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

BID DOCUMENTS

Name of Project : **SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE**

Project Location : **SAN JOSE, MASBATE**

Specification No : **LuzP23Z1619Sdg**

Contents :

Design and Development Department

SECTION I

INVITATION TO BID

National Power Corporation
INVITATION TO BID
PUBLIC BIDDING – BCS 2024-0039

1. 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-PIB24-005 / PB240208-AM00032 Supply, Erection / Installation, Testing and Commissioning of 7.97/13.8kV Distribution Line (Extension) Project for Malaking Ilog to Paral, San Jose, Masbate • PCAB License: License Category of at least **"Category B – Electrical Works"** and registration classification of at least **"Medium A – Electrical Works"**	Supply, Delivery, Erection / Installation, Testing and Commissioning of Transmission / Distribution Line with voltage of at least 13.2kV	25 January 2024 9:30 A.M.	08 February 2024 9:30 A.M.	₱ 36,714,000.00 / ₱ 25,000.00
Venue: Kañao Function Room, NPC Bldg. Diliman, Quezon City				

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

PR No/s. / PB Ref No/s.	Delivery Period / Contract Duration	Relevant Period of SLCC reckoned from the date of submission & receipt of bids
HO-PIB24-005	Two Hundred (200) Calendar Days	-

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

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

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

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

6. The National Power Corporation will hold Pre-Bid Conference **(see table above)** and/or through video conferencing or webcasting which shall be open to prospective bidders. Only registered bidder/s shall be allowed to participate in the conduct of virtual pre-bid conference. **Unregistered bidders** may attend the Pre-Bid Conference at the Kañao Room, NPC subject to the following:

   a. Only a maximum of two (2) representatives from each bidder / company shall be allowed to participate during the virtual pre-bid conference.
   b. 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 Meriam P. Defensor-Santiago Ave. (formerly BIR Road)
    Cor. Quezon Ave., Diliman, Quezon City, 1100
    Tel Nos.: Tel Nos.: 8921-3541 local 5564/5713
    Email: bcsd@napocor.gov.ph /

12. You may visit the following websites:

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

ATTY. MELCHOR P. RIDULME
Vice President, Office of the Legal Counsel and
Chairman, Bids and Awards Committee

SECTION II

INSTRUCTION TO BIDDERS

SECTION II - INSTRUCTIONS TO BIDDERS

TABLE OF CONTENTS

SECTION II - INSTRUCTIONS TO BIDDERS

1. Scope of Bid

NPC invites Bids for the **SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8 kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE**, with Project Identification Number **LuzP23Z1619Sdg.**

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

2. Funding Information

The GOP through the source of funding as indicated below for CY 2024 in the amount stated in the Invitation to Bid. The source of funding is the proposed Corporate Operating Budget of the National Power Corporation (NPC).

3. Bidding Requirements

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

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

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

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

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

5. Eligible Bidders

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

5.2. The bidder must have completed an SLCC that is similar to the contract to be bid, and whose value, adjusted to current prices using the PSA consumer price indices, must be at least fifty percent (50%) of the ABC to be bid: Provided, however, That contractors under Small A and Small B categories without similar experience on the contract to be bid may be allowed to bid if the cost of such contract is not more than the Allowable Range of Contract Cost (ARCC) of their registration based on the guidelines as prescribed by the PCAB. For Foreign-funded Procurement, the GoP and the foreign government/foreign or international financing institution may agree on another track record requirement.

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

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

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

6. Origin of Associated Goods

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

7. Subcontracts

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

7.2. The Bidder must submit together with its Bid the documentary requirements of the subcontractor(s) complying with the eligibility criterial stated in **ITB** Clause 5 in accordance with Section 23.4 of the 2016 revised IRR of RA No. 9184 pursuant to Section 23.1 thereof.

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

8. Pre-Bid Conference

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

9. Clarification and Amendment of Bidding Documents

Prospective bidders may request for clarification on and/or interpretation of any part of the Bidding Documents. Such requests must be in writing and received by the

Procuring Entity, either at its given address or through electronic mail indicated in the **IB**, at least ten (10) calendar days before the deadline set for the submission and receipt of Bids.

