert percentage amount]* _____ percent of the Contract Price for the due performance of the Contract;

(e) Our firm, including any subcontractors or suppliers for any part of the Contract, have nationalities from the following eligible countries: *[insert information]* _____;

(f) We are not participating, as Bidders, in more than one Bid in this bidding process, other than alternative offers in accordance with the Bidding Documents;

(g) Our firm, its affiliates or subsidiaries, including any subcontractors or suppliers for any part of the Contract, has not been declared ineligible by the Funding Source;

(h) We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal Contract is prepared and executed; and

(i) We understand that you are not bound to accept the Lowest Calculated Bid or any other Bid that you may receive.

(j) We likewise certify/confirm that the undersigned, is the duly authorized representative of the bidder, and granted full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and

execute the ensuing contract for the **RENOVATION OF POWERHOUSE AND FACILITIES IMPROVEMENT FOR BATAN DPP (LuzP21Z1350Sr)** of the National Power Corporation.

(k) We acknowledge that failure to sign each and every page of this Bid Letter, including the Bill of Quantities, shall be a ground for the rejection of our bid.

Name: _____

In the capacity of: _____

Signed: _____

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

Date: _____

Standard Form No. : NPCSF-INFR-14

DETAILED COST ESTIMATE FORM

Name of Bidder : _____

Item No.	Item Description	Unit of Measure	Direct Cost			Mark-Up		VAT	Unit Cost	Total Price
			Materials	Labor	Equipment	OCM	Profit			

Name, Signature of Authorized Representative

Designation

Standard Form No. : NPCSF-INFR-15

SUMMARY SHEETS OF MATERIALS PRICES, LABOR RATES AND EQUIPMENT RENTAL RATES

Name of Bidder : _____

I. Unit Prices of Materials

Materials Description	Unit	Unit Price
1.		
2.		
3.		
4.		
5.		
6.		
7.		

II. Manpower Hourly Rates

Designation	Rate/Hr.
1.	
2.	
3.	
4.	
5.	
6.	
7.	

III. Equipment Hourly Rental Rates

Equipment Description	Rental Rate/Hr.
1.	
2.	
3.	
4.	
5.	
6.	
7.	

Name, Signature of Authorized Representative

Designation

SECTION IX

BID DRAWINGS

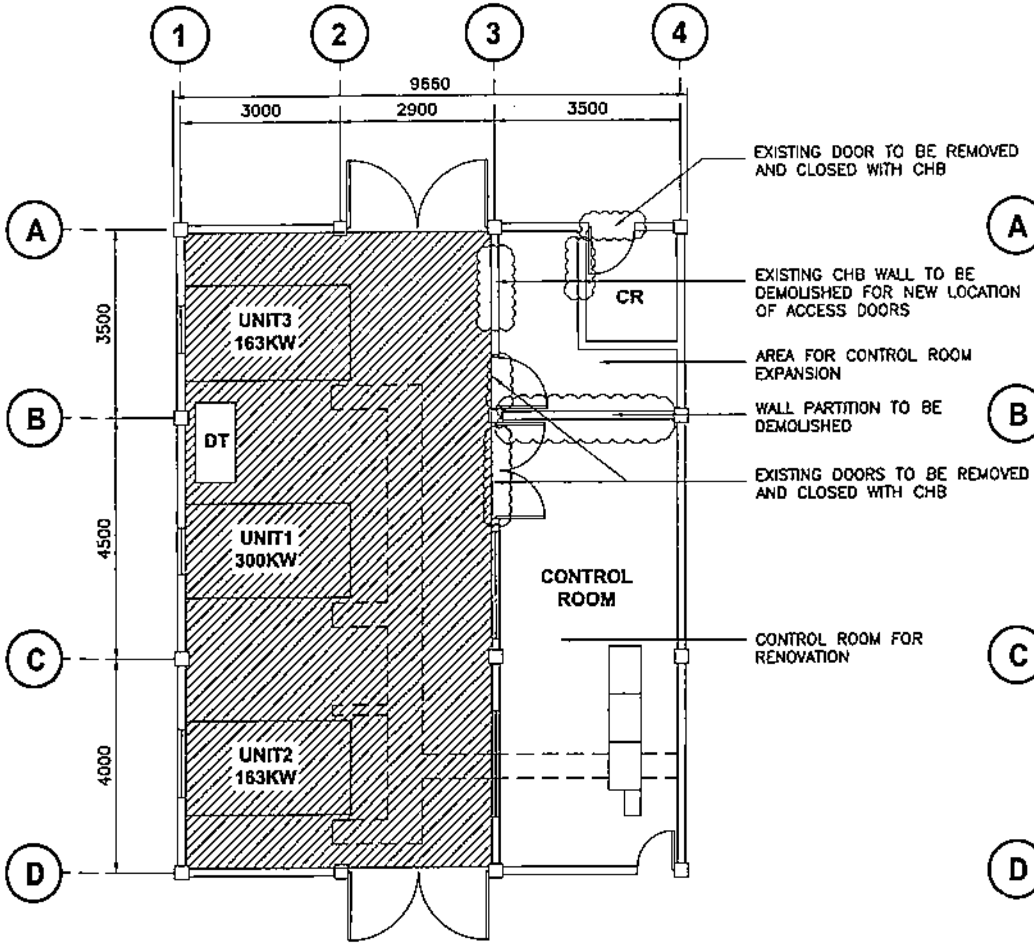
SECTION IX

BID DRAWINGS FOR ARCHITECTURAL WORKS

SECTION IX – BID DRAWINGS

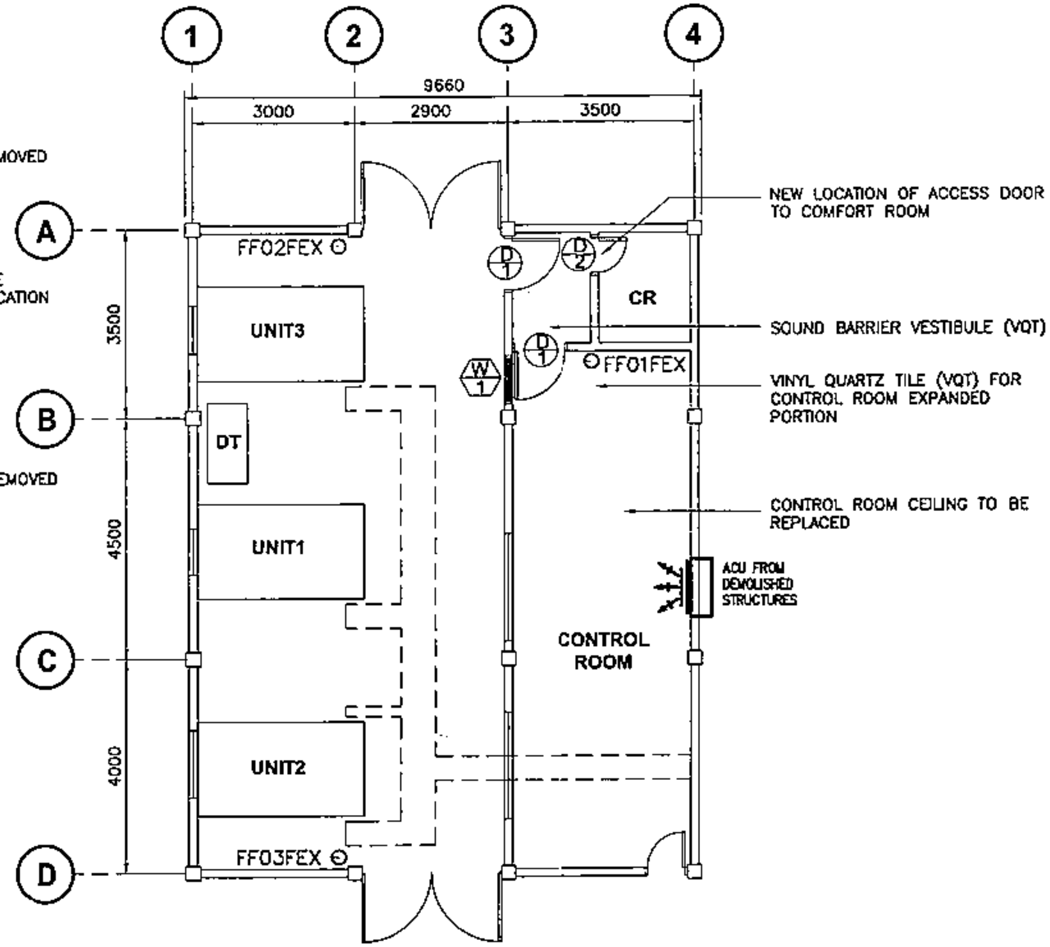
AW – ARCHITECTURAL DRAWINGS

DRAWING NO.	TITLE
BtnDPP-BDA-17.001	EXISTING & PROPOSED FLOOR PLAN
BtnDPP-BDA-17.002	ROOF & REFLECTED CEILING PLAN
BtnDPP-BDA-17.003	FRONT & REAR ELEVATIONS
BtnDPP-BDA-17.004	LEFT & RIGHT ELEVATIONS
BtnDPP-BDA-17.005	SCHEDULE OF DOORS & WINDOWS
BtnDPP-BDA-17.006	EXISTING POWERHOUSE ELEVATIONS



EXISTING FLOOR PLAN

SCALE 1:100



PROPOSED FLOOR PLAN

SCALE 1:100

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED
2. FLOOR HARDENER SHALL BE APPLIED WITHIN THE ENGINE AREA.
3. EXISTING DOOR AND WINDOWS OF THE CONTROL ROOM SHALL BE REPLACED WITH SOUNDPROOF DOOR AND WINDOWS.
4. FINAL LOCATION OF THE AIR-CONDITIONING UNIT FOR RELOCATION SHOULD BE VERIFIED AT THE SITE TO SUIT ACTUAL FIELD CONDITIONS.
5. CEILING OF CONTROL ROOM AND CR SHALL BE REPLACED.

REV.	DATE	NATURE OF REVISION	BY	CHKD.	RECD.	APPD.

OWNER: NATIONAL POWER CORPORATION
AGHAM ROAD, DELIMAN QUEZON CITY

PROJECT: RENOVATION OF POWERHOUSE AND FACILITIES IMPROVEMENT FOR BATAN DPP

LOCATION: Brgy. Batan, Rapu-Rapu, Albay

TITLE: EXISTING & PROPOSED FLOOR PLAN

	BY	CHKD	DATE
DESIGNED			
DRAWN	Fryst		
REVIEWED	PRINCIPAL ENGR. / ARCHT.		
CIVIL/ARCHT			
ELEC.			
MECH.			

