



REPUBLIC OF THE PHILIPPINES  
**NATIONAL POWER CORPORATION**  
(Pambansang Korporasyon sa Elektrisidad)

## **BID DOCUMENTS**

**Name of Project :** REHABILITATION / RESTORATION OF DAM  
INSTRUMENTATIONS OF ANGAT DAM MAIN  
AND SECONDARY DYKES LOCATED IN SAN  
LORENZO, NORZAGARAY, BULACAN

**Project Location :** SN. LORENZO, NORZAGARAY, BULACAN

**PR No. :** HO-DRW24-008

**Contents:**

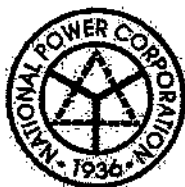
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Design and Development Department



## SECTION I

# INVITATION TO BID



# National Power Corporation

## INVITATION TO BID

### PUBLIC BIDDING – BCS 2024-0702

- The NATIONAL POWER CORPORATION (NPC), through its approved Corporate Budget of CY 2024 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
HO-DRW24-008 / PB241119-NA00489  Rehabilitation / Restoration of Dam Instrumentations of Angat Dam Main and Secondary Dykes Located in San Lorenzo, Norzagaray, Bulacan	Supply and Delivery of Dam Instruments	07 November 2024 9:30 A.M.	19 November 2024 9:30 A.M.	₱ 1,530,000.00 / ₱ 5,000.00
<b>Venue: Kañao Function Room, NPC Bldg. Diliman, Quezon City</b>				

- 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
HO-DRW24-008	Ninety (90) Calendar Days	Ten (10) Years

- 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.

- 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.
- 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.
- The National Power Corporation will hold a Pre-Bid Conference on the date, time and venue stated above. Interested bidder/s is/are allowed to join and participate in the Pre-Bid Conference at the Kañao Room or virtually. However, those attending virtually shall assume the risk of any internet connectivity issues. Further, interested bidders are hereby informed of the following:
  - Only a maximum of two (2) representatives from each bidder / company shall be allowed to participate

- b. Wearing of Face Masks is recommended but not required in view of Proclamation No. 297 S.2023 lifting the State of Public Health Emergency Throughout the Philippines
  - 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 in the 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**  
Gabriel Y. Itchon Building  
Senator Miriam P. Defensor-Santiago Ave. (formerly BIR Road)  
Cor. Quezon Ave., Diliman, Quezon City, 1100  
Tel Nos.: Tel Nos.: 8921-3541 local 5564/5713  
Email: bcscd@napocor.gov.ph /
  12. You may visit the following websites:  
For downloading of Bidding Documents: <https://www.napocor.gov.ph/bcscd/bids.php>



**ATTY. MELCHOR P. RIDULME**  
Sr. Vice President & COO and  
Chairman, Bids and Awards Committee

## SECTION II

# INSTRUCTIONS TO BIDDERS

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## SECTION II – INSTRUCTIONS TO BIDDERS

### 1. Scope of Bid

The **National Power Corporation (NPC or NAPOCOR)** wishes to receive Bids for the **REHABILITATION / RESTORATION OF DAM INSTRUMENTATIONS OF ANGAT DAM MAIN AND SECONDARY DYKES LOCATED IN SAN LORENZO, NORZAGARAY, BULACAN**, with identification number **PR NO. HO-DRW24-008**.

The Procurement Project (referred to herein as "Project") is composed of one (1) lot and will be awarded to one (1) Bidder in one complete contract, the details of which are described in Section VI (Technical Specifications).

### 2. Funding Information

- 2.1. The GOP through the source of funding as indicated below for CY 2024 in the amount specified in the Invitation to Bid.
- 2.2. The source of funding is the Corporate Operating Budget of the National Power Corporation.

### 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 Manuals 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 IB 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 verified and accepted the general requirements of this Project, including 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, and Coercive Practices

The Procuring Entity, as well as the Bidders and Suppliers, 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. Foreign ownership exceeding those allowed under the rules may participate when citizens, corporations, or associations of a country, included in the list issued by the GPPB, the laws or regulations of which grant reciprocal rights or privileges to citizens, corporations, or associations of the Philippines.

The foreign bidder claiming eligibility by reason of their country's extension of reciprocal rights to Filipinos shall submit a certification from the relevant government office of their country stating that Filipinos are allowed to participate in their government procurement activities for the same item/product. The said certification shall be validated during the post-qualification of bidders.

- 5.3. Pursuant to Section 23.4.1.3 of the 2016 revised IRR of RA No.9184, the Bidder shall have an SLCC that is at least one (1) contract similar to the Project the value of which, adjusted to current prices using the PSA's CPI, must be at least equivalent to at least fifty percent (50%) of the ABC.
- 5.4. The Bidders shall comply with the eligibility criteria under Section 23.4.1 of the 2016 IRR of RA No. 9184.

## 6. Origin of 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, subject to Domestic Preference requirements under **ITB** Clause 18.

## 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 twenty percent (20%) of the Project.

The portions of Project and the maximum percentage allowed to be subcontracted are indicated in the **BDS**, which shall not exceed twenty percent (20%) of the contracted Goods.

- 7.2. The Supplier may identify its subcontractor during the contract implementation stage. Subcontractors identified during the bidding may be changed during the implementation of this Contract. Subcontractors must submit the documentary requirements under Section 23.1 of the 2016 revised IRR of RA No. 9184 and comply with the eligibility criteria specified in **ITB** Clause 5 to the implementing or end-user unit.
- 7.3. Subcontracting of any portion of the Project does not relieve the Supplier 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 Supplier'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 Section VIII (NPCSF-GOODS-01 - Checklist of Technical and Financial Documents).
- 10.2. The Bidder's SLCC as indicated in **ITB** Clause 5.3 should have been completed within Ten (10) Years prior to the deadline for the submission and receipt of bids.
- 10.3. 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. Similar to the required authentication above, 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.
- 10.4. The Statement of the bidder's Single Largest Completed Contract (SLCC) (NPCSF-GOODS-03) and List of all Ongoing Government & Private Contracts Including Contracts Awarded but not yet Started (NPCSF-GOODS-02) shall comply with the documentary requirements specified in the **BDS**.

## 11. Documents comprising the Bid: Financial Component

- 11.1. The second bid envelope shall contain the financial documents for the Bid as specified in Section VIII (NPCSF-GOODS-01 - Checklist of Technical and Financial Documents).
- 11.2. If the Bidder claims preference as a Domestic Bidder or Domestic Entity, a certification issued by DTI shall be provided by the Bidder in accordance with Section 43.1.3 of the 2016 revised IRR of RA No. 9184.
- 11.3. Any bid exceeding the ABC indicated in paragraph 1 of the **IB** shall not be accepted.
- 11.4. 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. Bid Prices

- 12.1. Prices indicated on the Price Schedule shall be entered separately in the following manner:

- a. For Goods offered from within the Procuring Entity's country:
  - i. The price of the Goods quoted EXW (ex-works, ex-factory, ex-warehouse, ex-showroom, or off-the-shelf, as applicable);
  - ii. The cost of all customs duties and sales and other taxes already paid or payable;
  - iii. The cost of transportation, insurance, and other costs incidental to delivery of the Goods to their final destination; and
  - iv. The price of other (incidental) services, if any, listed in the **BDS**.
- b. For Goods offered from abroad:
  - i. Unless otherwise stated in the **BDS**, the price of the Goods shall be quoted delivered duty paid (DDP) with the place of destination in the Philippines as specified in the **BDS**. In quoting the price, the Bidder shall be free to use transportation through carriers registered in any eligible country. Similarly, the Bidder may obtain insurance services from any eligible source country.
  - ii. The price of other (incidental) services, if any, as listed in the **BDS**.

### 13. Bid and Payment Currencies

13.1. For Goods that the Bidder will supply from outside the Philippines, the 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.

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

### 14. Bid Security

14.1. 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**.

14.2. The Bid and bid security shall be valid for **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.

### 15. Sealing and Marking of Bids

Each Bidder shall submit Two (2) copies of the first and second components of its Bid, marked **Original** and photocopy. Only the original copy will be read and considered for the bid.

Any misplaced document outside of the **Original** copy will not be considered. The photocopy is ONLY FOR REFERENCE.

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.

Bidders must also comply with the Disclaimer and Data Privacy Notice specified in the **BDS**.

## **16. Deadline for Submission of Bids**

16.1. 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**.

## **17. Opening and Preliminary Examination of Bids**

17.1. 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.

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

## **18. Domestic Preference**

18.1. The Procuring Entity will grant a margin of preference for the purpose of comparison of Bids in accordance with Section 43.1.2 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 the 2016 revised IRR of RA No. 9184.

19.2. If the Project allows partial bids, bidders may submit a proposal on any of the lots or items, and evaluation will be undertaken on a per lot or item basis, as the case maybe. In this case, the Bid Security as required by **ITB** Clause 14 shall be submitted for each lot or item separately.

19.3. The descriptions of the lots or items shall be indicated in **Section VI (Technical Specifications)**, although the ABCs of these lots or items are indicated in the **BDS** for purposes of the NFCC computation pursuant to Section 23.4.2.6 of the

2016 revised IRR of RA No. 9184. The NFCC must be sufficient for the total of the ABCs for all the lots or items participated in by the prospective Bidder.

19.4. The Project shall be awarded to one (1) Bidder in one complete contract.

19.5. Except for bidders submitting a committed Line of Credit from a Universal or Commercial Bank in lieu of its NFCC computation, all Bids must include the NFCC computation pursuant to Section 23.4.1.4 of the 2016 revised IRR of RA No. 9184, which must be sufficient for the total of the ABCs for all the lots or items participated in by the prospective Bidder. For bidders submitting the committed Line of Credit, it must be at least equal to ten percent (10%) of the ABCs for all the lots or items participated in by the prospective Bidder.

## **20. Post-Qualification**

20.1. 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**

21.1. 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**

<b>ITB Clause</b>	
5.3	<p>For this purpose, similar contracts shall refer to similar contracts refer to Supply and Delivery of Dam Instruments.</p> <p>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.</p> <p>It shall be a ground for disqualification, if verification and validation cannot be conducted for reasons attributable to the Bidder.</p>
7.1	<p>Subcontracting may be allowed on transport, local/non-skilled labor under the supervision of the Bidder. The Bidder shall not be relieved from any liability or obligation that may arise from the performance of the Subcontractor.</p>
10.1	<p>The prospective bidder shall submit a valid and updated Certificate of PhilGEPs Registration under Platinum Membership (all pages including the Annex A of the said Certificate). <b>Non-compliance shall be a ground for disqualification.</b></p>
10.4	<p>The list of on-going contracts (Form No. NPCSF-GOODS-02) shall be supported by the following documents for each on-going contract to be submitted during <b>Post-Qualification</b>:</p> <ol style="list-style-type: none"> <li>1. Contract/Purchase Order and/or Notice of Award</li> <li>2. Certification coming from the project owner/client that the performance is satisfactory as of the bidding date</li> </ol> <p>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.</p> <p>The Statement of the bidder's Single Largest Completed Contract (SLCC) similar to the contract to be bid (Form No. NPCSF-GOODS-03) shall be supported by the following documents to be submitted during <b>Bid Opening</b>:</p> <ol style="list-style-type: none"> <li>1. Certificate of Acceptance; or Certificate of Completion; or Official Receipt (O.R); or Sales Invoice</li> </ol> <p>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.</p>

10.5	<p>Bidders shall also submit the following requirements in their first envelope, Eligibility and Technical Component of their bid:</p> <ol style="list-style-type: none"> <li>1. Data and Information to be submitted with the Proposal as specified in Clause TS-11.0(a) of Section VI - Technical Specifications;</li> <li>2. Complete eligibility documents of the proposed sub-contractor, if any</li> </ol>
12	The price of the Goods shall be quoted DDP Project Site or the applicable International Commercial Terms (INCOTERMS) for this Project.
14.1	<p>The bid security shall be in the form of a Bid Securing Declaration, or any of the following forms and amounts:</p> <ol style="list-style-type: none"> <li>a) The amount of not less two percent (2%) of ABC, if bid security is in cash, cashier's/manager's check, bank draft/guarantee or irrevocable letter of credit; or</li> <li>b) The amount of not less than five percent (5%) of ABC, if bid security is in Surety Bond.</li> </ol>
15.0	<p>All bid submissions and related correspondences are confidential and for viewing only by the intended recipient/s. Any unauthorized access to review, reproduce, or disseminate the information contained therein is strictly prohibited. The National Power Corporation (NAPOCOR) does not guarantee the security of any information electronically transmitted.</p> <p>Bid submissions and related correspondences may contain personal and sensitive personal information, and are subject to the Data Privacy Act of 2012, its implementing rules, regulations and issuances of the National Privacy Commission of the Philippines ("Privacy Laws"). By viewing, using, storing, sharing and disposing (collectively "Processing"), such bids submissions and correspondences, you agree to comply with the Privacy Laws. By responding to correspondence, you consent to the Processing by NAPOCOR of the Personal Data contained in your submission/reply in accordance with NAPOCOR's Personal Data Privacy Policy which you can find at <a href="http://www.napocor.gov.ph">http://www.napocor.gov.ph</a>.</p> <p>To report any privacy issue, contact the Data Privacy Officer at <a href="mailto:dpo@napocor.gov.ph">dpo@napocor.gov.ph</a>.</p> <p>NAPOCOR is not liable for the proper and complete transmission of the information contained in bid submission/correspondences nor for any delay in its receipt.</p>
19.3	<p>The Goods are grouped together in one (1) lot and will be awarded to one (1) Bidder in one complete contract.</p> <p>Partial bid is not allowed. The Goods are grouped in a single lot and the lot shall not be divided into sub-lots for the purpose of bidding, evaluation, and contract award.</p> <p>The Bidders bid offer must be within the ABC of the lot.</p>

	Bid offers that exceed the ABC of the lot or with incomplete price, shall be rejected.
19.5	If the Bidder opted to submit a Committed Line of Credit (CLC), the bidder must submit a granted credit line valid/effective at the date of bidding.
20.1	<p>Additional documents to be submitted during Post-Qualification:</p> <ol style="list-style-type: none"> <li>Class A – Eligibility Documents listed on the Annex A of Certificate of PhilGEPs Registration under Platinum Membership pursuant to Section 34.3 of the Revised IRR of R.A. 9184</li> <li>Contract/Purchase Order and/or Notice of Award for the contracts stated in the List of all Ongoing Government &amp; Private Contracts Including Contracts Awarded but not yet Started (NPCSF-GOODS-02);</li> <li>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-GOODS-02;</li> <li>Contract/Purchase Order for the contract stated in the Statement of the bidder's Single Largest Completed Contract (SLCC) similar to the contract to be bid (Form No. NPCSF-GOODS-03)</li> <li>Documents to be submitted during post-qualification process as specified in TS-11.0(b) of Section VI-Technical Specifications</li> </ol> <p>Manufacturer's brochures, manuals and other supporting documents of equipment, materials, hardware and tools proposed by the bidders must comply with the technical specifications of such equipment, materials, hardware and tools. It shall be a ground for disqualification if the submitted brochures, manuals and other supporting documents are determined not complying with the specifications during technical evaluation and post-qualification process.</p> <p>Equipment, materials, hardware and tools proposed by the winning bidder to be supplied, which were evaluated to be complying with the technical specifications, shall not be replaced and must be the same items to be delivered/installed/used during the contract implementation. Any proposed changes/replacement of said items may be allowed on meritorious reasons subject to validation and prior approval by NPC.</p>
20.2	The licenses and permits relevant to the Project and the corresponding law requiring it as specified in the Technical Specifications, if any.
21.2	Notice to Proceed.



## 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.

Additional requirements for the completion of this Contract shall be provided in the **Special Conditions of Contract (SCC)**.

### 2. Advance Payment and Terms of Payment

- 2.1. Advance payment of the contract amount is provided under Annex "D" of the revised 2016 IRR of RA No. 9184.
- 2.2. The Procuring Entity is allowed to determine the terms of payment on the partial or staggered delivery of the Goods procured, provided such partial payment shall correspond to the value of the goods delivered and accepted in accordance with prevailing accounting and auditing rules and regulations. The terms of payment are indicated in the **SCC**.

### 3. Performance Security

- 3.1. Within ten (10) calendar days from receipt of the Notice of Award by the Bidder 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 of RA No. 9184.
- 3.2. The performance bond to be posted by the Contractor must also comply with additional requirements specified in the **SCC**.