10. Documents Comprising the Bid: Eligibility and Technical Components

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

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

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

10.4. A List of Contractor's key personnel (e.g., Project Manager, Project Engineers, Materials Engineers, and Foremen) assigned to the contract to be bid, with their complete qualification and experience data shall be provided. These key personnel must meet the required minimum years of experience set in the **BDS**.

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

11. Documents Comprising the Bid: Financial Component

11.1. The second bid envelope shall contain the financial documents for the Bid as specified in **Form NPCSF-INFR-01 - Checklist of Technical and Financial Documents, Section VIII - Bidding Forms.**

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

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

12. Alternative Bids

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

13. Bid Prices

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

14. Bid and Payment Currencies

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

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

15. Bid Security

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

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

16. Sealing and Marking of Bids

Each Bidder shall submit 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**.

17. Deadline for Submission of Bids

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

18. Opening and Preliminary Examination of Bids

18.1. The BAC shall open the Bids in public at the time, on the date, and at the place specified in paragraph 9 of the **IB**. The Bidders' representatives who are present shall sign a register evidencing their attendance. In case videoconferencing, webcasting or other similar technologies will be used, attendance of participants shall likewise be recorded by the BAC Secretariat. In case the Bids cannot be opened as scheduled due to justifiable reasons, the rescheduling requirements under Section 29 of the 2016 revised IRR of RA No. 9184 shall prevail.

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

19. Detailed Evaluation and Comparison of Bids

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

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

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

20. Post Qualification

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

21. Signing of the Contract

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

SECTION III

BID DATA SHEETS

SECTION III - BID DATA SHEET

ITB Clause	
5.2	For this purpose, contracts similar to the Project refer to Supply, Delivery, Erection/installation, Testing and Commissioning of Transmission/Distribution Line with voltage of at least 13.2 kV. The Single Largest Completed Contract (SLCC) as declared by the bidder shall be verified and validated to ascertain such completed contract. Hence, bidders must ensure access to sites of such projects/equipment to NPC representatives for verification and validation purposes during post-qualification process. It shall be a ground for disqualification, if verification and validation cannot be conducted for reasons attributable to the Bidder.
7.1	Only a maximum of fifty percent (50%) of the Works may be subcontracted. All Subcontractors must be approved by NPC.
10.1	The 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). **Non-compliance shall be a ground for disqualification.**
	The list of on-going contracts (Form No. NPCSF-INFR-02) shall be supported by the following documents for each on-going contract to be submitted during Post-Qualification: 1. Contract/Purchase Order and/or Notice of Award 2. Certification coming from the project owner/client that the performance is satisfactory as of the bidding date. The bidder shall declare in this form all his on-going government and private contracts including contracts where the bidder (either as individual or as a Joint Venture) is a partner in a Joint Venture agreement other than his current joint venture where he is a partner. Non declaration will be a ground for disqualification of bid.
	The Statement of the bidder's Single Largest Completed Contract (SLCC) similar to the contract to be bid (Form No. NPCSF-INFR-03) shall be supported by the following documents to be submitted during Bid Opening: 1. Owner's Certificate of Final Acceptance issued by the project owner other than the contractor or a final rating of at least Satisfactory in the Constructors Performance Evaluation System (CPES). In case of contracts with the private sector, an equivalent document (Ex. Official Receipt or Sales Invoice) shall be submitted.
10.3	The required License issued by the Philippine Contractors Accreditation Board (PCAB): License Category of at least **"CATEGORY B – ELECTRICAL WORK"** and registration classification of at least **"MEDIUM A – ELECTRICAL WORK".**