SUBMITTED: R.R. R. VILLANUEVA, Principal Architect

RECOMMENDED: A. C. ESPIRITU, Manager

APPROVED: N. G. [illegible], Manager, DDD

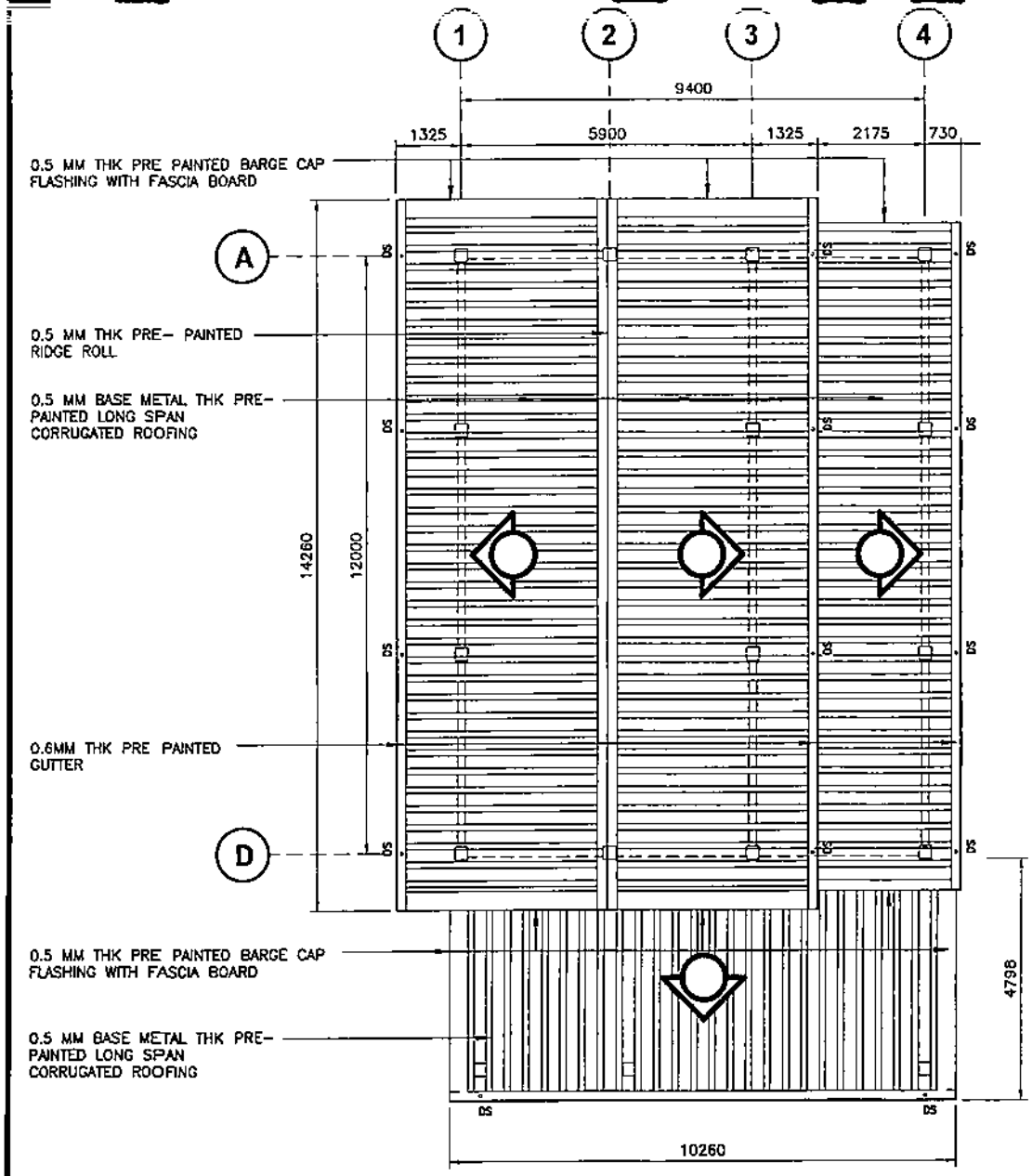
DWG. NO. BtnDPP-BDA-17.001

SPECS. NO. LuzP21Z1350Sr

SCALE: AS SHOWN

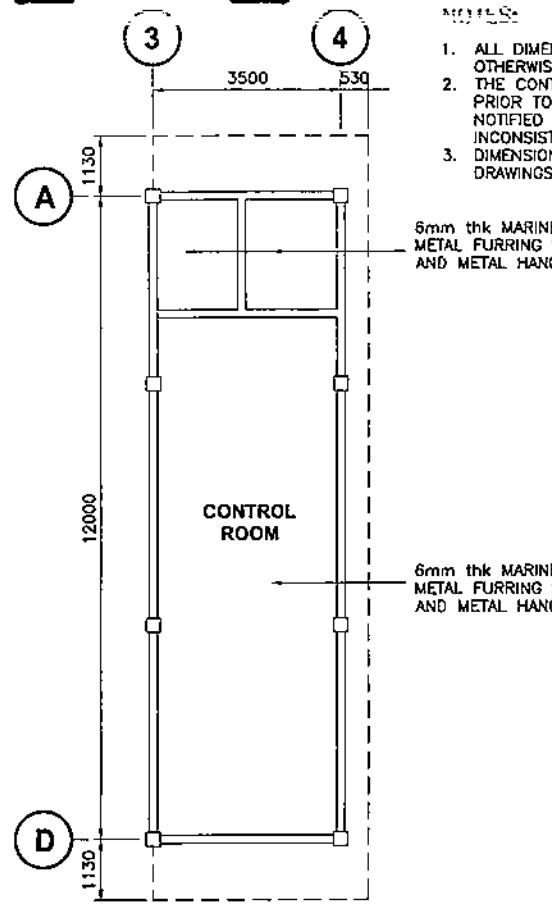
BID DRAWING

REV. 0



ROOF PLAN

SCALE 1:100



REFLECTED CEILING PLAN

SCALE 1:100

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION. THE NPC SHALL BE NOTIFIED OF ANY DISCREPANCIES OR INCONSISTENCIES.
3. DIMENSION SHALL TAKE PRECEDENCE OVER SCALED DRAWINGS.

OWNER: NATIONAL POWER CORPORATION
AGHAM ROAD, DILIMAN, QUEZON CITY

PROJECT: RENOVATION OF POWERHOUSE AND FACILITIES IMPROVEMENT FOR BATAN DPP

LOCATION: Brgy. Batan, Rapu-Rapu, Albay

TITLE: ROOF & REFLECTED CEILING PLAN

	BY	CHKD	DATE
DESIGNED			
DRAWN			
REVIEWED	PRINCIPAL ENGR./ARCHT.		
CIVIL/ARCHT			
ELEC.			
MECH.			

SUBMITTED: R.R. R. VILLANUEVA, Principal Architect A

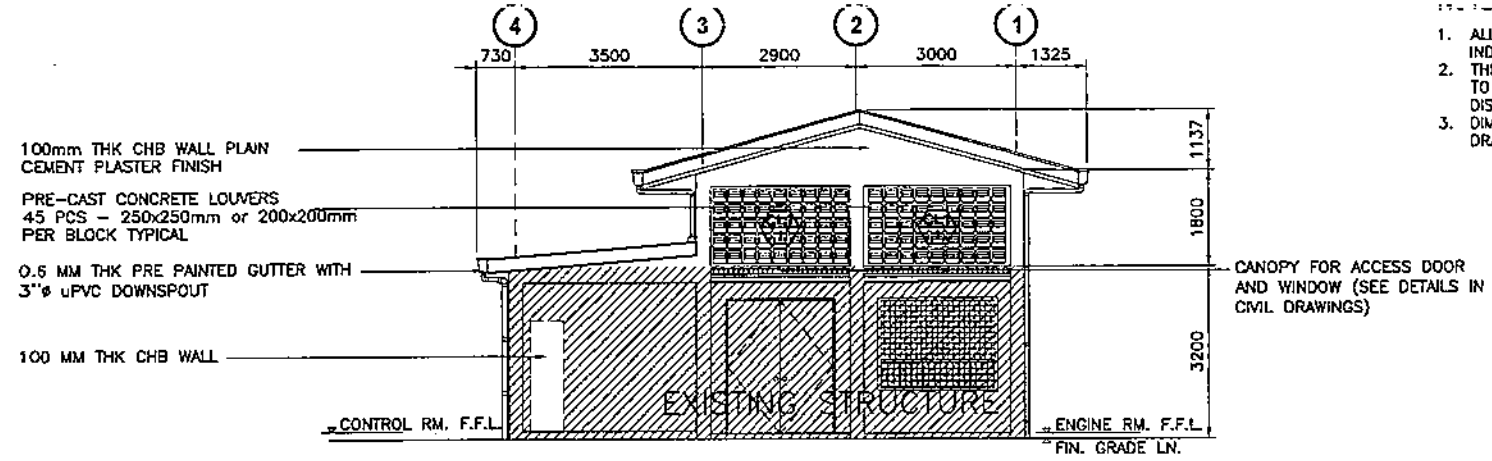
RECOMMENDED: A.C. ESPIRITU, Manager, RAD

APPROVED: N. G. SERRANO, JR., Manager, DDO

DWG NO. BtnDPP-BDA-17.002 SPECS NO. LuzP21Z1350Sr

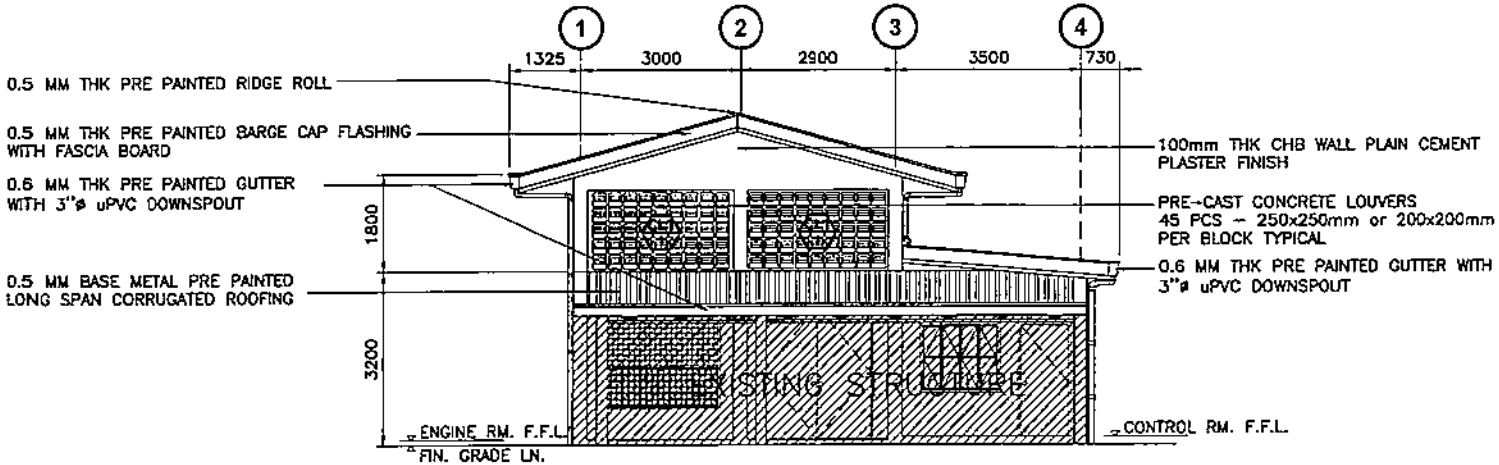
SCALE: AS SHOWN BID DRAWING REV. 0

REV.	DATE	NATURE OF REVISION	BY	CHKD.	RECD.	APPD.