### 4. Inspection and Tests

The Procuring Entity or its representative shall have the right to inspect and/or to test the Goods to confirm their conformity to the Project specifications at no extra cost to the Procuring Entity in accordance with the Generic Procurement Manual. In addition to tests in the **SCC, Section VI (Technical Specifications)** shall specify what inspections and/or tests the Procuring Entity requires, and where they are to be

conducted. The Procuring Entity shall notify the Supplier in writing, in a timely manner, of the identity of any representatives retained for these purposes.

All reasonable facilities and assistance for the inspection and testing of Goods, including access to drawings and production data, shall be provided by the Supplier to the authorized inspectors at no charge to the Procuring Entity.

## **5. Warranty**

5.1 In order to assure that manufacturing defects shall be corrected by the Supplier, a warranty shall be required from the Supplier as provided under Section 62.1 of the 2016 revised IRR of RA No. 9184.

5.2 The Procuring Entity shall promptly notify the Supplier in writing of any claims arising under this warranty. Upon receipt of such notice, the Supplier shall, repair or replace the defective Goods or parts thereof without cost to the Procuring Entity, pursuant to the Generic Procurement Manual.

## **6. Liability of the Supplier**

The Supplier's liability under this Contract shall be as provided by the laws of the Republic of the Philippines.

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

## SECTION V

# **SPECIAL CONDITIONS OF CONTRACT**

**SECTION V – SPECIAL CONDITIONS OF CONTRACT**

<b>GCC Clause</b>	
1	<p><b>Delivery and Documents –</b></p> <p>The delivery terms applicable to the Contract is DDP delivered to the project site specified in the technical specifications, in accordance with INCOTERMS. Risk and title will pass from the Supplier to the Procuring Entity upon receipt and final acceptance of the Goods at their final destination.</p> <p>Delivery of the Goods shall be made by the Supplier in accordance with the terms specified in Section VI – Technical Specifications. The details of shipping and/or other documents to be furnished by the Supplier are as follows:</p> <p><i>For Goods supplied from within the Philippines</i></p> <p>Upon delivery of the Goods to the Project Site, the Supplier shall notify the Procuring Entity and present the following documents to the Procuring Entity:</p> <ul style="list-style-type: none"> <li>(i) Original and four copies of the Supplier's invoice showing Goods' description, quantity, unit price, and total amount;</li> <li>(ii) Original and four copies of Supplier's factory test/inspection report;</li> <li>(iii) Original and four copies of the certificate of origin (for imported Goods);</li> <li>(iv) Delivery receipt detailing number and description of items received signed by the Procuring Entity's representative at the Project Site;</li> <li>(v) Certificate of Completion/Inspection Report signed by the Procuring Entity's representative at the Project Site;</li> <li>(vi) Original and four copies of the Inspection Receiving Report signed by the Procuring Entity's representative at the Project Site;</li> <li>(vii) Original and four copies of the Manufacturer's and/or Supplier's warranty certificate; and</li> <li>(viii) Documents specified in the Technical Specifications, if any.</li> </ul> <p><i>For Goods supplied from abroad:</i></p> <p>Upon shipment, the Supplier shall notify the Procuring Entity and the insurance company by e-mail the full details of the shipment, including Contract Number, description of the Goods, quantity, vessel, bill of lading number and date, port of loading, date of shipment, port of discharge etc. Upon delivery to the Project Site, the Supplier shall notify the Procuring Entity and present the following documents as applicable with the documentary requirements of any letter of credit issued taking precedence:</p>

- (i) Original and four copies of the Supplier's invoice showing Goods' description, quantity, unit price, and total amount;
- (ii) Original and four copies of the negotiable, clean shipped on board bill of lading marked "freight pre-paid" and five copies of the non-negotiable bill of lading;
- (iii) Original and four copies of Supplier's factory test/inspection report;
- (iv) Delivery receipt detailing number and description of items received signed by the Procuring Entity's representative at the Project Site;
- (v) Certificate of Completion/Inspection Report signed by the Procuring Entity's representative at the Project Site;
- (vi) Original and four copies of the Inspection Receiving Report signed by the Procuring Entity's representative at the Project Site;
- (vii) Original and four copies of the certificate of origin (for imported Goods); and
- (viii) Original and four copies of the Manufacturer's and/or Supplier's warranty certificate including all other documents specified in the Technical Specifications, if any.

For purposes of this Clause the Procuring Entity's Representative at the Project Site is Sr. Department Manager - Resource Management Services.

#### **Incidental Services –**

The Supplier is required to provide all of the following services, including additional services, if any, specified in Section VII - Schedule of Requirements:

- a. performance or supervision of on-site assembly and/or start-up of the supplied Goods;
- b. furnishing of tools required for assembly and/or maintenance of the supplied Goods;
- c. furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied Goods;
- d. performance or supervision or maintenance and/or repair of the supplied Goods, for a period of time agreed by the parties, provided that this service shall not relieve the Supplier of any warranty obligations under this Contract; and
- e. training of the Procuring Entity's personnel, at the Supplier's plant and/or on-site, in assembly, start-up, operation, maintenance, and/or repair of the supplied Goods.

- f. Additional requirements specified in Section VI – Technical Specifications, if any.

The Contract price for the Goods shall include the prices charged by the Supplier for incidental services and shall not exceed the prevailing rates charged to other parties by the Supplier for similar services.

#### **Spare Parts –**

The Supplier is required to provide all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the Supplier:

1. such spare parts as the Procuring Entity may elect to purchase from the Supplier, provided that this election shall not relieve the Supplier of any warranty obligations under this Contract; and
2. in the event of termination of production of the spare parts:
  - i. advance notification to the Procuring Entity of the pending termination, in sufficient time to permit the Procuring Entity to procure needed requirements; and
  - ii. following such termination, furnishing at no cost to the Procuring Entity, the blueprints, drawings, and specifications of the spare parts, if requested

The spare parts and other components required are listed in **Section VI (Technical Specifications)** and **Section VII (Schedule of Requirements/Bid Price Schedule)** and the costs thereof are included in the contract price.

The Supplier shall carry sufficient inventories to assure ex-stock supply of consumable spare parts or components for the Goods for the period specified in the Technical Specifications.

Spare parts or components shall be supplied as promptly as possible, but in any case, within three (3) months of placing the order.

#### **Packaging –**

The Supplier shall provide such packaging of the Goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in this Contract. The packaging shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit, and open storage. Packaging case size and weights shall take into consideration, where appropriate, the remoteness of the Goods' final destination and the absence of heavy handling facilities at all points in transit.

The packaging, marking, and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly



	<p>provided for in the Contract, including additional requirements, if any, specified below, and in any subsequent instructions ordered by the Procuring Entity.</p> <p>The outer packaging must be clearly marked on at least four (4) sides as follows:</p> <p>Name of the Procuring Entity Name of the Supplier Contract Description Final Destination Gross weight Any special lifting instructions Any special handling instructions Any relevant HAZCHEM classifications</p> <p>A packaging list identifying the contents and quantities of the package is to be placed on an accessible point of the outer packaging if practical. If not practical the packaging list is to be placed inside the outer packaging but outside the secondary packaging.</p> <p><b>Transportation –</b></p> <p>Where the Supplier is required under Contract to deliver the Goods CIF, CIP, or DDP, transport of the Goods to the port of destination or such other named place of destination in the Philippines, as shall be specified in this Contract, shall be arranged and paid for by the Supplier, and the cost thereof shall be included in the Contract Price.</p> <p>Where the Supplier is required under this Contract to transport the Goods to a specified place of destination within the Philippines, defined as the Project Site, transport to such place of destination in the Philippines, including insurance and storage, as shall be specified in this Contract, shall be arranged by the Supplier, and related costs shall be included in the contract price.</p> <p>Where the Supplier is required under Contract to deliver the Goods CIF, CIP or DDP, Goods are to be transported on carriers of Philippine registry. In the event that no carrier of Philippine registry is available, Goods may be shipped by a carrier which is not of Philippine registry provided that the Supplier obtains and presents to the Procuring Entity certification to this effect from the nearest Philippine consulate to the port of dispatch. In the event that carriers of Philippine registry are available but their schedule delays the Supplier in its performance of this Contract the period from when the Goods were first ready for shipment and the actual date of shipment the period of delay will be considered force majeure.</p> <p>The Procuring Entity accepts no liability for the damage of Goods during transit other than those prescribed by INCOTERMS for DDP deliveries. In the case of Goods supplied from within the Philippines or supplied by domestic Suppliers risk and title will not be deemed to have passed to the Procuring Entity until their receipt and final acceptance at the final destination.</p>
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	<p><b>Intellectual Property Rights –</b></p> <p>The Supplier shall indemnify the Procuring Entity against all third-party claims of infringement of patent, trademark, or industrial design rights arising from use of the Goods or any part thereof.</p>
2.2	<p>Advance payment not to exceed fifteen percent (15%) of the contract amount shall be allowed and paid within sixty (60) calendar days from effectivity of the contract and upon the submission to and acceptance by the Procuring Entity of an irrevocable letter of credit or bank guarantee issued by a Universal or Commercial Bank. The irrevocable letter of credit or bank guarantee must be for an equivalent amount, shall remain valid until the goods are delivered, and accompanied by a claim for advance payment.</p> <p>All progress payments shall first be charged against the advance payment until the latter has been fully exhausted.</p> <p>The terms of payment shall be as follows:</p> <p><b>1) For Supply and Delivery Contracts:</b></p> <p>(a) On Contract Effectivity: Advance payment of Fifteen percent (15%) of the total Contract Price shall be paid within sixty (60) days from effectivity of the Contract and upon submission of a claim and an irrevocable letter of credit or bank guarantee issued by a Universal or Commercial Bank for the equivalent amount valid until the Goods are delivered and in the form provided in Section VIII- Bidding Forms.</p> <p>(b) On Delivery: Eighty percent (80%) of the Contract Price of the <b>delivered Goods</b> shall be considered for payment, less the total amount of advance payment, if any and other deductions. If the amount is sufficient to fully recoup the advance payment, the remainder after deductions shall be paid to the Supplier within sixty (60) days after the date of receipt of the Goods and upon submission of the documents (i) through (vi) specified in the <u>SCC</u> provision on Delivery and Documents. Otherwise, the total delivery payment shall be charged against the advance payment and the remaining advance payment will be fully recouped from the succeeding claims.</p> <p>(c) On Acceptance: The remaining twenty percent (20%) of the Contract Price of the <b>delivered Goods</b> shall be paid to the Supplier within sixty (60) days after the date of submission of the acceptance and inspection certificate for the respective delivery issued by the Procuring Entity's authorized representative. In the event that no acceptance certificate is issued by the Procuring Entity's authorized representative within forty five (45) days after successful test and commissioning, if required, the Supplier shall have the right to claim payment of the remaining twenty percent (20%) subject to the Procuring Entity's own verification of the reason(s) for the failure to issue documents (vii) and (viii) as described in the <u>SCC</u> provision on Delivery and Documents.</p>

**2) For Supply, Delivery, Installation, Test and Commissioning Contracts:**

- (a) On Contract Effectivity: Advance payment of Fifteen percent (15%) of the total Contract Price shall be paid within sixty (60) days from effectivity of the Contract and upon submission of a claim and an irrevocable letter of credit or bank guarantee issued by a Universal or Commercial Bank for the equivalent amount valid until the Goods are delivered and in the form provided in Section VIII- Bidding Forms.
- (b) On Delivery: Eighty percent (80%) of the price of the **delivered Goods**, excluding price for installation, test and commissioning shall be considered for payment, less the total amount of advance payment, if any and other deductions. If the amount is sufficient to fully recoup the advance payment, the remainder after deductions shall be paid to the Supplier within sixty (60) days after the date of receipt of the Goods and upon submission of the documents (i) through (vi) specified in the SCC provision on Delivery and Documents. Otherwise, the total delivery payment shall be charged against the advance payment and the remaining advance payment will be fully recouped from the succeeding claims.
- (c) On Acceptance: The remaining twenty percent (20%) of the price of the **delivered Goods** plus price for installation, test and commissioning shall be paid to the Supplier within sixty (60) days after the date of submission of the acceptance and inspection certificate for the respective delivery issued by the Procuring Entity's authorized representative. In the event that no acceptance certificate is issued by the Procuring Entity's authorized representative within forty five (45) days after successful test and commissioning, the Supplier shall have the right to claim payment subject to the Procuring Entity's own verification of the reason(s) for the failure to issue documents (vii) and (viii) as described in the SCC provision on Delivery and Documents.

**3) For Supply, Delivery, Installation, Test and Commissioning Contracts where Installation, Test and Commissioning prices are included in the supply price:**

- (a) On Contract Effectivity: Advance payment of Fifteen percent (15%) of the total Contract Price shall be paid within sixty (60) days from effectivity of the Contract and upon submission of a claim and an irrevocable letter of credit or bank guarantee issued by a Universal or Commercial Bank for the equivalent amount valid until the Goods are delivered and in the form provided in Section VIII- Bidding Forms.
- (b) On Delivery: Sixty percent (60%) of the price of the **delivered Goods** shall be considered for payment, less the total amount of advance payment, if any and other deductions. If the amount is sufficient to fully recoup the advance payment, the remainder after deductions shall be paid to the Supplier within sixty (60) days after the date of receipt of the Goods and upon submission of the documents (i) through (vi) specified in the SCC provision on Delivery and Documents. Otherwise, the total delivery payment shall be charged against the advance

	<p>payment and the remaining advance payment will be fully recouped from the succeeding claims.</p> <p>(c) On Acceptance: The remaining forty percent (40%) of the price of the <b>delivered Goods</b> shall be paid to the Supplier within sixty (60) days after the date of submission of the acceptance and inspection certificate for the respective delivery issued by the Procuring Entity's authorized representative. In the event that no acceptance certificate is issued by the Procuring Entity's authorized representative within forty five (45) days after successful test and commissioning, the Supplier shall have the right to claim payment subject to the Procuring Entity's own verification of the reason(s) for the failure to issue documents (vii) and (viii) as described in the <u>SCC</u> provision on Delivery and Documents</p>
3.2	<ol style="list-style-type: none"> <li>1. The following must be indicated in the performance bond to be posted by the Contractor: <ol style="list-style-type: none"> <li>i. Company Name</li> <li>ii. Correct amount of the Bond</li> <li>iii. Contract/Purchase Order Reference Number</li> <li>iv. Purpose of the Bond: <p>"To guarantee the faithful performance of the Principal's obligation to undertake <u>(Contract/Purchase Order Description)</u> in accordance with the terms and conditions of <u>(Contract No. &amp; Schedule/Purchase Order No.)</u> entered into by the parties."</p> </li> </ol> </li> <li>2. The bond shall remain valid and effective until the duration of the contract <u>(should be specific date reckoned from the contract effectivity)</u> plus sixty (60) days after NPC's acceptance of the last delivery/final acceptance of the project.</li> <li>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.</li> <li>4. Other required conditions in addition to the standard policy terms issued by the Bonding Company: <ol style="list-style-type: none"> <li>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;</li> </ol> </li> </ol>

	<ul style="list-style-type: none"><li>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;</li><li>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.</li></ul>
4	The inspections and tests that will be conducted are specified in the Technical Specifications.

# SECTION VI

# TECHNICAL SPECIFICATIONS

**TECHNICAL SPECIFICATION**  
**EW - ELECTRICAL WORKS**  
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## **SECTION VI – TECHNICAL SPECIFICATIONS**

### **PART I – TECHNICAL SPECIFICATIONS**

#### **TS-1.0 GENERAL**

This section covers the technical and associated requirements for the complete system for the Rehabilitation/Restoration of Dam Instrumentations of Angat Dam Main and Secondary Dykes located in San Lorenzo, Norzagaray, Bulacan.

All support shall be suitable for the intended purpose and comply with all applicable regulations, quality standards, and regulations. The Supplier shall submit all related drawings and documents deemed necessary prior to the execution of the work, subject to the approval of NPC.

The works shall be performed and completed satisfactorily by generally accepted modern engineering practice.

#### **TS-2.0 SCOPE OF WORK**

The works to be done under this specification and other associated requirements shall generally include the rehabilitation/restoration, testing, and commissioning of instrumentation devices of Angat Dam Main and Secondary Dykes but are not limited to the following:

1. Conduct site inspection for the determination of station location, equipment identification, and compatibility analysis;
2. Restoration/reconnection, Test, and Commissioning of:
  - a. Strong Motion Accelerometers complete with required accessories and appurtenances for the whole and reliable operation of the system;
  - b. Solar Panel set and power cables;
  - c. Standpipe Piezometer instruments to the Data Logger to be supplied;
  - d. Communication devices and software to be integrated with the existing system. The Supplier shall ensure system compatibility of each supplied equipment and device to suit actual site requirements and shall ensure real-time monitoring of all instruments;
  - e. IP Radio Communication System;
  - f. LED Lighting system with sensor-switching capability, including power conductors and other appurtenances required for the interfacing of supplied LED lighting;
3. Supply of Data Logger and required accessories;
4. Conduct of Propagation Testing;
5. Testing and Commissioning of Communication System;
6. Conduct admin and user training of NPC personnel regarding operation and maintenance of the supplied equipment, including system configuration, setting, and parameterization; and,
7. Provide technical assistance and services during the warranty period, such as periodic assessment of the operating condition.