10.4	The list of key personnel shall include the following minimum requirements: **a. One (1) Project Manager** Professional Electrical Engineer (PEE) who had managed or supervised at least a similar project within the last ten (10) years. **b. One (1) Project Engineer** Registered Electrical Engineer or Registered Civil Engineer who had supervised at least one (1) similar project within the last ten (10) years. Must have at least five (5) years professional experience on similar project. **c. One (1) Safety Officer 2** Construction Safety Officer who has completed at least forty (40) hours of Construction Safety and Health Training (COSH) from Occupational Safety and Health Center (OSHC) or Safety Training Organizations (STOs) accredited by the Department of Labor and Employment (DOLE) The above key personnel must either be employed by the Bidder or contracted by the Bidder to be employed for the contract to be bid.
10.5	The list of construction equipment (owned or leased) shall include the following minimum requirements: **I. UTILITY EQUIPMENT** 1. Cargo Truck with boom (10 – 15 Tons cap.) - 1 unit 2. Crane (5 - 9 tons) - 1 unit 3. High Bed Trailer - 1 unit 4. Service Vehicle (pickup/van) - 1 unit 5. Tamping Tools - 2 units a. 1 – 10 ft. long b. 1 – 7 ft. Long **II. STRINGING EQUIPMENT** 1. Puller - 1 unit 2. Tensioner - 1 unit 3. Stringing Sheaves for ACSR - 30 pcs. 4. Stringing Sheaves for OHGW - 12 pcs. 5. Hydraulic Compressor for Jointing, Clipping of ACSR and OHGW - 1 unit 6. Tools for clamping/crimping of ACSR & OHGW- 2 sets
10.6	Bidders shall also submit the following requirements in their first envelope, Eligibility and Technical Component of their bid: 1. Documents to be submitted with the Bid Proposal as specified in Clause EW-2.10.1 of Section VI – Electrical Works (EW); 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. 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. 2. Complete eligibility documents of the proposed sub-contractor, if any
10.7	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.
12	No further instructions
15.1	The bid security shall be in the form of a Bid Securing Declaration or any of the following forms and amounts: 1. The amount of not less than *2% of ABC,* if bid security is in cash, cashier's/manager's check, bank draft/guarantee or irrevocable letter of credit; 2. The amount of not less than *5% of ABC* if bid security is in Surety Bond.
16	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. 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 **http://www.napocor.gov.ph**. To report any privacy issue, contact the Data Privacy Officer at **dpo@napocor.gov.ph**. 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.
19.2	Partial Bid is not allowed

20	Additional documents to be submitted during Post-Qualification: a. 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 b. Contract/Purchase Order and/or Notice of Award for the contracts stated in the List of all Ongoing Government & Private Contracts Including Contracts Awarded but not yet Started (NPCSF-INFR-02); c. Certification coming from the project owner/client that the performance is satisfactory as of the bidding date for all ongoing contracts stated in form NPCSF-INFR-02. d. 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-INFR-03) e. Certificate of Employment, Bio Data and valid PRC License of the (professional) personnel (NPCSF-INFR-10a, NPCSF-INFR-11) f. Certificate of Employment, Bio Data and Construction Safety and Health Training Certificate from OSHC/STOs accredited by DOLE of the Safety Officer (NPCSF-INFR-10b, NPCSF-INFR-11) g. Proof of ownership and/or certificate of availability issued by Equipment Lessors for the submitted List of Contractor's Equipment (owned, leased or under purchase agreement) under form NPCSF-INFR-12 h. The licenses and permits relevant to the Project and the corresponding law requiring it as specified in the Technical Specifications, if any.
21	The following documents shall form part of the contract: 1. Notice to Proceed 2. Construction schedule and S-curve 3. Manpower Schedule 4. Construction Methods 5. Equipment Utilization Schedule 6. Construction safety and health program of the contractor duly approved by the Bureau of Working Condition (BWC) of the Department of Labor and Employment (DOLE) or proof of submission to BWC 7. PERT/CPM.