REAR ELEVATION

SCALE 1:100



FRONT ELEVATION

SCALE 1:100

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION. THE NPC SHALL BE NOTIFIED OF ANY DISCREPANCIES OR INCONSISTENCIES.
3. DIMENSION SHALL TAKE PRECEDENCE OVER SCALED DRAWINGS.

OWNER: NATIONAL POWER CORPORATION
AGHAM ROAD, DILIMAN, QUEZON CITY

PROJECT: RENOVATION OF POWERHOUSE AND FACILITIES IMPROVEMENT FOR SATAN DPP

LOCATION: Brgy. Satan, Raps-Raps, Alday

TITLE: FRONT & REAR ELEVATIONS

	BY	CHKD	DATE
DESIGNED			
DRAWN			
REVIEWED	PRINCIPAL ENGR. / ARCHT.		
CIVIL/ARCHT			
ELEC.			
MECH.			

SUBMITTED: R.R. R. VILLANUEVA, Principal Architect

RECOMMENDED: A. C. BERNTU, Manager, DDD

APPROVED: N. G. SUMOBIERRA, Manager, DDD

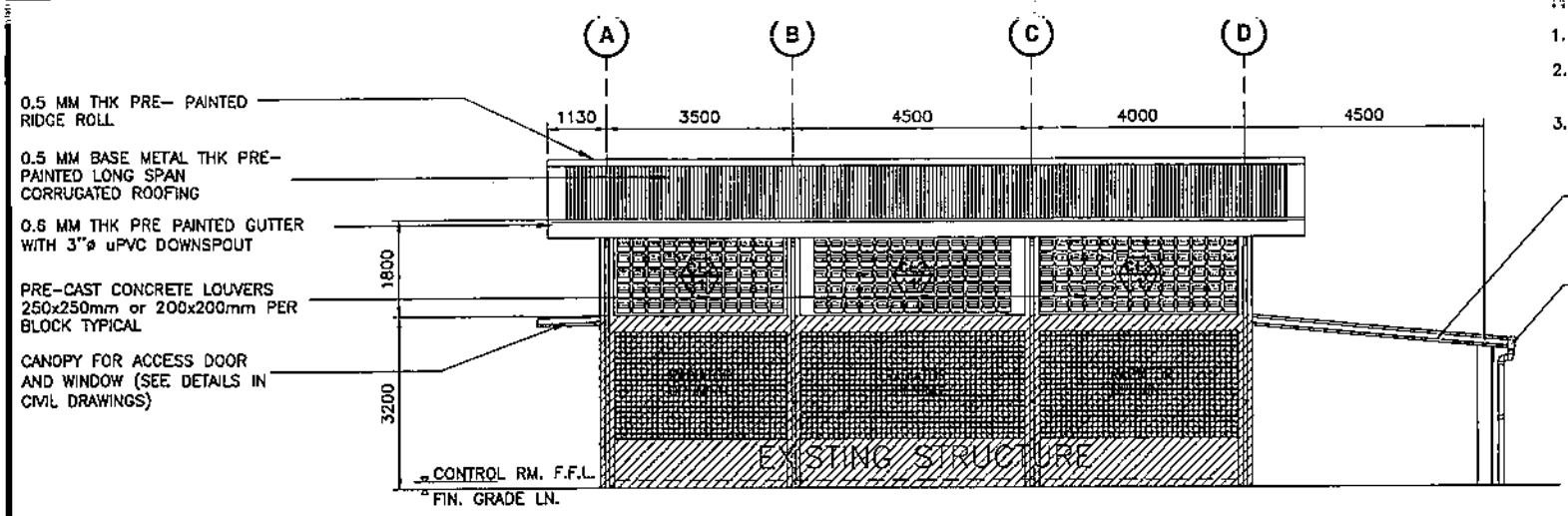
DWG. NO. BtnDPP-BDA-17.003 SPECS. NO. LuzP21Z1350Sr

SCALE: AS SHOWN BID DRAWING REV. 0

REV.	DATE	NATURE OF REVISION	BY	CHKD.	RECD.	APPD.

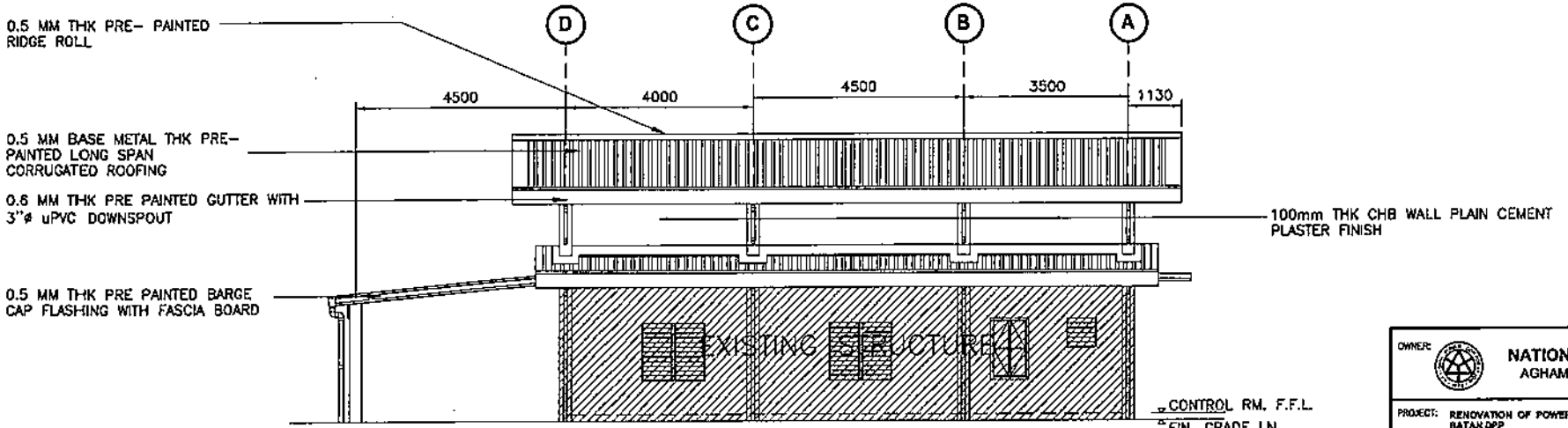
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION. THE NPC SHALL BE NOTIFIED OF ANY DISCREPANCIES OR INCONSISTENCIES.
3. DIMENSION SHALL TAKE PRECEDENCE OVER SCALED DRAWINGS.



LEFT ELEVATION

SCALE 1:100



RIGHT ELEVATION

SCALE 1:100

OWNER: NATIONAL POWER CORPORATION
AGHAM ROAD, DILIMAN, QUEZON CITY

PROJECT: RENOVATION OF POWERHOUSE AND FACILITIES IMPROVEMENT FOR BATAN DPP

LOCATION: Brgy. Baian, Rapu-Rapu, Albay

TITLE: LEFT & RIGHT ELEVATIONS

	BY	CHKD	DATE
DESIGNED			
DRAWN			
REVIEWED	PRINCIPAL ENGR./ARCHT.		
CIVIL/ARCHT			
ELEC.			
MECH.			

SUBMITTED: R.R.R. VILLANUEVA, Principal Architect

RECOMMENDED: A.C. BERRITU, Unit Head

APPROVED: N. G. SORIANO, Manager, DDO

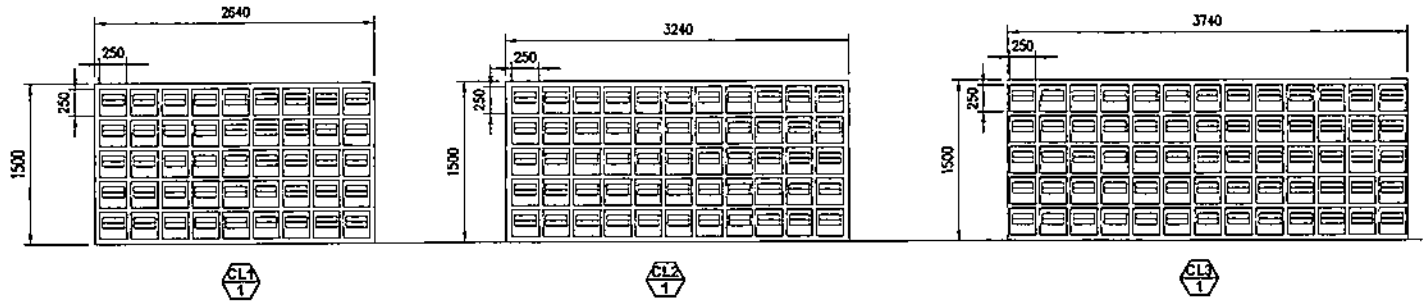
DWG. NO. BtnDPP-BDA-17.004 SPECS. NO. LuzP21Z1350Sr

SCALE: AS SHOWN BID DRAWING REV. 0

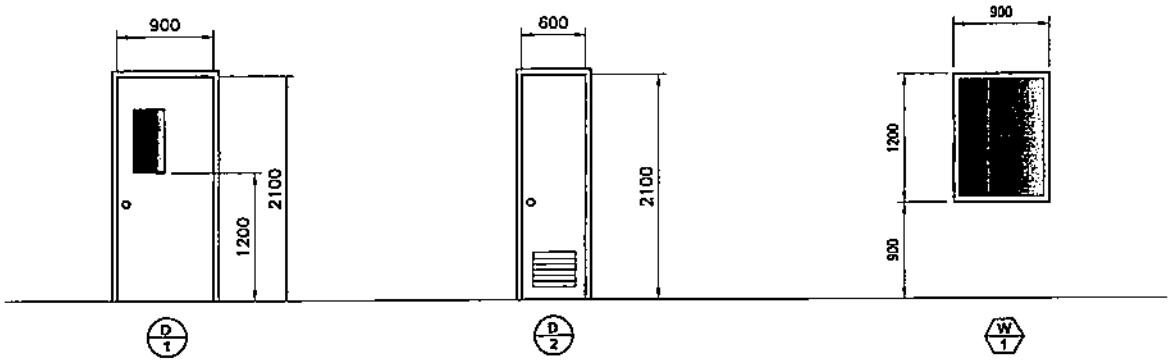
REV.	DATE	NATURE OF REVISION	BY	CHKD.	RECO.	APPD.

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERES UNLESS OTHERWISE INDICATED.