This includes all maintenance services to be rendered upon request if any abnormality occurs within the warranty period.

8. Reconstruction/restructuring and setting of damaged SMA/SPP housing/enclosure.

The work shall also include all the other works and services not indicated on the technical specifications necessary for the complete and reliable operation of the system, which the Supplier shall, at this moment, provide.

#### **TS-3.0 DELIVERY PERIOD AND LOCATION**

The delivery period shall be NINETY (90) CALENDAR DAYS reckoned upon receipt of the Notice to Proceed (NTP).

The materials and equipment to be supplied shall be delivered to ANGAT DAM, SAN LORENZO, NORZAGARAY, BULACAN.

#### **TS-4.0 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 intended purpose. 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. American Society for Testing and Materials       | ASTM |
| 4. National Electrical Manufacturer's Association   | NEMA |
| 5. Underwriters Laboratory                          | UL   |
| 6. International Electro-Technical Commission       | IEC  |
| 7. International Standards Organization             | ISO  |
| 8. National Electrical Code                         | NEC  |
| 9. National Electrical Safety Code                  | NESC |
| 10. Philippine Electrical Code                      | PEC  |
| 11. Illuminating Engineering Society                | IES  |
| 12. Philippine National Standards                   | PNS  |

These codes and standards set forth the minimum requirements that may be exceeded by the Supplier if, in the Supplier/ Supplier's judgment and with NPC's acceptance, superior or more economical designs or materials

are available for the successful and continuous operation of the Supplier's equipment as required by this specification.

The equipment furnished shall be governed by, but not limited to, the latest issues of the applicable Codes and Standards, including all appendices, in effect at the time of the purchase order unless otherwise stated in the specification.

## **TS-5.0 TECHNICAL REQUIREMENTS**

### **General**

This section describes the technical specifications of all materials and equipment to be furnished by the Supplier.

The specification covers the Rehabilitation/Restoration of Dam Instrumentation of Angat Dam Main and Secondary Dykes located in San Lorenzo, Norzagaray, Bulacan.

The specification is not intended to give all the details or describe all the aspects of the scope of works, including all equipment necessary to ensure that the supplied and installed equipment is complete and ready for operation.

The work required herein, including all works and services, although not explicitly mentioned and detailed but required for the complete, safe, and reliable operation, shall be provided by the Supplier.

The Supplier shall install furnished equipment neatly, in high quality, and satisfactorily, in conformance with modern engineering methods and practices.

The Supplier shall meet the minimum requirements specified in the technical specifications. Non-compliance will be grounds for disqualification.

## **TS-5.1 STRONG MOTION ACCELEROMETER (SMA)**

The affected one (1) SMA unit shall be restored/reconnected on site and restored to working correctly and reliably at its designated function.

Four (4) SMAs shall be integrated with a photocell-controlled LED lighting fixture. The instrument and housing/enclosure must be watertight, and access shall be secured from theft or unauthorized access. Spare batteries shall be supplied.

SMAs shall be able to transmit data and provide access to waveform monitoring, viewing, and direct downloading of events via EtherNet, calibration, configuration, and maintenance through the wireless communication system.



## TS-5.2 STANDPIPE PIEZOMETER (SPP)

Three (3) affected SPPs shall be restored/reconnected to the station data logger to be supplied and work correctly and reliably to their designated function. It shall be able to transmit data wirelessly through the IP Communication system.

Two (2) SPP stations shall be integrated with a photocell-controlled LED lighting fixture. The instrument piers' housing/enclosure must be watertight, and access shall be secured from theft or unauthorized access. Spare batteries shall be supplied.

The minimum specifications of the Data Logger shall be as follows:

1. Data Logger	
a. Channel Capacity	At least 3
b. Accuracy	± 0.05%
c. Operating Temperature	3 ~ 50°C or higher
d. Scan Interval	10s ~ 24 hrs.
e. Connection	10-Pin Connector, 6-Pin Waterproof Connector, RS-232/USB/RS-485

## TS-5.3 IP COMMUNICATION RADIO

The IP Communication Radio shall be capable of transmitting and receiving data and information reliably using a point-to-multipoint (PTMP) / point-to-point (PTP) system in designated areas of Angat Dam.

IP Communication Radio housing/enclosure shall be protected from unauthorized access.

The minimum specifications of the IP Communication Radio shall be as follows:

Description	Requirements
1. Frequency	≥5 GHz
2. Channel Bandwidth	5, 10, 20 or 40MHz
3. Operating Temperature	3 ~ 55°C or higher
4. Standard Compliance	IEC
5. Communication Interface	IPV4/IPV6,HTTP,100/1000 Base T
6. Power Supply	POE
7. Physical Layer	2x2 MIMO/OFDM
8. Wind Survival	Up to 180 Km/h
9. Protection	At least IP55 Rating
10. Encryption	128-bit AES

#### TS-5.4 INTEGRATED SOLAR LIGHT

Solar LED lighting systems shall be self-powered and have a built-in lithium iron phosphate battery, an intelligent controller, and a monocrystalline solar panel.

It shall be composed of a photoelectric and sensor-controlled switching system. The sensor shall detect the presence of activity/movement in the area. If no activity/motion is detected, illumination shall dim; maximum illumination shall be set manually.

The Solar LED lighting system shall be integrated with the supplied instrumentation system and attached to the equipment installation poles through mounting brackets. The following specifications are required:

Description	Requirements
1. Solar Panel Parameters	
a. Rated Power	≥110W
b. Rated Voltage	18VDC
2. Battery Parameters	
a. Type	LiFePO4
b. Rated Voltage	12.8VDC
c. Ampacity	≥50AH
3. Rated Power	≥80W
4. Charge Time	4H
5. Protection	IP66
6. Operating Temperature	Up to 50°C
7. Luminous Flux	≥13,600LM
8. Lighting Mode	Variable

#### TS-5.5 WORKSTATION

The specification provides data acquisition and data backup of the system configuration, as well as programming the radio data transceivers, microcomputer controllers, and switches.

Requirements	Specifications
1. Type	Laptop computer
2. CPU	AMD Ryzen-9 or higher
3. Memory	16GB RAM or higher
4. Storage	1TB M.2 PCIe NVME SSD or higher
5. Operating & Application System	a) Licensed Windows 11 Pro or better b) Licensed MS Office 2021 or better c) Equipment application/programming software



<b>Requirements</b>	<b>Specifications</b>
6. Video Card	4GB or higher
7. Display	14.0" OLED or better
8. Input/Output (I/O) Interface	Built-in-audio, headphone, microphone & speaker jacks, SD card reader, USB & HDMI ports,
9. Built-in Peripheral Devices	720p HD camera
10. Power Supply	(±5%) 220VAC 60Hz power adaptor
11. Accessories	Carrying bag, USB optical mouse, and 16GB USB 3.0 external drive

## **TS-6.0 PREPARATORY AND INSTALLATION WORKS**

### **TS-6.1 Preparatory Works**

#### **General**

The work to be done shall consist of the following items:

1. Survey and Investigation
2. Transportation and Storage

The work to be done shall be conducted to prepare for the installation of instrumentation and telecommunications equipment. All expenses necessary for the preparatory works shall be included in the contract price.

#### **Survey and investigation**

Surveys and investigations shall be conducted at each job site to obtain information on road conditions, site conditions, and civil works conditions.

#### **Transportation and storage**

Transportation shall mean carrying the instrumentation, telecommunication equipment, and materials from the supplier's stockroom/ stockyard to each job site.

Storage shall mean keeping the instrumentation, telecommunications equipment, and materials in NPC's stockroom and stockyard.

## **TS-6.2 Installation Works**

### **General**

The Supplier shall carry out all the installation works as specified in the Technical Specifications or as directed by NPC by furnishing all labor, materials, and equipment necessary to complete the installation according to the specifications and industry standards.

The Supplier shall provide complete details of proper handling, transport and storage, installation, testing, performance guarantees, etc.

The Supplier shall ensure that the equipment is installed according to the manufacturer's recommendations, check control system hardware and software configuration, perform logic configuration changes or additions, and make tuning adjustments necessary to keep the system in trouble-free operation. The supplier shall instruct the personnel to properly operate and maintain the equipment furnished and perform hardware troubleshooting and installation. At the minimum, an experienced engineer/service technician is required for this task.

## **TS-7.0 TESTING AND COMMISSIONING**

### **TS-7.1 Requirement of Adjustment and Test**

By the standard and specifications, the Supplier shall submit, for approval, the test program describing each test and adjustment to be performed together with the time and manpower schedule to conduct the test. The test program, on completion, shall define the sequence of tests, equipment to be used, equipment operation procedure, and detailed procedure for performing the test. Moreover, it shall contain the design values, technical particulars, or any other standard data for testing, which shall be treated as the criteria for evaluating such tests.

The supplier shall require experienced and skilled engineers and technicians along this line for adjustment and testing.

The following are the major adjustment items:

1. Adjustment of individual equipment at each site.
  - a. Visual Inspection of high-quality satisfaction of mounting, cabling, and wiring; physical inventory of system stations and equipment;
  - b. System performance and characteristic test; and,
  - c. Electrical Characteristics
2. Overall adjustment of the whole system.
  - a. Overall Operation
  - b. Function

## **TS-7.2 Work Assembly Tests**

### **General**

The instrumentation and telecommunications equipment to be furnished shall be completely assembled and adjusted at the Supplier's workshop, and routine shop tests and another test will be made. All parts shall be marked appropriately for ease of assembly in the field. All tests required herein shall be witnessed by NPC or his authorized representative unless waived in writing, and no equipment shall be installed until released for delivery by NPC authorized representative.

The test equipment, test methods, measurements, and computations shall be according to the latest applicable requirements of ANSI and IEC Standards except in cases where otherwise set forth. They shall be subject to NPC's approval.

### **Shop Test**

Routine, design, quality conformance tests, and other necessary tests shall be performed according to the ANSI Standard or equivalent IEC Standard.

The Supplier shall prepare for tests, provide the test apparatus and personnel, and notify NPC of the test date ten (10) days in advance.

The tests noted below shall be performed and witnessed by an authorized representative on the equipment covered by the Specification at the Manufacturer's plant before shipment.

## **TS-7.3 Design/ Routine/ Type Tests Report**

The Supplier shall submit a certified copy of the design/ routine/ type test results on each type of equipment to show its design and manufacturing quality adequacy.

The Supplier shall furnish a detailed description of the test, test procedures, and results.

## **TS-7.4 Commissioning and Joint Final Inspection (JFI)**

By the standard and specification, the Supplier shall be required to submit the detailed site acceptance test parameters, checklist, punch list, generated punch list if there are any, system test parameters, and site cleanup checklist describing each test and adjustment to be performed together with the time and manpower schedule before the conduct of JFI.

Test on completion shall be done in the presence of NPC representatives. Inspection shall include, but not be limited to, the following:

1. At each site:
  - a. Visual Inspection of high-quality satisfaction of mounting, cabling, and wiring; physical inventory of system stations and equipment;

- b. System performance and characteristic test; and,
- c. Electrical Characteristics

2. Overall Test for the Whole System:

- a. Overall Operation
- b. Function

Any corrective works, deficiency findings, or not by required specifications will form part of the punch list items generated after the conduct of JFI. NPC must comply with and accept The punch list items before issuing the Certificate of Completion of Works. The date of acceptance of the compliance report will determine the completion of the project.

**TS-8.0 WARRANTY**

The entire system's equipment warranty period is one (1) year from the date the project's Certificate of Completion of Works (Final Acceptance) is issued.

The Supplier shall provide a Manufacturer Certificate of Warranty & Support for the following:

- 1. Telemetry Equipment, including application software
- 2. Point-to-Point (P2P) IP-radio Equipment

The Supplier shall remedy, at his own expense, any defects against which the equipment is guaranteed by making all necessary repairs or replacements.

**TS-9.0 SUPPORT SERVICES**

During the warranty period, the Supplier must provide its clients with free remote support services for system administration, monitoring, maintenance, and repair operations.

**TS-10.0 ACCEPTANCE CRITERIA**

An acceptance certificate shall be issued only after all the items have been completely delivered, inspected, tested, and found to conform to the specifications. If any fail to pass the inspection and actual testing, the user may, at its judgment, direct the Supplier to replace within sixty (60) calendar days as the goods in question.

**TS-11.0 DATA AND DOCUMENTS TO BE SUBMITTED**

- a. To be submitted with the bid:
  - a.1 Completely filled-out Technical Data Sheets (TDS);
  - a.2 The Supplier must submit a certificate of Resellership from the Distributor of the offered brand directly addressed to





the BAC-NPC, indicating therein the PR/Reference number.

Note: The Distributor's certificate of Resellers shall be current and valid on the bid opening date as advertised.

a.3 Certificate of Actual Site Inspection, and;

b. To be submitted during post-qualification:

- b.1 Certification from the Manufacturer's central/regional office stating that the Supplier is an Authorized Business Partner of the brand being offered;
- b.2 Letter of Confirmation from the Manufacturer that a local agent or representative is available to provide "After Sales Service" to the supplied components/parts/accessories during and after the warranty period. Name, address, and contact number shall be provided;
- b.3 Manufacturer's Brochures/Catalogues/Drawings which contain information/data to support the Supplier's submitted and filled-out Technical Data Sheet;
- b.4 Generated software-based propagation test analysis report of all the warning station sites for expected radio communication coverage.
- b.5 Certificate from their customer (end-user) duly addressed to the Supplier that the supplied components/parts/accessories, like the items subject to bidding, have performed satisfactorily in service.

Note: Authorization to bid shall be current and valid for at least Six (6) months from the date of bid opening as advertised.

c. To be submitted before or upon delivery:

- c.1 "Certificate of Origin" from the Original Equipment Manufacturer;
- c.2 "Warranty Certificate" for one (1) year against factory defects;
- c.3 Quality Assurance or Quality Inspection Certificate from the Manufacturer;
- c.4 Installation Manual, and;

- c.5 Certificate to show that the item to be delivered is brand new.

All drawings and documents in Clause TS-11.0 item c shall be submitted to the Manager—DMD for evaluation and approval before acceptance is issued.

**TS-12.0 TRAINING**

The Supplier shall conduct one (1) day of comprehensive training for the complete use of the equipment for at least four (4) NPC DMD personnel. The training shall cover the equipment's testing functionalities, operation, troubleshooting, and maintenance.

The Supplier shall provide an outline of the training course and schedule for NPC approval, including all the necessary training materials.

**TS-13.0 MEASUREMENT OF PAYMENT**

Payment will be made at the contract price in the Schedule of Requirements, which shall constitute the total compensation for the supply, installation, propagation testing, and commissioning of the equipment/ component, including accessories.

# SECTION VI

## TECHNICAL DATA SHEETS

## **SECTION VI – TECHNICAL SPECIFICATIONS**

### **PART II – TECHNICAL DATA SHEETS**

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## **SECTION VI – TECHNICAL SPECIFICATIONS**

### **PART II – TECHNICAL DATASHEETS**

#### **REHABILITATION/RESTORATION OF DAM INSTRUMENTATIONS OF ANGAT DAM MAIN AND SECONDARY DYKES LOCATED IN SAN LORENZO, NORZAGARAY, BULACAN.**

##### **Technical Requirements**

- a. The Supplier shall complete this technical data sheet and submit the filled-up form with the technical proposal. The Supplier shall use continuation sheets as necessary for any additional information, keeping to the format shown herein or reproducing the same.
- b. NPC reserves the right to reject Bids without proper and specific data and information as required herein.
- c. The data required are technical features and characteristics of the Equipment/ component/material to be provided by the Supplier. The Supplier's proposal shall be at least equal or superior to the requirements specified by NPC.