SECTION IV

GENERAL CONDITIONS OF CONTRACT

SECTION IV – GENERAL CONDITIONS OF CONTRACT

TABLE OF CONTENTS

SECTION IV – GENERAL CONDITIONS OF CONTRACT

1. Scope of Contract

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

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

2. Sectional Completion of Works

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

3. Possession of Site

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

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

4. The Contractor's Obligations

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

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

5. Performance Security

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

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

6. Site Investigation Reports

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

7. Warranty

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

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

8. Liability of the Contractor

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

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

9. Termination for Other Causes

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

10. Dayworks

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

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

11. Program of Work

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

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

12. Instructions, Inspections and Audits

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

13. Advance Payment

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

14. Progress Payments

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

15. Operating and Maintenance Manuals

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

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

SECTION V

SPECIAL CONDITIONS OF CONTRACT

SECTION V – SPECIAL CONDITIONS OF CONTRACT

GCC Clause	
2	Sectional completion is not specified.
3.1	NPC shall give access to the Site for the Contractor to commence and proceed with the works on the start date. The access to the site referred herein shall not be exclusive to the Contractor but only to enable him to execute the Work.
4	It shall also be the obligation and responsibility of the Contractor to carry out the Works properly and in accordance with this Contract, including but not limited to the following conditions: a. The Contractor shall conduct the Works with due regard to safety and health in accordance with its Construction Safety and Health Program (CSHP) duly approved by the Department of Labor & Employment (DOLE) and in compliance with the DOLE Department Order No. 13 – The Guidelines Governing Occupational Safety and Health in the Construction Industry. Failure to comply with the approved CSHP will be considered as non-compliance with the Contract and shall result to the imposition of Section 19, Violation and Penalties of the DOLE Department Order No. 13 and any appropriate sanctions such as, but not limited to: 1. Suspend the work until the Contractor complies with the approved CSHP with the condition that the work resumption will not incur additional cost to the Corporation; 2. Suspend payment of the portion of work under question; 3. Correct the situation by employing 3rd party and charge all expenses incurred to the Contractor's collectibles/securities; and 4. Report the condition to the Bureau of Working Conditions of the DOLE for their appropriate action. b. The Contractor shall be responsible for the strict compliance with the provision of the Philippine Laws affecting labor and operation of Work under the contract and shall be responsible for the payment of all indemnities arising out of any labor accident which may occur in the execution of the Works and for which he may be responsible under Republic Act 3428, as amended, known as the Workmen's Compensation Law. c. The Contractor is obliged to exercise due care so as not to endanger life and property in the vicinity of the Works where he operates in connection with this Contract. He shall be liable for all damages incurred in any manner by acts of negligence of his own, or his agents, employees, or workmen.

	d. It is the responsibility of the Contractor for the strict compliance with the requirements of the Philippine Clean Air Act of 1999 (R.A. 8749) and Philippine Clean Water Act of 2004 (R.A. 9275). The Contractor shall be liable for any damages/destructions to the environment including penalties that will be imposed by the Department of Environment and Natural Resources (DENR) arising from non-compliance of the requirements thereof. e. The Contractor shall be responsible for the strict compliance with the requirements of the Environmental Compliance Certificate (ECC) issued for this project (if any) and DENR Administrative Order No. 26. He shall be liable for any damages/destructions to the environment including penalties that will be imposed by the DENR arising from non-compliance thereof, in any manner by his acts or negligence, or by his agents, employees, or workmen in the execution of the Works. The Contractor may employ a Pollution Control Officer accredited with the DENR for the duration of the project, if so required by the DENR Administrative Order No. 26 f. It shall be the Contractor's responsibility for the correctness, accuracy and quality of works. NPC's approval does not relieve his contractual obligation and responsibility under this contract. g. Payment of all forms of taxes, such as value added tax (VAT) including municipal licenses and permits, and others that may be imposed by the Philippine Government or any of its agencies and political subdivisions in connection with the Contract shall be for the account of the Contractor. h. In general, the Contractor is totally responsible for the execution of the Works and therefore, takes upon himself all the technical, legal and economic risks and all obligations which could arise therefrom or connected therewith. The overall responsibility of the Contractor includes the responsibility for actions or omissions of his own personnel as well as the personnel of the sub-contractors.
5	1. The following must be indicated in the performance bond to be posted by the Contractor: i. Company Name ii. Correct amount of the Bond iii. Contract/Purchase Order Reference Number iv. Purpose of the Bond: "To guarantee the faithful performance of the Principal's obligation to undertake *(Contract/Purchase Order Description)* in accordance with the terms and conditions of *(Contract No. & Schedule/Purchase Order No.)* entered into by the parties." 2. The bond shall remain valid and effective until the duration of the contract *(should be specific date reckoned from the contract effectivity)* plus sixty (60) days after NPC's acceptance of the last delivery/final acceptance of the project.