- CONCRETE LOUVER BLOCK 45-PCS 250x250mm OR 200x200mm PRE-CAST CONCRETE
- CONCRETE LOUVER BLOCK 55-PCS 250x250mm OR 200x200mm PRE-CAST CONCRETE
- CONCRETE LOUVER BLOCK 65-PCS 250x250mm OR 200x200mm PRE-CAST CONCRETE



- FLUSH TYPE WOOD DOOR
- MARINE PLYWOOD BOTH SIDES
- 2x5" HARD WOOD JAMB
- 3 PIECES OF HEAVY DUTY LOOSE PIN HINGES
- ONE SET DOOR KNOB
- GLAZED LACQUER PAINT FINISH ON DOOR AND JAMB
- 6MM THK. 300X600MM CLEAR GLASS
- HEAVY DUTY MECHANISM
- TWO (2) SETS

- FLUSH TYPE MARINE PLYWOOD
- 2x5" HARD WOOD JAMB
- 3 PIECES OF HEAVY DUTY LOOSE PIN HINGES
- ONE SET DOOR KNOB
- GLAZED LACQUER PAINT FINISH ON DOOR AND JAMB
- FIXED WOOD LOUVER
- ONE (1) SET

- GLASS & ALUMINUM FIXED WINDOW
- 6MM THK CLEAR GLASS
- 20 X 20 MM SQUARE ALUMINUM GLAZING BEAD
- 50X100MM ANODIZED ALUMINUM FRAME SILICON SEALANT SOUND PROOFING
- ONE (1) SET

SCHEDULE OF DOORS AND WINDOWS

SCALE 1:50

REV.	DATE	NATURE OF REVISION	BY	CHKD.	RECD.	APPD.

OWNER: NATIONAL POWER CORPORATION
AGHAM ROAD, DELIMAN QUEZON CITY

PROJECT: RENOVATION OF POWERHOUSE AND FACILITIES IMPROVEMENT FOR BATAN DPP

LOCATION: Brgy. Batan, Rapu-Rapu, Albay

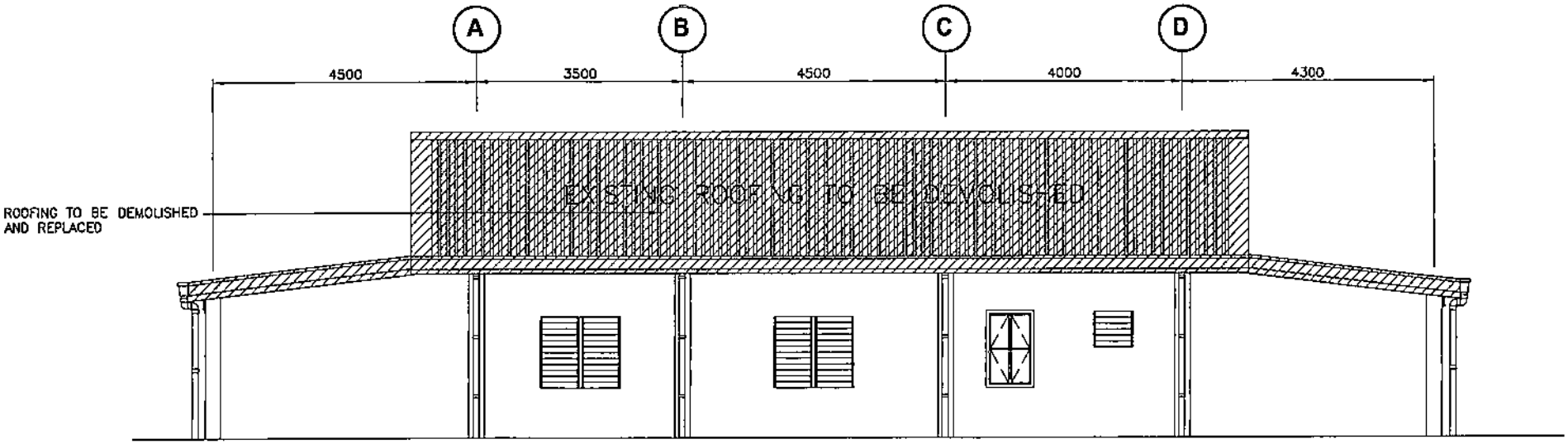
TITLE: SCHEDULE OF DOORS AND WINDOWS

	BY	CHKD	DATE
DESIGNED			
DRAWN	FYST		
REVIEWED	PRINCIPAL ENGR. / ARCHT.		
CIVIL/ARCHT			
ELEC.			
MECH.			

SUBMITTED: R.R. R. VILLANUEVA, Project Architect
RECOMMENDED: A. O. ESPIRITU, Section Head
APPROVED: N. G. CRISOSTOMO, Manager, DDO

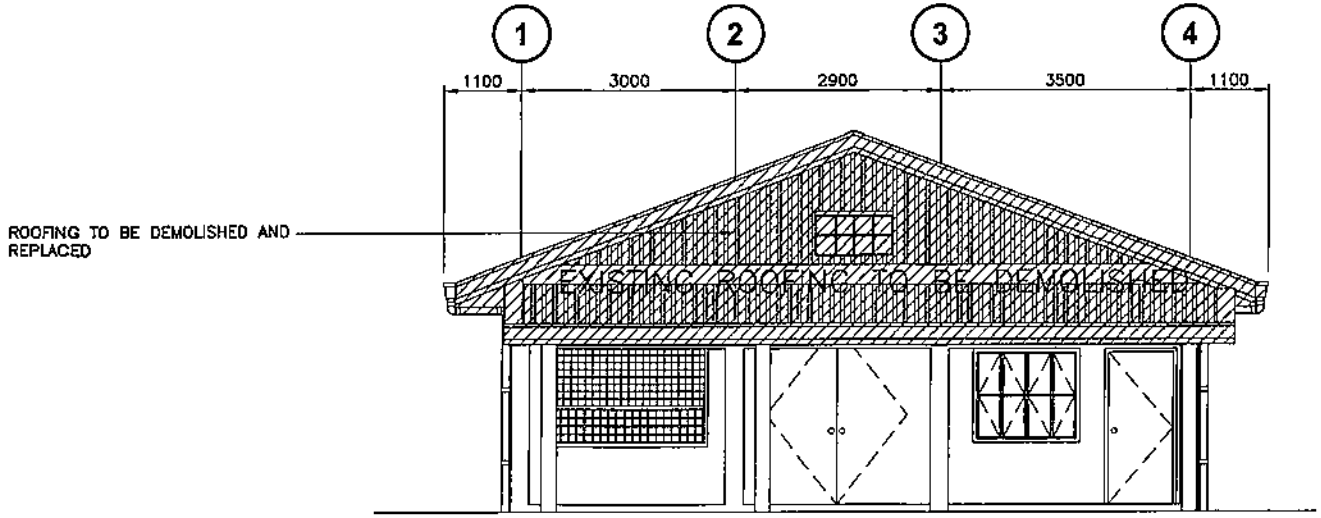
DWG NO. BtnDPP-BDA-17.005 | SPECS. NO. LuzP21Z13S0S1

SCALE: AS SHOWN | BID DRAWING | REV. 0



RIGHT SIDE ELEVATION

SCALE 1:75



FRONT ELEVATION

SCALE 1:75

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED

OWNER: **NATIONAL POWER CORPORATION**
AGHAM ROAD, DILIMAN, QUEZON CITY

PROJECT: RENOVATION OF POWERHOUSE AND FACILITY IMPROVEMENT FOR BATAN OPP

LOCATION: Brgy. Batan, Rapu-Rapu, Albay

TITLE: **EXISTING POWERHOUSE ELEVATIONS**

	BY	CHKD	DATE
DESIGNED			
DRAWN			
REVIEWED	PRINCIPAL ENGR./ARCHT.		
CIVIL/ARCHT			
ELEC.			
MECH.			

SUBMITTED: R.R.R. VILLANUEVA, Principal Architect A

RECOMMENDED: A.C. ESPIRITU, Manager, DBAD

APPROVED: N. G. SOMBILLERA, Manager, DDO

DWG. NO. BinDPP-BDA-17.005 SPECS. NO. LuzP21Z1350Sr

SCALE: 1:75 **BID DRAWING** REV. 0

REV.	DATE	NATURE OF REVISION	BY	CHKD.	RECD.	APPD.

SECTION IX

BID DRAWINGS FOR CIVIL WORKS

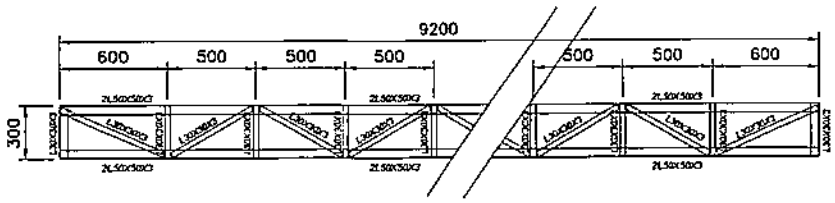
SECTION IX – BID DRAWINGS

CW – CIVIL DRAWINGS

DRAWING NO.	TITLE
BtnDPP-BDC-17.001	ROOF FRAMING PLAN
BtnDPP-BDC-17.002	DETAILS OF TRUSS & TURN BUCKLE
BtnDPP-BDC-17.003	TYPICAL RC BEAM, COLUMN & CANOPY DETAILS

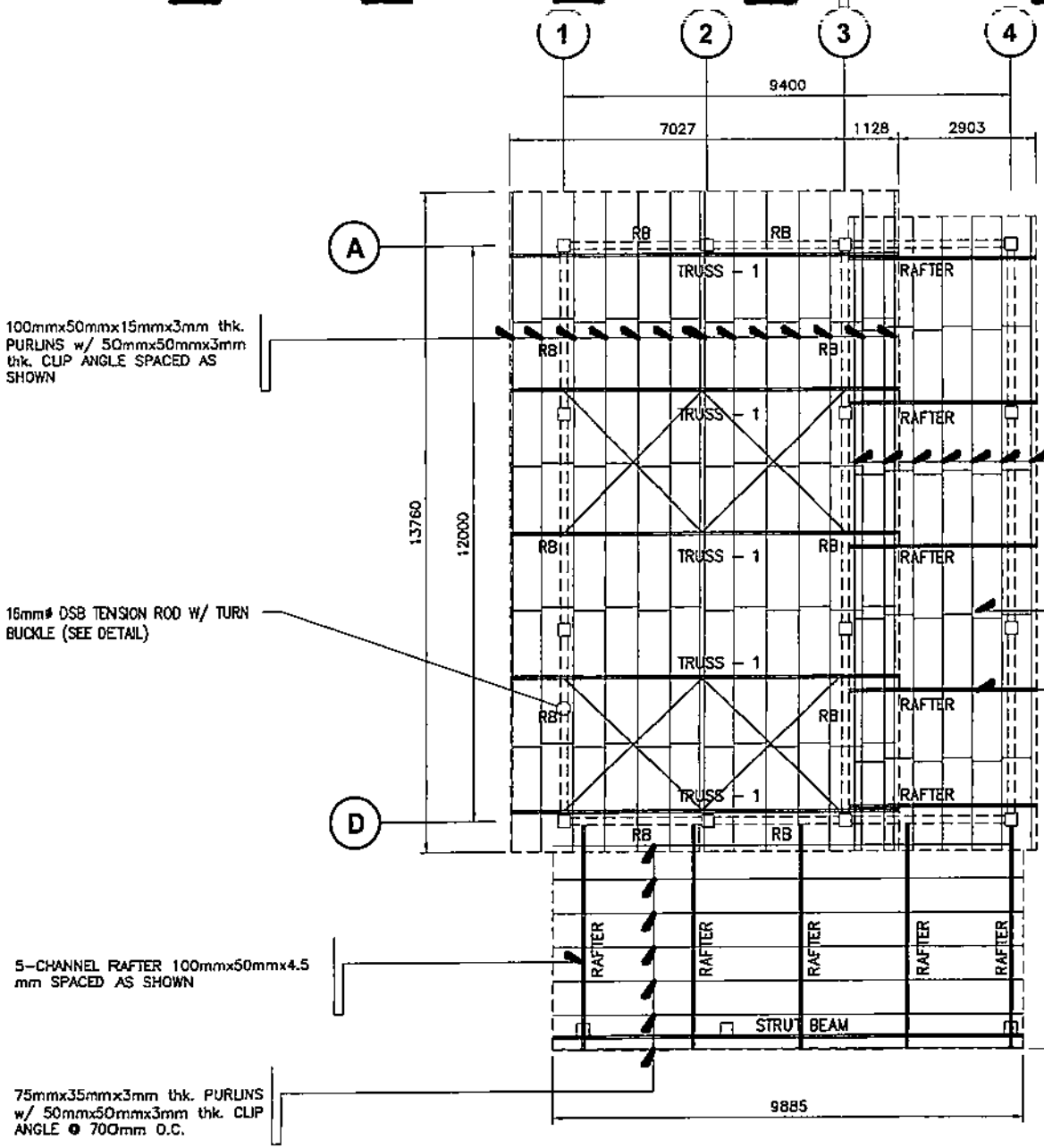
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED



STRUT BEAM DETAILS

SCALE 1:30



ROOF FRAMING PLAN

SCALE 1:100

REV.	DATE	NATURE OF REVISION	BY	CHKD.	RECD.	APPD.

OWNER: NATIONAL POWER CORPORATION
AGHAM ROAD, DILIMAN, QUEZON CITY

PROJECT: RENOVATION OF POWERHOUSE AND FACILITY IMPROVEMENT FOR BATAN DPP

LOCATION: Brgy. Batan, Rapu-Rapu, Albay

TITLE: ROOF FRAMING PLAN

	BY	CHKD	DATE
DESIGNED			
DRAWN			
REVIEWED	PRINCIPAL ENGR. / ARCHT.		
CIVIL/ARCHT			
ELEC.			
MECH.			

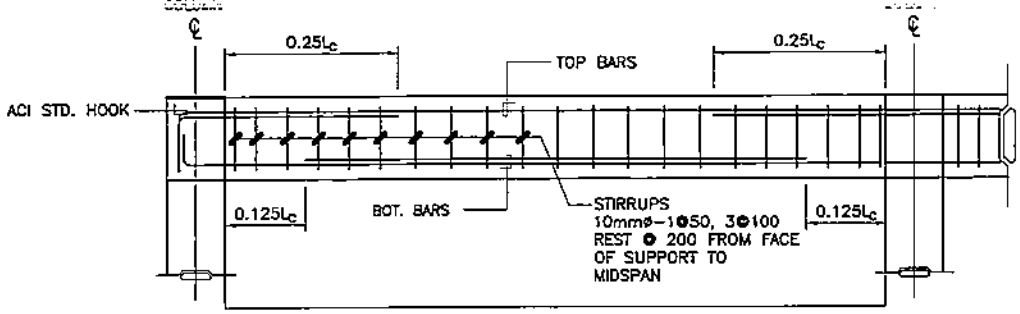
SUBMITTED: H. C. MENDOZA, Principal Engineer A

RECOMMENDED: A.C. ESPIRITU, Unit Head

APPROVED: N. G. SOLIVEREZ, Manager, DDD

DWG. NO. BtnDPP-BDC-17.001 SPECS. NO. LuzP21Z1350Sr

SCALE: AS SHOWN BID DRAWING REV. 0



TYPICAL BEAM DETAILS

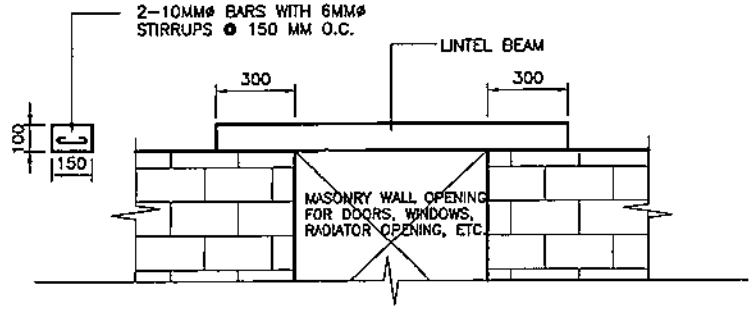
SCALE NTS

SCHEDULE OF REINFORCED CONCRETE BEAM

BEAM MARK	BEAM CROSS SECTION		LONGITUDINAL REINFORCEMENTS			STIRRUPS DIAMETER (mm)	STIRRUPS SPACING
	B	H	LEFT SUPPORT	MIDSPAN	RIGHT SUPPORT		
ROOF BEAM (RB)	250	300	3–12mmø 2–12mmø	2–12mmø 3–12mmø	3–12mmø 2–12mmø	10	1@50, 3@100, REST @ 200 FROM FACE OF SUPPORT TO MIDSPAN

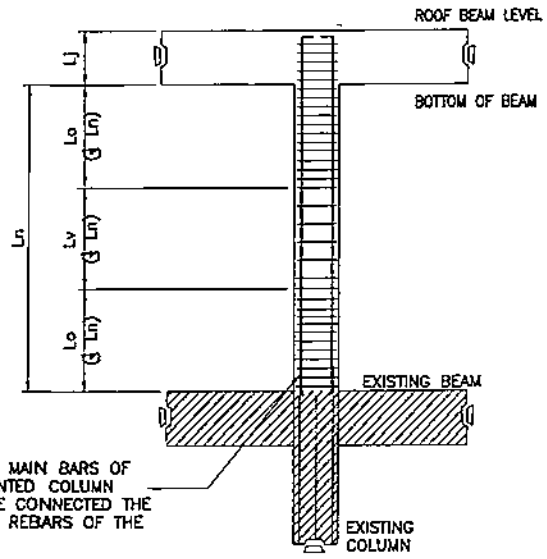
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION. THE NPC SHALL BE NOTIFIED OF ANY DISCREPANCIES OR INCONSISTENCIES.
3. DIMENSION SHALL TAKE PRECEDENCE OVER SCALED DRAWINGS.
4. UNLESS OTHERWISE INDICATED IN THE PLANS OR NOTED IN THE SPECIFICATIONS, THE MINIMUM 28 DAY CYLINDER COMPRESSIVE STRENGTH OF CONCRETE SHALL BE 20.7MPa.
5. UNLESS OTHERWISE INDICATED SPECIFIED IN THE PLANS, THE MINIMUM YIELD STRENGTH OF REINFORCEMENT TO BE USED SHALL BE GRADE 40 (276MPa).
6. ALL REINFORCING STEEL SHALL BE DETAILED AND PLACED IN CONFORMANCE WITH ACI-318.



TYPICAL LINTEL BEAM DETAILS

SCALE NTS

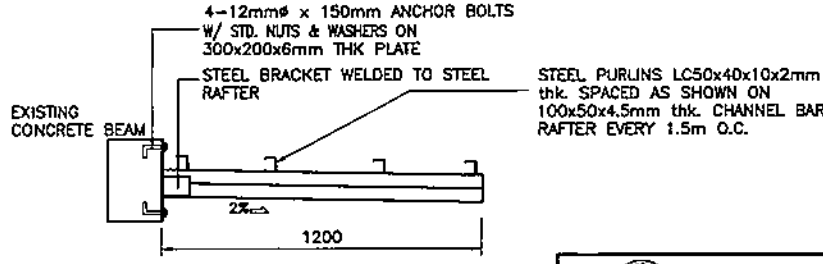


DETAILS OF COLUMN

COLUMN MARK	C1
SIZE,mm	300X300
MAIN BARS	4–15mmø
AT JOINT/EXTRA TIES (Lj)	10mmø @ 100mm
AT CONFINED HEIGHT (Lo)	10mmø, 1@50mm, REST @ 150mm – 2 SETS
AT MIDHEIGHT (Lv)	10mmø @ 200mm – 2 SETS

ELEVATION OF COLUMN

SCALE NTS



CANOPY DETAILS

SCALE 1:20

OWNER: NATIONAL POWER CORPORATION
AGHAM ROAD, DILIMAN QUEZON CITY

PROJECT: RENOVATION OF POWERHOUSE AND FACILITIES IMPROVEMENT FOR BATAN DPP

LOCATION: Brgy. Batan, Rapu-Rapu, Albay

TITLE: TYPICAL RC BEAM, COLUMN & CANOPY DETAILS

	BY	CHKD	DATE
DESIGNED			
DRAWN	FYST		
REVIEWED	PRINCIPAL ENGR. / ARCHT.		
CIVIL/ARCHT			
ELEC.			
MECH.			

SUBMITTED: H. L. MENDOZA, Principal Engineer

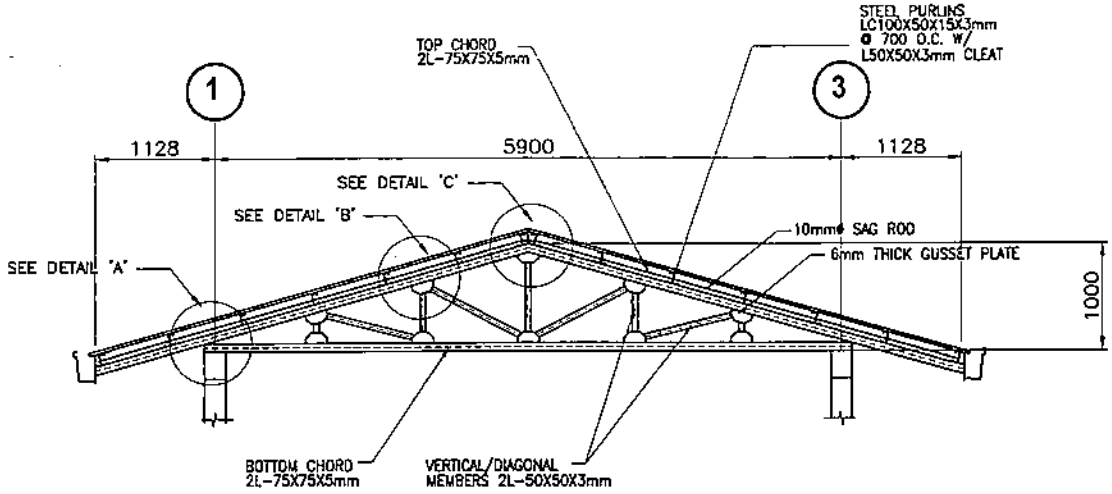
RECOMMENDED: A. C. ESPIRITU, Manager, GSD

APPROVED: N. G. SORIANO-RA, Manager, GSD

DWG. NO. BtnDPP-BDC-17.003 SPECS. NO. LuzP21Z1350Sr

SCALE: AS SHOWN BID DRAWING REV. 0

REV.	DATE	NATURE OF REVISION	BY	CHKD.	RECD.	APPD.