ITEM	DESCRIPTION	REQUIREMENTS	SUPPLIER'S DATA
1.0	<b>STRONG MOTION ACCELEROMETER (SMA)</b>		
	1. Manufacturer	By Supplier	
	2. Place of Manufacture	By Supplier	
	3. Brand/Model	By Supplier	
	4. Quantity	One (1) unit	
	5. One (1) Unit is to be configured, restored, and reconnected on-site to work correctly and reliably at its designated function.	To perform	
	6. Four (4) SMAs shall be integrated with a photocell-controlled LED lighting fixture. The instrument and housing/enclosure must be watertight and have spare batteries.	To perform	
	7. Four (4) SMAs shall be integrated with a photocell-controlled LED lighting fixture. The instrument and housing/enclosure must be watertight.	To perform	

Name of Firm

Name & Signature of Representative

Designation

ITEM	DESCRIPTION	REQUIREMENTS	SUPPLIER'S DATA
<b>2.0</b>	<b>STANDPIPE PIEZOMETER (SPP)</b>		
	1. Three (3) affected SPPs shall be restored/reconnected to the station data logger to be supplied and work correctly and reliably to their designated function.	To perform	
	2. Three (3) affected SPPs shall be restored/ reconnected to the station data logger to be supplied and work correctly and reliably to their designated function.	To perform	
<b>3.0</b>	<b>DATA LOGGER</b>		
	1. Manufacturer	By Supplier	
	2. Place of Manufacture	By Supplier	
	3. Brand/Model	By Supplier	
	4. Quantity	By Supplier	
	5. Output	0-5V, 10mV/v	
	6. Accuracy	<0.1% F.S.	

Name of Firm

Name & Signature of Representative

Designation

ITEM	DESCRIPTION	REQUIREMENTS	SUPPLIER'S DATA
	<b>7. Data Logger</b>		
	a. Channel Capacity	At least 3	
	b. Accuracy	± 0.05%	
	c. Operating Temperature	Up to 50°C or higher	
	d. Scan Interval	10s ~ 24 hrs.	
	e. Interface	10-pin Connector, 6-pin Waterproof Connector, RS-232/USB/RS-485	
	<b>8. Solar Power System</b>		
	a. Capacity	≥310W	
	b. MPPT Solar Charge Controller	≥20A	
	c. Deep Cycle Battery	≥150AH	
	d. Solar Cable	Twin-core, 15-meters x 4mm <sup>2</sup>	
	e. Mounting Kit	To be provided	
<b>4.0</b>	<b>IP COMMUNICATION RADIO SYSTEM</b>		
	1. Manufacturer	By Supplier	
	2. Place of Manufacture	By Supplier	
	3. Brand/Model	By Supplier	
	4. Quantity	By Supplier	

Name of Firm

Name & Signature of Representative

Designation



PART II – TECHNICAL DATA SHEETS

PR NO. HO-DRW24-008

ITEM	DESCRIPTION	REQUIREMENTS	SUPPLIER'S DATA
	5. Type	By Supplier	
	6. Power Supply	PoE	
	7. Antenna Gain	≥25 dBi	
	8. Antenna Feed	Dish Reflector	
	9. Protection	IP55	
	10. Wind Survival	Up to 180 Km/h	
	11. LED Indicator	Power, Ethernet, Signal Strength Indicator	
	12. Operating Temperature	Up to 55°C or higher	
	13. Frequency	≥5 GHz	
	14. Standards Compliance	IEC 68-2-5, IEC 68-2-14, IEC 68-2-6	
	15. Cat5e Outdoor Carrier Class Shielded Ethernet Cable	24AWG with ESD drain wire, PE-outdoor rated WP jacket, L2 Multi-layered shielding	
	16. 2 x RJ45 Gigabit Ethernet Surge Suppressor	56V, Line-to-line, and line-to-ground Protection Mode (TVS Diodes)	
<b>5.0</b>	<b>INTEGRATED SOLAR LIGHT</b>		
	1. Manufacturer	By Supplier	
	2. Place of Manufacture	By Supplier	
	3. Brand/Model	By Supplier	
	4. Quantity	By Supplier	

Name of Firm

Name & Signature of Representative

Designation

PART II – TECHNICAL DATA SHEETS

PR NO. HO-DRW24-008

ITEM	DESCRIPTION	REQUIREMENTS	SUPPLIER'S DATA
	5. Solar Panel Parameters		
	a. Rated Power	≥110W	
	b. Rated Voltage	18VDC	
	6. Battery Parameters		
	a. Type	LiFePO4	
	b. Rated Voltage	12.8VDC	
	c. Ampacity	≥50AH	
	7. Rated Power	≥80W	
	8. Charge Time	≤4H	
	9. Protection	IP66	
	10. Operating Temperature	Up to 50°C or higher	
	11. Luminous Flux	≥13,600LM	
<b>6.0</b>	<b>WORKSTATION</b>		
	1. Type	Laptop computer	
	2. CPU	AMD Ryzen-9 or higher	
	3. Memory	16GB RAM or higher	
	4. Storage	1TB M.2 PCIe NVME SSD or higher	
	5. Operating System & Application System	a) Licensed Windows 11 Pro or better b) Licensed MS Office 2021 or better c) Equipment application/ programming software	

Name of Firm

Name & Signature of Representative

Designation

PART II – TECHNICAL DATA SHEETS

PR NO. HO-DRW24-008

ITEM	DESCRIPTION	REQUIREMENTS	SUPPLIER'S DATA
	6. Video Card	4GB or higher	
	7. Display	14.0" OLED or better	
	8. Input/Output (I/O) Interface	Built-in-audio, headphone, microphone & speaker jacks, SD card reader, USB & HDMI ports	
	9. Built-in Peripheral Devices	720p HD camera	
	10. Power Supply	(±5%) 220VAC 60Hz power adaptor	
	11. Accessories: Carrying bag, USB optical mouse, and 16GB USB 3.0 external drive	To be provided	
<b>7.0</b>	<b>TESTING AND COMMISSIONING</b>		
	a. Requirement and Adjustment and Test	To perform	
	b. Commissioning and Joint Final Inspection	To perform	

Name of Firm

Name & Signature of Representative

Designation

PART II – TECHNICAL DATA SHEETS

PR NO. HO-DRW24-008

ITEM	DESCRIPTION	REQUIREMENTS	SUPPLIER'S DATA
<b>8.0</b>	<b>TRAINING</b>		
	Refer to Part I-Technical Specifications, Clause TS-12.0	To be provided	
<b>9.0</b>	<b>WARRANTY</b>		
	Refer to Part I-Technical Specifications, Clause TS-8.0	To be included	

\_\_\_\_\_  
Name of Firm

\_\_\_\_\_  
Name & Signature of Representative

\_\_\_\_\_  
Designation

## SECTION VII - SCHEDULE OF REQUIREMENTS

PR NO. HO-DRW24-008

**SECTION VII - SCHEDULE OF REQUIREMENTS**  
**REHABILITATION / RESTORATION OF DAM INSTRUMENTATIONS OF**  
**ANGAT DAM MAIN AND SECONDARY DYKES LOCATED**  
**HO-DRW24-008**

ITEM NO.	DESCRIPTION	QTY/ Unit	* CODE	UNIT PRICE FOR GOODS AND RELATED SERVICES TO BE SUPPLIED AND DELIVERED						TOTAL PRICE
				Unit Price of Goods Delivered up to Philippine Port +(Phil. Peso)	Import Duties & other Levies Imposed by Phil. Govt. (Phil. Peso)	Value Added Tax and other Taxes Imposed by Phil. Govt. (Phil. Peso)	Local Transport from Port to Delivery Site <(Phil. Peso)	Labor (Installation, Testing, and Commissioning) >(Phil. Peso)	Total Unit Price (E+F+G+H+I)	Local Currency (Phil. Peso) (K=J x C)
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)
1	REHABILITATION / RESTORATION OF DAM INSTRUMENTATIONS OF ANGAT DAM MAIN AND SECONDARY DYKES LOCATED IN SAN LORENZO, NORZAGARAY, BULACAN	1 SET								

\* Bidders shall enter a code representing the Country of Origin of all imported Equipment, Materials and Accessories.

+ Cost of equipment, freight, insurance, etc. up to Phil. port of entry.

< Unit Price for Local Transportation, insurance and other local costs incidental to delivery of the goods from the Phil port of entry to final delivery site.

> Unit Price for Local Transportation, insurance and other local costs incidental to delivery of the goods from local source to final delivery site.

**Note:** National Power Corporation, Angat Dam, San Lorenzo, Norzagaray, Bulacan.

Code	Country of Origin

Supplier: \_\_\_\_\_

Signature of Supplier: \_\_\_\_\_

## SECTION VIII

# BIDDING FORMS

## **SECTION VIII – BIDDING FORMS**

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NPCSF-GOODS-03	- Statement of the bidder's Single Largest Completed Contract (SLCC) similar to the contract to be bid
NPCSF-GOODS-04	- Computation of Net Financial Contracting Capacity (NFCC)
NPCSF-GOODS-05	- Joint Venture Agreement
NPCSF-GOODS-06a	- Form of Bid Security : Bank Guarantee
NPCSF-GOODS-06b	- Form of Bid Security : Surety Bond
NPCSF-GOODS-06c	- Bid Securing Declaration Form
NPCSF-GOODS-07	- Omnibus Sworn Statement (Revised)
NPCSF-GOODS-08	- Bid Letter
Sample Form	- Bank Guarantee Form for Advance Payment
Sample Form	- Certification from DTI as Domestic Bidder

Standard Form No: NPCSF-GOODS-01

**Checklist of Technical & Financial Envelope Requirements for Bidders****A. THE 1<sup>ST</sup> ENVELOPE (TECHNICAL COMPONENT) SHALL CONTAIN THE FOLLOWING:****1. ELIGIBILITY DOCUMENTS****a. (CLASS A)**

- PhilGEPs Certificate of Registration and Membership under Platinum Category (all pages) in accordance with Section 8.5.2 of the Revised IRR of RA. 9184;

**Note:** The failure by the prospective bidder to update its Certificate with the current and updated Class "A" eligibility documents shall result in the automatic suspension of the validity of its Certificate until such time that all of the expired Class "A" eligibility documents has been updated

- 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-GOODS-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-GOODS-03) complete with the following supporting documents:

1. Certificate of Acceptance; or Certificate of Completion; or Official Receipt (O.R); or Sales Invoice

*(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.)*

- Duly signed computation of its Net Financial Contracting Capacity (NFCC) at least equal to the ABC (NPCSF-GOODS-04) or a Committed Line of Credit (CLC) at least equal to ten percent (10%) of the ABC, issued by a Universal or Commercial Bank; If the Bidder opted to submit a Committed Line of Credit (CLC), the bidder must submit a granted credit line valid/effective at the date of bidding.

**b. (CLASS B)**

- For Joint Venture (if applicable), any of the following:

- Valid Joint Venture Agreement (NPCSF-GOODS-05)

**OR**

- Notarized statements from all the potential joint venture partners stating that they will enter into and abide by the provisions of the JVA, if awarded the contract

- Certification from the relevant government office of their country stating that Filipinos are allowed to participate in their government procurement activities for the same item/product (For foreign bidders claiming eligibility by reason of their country's extension of reciprocal rights to Filipinos)



Standard Form No: NPCSF-GOODS-01

## 2. Technical Documents

- Bid Security, any one of the following:
  - Bid Securing Declaration (NPCSF-GOODS-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-GOODS-06a) - 2% of ABC;  
**OR**
  - Surety Bond callable upon demand issued by a reputable surety or insurance company (NPCSF-GOODS-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-GOODS-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)
- Documents to be submitted with the Proposal as specified in Clause TS-11.0(a) of Section VI - Technical Specifications;
- Complete eligibility documents of the proposed subcontractor, if any

### **B. THE 2<sup>ND</sup> ENVELOPE (FINANCIAL COMPONENT) SHALL CONTAIN THE FOLLOWING:**

- Duly signed Bid Letter indicating the total bid amount in accordance with the prescribed form (NPCSF-GOODS-08)
- Duly signed and completely filled-out Schedule of Requirement (Section VII) indicating the unit and total prices per item and the total amount in the prescribed Price Schedule form.
- For Domestic Bidder claiming for domestic preference:
  - Letter address to the BAC claiming for preference
  - Certification from DTI as Domestic Bidder in accordance with the prescribed forms provided

*Standard Form No: NPCSF-GOODS-01***CONDITIONS:**

1. Each Bidder shall submit Two (2) copies of the first and second components of its Bid, marked Original and photocopy. Only the original copy will be read and considered for the bid. Any misplaced document outside of the Original copy will not be considered. The photocopy is ONLY FOR REFERENCE. 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. In the case of foreign bidders, the eligibility requirements under Class "A" Documents (except for Tax Clearance) may be substituted by the appropriate equivalent documents, if any, issued by the country of the foreign bidder concerned. The eligibility requirements or statements, the bids, and all other documents to be submitted to the BAC must be in English. If the eligibility requirements or statements, the bids, and all other documents submitted to the BAC are in foreign language other than English, it must be accompanied by a translation of the documents in English. The documents shall be translated by the relevant foreign government agency, the foreign government agency authorized to translate documents, or a registered translator in the foreign bidder's country; and 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.  
  
These documents shall be accompanied by a Sworn Statement in a form prescribed by the GPPB stating that the documents submitted are complete and authentic copies of the original, and all statements and information provided therein are true and correct. Upon receipt of the said documents, the PhilGEPS shall process the same in accordance with the guidelines on the Government of the Philippines – Official Merchants Registry (GoP-OMR).
3. 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.

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

Name of Contract/ Project Cost	a. Owner's Name b. Address c. Telephone Nos.	Nature of Work	Bidder's Role		a. Date Awarded b. Date Started c. Date of Completion or Contract Duration/ Date of Delivery	Value of Outstanding Works / Undelivered Portion
			Description	%		
<b>Government</b>						
<b>Private</b>						
<b>Total Cost</b>						

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

- Submitted by : \_\_\_\_\_  
(Printed Name & Signature)
- Designation : \_\_\_\_\_
- Date : \_\_\_\_\_

## SECTION VIII – BIDDING FORMS

Standard Form Number: NPCSF-GOODS-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 any of the following: Certificate of Acceptance; or Certificate of Completion; 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-GOODS-04

**NET FINANCIAL CONTRACTING CAPACITY (NFCC)**

- A. Summary of the Supplier's/Distributor's/Manufacturer'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 Supplier / Distributor / Manufacturer

\_\_\_\_\_  
Signature of Authorized Representative

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

Standard Form Number: NPCSF-GOODS-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. _____	P _____
2. _____	P _____

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*

\_\_\_\_\_  
*Official Designation*

\_\_\_\_\_  
*Name of Firm*

\_\_\_\_\_  
*Name & Signature of Authorized Representative*

\_\_\_\_\_  
*Official Designation*

\_\_\_\_\_  
*Name of Firm*

*Witnesses*

1. \_\_\_\_\_

2. \_\_\_\_\_

**[Jurat]**

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

Standard Form Number: NPCSF-GOODS-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-GOODS-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 Surety), 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 than 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 Number: NPCSF-GOODS-06b*  
*Page 2 of 2*

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 No: NPCSF-GOODS-06c

REPUBLIC OF THE PHILIPPINES )  
CITY OF \_\_\_\_\_ ) S.S.

**BID-SECURING DECLARATION**  
**REHABILITATION / RESTORATION OF DAM INSTRUMENTATIONS OF ANGAT DAM**  
**MAIN AND SECONDARY DYKES LOCATED IN SAN LORENZO, NORZAGARAY,**  
**BULACAN**  
**(PR NO. HO-DRW24-008)**

To: **National Power Corporation**  
Gabriel Y. Itchon Building  
Sen. Miriam P. Defensor-Santiago Ave.  
(formerly BIR Road) corner Quezon Avenue  
Diliman, Quezon City, Philippines 1100

I/We<sup>1</sup>, 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

<sup>1</sup> Select one and delete the other. Adopt same instruction for similar terms throughout the document.

**[Jurat]**

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

Standard Form No: NPCSF-GOODS-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 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-GOODS-08

**BID LETTER**

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

To: **THE PRESIDENT**  
National Power Corporation  
Gabriel Y. Itchon Building  
Sen. Miriam P. Defensor-Santiago Ave.  
(formerly BIR Road) corner Quezon Avenue  
Diliman, Quezon City, Philippines 1100

Gentlemen:

Having examined the Bidding Documents including Bid Bulletin Numbers *[insert numbers]*\_\_\_\_\_, the receipt of which is hereby duly acknowledged, we, the undersigned, offer to perform **REHABILITATION / RESTORATION OF DAM INSTRUMENTATIONS OF ANGAT DAM MAIN AND SECONDARY DYKES LOCATED IN SAN LORENZO, NORZAGARAY, BULACAN (PR NO. HO-DRW24-008)** in conformity with the said Bidding Documents for the sum of *[total Bid amount in words and figures]*\_\_\_\_\_ or such other sums as may be ascertained in accordance with the Schedule of Prices attached herewith and made part of this Bid.