DETAILS OF TRUSS

SCALE 1:50

NOTES:

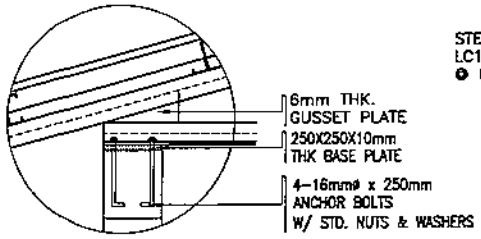
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. USE STRUCTURAL GRADE STEEL SHAPES, BARS AND PLATES CONFORMING TO ASTM A36.
3. WELDING SHALL CONFORM TO E70 SERIES OF SPECIFICATIONS FOR MILD STEEL ARC WELDING ELECTRODES ASTM A233, LATEST EDITION.
4. ALL STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE AISC SPECIFICATIONS AND CODE OF STANDARD PRACTICE.
5. ALL CONNECTION DETAILS SHOWN ARE CONCEPTUAL DESIGN AND OF CONNECTION DETAILS IS THE RESPONSIBILITY OF THE CONTRACTOR.
6. ALL GUSSET PLATES SHALL BE 6MM THICK.

NOTE :

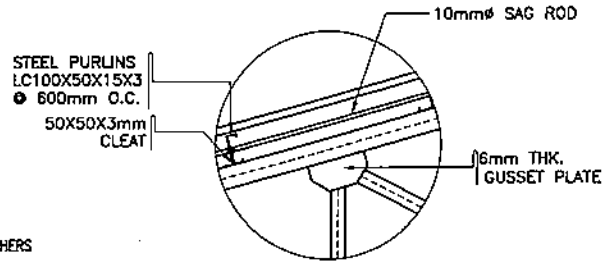
1. USE THE FOLLOWING MATERIALS FOR :

TOP CHORD	–	2L-75mmx75mmx5mm thk. ANGLE BARS
BOTTOM CHORD	–	2L-75mmx75mmx5mm thk. ANGLE BARS
WEB MEMBERS	–	2L-50mmx50mmx3mm thk. ANGLE BARS

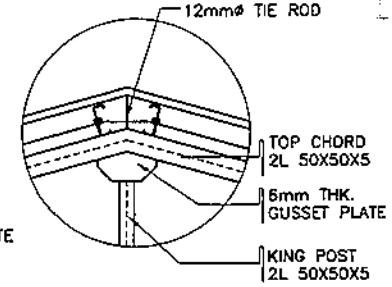
PROVIDE 6mm thk. GUSSET PLATES FOR ALL STRUCTURAL STEEL JOINTS.



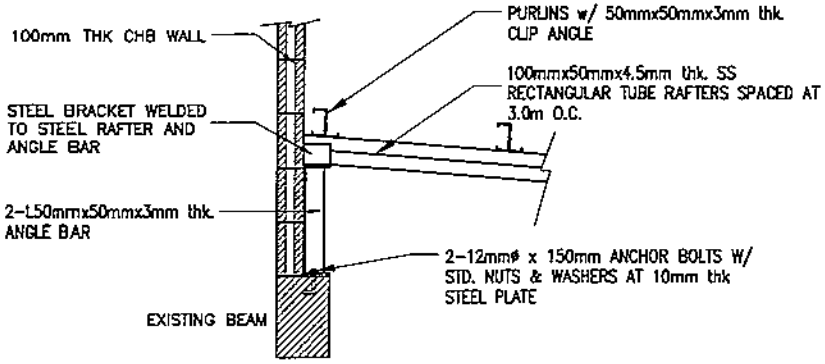
DETAIL 'A'



DETAIL 'B'

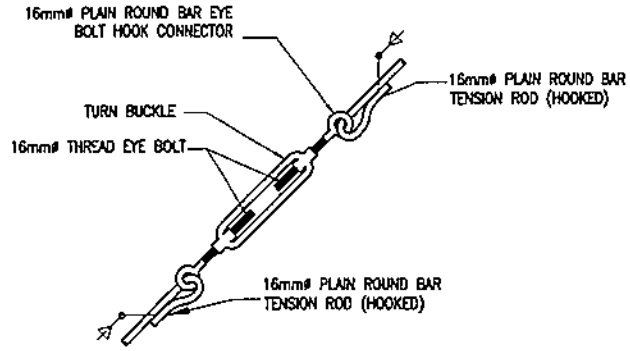


DETAIL 'C'



RAFTER DETAILS

SCALE 1:20



TURN BUCKLE DETAILS

SCALE NTS

OWNER: NATIONAL POWER CORPORATION
AGHAM ROAD, DILIMAN QUEZON CITY

PROJECT: RENOVATION OF POWERHOUSE AND FACILITIES IMPROVEMENT FOR BATAN DPP

LOCATION: Brgy. Batan, Rapu-Rapu, Albay

TITLE: DETAILS OF TRUSS & TURN BUCKLE

	BY	CHKD	DATE
DESIGNED			
DRAWN	FYST		
REVIEWED	PRINCIPAL ENGR. / ARCHT.		
CIVIL/ARCHT			
ELEC.			
MECH.			

SUBMITTED: H. L. MENDOZA, Project Engineer
RECOMMENDED: A. C. ESPIRITU, Manager, CEAD
APPROVED: N. G. SOMOGURRA, Manager, DCD

DWG. NO. BtnDPP-BDC-17.002 SPECS. NO. LuzP21Z1350S1

SCALE: AS SHOWN BID DRAWING REV. 0

REV.	DATE	NATURE OF REVISION	BY	CHKD.	RECD.	APPD.

SECTION IX

BID DRAWINGS FOR ELECTRICAL WORKS

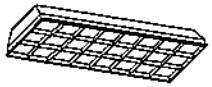
SECTION IX – BID DRAWINGS

EW – ELECTRICAL DRAWINGS

DRAWING NO.	TITLE
BtnDPP-BDE-17.001	GENERAL NOTES AND DETAILS OF LIGHTING FIXTURES
BtnDPP-BDE-17.002	LIGHTING LAYOUT
BtnDPP-BDE-17.003	POWER LAYOUT
BtnDPP-BDE-17.004	LOAD AND PANELBOARD SCHEDULE (MAIN DISTRIBUTION PANELBOARD: MDP)
BtnDPP-BDE-17.005	LOAD AND PANELBOARD SCHEDULE (LIGHTING AND POWER PANELBOARD: LPP)

GENERAL NOTES:

1. ALL WORKS SHALL BE DONE IN ACCORDANCE WITH THE LATEST PROVISIONS OF THE PHILIPPINE ELECTRICAL CODE, LAWS AND ORDINANCES OF THE LOCAL CODE ENFORCING AUTHORITIES.
2. POWER SUPPLY SHALL BE FROM THE 75 kVA, 7.97kV/240V, 60Hz, 1-PHASE STATION SERVICE TRANSFORMER
3. ALL SWITCHES AND CONVENIENCE OUTLETS SHALL BE FLUSH-MOUNTED. SWITCHES SHALL BE 1.37 METERS ABOVE THE FINISHED FLOOR WHILE CONVENIENCE OUTLETS SHALL BE MOUNTED 0.30 METERS ABOVE THE FINISHED FLOOR AND 0.15 METERS ABOVE WORKING TABLE.
4. OUTLETS FOR EXHAUST FAN SHALL BE FLUSH-MOUNTED, 2.0 METERS ABOVE THE FINISHED FLOOR.
5. CONDUIT RUNS ARE INDICATIVE ONLY. THE ACTUAL RUNS SHALL BE DETERMINED IN THE FIELD.
6. FINAL LOCATIONS OF EQUIPMENT TO BE SUPPLIED, INSTALLED OR CONSTRUCTED BY THE CONTRACTOR SHALL BE CLOSELY COORDINATED WITH SPUG MANAGEMENT AND PLANT HEADS/PLANT IN CHARGE TO SUIT ACTUAL SITE CONDITIONS PRIOR TO DELIVERY/INSTALLATION/ CONSTRUCTION FOR THE TIMELY AND EFFICIENT IMPLEMENTATION OF THE PROJECT.
7. MINIMUM SIZE OF CONDUCTOR TO BE USED FOR THE BRANCH CIRCUITS SHALL BE 3.5 mm^2 THHN/THWN-2 IN 20 mmø SCH.40 uPVC CONDUIT UNLESS OTHERWISE SPECIFIED IN THE PLAN.
8. METHOD OF WIRING SHALL BE IN uPVC WITH PROPER FITTINGS, DEVICES, BOXES AND SUPPORTS, WORK SHALL BE AS PER PLAN AND SPECIFICATIONS AS TO LOCATION, TYPE AND USE.
9. ALL EQUIPMENT SHALL BE PROPERLY GROUNDED.
10. WIRES, BOXES, ELECTRICAL AS WELL AS NON-ELECTRICAL MATERIALS NOT INCLUDED IN THE PLANS AND SPECIFICATIONS BUT NECESSARY TO COMPLETE THE JOB SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.
11. ALL ELECTRICAL MATERIALS TO BE USED IN THE INSTALLATION SHALL BE NEW, STANDARD AND APPROVED TYPE AS TO LOCATION, TYPES AND PURPOSE.
12. ELECTRICAL WORKS SHALL BE DONE UNDER THE DIRECT SUPERVISION OF A DULY LICENSED ELECTRICAL ENGINEER.

A	B	C	D	E
				
IP20 RECESSED TYPE LIGHTING FIXTURE WITH MIRROR FINISH ALUMINUM REFLECTOR, 1200mm x 600mm ZINC PHOSPHATE STEEL SHEET HOUSING, 2 x 18 WATTS, COOL WHITE, HIGH OUTPUT LED LAMP TUBE LUMINAIRES.	IP65 WATER AND DUST PROOF LIGHTING FIXTURE WITH POLYCARBONATE HOUSING AND 2 x 16 WATTS, 1200mm, HIGH OUTPUT, LED TUBE LIGHT	IP20 1 x 9 WATTS COOL WHITE, CLASSIC GLOBE SHAPE, FROSTED FINISH, E27 BASE, COMPACT LED LAMP	IP20 1 x 18 WATTS COOL WHITE, CLASSIC GLOBE SHAPE, FROSTED FINISH, E27 BASE, COMPACT LED LAMP	PORTABLE EMERGENCY LIGHTING FIXTURE, 2 x 2 WATTS LED WARM WHITE WITH BUILT-IN SEALED LEAD ACID BATTERY CHARGING TIME < 20 HRS; USAGE TIME <= 4 HRS

DETAILS OF LIGHTING FIXTURES

SCALE NTS

REV.	DATE	NATURE OF REVISION	BY	CHKD	RECD.	APPD.