We undertake, if our Bid is accepted, to supply and deliver the goods and perform other services, if required within the contract duration and in accordance with the scope of the contract specified in the Schedule of Requirements and Technical Specifications.

If our Bid is accepted, we undertake to provide a performance security in the form, amounts, and within the times specified in the Bidding Documents.

We agree to abide by this Bid for the Bid Validity Period specified in Bid Documents and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

Until a formal Contract is prepared and executed, this Bid, together with your written acceptance thereof and your Notice of Award, shall be binding upon us.

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

We certify/confirm that we comply with the eligibility requirements pursuant to the Bidding Documents.

We likewise certify/confirm that the undersigned, *[for sole proprietorships, insert: as the owner and sole proprietor or authorized representative of* *[Name of Bidder]* *has the full power and authority to participate, submit the bid, and to sign and execute the ensuing contract, on the latter's behalf for the* *[Name of Project]* *of the National Power Corporation* *[for partnerships, corporations, cooperatives, or joint ventures, insert: is granted full power and authority by the* *[Name of Bidder]* *to participate, submit the bid, and to sign and execute the ensuing contract on the latter's behalf for* *[Name of Project]* *of the National Power Corporation.*

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

\_\_\_\_\_  
*[name and signature of authorized signatory]*\_\_\_\_\_  
*[in the capacity of]*

Duly authorized to sign Bid for and on behalf of \_\_\_\_\_  
*[name of bidder]*

---

**Bank Guarantee Form for Advance Payment**

---

To: **THE PRESIDENT**  
National Power Corporation  
Gabriel Y. Itchon Building  
Sen. Miriam P. Defensor-Santiago Ave.  
(formerly BIR Road) corner Quezon Avenue  
Diliman, Quezon City, Philippines 1100

*[name of Contract]*

Gentlemen and/or Ladies:

In accordance with the Advance Payment Provision, of the General Conditions of Contract, *[name and address of Supplier]* (hereinafter called the "Supplier") shall deposit with the PROCURING ENTITY a bank guarantee to guarantee its proper and faithful performance under the said Clause of the Contract in an amount of *[amount of guarantee in figures and words]*.

We, the *[name of the universal/commercial bank]*, as instructed by the Supplier, agree unconditionally and irrevocably to guarantee as primary obligator and not as surety merely, the payment to the PROCURING ENTITY on its first demand without whatsoever right of objection on our part and without its first claim to the Supplier, in the amount not exceeding *[amount of guarantee in figures and words]*.

We further agree that no change or addition to or other modification of the terms of the Contract to be performed thereunder or of any of the Contract documents which may be made between the PROCURING ENTITY and the Supplier, shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition, or modification.

This guarantee shall remain valid and in full effect from the date the advance payment is received by the Supplier under the Contract and until the Goods are accepted by the PROCURING ENTITY.

Yours truly,

Signature and seal of the Guarantors

\_\_\_\_\_  
*[name of bank or financial institution]*

\_\_\_\_\_  
*[address]*

\_\_\_\_\_  
*[date]*



**CERTIFICATION AS A DOMESTIC BIDDER**

This is to certify that based on the records of this office, (Name of Bidder) is  
duly registered with the DTI on \_\_\_\_\_.

This further certifies that the articles forming part of the product of (Name of Bidder)  
which are/is (Specify) \_\_\_\_\_ are substantially composed of  
articles, materials, or supplies grown, produced or manufactured in the Philippines. (Please  
encircle the applicable description/s).

This certification is issued upon the request of (Name of Person/Entity) in  
connection with his intention to participate in the bidding for the (Name of Project)  
of the National Power Corporation (NPC).

Given this \_\_\_\_ day of \_\_\_\_\_ 20\_\_ at \_\_\_\_\_, Philippines

\_\_\_\_\_  
Name

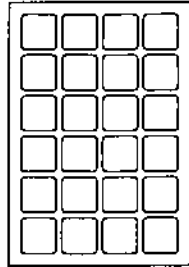
\_\_\_\_\_  
Position

\_\_\_\_\_  
Department of Trade & Industry

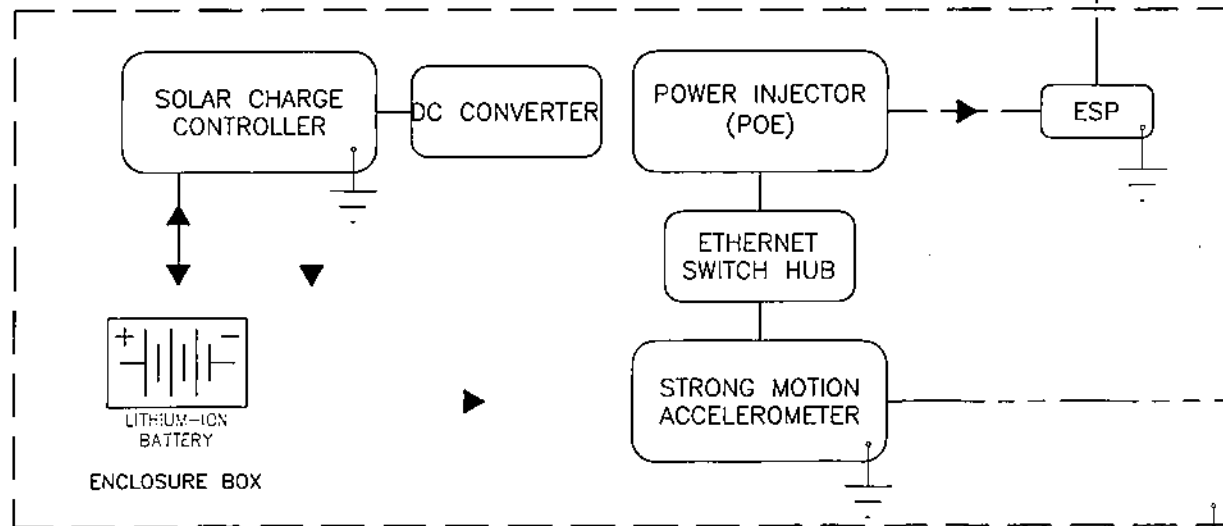
## SECTION IX

# REFERENCE DRAWINGS

SOLAR PV MODULE



DC  
CURRENT ▼







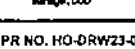
## STRONG MOTION ACCELEROMETER SYSTEM ARCHITECTURE

### NOTES:

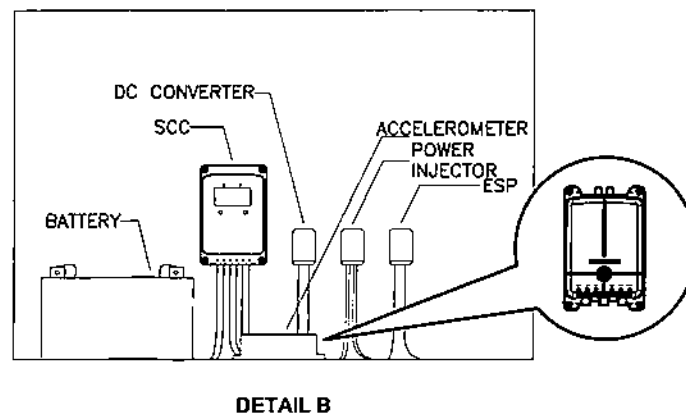
1. ALL ELECTRICAL WORKS SHALL BE DONE IN ACCORDANCE WITH THE LATEST PROVISIONS OF THE PHILIPPINE ELECTRICAL CODE AND SHALL COMPLY WITH THE RULES AND REGULATIONS OF THE LOCAL CODES AND STANDARDS.
2. ALL EQUIPMENT/COMPONENTS/MODEM, ETC. NOT INDICATED IN THE DRAWING BUT ARE REQUIRED FOR THE EFFICIENT AND PROPER OPERATION OF THE SYSTEM SHALL BE INCLUDED IN THE CONTRACTOR SCOPE OF WORK AT NO ADDITIONAL COST TO NPC.
3. THE CONTRACTOR IS REQUIRED TO CONDUCT SITE INSPECTION AND ASSESS THE EXTENT OF THE WORKS NEEDED TO IMPLEMENT THE PROJECT COMPLETELY AND EFFICIENTLY.
4. THIS DRAWING IS CONCEPTUAL AND FOR BIDDING PURPOSES ONLY. THE SUPPLIER SHALL IDENTIFY THE FINAL SINGLE LINE DIAGRAM OF THE SYSTEM INCLUDING ITS INTERNAL CIRCUITRY AND PRIMARY COMPONENTS CONNECTION.
5. THE DETAILED DESIGN AND CALCULATION FOR THE REQUIRED NUMBER OF EQUIPMENT FOR INSTALLATION SHALL BE SUBMITTED FOR NPC'S REVIEW AND APPROVAL.

### LEGENDS:



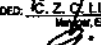
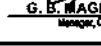
- ESP — ETHERNET SURGE PROTECTOR  
GPS — GLOBAL POSITIONING SYSTEM  
POE — POWER OVER ETHERNET  
——— POWER CABLE  
----- COMMUNICATION CABLE

OWNER:		 <b>NATIONAL POWER CORPORATION</b> GABRIEL Y. ITCHON BLDG., SEN. MIRAMP. DEFENSOR-SANTIAGO AVENUE (FORMERLY BIR ROAD) CORNER QUEZON AVENUE, ORTIGUA 1100 QUEZON CITY, PHILIPPINES	
PROJECT: RENOVATION/RESTORATION OF DAM INSTRUMENTATIONS OF ANG DAM MAIN AND SECONDARY DYKES LOCATED IN SAN LORENZO NORZAGARAT, BULACAN			
LOCATION: Angat Dam, San Lorenzo, Norzagaray, Bulacan			
TITLE:		<b>STRONG MOTION ACCELEROMETER SYSTEM ARCHITECTURE</b>	
DESIGNED	RRPR	DATE	SUBMITTED:  RECOMMENDED:  APPROVED:  MECH: 
DRAWN	RRPR		
REVIEWED	PRINCIPAL ENGR./ARCHT.		
CIVIL/ARCHT			
ELEC.			
DWG. NO. <b>AgDAM-BDE-22.001</b>		SPECS. NO. PR NO. HO-DRW23-001	
SCALE: <b>NT8</b>		<b>REFERENCE DRAWING</b>	
REV.	DATE	NATURE OF REVISION	BY

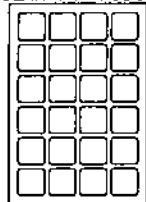
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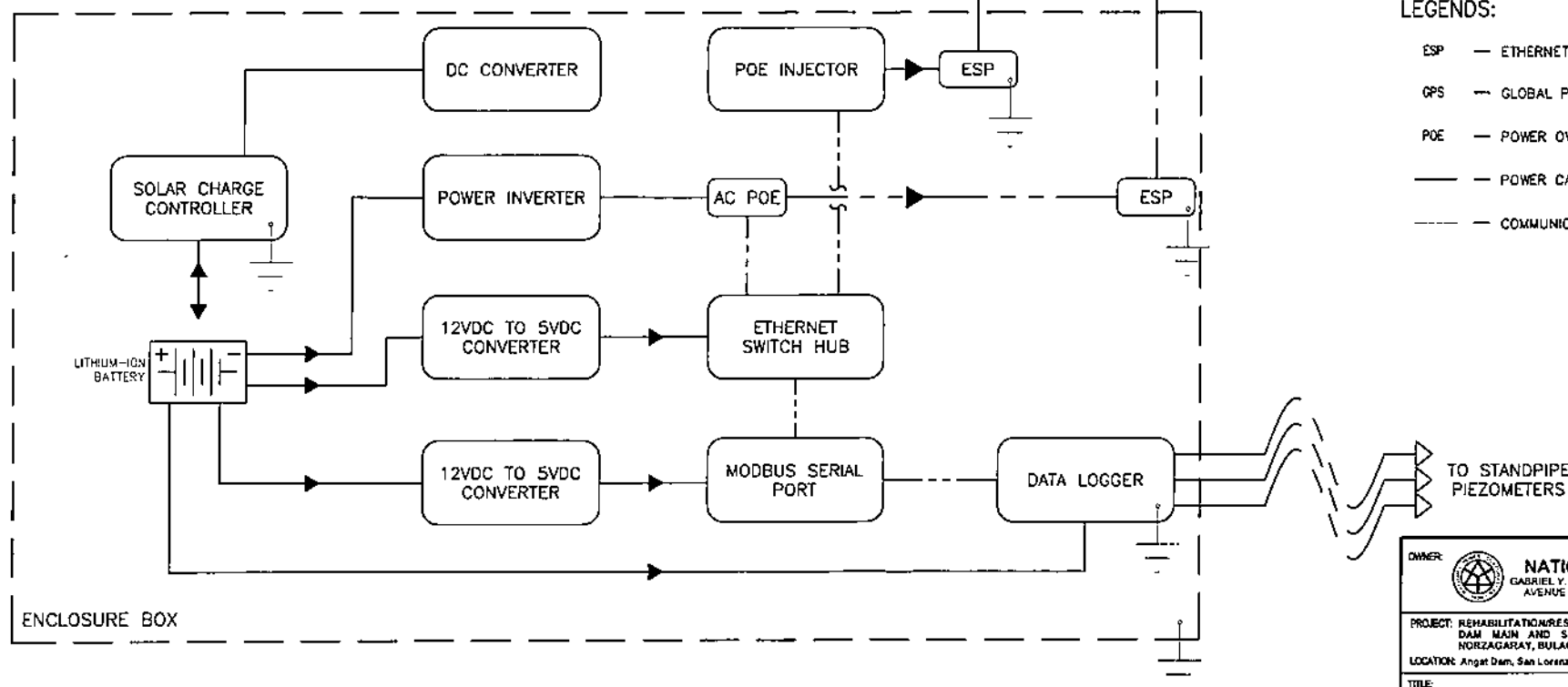
- ESP — ETHERNET SURGE PROTECTOR  
GPS — GLOBAL POSITIONING SYSTEM  
SCC — SOLAR CHARGE CONTROLLER

OWNER:	 <b>NATIONAL POWER CORPORATION</b> GABRIEL Y. ITCHEON BLDG., SEN. MIRAMIP DEFENSOR-SANTIAGO AVENUE (FORMERLY 1100 ROAD) CORNER QUEZON AVENUE, DILIMAN 1100 QUEZON CITY, PHILIPPINES		
PROJECT:	REHABILITATION/RESTORATION OF DAM INSTRUMENTATIONS OF ANGA DAM MAIN AND SECONDARY DYKES LOCATED IN SAN LORENZO, HORIZAGARAY, BULACAN		
LOCATION:	Angat Dam, San Lorenzo, Horizagaray, Bulacan		
<b>TITLE</b> <b>STRONG MOTION ACCELEROMETER</b> <b>INSTALLATION DETAILS</b>			
	BY	CHKD	DATE
DESIGNED	RRPR		
DRAWN	RRPR		
REVIEWED	PRINCIPAL ENGR. / ARCHT.		
CHECKED			
ELSC.			
MECH.			
SUBMITTED:		 R.P. VEAR Project Engineer	
RECOMMENDED:		 C.Z. C. LUGOD, JR. Manager, ESDO	
APPROVED:		 G.B. MAGPOC, JR. Manager, OGD	
DWG. NO. <b>AgdDAM-SDE-22.002</b>		SPECS. NO. PR NO. HO-DRW23-007	
SCALE: NTS		REFERENCE DRAWING	
REV. 0			

SOLAR PV MODULE



DC  
CURRENT ▼



ENCLOSURE BOX

## STANDPIPE PIEZOMETER SYSTEM ARCHITECTURE

### NOTES:

1. ALL ELECTRICAL WORKS SHALL BE DONE IN ACCORDANCE WITH THE LATEST PROVISIONS OF THE PHILIPPINE ELECTRICAL CODE AND SHALL COMPLY WITH THE RULES AND REGULATIONS OF THE LOCAL CODES AND STANDARDS.
2. ALL EQUIPMENT/COMPONENTS/MODEM, ETC. NOT INDICATED IN THE DRAWING BUT ARE REQUIRED FOR THE EFFICIENT AND PROPER OPERATION OF THE SYSTEM SHALL BE INCLUDED IN THE CONTRACTOR SCOPE OF WORK AT NO ADDITIONAL COST TO NPC.
3. THE CONTRACTOR IS REQUIRED TO CONDUCT SITE INSPECTION AND ASSESS THE EXTENT OF THE WORKS NEEDED TO IMPLEMENT THE PROJECT COMPLETELY AND EFFICIENTLY.
4. THIS DRAWING IS CONCEPTUAL AND FOR BIDDING PURPOSES ONLY. THE SUPPLIER SHALL IDENTIFY THE FINAL SINGLE LINE DIAGRAM OF THE SYSTEM INCLUDING ITS INTERNAL CIRCUITRY AND PRIMARY COMPONENTS CONNECTION.
5. THE DETAILED DESIGN AND CALCULATION FOR THE REQUIRED NUMBER OF EQUIPMENT FOR INSTALLATION SHALL BE SUBMITTED FOR NPC'S REVIEW AND APPROVAL.

### LEGENDS:

- ESP — ETHERNET SURGE PROTECTOR  
GPS — GLOBAL POSITIONING SYSTEM  
POE — POWER OVER ETHERNET  
— — POWER CABLE  
--- — COMMUNICATION CABLE

OWNER:		<b>NATIONAL POWER CORPORATION</b> GABRIEL Y. ITCHON BLDG., SEN. MIRAM P. DEFENSOR-SANTIAGO AVENUE (FORMERLY BIR ROAD) CORNER QUEZON AVENUE, DILIMAN 1100 QUEZON CITY, PHILIPPINES	
PROJECT:		REHABILITATION/RESTORATION OF DAM INSTRUMENTATIONS OF ANGA DAM MAIN AND SECONDARY DYKES LOCATED IN SAN LORENZO, MORZAGARAY, BULACAN	
LOCATION:		Angat Dam, San Lorenzo, Morzagaray, Bulacan	
TITLE:		STANDPIPE PIEZOMETER SYSTEM ARCHITECTURE	
DESIGNED	BY	CHKD	DATE
DRAWN	RRPR		
REVIEWED	PRINCIPAL ENR / ARCHT.		
CHURNIGHT			
ELEC.			
MECH.			
SUBMITTED:		S. P. VERAR	
RECOMMENDED:		C. Z. LUGOD, JR.	
APPROVED:		G. B. MAGPOC, JR.	
DWG. NO.		AgtDAM-8DE-22.003	
SPEC. NO.		PR NO. HO-DRW23-007	
SCALE:		NTS	
REFERENCE DRAWING		REV. 0	

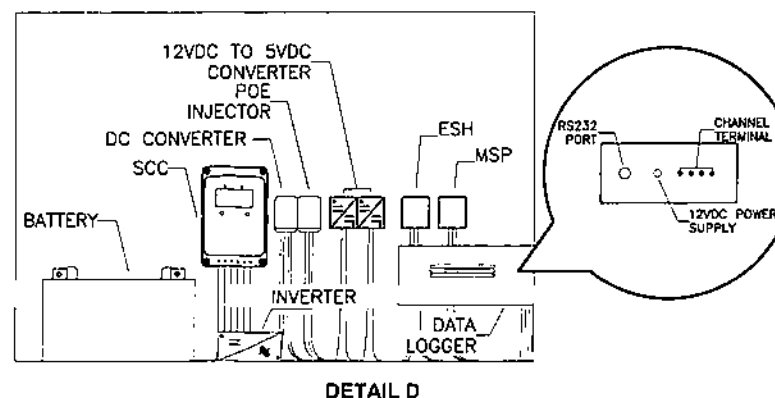
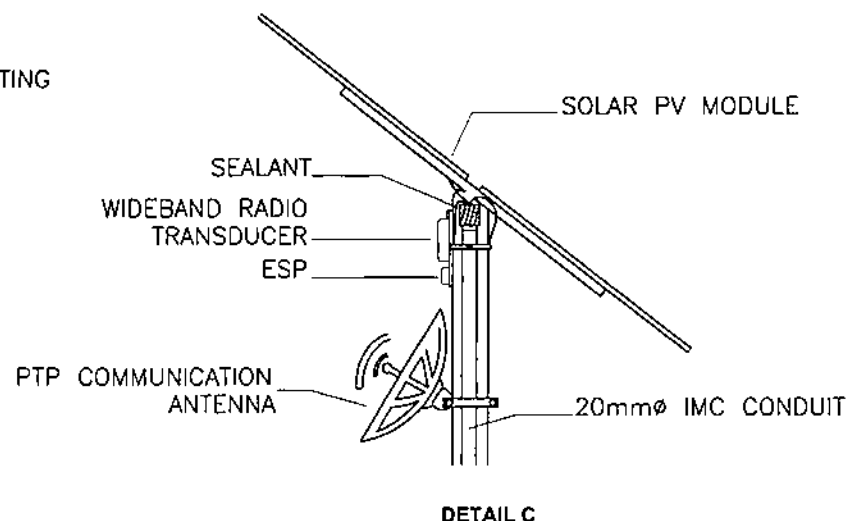
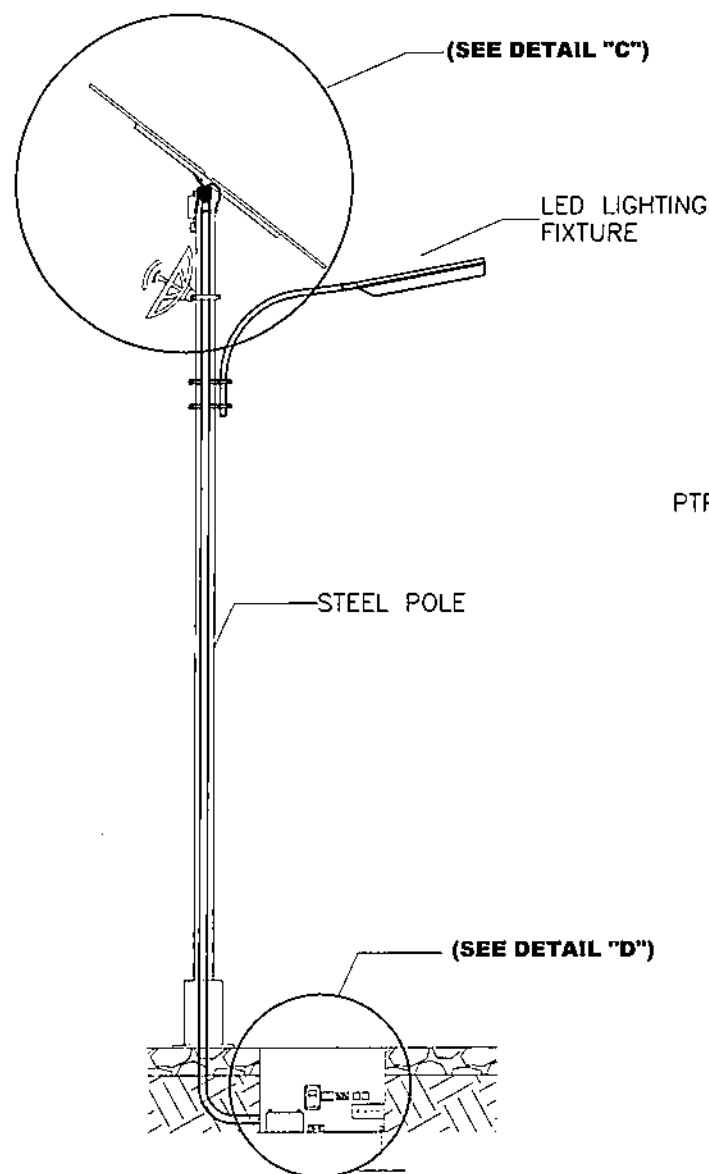
REV.	DATE	NATURE OF REVISION	BY	CHKD.	RECD.	APPD.

# NOTES:

1. FINAL EQUIPMENT INSTALLATION LOCATIONS SHALL BE DETERMINED AS PER ACTUAL SITE SITUATION AND SYSTEM REQUIREMENT.
2. ALL EQUIPMENT/COMPONENTS/MODEM, ETC. NOT INDICATED IN THE DRAWING BUT ARE REQUIRED FOR THE EFFICIENT AND PROPER OPERATION OF THE SYSTEM SHALL BE INCLUDED IN THE CONTRACTOR SCOPE OF WORK AT NO ADDITIONAL COST TO NPC.
3. THE CONTRACTOR IS REQUIRED TO CONDUCT SITE INSPECTION AND ASSESS THE EXTENT OF THE WORKS NEEDED TO IMPLEMENT THE PROJECT COMPLETELY AND EFFICIENTLY.
4. THE SYSTEM SHALL BE COMPATIBLE WITH THE EXISTING SYSTEM AVAILABLE ON SITE.
5. ALL EQUIPMENT TO BE SUPPLIED SHALL BE SUBMITTED TO NPC FOR REVIEW AND APPROVAL.

# LEGENDS:

- ESP — ETHERNET SURGE PROTECTOR  
GPS — GLOBAL POSITIONING SYSTEM  
ESH — ETHERNET SWITCH HUB  
MSP — MODBUS SERIAL PORT  
AC POE — ALTERNATING CURRENT POWER OVER ETHERNET  
DC POE — DIRECT CURRENT POWER OVER ETHERNET  
SCC — SOLAR CHARGE CONTROLLER



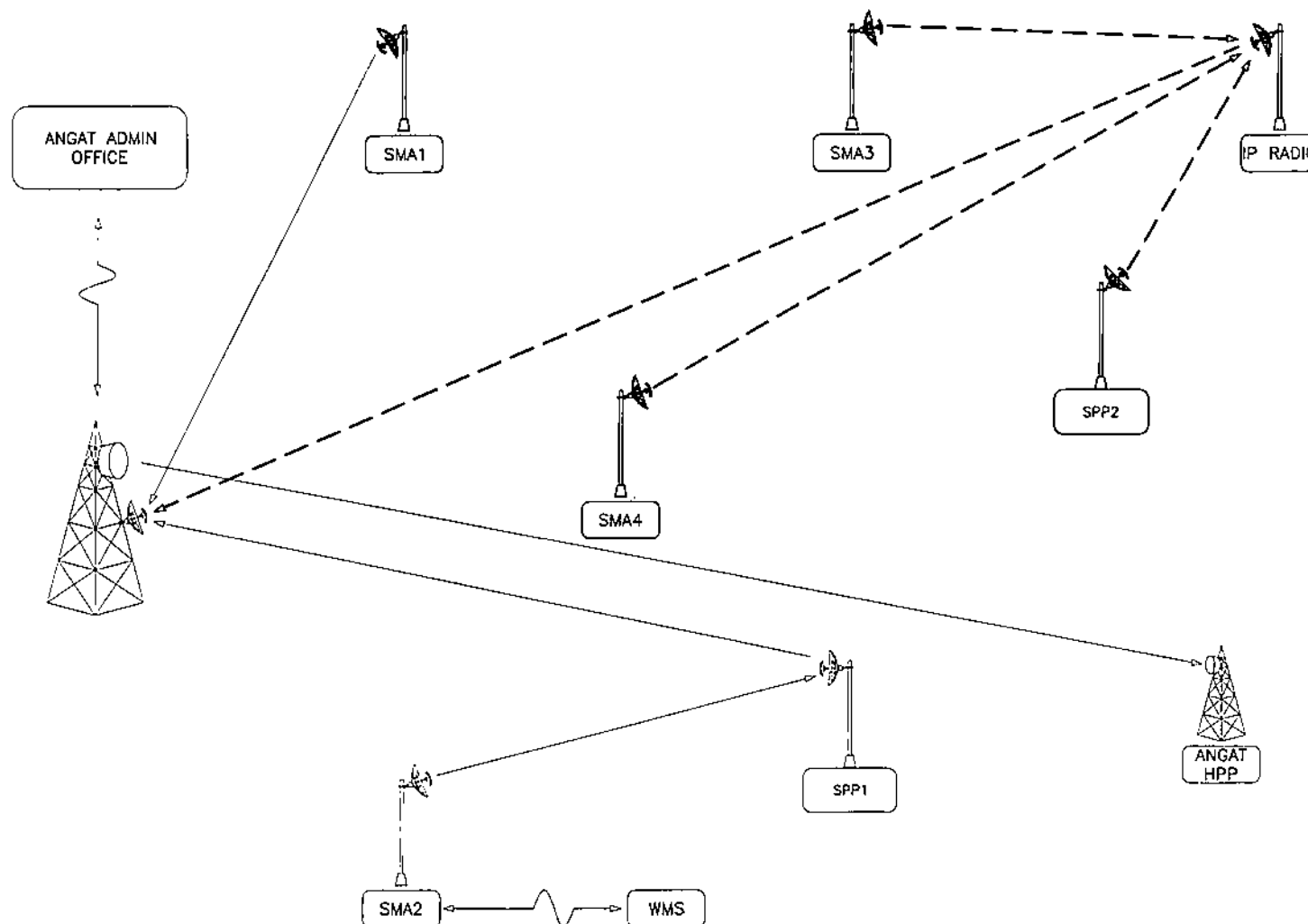
OWNER:		<b>NATIONAL POWER CORPORATION</b> GABRIEL Y. ITCHON BLDG., SEN. MIRAM P. DEFENSOR-SANTIAGO AVENUE (FORMERLY BAR ROAD) CORNER QUEZON AVENUE, DILIMAN 1100 QUEZON CITY, PHILIPPINES	
PROJECT:		REHABILITATION/RESTORATION OF DAM INSTRUMENTATIONS OF ANGA DAM MAIN AND SECONDARY DYKES LOCATED IN SAN LORENZO NORZAGARA, BULACAN	
LOCATION:		Angat Dam, San Lorenzo, Norzagaray, Bulacan	
TITLE: <b>DATA LOGGER COMMUNICATION SYSTEM FOR STANDPIPE PIEZOMETER STATION</b>			
DESIGNED	BY	CHKD	DATE
DRAWN	RRPR		
REVIEWED	PRINCIPAL ENGR. JARCHT.		
ENCL. JARCHT			
ELEC.			
MECH.			
SUBMITTED:		 <b>R. P. VERAR</b> Manager, EDCO	
RECOMMENDED:		 <b>E. Z. C. LUGOD, JR.</b> Manager, EDCO	
APPROVED:		 <b>G. B. MAGPOC, JR.</b> Manager, EDCO	
DWG. NO. <b>AgtDAM-BDE-22.004</b>		SPEC. NO. PR NO. HO-DW23-007	
SCALE: <b>NTS</b>		REFERENCE DRAWING	
REV. DATE		NATURE OF REVISION	
BY		CHKD. RECD. APPD.	

# NOTES:

1. FINAL EQUIPMENT INSTALLATION LOCATIONS SHALL BE DETERMINED AND COORDINATED WITH THE END-USER.
2. ALL EQUIPMENT/COMPONENTS/MODEM, ETC. NOT INDICATED IN THE DRAWING BUT ARE REQUIRED FOR THE EFFICIENT AND PROPER OPERATION OF THE SYSTEM SHALL BE INCLUDED IN THE CONTRACTOR SCOPE OF WORK AT NO ADDITIONAL COST TO NPC.
3. THE CONTRACTOR IS REQUIRED TO CONDUCT SITE INSPECTION AND ASSESS THE EXTENT OF THE WORKS NEEDED TO IMPLEMENT THE PROJECT COMPLETELY AND EFFICIENTLY.
4. THE SYSTEM TO BE BUILT SHALL BE COMPATIBLE WITH THE CURRENT SYSTEM UTILIZED ON SITE.
5. ALL EQUIPMENT TO BE SUPPLIED SHALL BE SUBMITTED TO NPC FOR REVIEW AND APPROVAL.