OWNER: NATIONAL POWER CORPORATION
AGHAM ROAD, DILIMAN, QUEZON CITY

PROJECT: RENOVATION OF POWERHOUSE AND FACILITIES IMPROVEMENT FOR BATAN DPP

LOCATION: Brgy. Batan, Rapu-Rapu, Albay

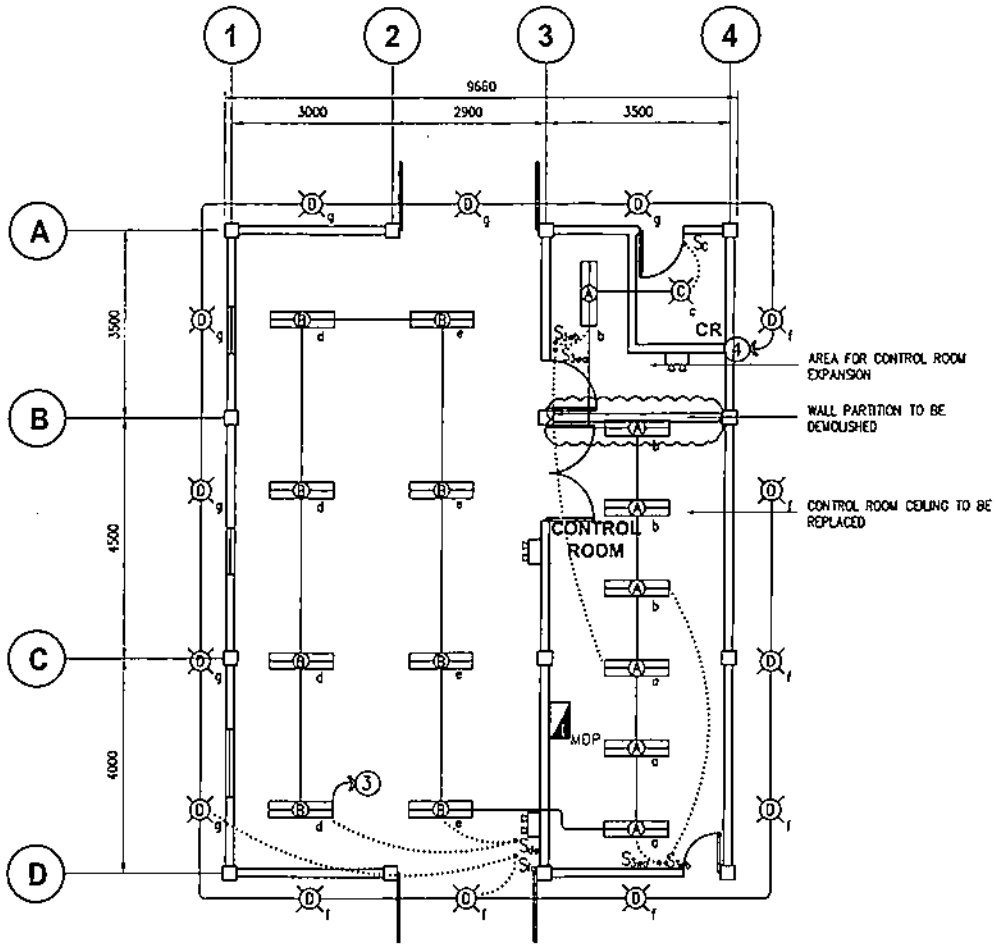
TITLE: GENERAL NOTES AND DETAILS OF LIGHTING FIXTURES

	BY	CHKD	DATE
DESIGNED			
DRAWN	RLD		
REVIEWED	PRINCIPAL ENGR./ARCHT.		
CIVIL/ARCHT.			
ELEC.			
MECH.			

SUBMITTED: B. M. AGUILA, PRINCIPAL ENGINEER II, PCDD
RECOMMENDED: C. L. LUGOD, JR., MANAGER, PCDD
APPROVED: N. C. SANTISIERRA, MANAGER, DDD

DWG. NO BtnDPP-BDE-17.001 SPECS. NO LuzP21Z1350Sr

SCALE: N. T. S. BID DRAWING REV. 0



LIGHTING LAYOUT

SCALE 1:100

LEGEND:

- (A) – 2x18W LIGHTING FIXTURE TYPE A
- (B) – 2x16W LIGHTING FIXTURE TYPE B
- (C) – 9W LIGHTING FIXTURE TYPE E
- (D) – 18W LIGHTING FIXTURE TYPE D
- – 2x2W LIGHTING FIXTURE TYPE E
- S_x – SINGLE POLE WALL SWITCH (letter denotes fixture to be controlled)
- S_{xx} – DUPLEX WALL SWITCH (letter denotes fixture to be controlled)
- S_{3wx} – THREE WAY WALL SWITCH (letter denotes fixture to be controlled)
- MDP – MAIN DISTRIBUTION PANELBOARD
- (1) – CIRCUIT HOMERUN
- ——— – CIRCUIT RUNNING ON CEILING
- ..... – CONTROL CIRCUIT

NOTES:

1. THIS DRAWING IS FOR BIDDING PURPOSES ONLY.
2. ALL DIMENSIONS INDICATED ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.

REV.	DATE	NATURE OF REVISION	BY	CHKD.	RECD.	APPD.

OWNER: NATIONAL POWER CORPORATION
AGHAM ROAD, DILIMAN, QUEZON CITY

PROJECT: RENOVATION OF POWERHOUSE AND FACILITIES IMPROVEMENT FOR BATAN DPP

LOCATION: Brgy. Batan, Rapu-Rapu, Albay

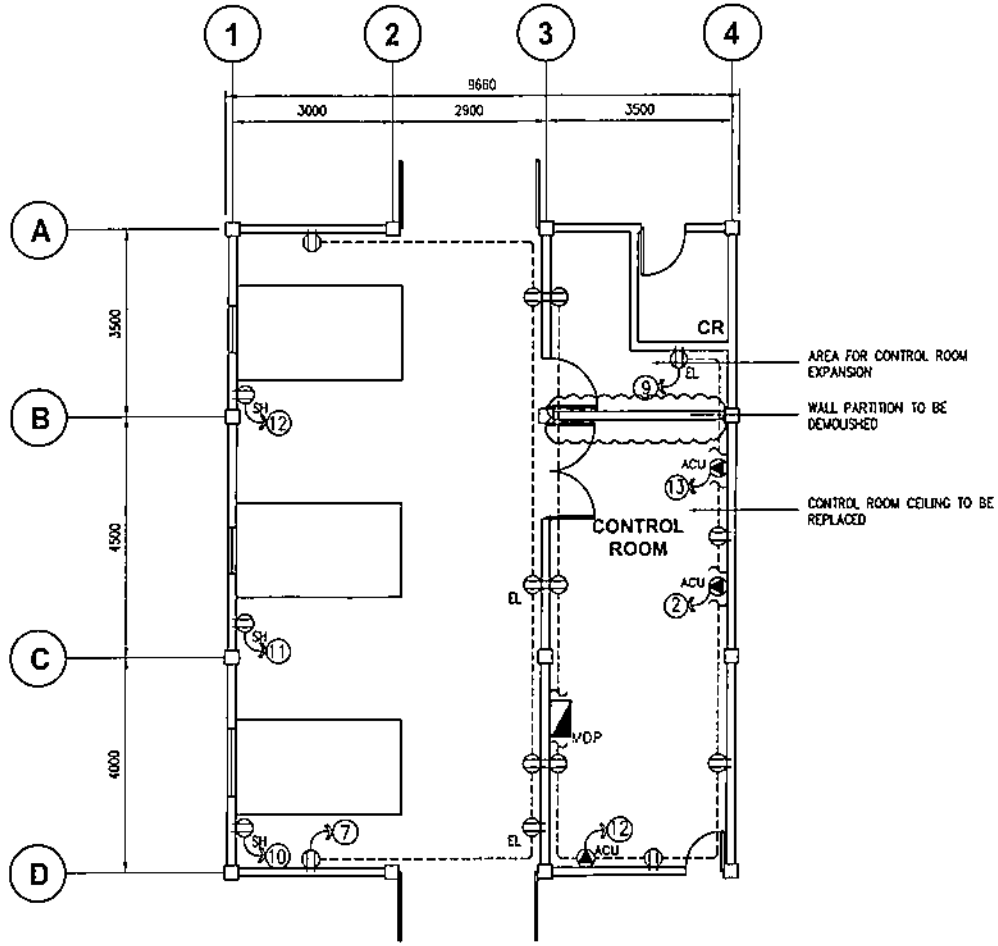
TITLE: LIGHTING LAYOUT

	BY	CHKD	DATE
DESIGNED			
DRAWN	RLD		
REVIEWED	PRINCIPAL ENGR. / ARCHT.		
CIVIL/ARCHT			
ELEC.			
MECH.			

SUBMITTED: B. M. AGUILA, PRINCIPAL ENGINEER A, EEISD
RECOMMENDED: C. C. LUGOD, JR., MANAGER, EEISD
APPROVED: N. G. SOMOGUERRA, MANAGER, EDD

DWG. NO. BtnDPP-BDE-17.002 | SPECS. NO. LuzP21Z1350Sr

SCALE: AS SHOWN | BID DRAWING | REV. 0



POWER LAYOUT

SCALE 1:100

LEGEND:

- DUPLEX UNIVERSAL CONVENIENCE OUTLET
- EL – EMERGENCY LIGHT OUTLET
- SH – SPACE HEATER/BATTERY CHARGER OUTLET
- ACU – AIR CONDITIONING UNIT OUTLET
- MDP – MAIN DISTRIBUTION PANELBOARD
- (1) – CIRCUIT HOMERUN
- ——— – CIRCUIT RUNNING ON CEILING
- - - - - - – CIRCUIT RUNNING ON GROUND

NOTES:

1. THIS DRAWING IS FOR BIDDING PURPOSES ONLY.
2. ALL DIMENSIONS INDICATED ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.