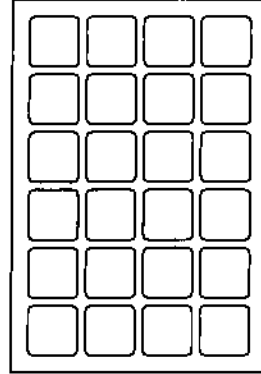
# LEGENDS:

- SMA — SMA STATION
- SPP — SPP STATION
- HPP — HYDROPOWER PLANT
- WMS — WEIR MONITORING SYSTEM
- — WIRELESS SIGNAL TO ANGAT HYDROPOWER PLANT
- — WIRELESS SIGNAL TO ANGAT GUEST HOUSE
- - - — WIRELESS SIGNAL TO SMA/SPP
- ~ — LAN DATA CABLE



OWNER:		<b>NATIONAL POWER CORPORATION</b> GABRIEL Y. ITCHON BLDG., SEN. MARAM P. DEPEÑOSA-SANTIAGO AVENUE (FORMERLY BIR ROAD) CORNER QUEZON AVENUE, DILIMAN 1105 QUEZON CITY, PHILIPPINES	
PROJECT: REHABILITATION/RESTORATION OF DAM INSTRUMENTATIONS OF ANGAT DAM MAIN AND SECONDARY DYKES LOCATED IN SAN LORENZO NORZAGARAY, BULACAN			
LOCATION: Angat Dam, San Lorenzo, Norzagaray, Bulacan			
TITLE: <b>INSTRUMENTATION NETWORK DIAGRAM</b>			
DESIGNED	BY	CHKD	DATE
DRAWN	RRPR		
REVIEWED	PRINCIPAL ENGR./ARCHT.		
CIVIL/ARCHT			
ELEC.			
MECH.			
SUBMITTED:		 R. P. VERAR Project Engineer	
RECOMMENDED:		 C. Z. C. LUGOD, JR. Manager, E&C	
APPROVED:		 G. B. MAGPOC, JR. Manager, DDO	
DWG. NO. <b>AgtDAM-BDE-22.005</b>		SPECS. NO. PR NO. HO-DRW23-007	
SCALE: NTS		REFERENCE DRAWING	
REV.	DATE	NATURE OF REVISION	BY

SOLAR PV MODULE



DC  
CURRENT ▼

SOLAR CHARGE  
CONTROLLER

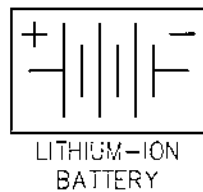
DC CONVERTER

POWER INJECTOR  
(POE)

ESP

ETHERNET  
SWITCH HUB

STRONG MOTION  
ACCELEROMETER



LITHIUM-ION  
BATTERY

ENCLOSURE BOX





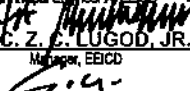
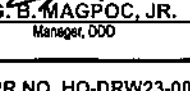
## NOTES:

1. ALL ELECTRICAL WORKS SHALL BE DONE IN ACCORDANCE WITH THE LATEST PROVISIONS OF THE PHILIPPINE ELECTRICAL CODE AND SHALL COMPLY WITH THE RULES AND REGULATIONS OF THE LOCAL CODES AND STANDARDS.
2. ALL EQUIPMENT/COMPONENTS/MODEM, ETC. NOT INDICATED IN THE DRAWING BUT ARE REQUIRED FOR THE EFFICIENT AND PROPER OPERATION OF THE SYSTEM SHALL BE INCLUDED IN THE CONTRACTOR SCOPE OF WORK AT NO ADDITIONAL COST TO NPC.
3. THE CONTRACTOR IS REQUIRED TO CONDUCT SITE INSPECTION AND ASSESS THE EXTENT OF THE WORKS NEEDED TO IMPLEMENT THE PROJECT COMPLETELY AND EFFICIENTLY.
4. THIS DRAWING IS CONCEPTUAL AND FOR BIDDING PURPOSES ONLY. THE SUPPLIER SHALL IDENTIFY THE FINAL SINGLE LINE DIAGRAM OF THE SYSTEM INCLUDING ITS INTERNAL CIRCUITRY AND PRIMARY COMPONENTS CONNECTION.
5. THE DETAILED DESIGN AND CALCULATION FOR THE REQUIRED NUMBER OF EQUIPMENT FOR INSTALLATION SHALL BE SUBMITTED FOR NPC'S REVIEW AND APPROVAL.

## LEGENDS:

- ESP — ETHERNET SURGE PROTECTOR
- GPS — GLOBAL POSITIONING SYSTEM
- POE — POWER OVER ETHERNET
- — POWER CABLE
- — COMMUNICATION CABLE

# STRONG MOTION ACCELEROMETER SYSTEM ARCHITECTURE

OWNER:		 <b>NATIONAL POWER CORPORATION</b> GABRIEL Y. ITCHON BLDG., SEN. MIRIAM P. DEFENSOR-SANTIAGO AVENUE (FORMERLY BIR ROAD) CORNER QUEZON AVENUE, DILIMAN 1100 QUEZON CITY, PHILIPPINES	
PROJECT: REHABILITATION/RESTORATION OF DAM INSTRUMENTATIONS OF ANGAT DAM MAIN AND SECONDARY DYKES LOCATED IN SAN LORENZO, NORZAGARAY, BULACAN			
LOCATION: Angat Dam, San Lorenzo, Norzagaray, Bulacan			
TITLE: <b>STRONG MOTION ACCELEROMETER SYSTEM ARCHITECTURE</b>			
DESIGNED	BY	CHKD	DATE
DRAWN	RRPR		
REVIEWED	PRINCIPAL ENGR. / ARCHT.		
CIVIL/ARCHT			
ELEC.			
MECH.			
SUBMITTED:		 R.P. VERAR Principal Engineer / ESD	
RECOMMENDED:		 C.Z. LUGOD, JR. Manager, ESD	
APPROVED:		 G.B. MAGPOC, JR. Manager, ODD	
DWS. NO. <b>AgIDAM-BDE-22.001</b>		SPECS. NO. PR NO. HO-DRW23-007	
SCALE: NTS		REFERENCE DRAWING	
REV. 0			

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

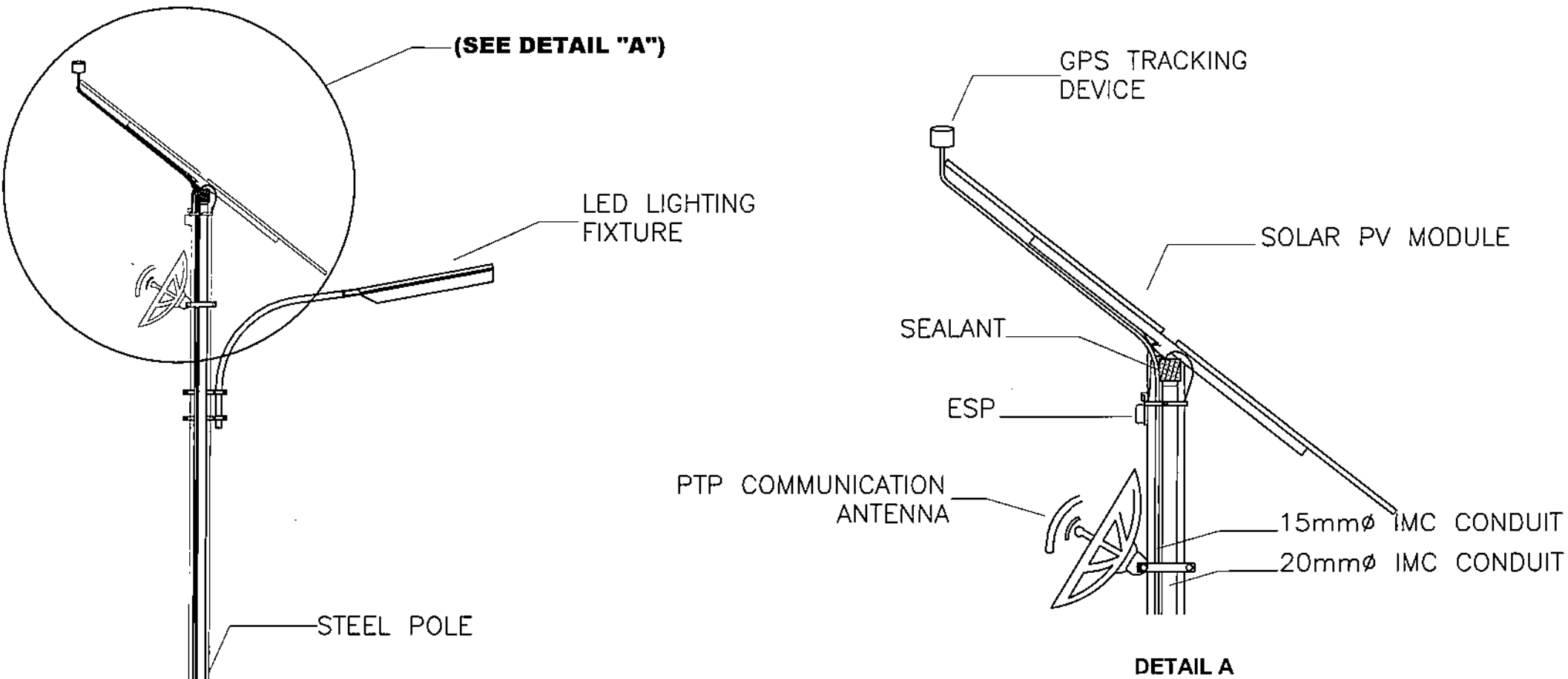


# NOTES:

1. FINAL EQUIPMENT INSTALLATION LOCATIONS SHALL BE DETERMINED AS PER ACTUAL SITE SITUATION AND SYSTEM REQUIREMENT.
2. ALL EQUIPMENT/COMPONENTS/MODEM, ETC. NOT INDICATED IN THE DRAWING BUT ARE REQUIRED FOR THE EFFICIENT AND PROPER OPERATION OF THE SYSTEM SHALL BE INCLUDED IN THE CONTRACTOR SCOPE OF WORK AT NO ADDITIONAL COST TO NPC.
3. THE CONTRACTOR IS REQUIRED TO CONDUCT SITE INSPECTION AND ASSESS THE EXTENT OF THE WORKS NEEDED TO IMPLEMENT THE PROJECT COMPLETELY AND EFFICIENTLY.
4. THE SYSTEM TO BE BUILT SHALL BE COMPATIBLE WITH THE CURRENT SYSTEM UTILIZED ON SITE.
5. ALL EQUIPMENT TO BE SUPPLIED SHALL BE SUBMITTED TO NPC FOR REVIEW AND APPROVAL.





# LEGENDS:

- ESP — ETHERNET SURGE PROTECTOR
- GPS — GLOBAL POSITIONING SYSTEM
- SCC — SOLAR CHARGE CONTROLLER



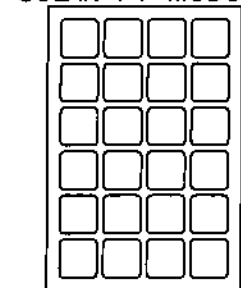
**STRONG MOTION ACCELEROMETER  
INSTALLATION DETAILS**

**DETAIL B**

OWNER:		 <b>NATIONAL POWER CORPORATION</b> GABRIEL Y. ITCHON BLDG., SEN. MIRIAM P. DEFENSOR-SANTIAGO AVENUE (FORMERLY BIR ROAD) CORNER QUEZON AVENUE, DILIMAN 1100 QUEZON CITY, PHILIPPINES	
PROJECT: REHABILITATION/RESTORATION OF DAM INSTRUMENTATIONS OF ANGAT DAM MAIN AND SECONDARY DYKES LOCATED IN SAN LORENZO, NORZAGARAY, BULACAN			
LOCATION: Angat Dam, San Lorenzo, Norzagaray, Bulacan			
TITLE: <b>STRONG MOTION ACCELEROMETER INSTALLATION DETAILS</b>			
DESIGNED	RRPR	DATE	SUBMITTED:  RECOMMENDED:  APPROVED:  Manager, EEC Manager, DOD
DRAWN	RRPR		
REVIEWED	PRINCIPAL ENGR. / ARCHT.		
CIVIL/ARCHT			
ELEC.			
MECH.			
DWG. NO. <b>AgtDAM-BDE-22.002</b>		SPECS. NO. PR NO. HO-DRW23-007	
SCALE: NTS		REFERENCE DRAWING	
REV. 0			

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

SOLAR PV MODULE



DC  
CURRENT ▼

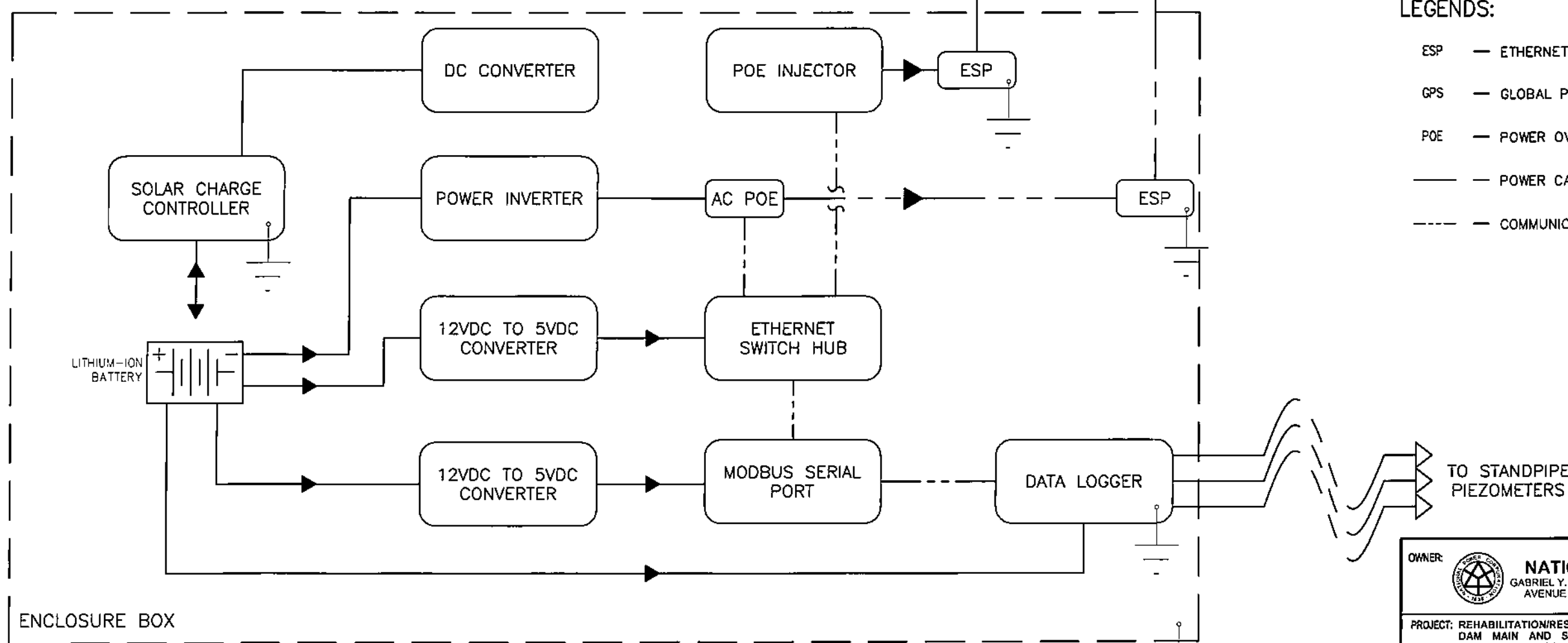


## NOTES:

1. ALL ELECTRICAL WORKS SHALL BE DONE IN ACCORDANCE WITH THE LATEST PROVISIONS OF THE PHILIPPINE ELECTRICAL CODE AND SHALL COMPLY WITH THE RULES AND REGULATIONS OF THE LOCAL CODES AND STANDARDS.
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5. THE DETAILED DESIGN AND CALCULATION FOR THE REQUIRED NUMBER OF EQUIPMENT FOR INSTALLATION SHALL BE SUBMITTED FOR NPC'S REVIEW AND APPROVAL.

## LEGENDS:

- ESP — ETHERNET SURGE PROTECTOR
- GPS — GLOBAL POSITIONING SYSTEM
- POE — POWER OVER ETHERNET
- — POWER CABLE
- — COMMUNICATION CABLE



## STANDPIPE PIEZOMETER SYSTEM ARCHITECTURE

OWNER:		<b>NATIONAL POWER CORPORATION</b> GABRIEL Y. ITCHON BLDG., SEN. MIRIAM P. DEFENSOR-SANTIAGO AVENUE (FORMERLY BIR ROAD) CORNER QUEZON AVENUE, DILIMAN 1100 QUEZON CITY, PHILIPPINES	
PROJECT: REHABILITATION/RESTORATION OF DAM INSTRUMENTATIONS OF ANGAT DAM MAIN AND SECONDARY DYKES LOCATED IN SAN LORENZO, NORZAGARAY, BULACAN			
LOCATION: Angat Dam, San Lorenzo, Norzagaray, Bulacan			
TITLE: <b>STANDPIPE PIEZOMETER SYSTEM ARCHITECTURE</b>			
DESIGNED	BY	CHKD	DATE
DRAWN	RRPR		
REVIEWED	PRINCIPAL ENGR. / ARCHT.		
CIVIL/ARCHT			
ELEC.			
MECH.			
SUBMITTED:		 <b>R.P. VERAR</b> Manager, EECDO	
RECOMMENDED:		 <b>C.Z. C. LUGOD, JR.</b> Manager, EECDO	
APPROVED:		 <b>G.B. MAGPOC, JR.</b> Manager, ODD	
DWG. NO. <b>AgtDAM-BDE-22.003</b>		SPECS. NO. PR NO. HO-DRW23-007	
SCALE: NTS		REFERENCE DRAWING	
REV. 0			

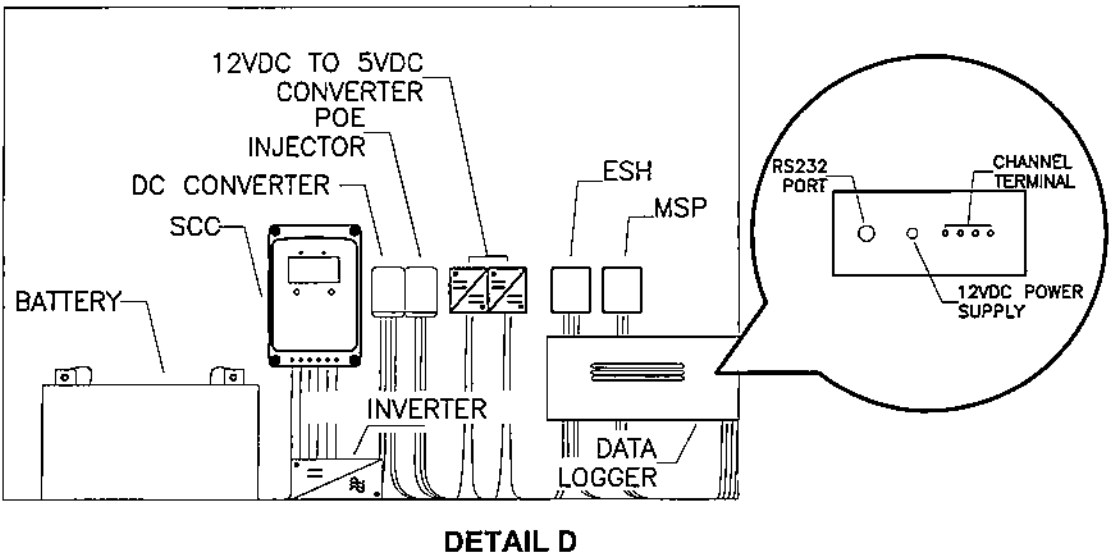
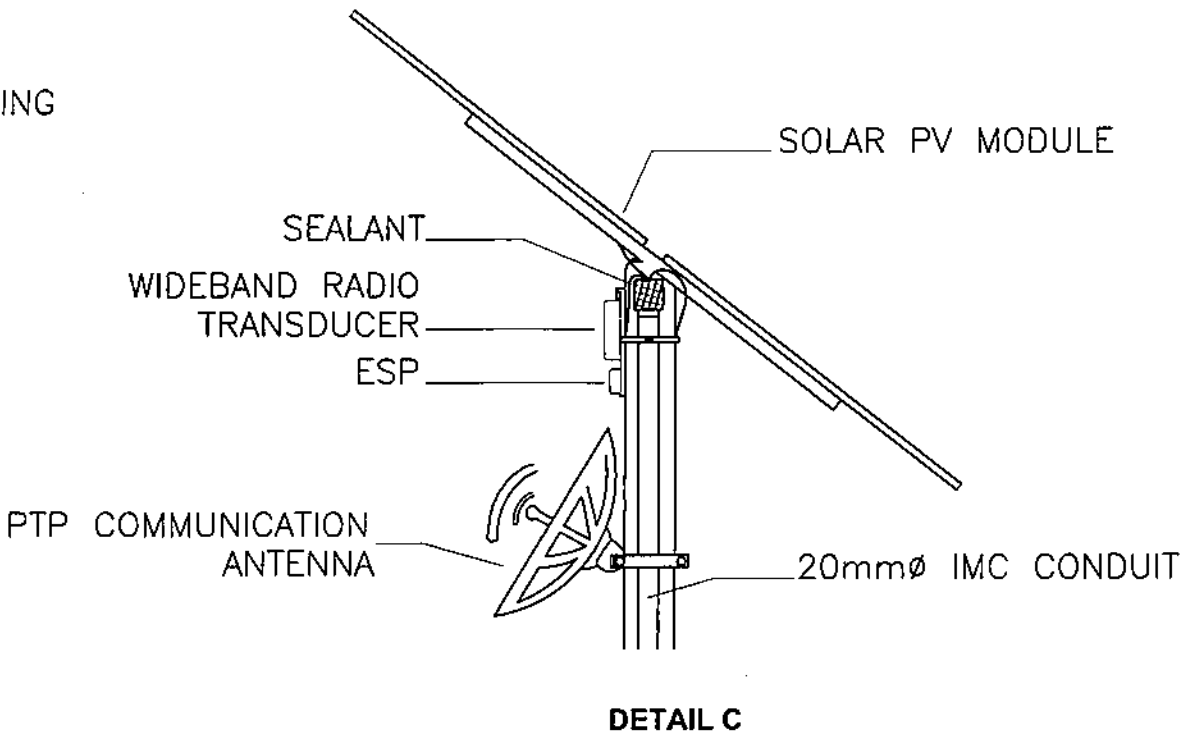
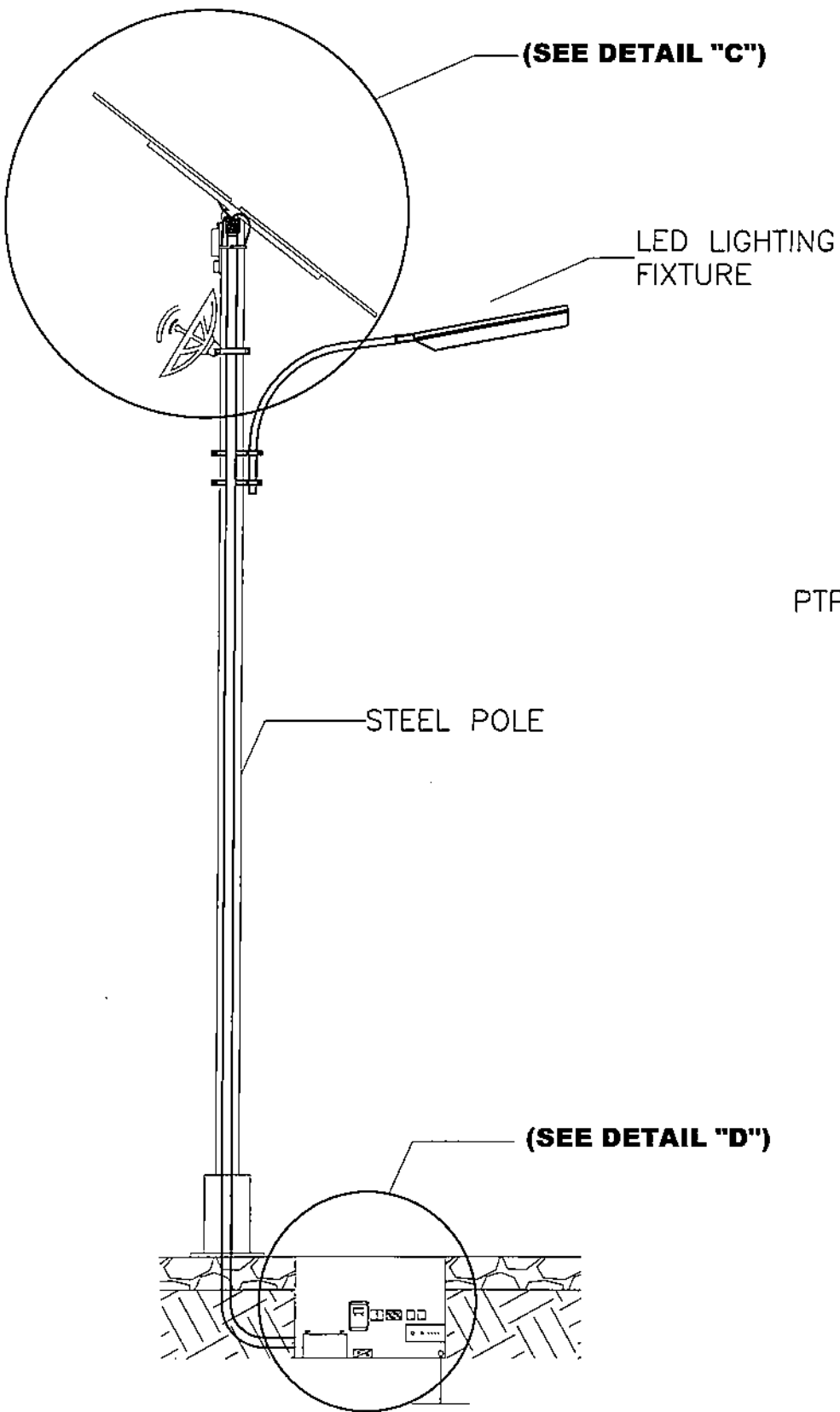
REV.	DATE	NATURE OF REVISION	BY	CHKD.	RECD.	APPD.




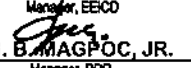
NOTES:

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5. ALL EQUIPMENT TO BE SUPPLIED SHALL BE SUBMITTED TO NPC FOR REVIEW AND APPROVAL.

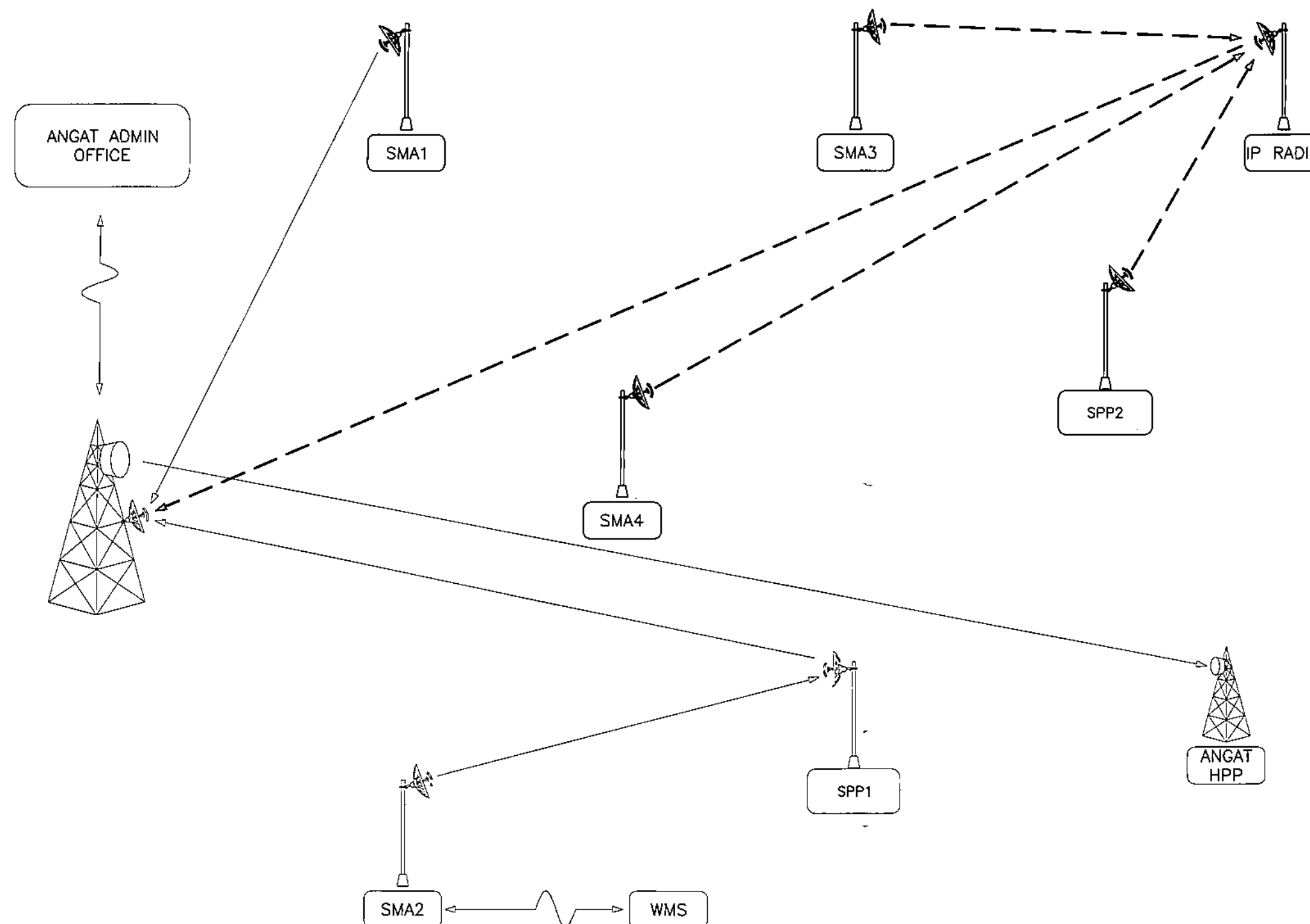
LEGENDS:

- ESP — ETHERNET SURGE PROTECTOR
- GPS — GLOBAL POSITIONING SYSTEM
- ESH — ETHERNET SWITCH HUB
- MSP — MODBUS SERIAL PORT
- AC POE — ALTERNATING CURRENT POWER OVER ETHERNET
- DC POE — DIRECT CURRENT POWER OVER ETHERNET
- SCC — SOLAR CHARGE CONTROLLER



OWNER:				<b>NATIONAL POWER CORPORATION</b> GABRIEL Y. ITCHON BLDG., SEN. MIRIAM P. DEFENSOR-SANTIAGO AVENUE (FORMERLY BIR ROAD) CORNER QUEZON AVENUE, DILIMAN 1100 QUEZON CITY, PHILIPPINES	
PROJECT: REHABILITATION/RESTORATION OF DAM INSTRUMENTATIONS OF ANGAT DAM MAIN AND SECONDARY DYKES LOCATED IN SAN LORENZO, NORZAGARAY, BULACAN					
LOCATION: Angat Dam, San Lorenzo, Norzagaray, Bulacan					
TITLE: <b>DATA LOGGER COMMUNICATION SYSTEM FOR STANDPIPE PIEZOMETER STATION</b>					
DESIGNED	RRPR	CHKD	DATE	SUBMITTED:	 R. P. VERAR Principal Engineer A, E&E
DRAWN	RRPR			RECOMMENDED:	 E. Z. C. LUGOD, JR. Manager, E&E
REVIEWED	PRINCIPAL ENGR. / ARCHT.			APPROVED:	 G. B. MAGPOC, JR. Manager, DOD
CIVIL/ARCHT					
ELEC.					
MECH.					
DWG. NO. <b>AgtDAM-BDE-22.004</b>				SPECS. NO. PR NO. HO-DRW23-007	
SCALE: NTS				REFERENCE DRAWING	
REV. 0					

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







## NOTES:

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## LEGENDS:

- SMA — SMA STATION
- SPP — SPP STATION
- HPP — HYDROPOWER PLANT
- WMS — WEIR MONITORING SYTEM
- — WIRELESS SIGNAL TO ANGAT HYDROPOWER PLANT
- — WIRELESS SIGNAL TO ANGAT GUEST HOUSE
- - - - — WIRELESS SIGNAL TO SMA/SPP
- ~~~~ — LAN DATA CABLE

OWNER:		 <b>NATIONAL POWER CORPORATION</b> GABRIEL Y. ITCHON BLDG., SEN. MIRIAM P. DEFENSOR-SANTIAGO AVENUE (FORMERLY BIR ROAD) CORNER QUEZON AVENUE, DILIMAN 1100 QUEZON CITY, PHILIPPINES	
PROJECT: REHABILITATION/RESTORATION OF DAM INSTRUMENTATIONS OF ANGAT DAM MAIN AND SECONDARY DYKES LOCATED IN SAN LORENZO, NORZAGARAY, BULACAN			
LOCATION: Angat Dam, San Lorenzo, Norzagaray, Bulacan			
TITLE: <b>INSTRUMENTATION NETWORK DIAGRAM</b>			
DESIGNED	BY	CHKD	DATE
DRAWN	RRPR		
REVIEWED	PRINCIPAL ENGR. / ARCHT.		
CIVIL/ARCHT			
ELEC.			
MECH.			
SUBMITTED:		 <b>R. P. VERAR</b> Principal Engineer, A.E.E.T.	
RECOMMENDED:		 <b>C. Z. C. LUGOD, JR.</b> Manager, EEICD	
APPROVED:		 <b>G. B. MAGPOC, JR.</b> Manager, DDD	
DWG. NO. <b>AgtDAM-BDE-22.005</b>		SPECS. NO. PR NO. HO-DRW23-007	
SCALE: <b>NTS</b>		REFERENCE DRAWING	
REV. 0			

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