OWNER: NATIONAL POWER CORPORATION
AGHAM ROAD, DILIMAN, QUEZON CITY

PROJECT: RENOVATION OF POWERHOUSE AND FACILITIES IMPROVEMENT FOR BATAN DPP

LOCATION: Brgy. Batan, Rapu-Rapu, Albay

TITLE: POWER LAYOUT

	BY	CHKD	DATE
DESIGNED			
DRAWN	RLD		
REVIEWED	PRINCIPAL ENGR./ARCHT.		
CIVIL/ARCHT			
ELEC.			
MECH			

SUBMITTED: R. M. AGTUTA, PRINCIPAL ENGINEER A, EMED
RECOMMENDED: C. Z. C. LUGOD, JR., MANAGER, EEDD
APPROVED: N. C. SORIGUERRA, MANAGER, 3DD

DWG NO. BtnDPP-BDE-17.003 SPECS. NO. LuzP21Z1350Sr

SCALE: AS SHOWN BID DRAWING REV. 0

REV.	DATE	NATURE OF REVISION	BY	CHKD	RECD	APPD

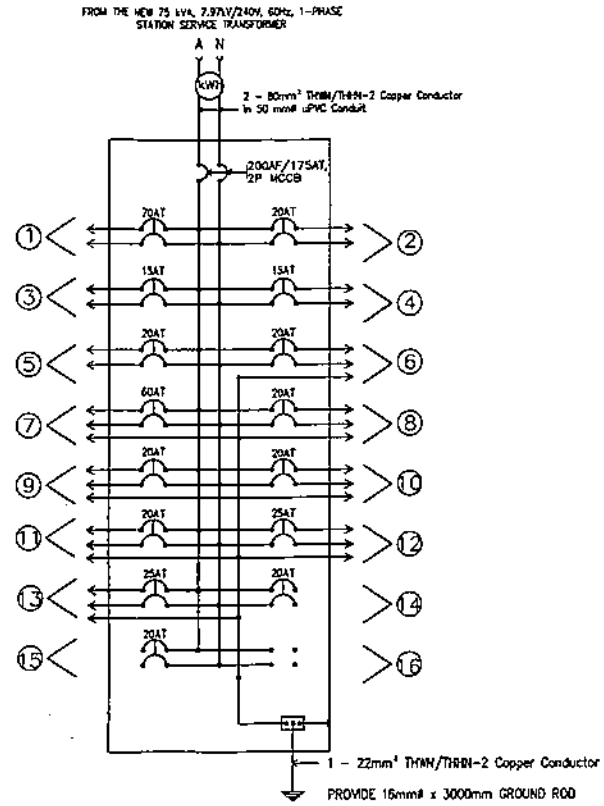
CKT NO.	DESCRIPTION	VA	VOLTS	AMPS	SIZES		
					BREAKER	WIRE	CONDUIT
1	EXISTING 5 HP FUEL PUMP MOTOR	8440	230	28.00	100AF/70AT		
2	EXISTING 1.0 HP AIR CONDITIONING UNIT	1840	230	8.00	50AF/20AT	2 – 3.5mm² THWN/THHN–2 1 – 3.5mm² THWN/THHN–2	20mmø uPVC
3	7 – 2x18W LIGHTING FIXTURE TYPE A 8 – 2x16W LIGHTING FIXTURE TYPE B 1 – 9W LIGHTING FIXTURE TYPE C	647	230	2.81	50AF/15AT	2 – 3.5mm² THWN/THHN–2	20mmø uPVC
4	14 – 18W LIGHTING FIXTURE TYPE D	315	230	1.37	50AF/15AT	2 – 3.5mm² THWN/THHN–2	20mmø uPVC
5	EXISTING 1 HP FUEL PUMP MOTOR	1840	230	8.00	50AF/20AT		
6	4 – 200VA CONVENIENCE OUTLET 2 – 2 X 2W EMERGENCY LIGHT OUTLET	810	230	3.52	50AF/20AT	2 – 3.5mm² THWN/THHN–2 1 – 3.5mm² THWN/THHN–2	20mmø uPVC
7	LIGHTING AND POWER PANELBOARD	8338	230	36.51	100AF/60AT	2 – 14mm² THWN/THHN–2 1 – 8.0mm² THWN/THHN–2	25mmø uPVC
8	6 – 200VA CONVENIENCE OUTLET 1 – 2 X 2W EMERGENCY LIGHT OUTLET	1205	230	5.24	50AF/20AT	2 – 3.5mm² THWN/THHN–2 1 – 3.5mm² THWN/THHN–2	20mmø uPVC
9	1000W SPACE HEATER / BATTERY CHARGER	1250	230	5.43	50AF/20AT	2 – 3.5mm² THWN/THHN–2 1 – 3.5mm² THWN/THHN–2	20mmø uPVC
10	1000W SPACE HEATER / BATTERY CHARGER	1250	230	5.43	50AF/20AT	2 – 3.5mm² THWN/THHN–2 1 – 3.5mm² THWN/THHN–2	20mmø uPVC
11	1000W SPACE HEATER / BATTERY CHARGER	1250	230	5.43	50AF/20AT	2 – 3.5mm² THWN/THHN–2 1 – 3.5mm² THWN/THHN–2	20mmø uPVC
12	1 – EXISTING 2.0 HP AIR CONDITIONING UNIT	2760	230	12.00	50AF/25AT	2 – 3.5mm² THWN/THHN–2 1 – 3.5mm² THWN/THHN–2	20mmø uPVC
13	1 – 2.0 HP AIR CONDITIONING UNIT	2760	230	12.00	50AF/25AT	2 – 3.5mm² THWN/THHN–2 1 – 3.5mm² THWN/THHN–2	20mmø uPVC
14	SPARE	1500	230	6.52	50AF/20AT		
15	SPARE	1500	230	6.52	50AF/20AT		
16	SPACE						
		33755.00	230	146.80			

PROVIDE: 200AF / 175AT, 2P, MAIN MCCB
WITH BRANCH CIRCUIT OF:
1 – 100AF / 70AT, 2P, MCB
1 – 100AF / 60AT, 2P, MCB
1 – 50AF / 25AT, 2P, MCB
9 – 50AF / 20AT, 2P, MCB
2 – 50AF / 15AT, 2P, MCB

PROVIDE: 2 – 80 mm² THHN/THWN–2 Copper Conductor &
1 – 22 mm² THHN/THWN–2 Copper Conductor
in 50 mmø uPVC Conduit

LOAD SCHEDULE (MDP)

SCALE NTS



PANELBOARD SCHEDULE (MDP)

SCALE NTS

NOTES:

1. ALL EQUIPMENT IN THE BROKEN LINE ARE EXISTING, ALL OTHERS ARE INCLUDED ON THE CONTRACT.

REV.	DATE	NATURE OF REVISION	BY	CHKD.	RECD.	APPD.

OWNER: NATIONAL POWER CORPORATION
AGHAM ROAD, DILIMAN, QUEZON CITY

PROJECT: RENOVATION OF POWERHOUSE AND FACILITIES IMPROVEMENT FOR BATAN DPP

LOCATION: Brgy. Batan, Rapu-Rapu, Albay

TITLE: LOAD AND PANELBOARD SCHEDULE (MAIN DISTRIBUTION PANELBOARD; MDP)

	BY	CHKD	DATE
DESIGNED			
DRAWN	RED		
REVIEWED	PRINCIPAL ENGR. / ARCHT.		
CIVIL/ARCHT			
ELEC.			
MECH.			

SUBMITTED: B. M. AGUILA, PRINCIPAL ENGINEER A, LEED
RECOMMENDED: C. Z. C. LUGOD, JR., MANAGER, LEED
APPROVED: N. G. GUEVARRA, MANAGER, DDD

DWG. NO. BtnDPP-BDE-13.004 SPECS. NO. LuzP21Z1350Sr

SCALE: AS SHOWN BID DRAWING REV. 0

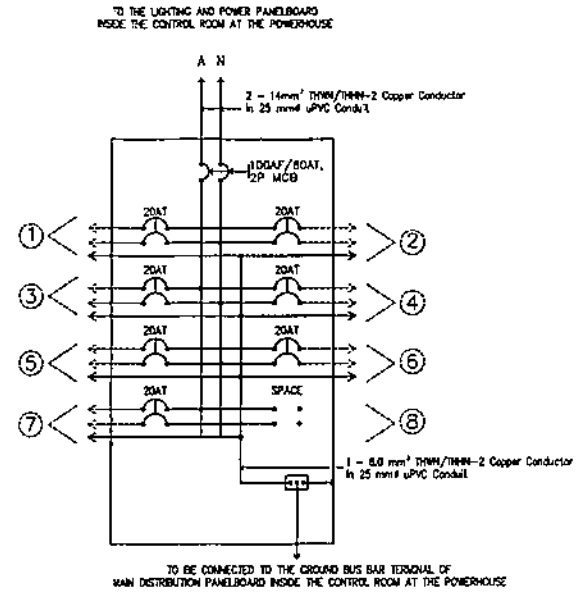
CKT NO.	DESCRIPTION	VA	VOLTS	AMPS	SIZES		
					BREAKER	WIRE	CONDUIT
1	1 – 200VA CONVENIENCE OUTLET 4 – 18W LIGHT BULB 1 – 45W EXHAUST FAN	347	230	1.51	50AF/20AT		
2	1 – 200VA CONVENIENCE OUTLET 4 – 18W LIGHT BULB 1 – 45W EXHAUST FAN	347	230	1.51	50AF/20AT		
3	1 – 200VA CONVENIENCE OUTLET 4 – 18W LIGHT BULB 1 – 45W EXHAUST FAN	347	230	1.51	50AF/20AT		
4	1 – EXISTING 1.5 HP AIR CONDITIONING UNIT	2300	230	10.00	50AF/20AT		
5	1 – EXISTING 1.5 HP AIR CONDITIONING UNIT	2300	230	10.00	50AF/20AT		
6	1 – EXISTING 1.5 HP AIR CONDITIONING UNIT	2300	230	10.00	50AF/20AT		
7	2 – 200VA CONVENIENCE OUTLET 1 – 45W EXHAUST FAN	457	230	1.99	50AF/20AT		
8	SPACE						
		8398	230	36.52			

PROVIDE: 1 – 100AF / 60AT, 2P, MAIN MCB
BRANCH CIRCUIT OF:
7 – 50AF / 20AT, 2P, MCB

PROVIDE: 2 – 14 mm² THHN/THWN–2 Copper Conductor &
1 – 8.0 mm² THHN/THWN–2 Copper Conductor
in 25 mmø uPVC Conduit

LOAD SCHEDULE (LPP)

SCALE NTS



PANELBOARD SCHEDULE (LPP)

SCALE NTS

NOTES:

1. ALL EQUIPMENT IN THE BROKEN LINE ARE EXISTING, ALL OTHERS ARE INCLUDED ON THE CONTRACT.
2. ALL CIRCUIT BREAKERS INSIDE THE CONTAINERIZED BUNKERHOUSE SHALL BE DISMANTLED AND INSTALL TO THE LIGHTING AND POWER PANELBOARD.
3. LIGHTING AND POWER PANELBOARD SHALL BE CONNECTED TO THE EXISTING 60 AT BREAKER AT THE MAIN DISTRIBUTION PANELBOARD.

REV.	DATE	NATURE OF REVISION	BY	CHKD.	RECD.	APPD.

OWNER: NATIONAL POWER CORPORATION
AGHAM ROAD, DILIMAN, QUEZON CITY

PROJECT: RENOVATION OF POWERHOUSE AND FACILITIES IMPROVEMENT FOR BATAN DPP

LOCATION: Brgy. Batan, Rapu-Rapu, Albay

TITLE: LOAD AND PANELBOARD SCHEDULE (LIGHTING AND POWER PANELBOARD: LPP)

	BY	CHKD	DATE
DESIGNED			
DRAWN	RLO		
REVIEWED	PRINCIPAL ENGR. / ARCHT.		
CIVIL/ARCHT.			
ELEC.			
MECH.			

SUBMITTED: B. M. AGUILA, PROJECT ENGINEER A, EECD
RECOMMENDED: C. Z. C. LUGOD, JR., MANAGER, EECD
APPROVED: N. G. SOMOSIERRA, MANAGER, DDD

DWG. NO. BtnDPP-BDE-13.005 SPECS. NO. LuzP21Z1350Sr

SCALE: AS SHOWN BID DRAWING REV. 0