	3. In case of surety bond, any extension of the contract duration or delivery period granted to the CONTRACTOR shall be considered as given, and any modification of the contract shall be considered as authorized, as if with the expressed consent of the surety, provided that such extension or modifications falls within the effective period of the said surety bond. However, in the event that the extension of the contract duration or delivery schedule would be beyond the effective period of the surety bond first posted, it shall be the sole obligation of the CONTRACTOR to post an acceptable Performance Security within ten (10) calendar days after the contract duration/delivery period extension has been granted by NPC. 4. Other required conditions in addition to the standard policy terms issued by the Bonding Company: i. The bond is a penal bond, callable on demand and the entire amount thereof shall be forfeited in favor of the Obligee upon default of the Principal without the need to prove or to show grounds or reasons for demand for the sum specified therein; ii. The amount claimed by the Obligee under this bond shall be paid in full and shall never be subject to any adjustment by the Surety; iii. In case of claim, the Surety shall pay such claim within sixty (60) days from receipt by the Surety of the Obligee's notice of claim/demand letter notwithstanding any objection thereto by the Principal.
6	No site investigation report.
7.2	In case of permanent structures, such as buildings of types 4 and 5 as classified under the National Building Code of the Philippines and other structures made of steel, iron, or concrete which comply with relevant structural codes (e.g., DPWH Standard Specifications), such as, but not limited to, steel/concrete bridges, flyovers, aircraft movement areas, ports, dams, tunnels, filtration and treatment plants, sewerage systems, power plants, transmission and communication towers, railway system, and other similar permanent structures: Fifteen (15) years. In case of semi-permanent structures, such as buildings of types 1, 2, and 3 as classified under the National Building Code of the Philippines, concrete/asphalt roads, concrete river control, drainage, irrigation lined canals, river landing, deep wells, rock causeway, pedestrian overpass, and other similar semi-permanent structures: Five (5) years. In case of other structures, such as Bailey and wooden bridges, shallow wells, spring developments, and other similar structures: Two (2) years.

8.0	**CORRECTION OF PUNCHLIST ITEMS:** After to the conduct of Test and Commissioning/Joint Final Inspection or upon the advice by the NPC, the Contractor/Supplier must correct any remaining works and work deficiencies identified in the punchlist issued for the project within one (1) month considering the approved remaining contract time. Failure to comply with this provision shall be grounds for non-issuance of Certificate of Satisfactory Performance which is a requirement for future bidding with the NPC. This, however, shall not preclude NPC's claim for liquidated damages, imposition of any other penalties and/or filing of blacklisting actions in accordance with the blacklisting guidelines issued by the Government Procurement Policy Board (GPPB).
10	No dayworks are applicable to the contract.
11.1	The Contractor shall submit the Program of Work to the Procuring Entity's Representative within Ten (10) calendar days of delivery of the Notice of Award/Letter of Acceptance.
11.2	The period between Program of Work updates is Thirty (30) calendar days. The amount to be withheld for late submission of an updated Program of Work is One percent (1%) of contract amount.
12	During contract implementation, the Procuring Entity shall conduct Constructors Performance Evaluation in accordance with Section 12, Annex E of the Revised Implementing Rules and Regulation of R.A. 9184 using the NPC Constructors Performance Evaluation System (CPES) Guidelines. CPES ratings shall be used for the following purposes: a) eligibility screening/post-qualification; b) awarding of contracts; c) project monitoring & control; d) issuance of Certificate of Completion; and in adopting measures to further improve performance of contractors in the prosecution of government projects. Qualified Constructors Performance Evaluators (CPE) shall conduct project evaluation as follows: (a) During Construction - Except for those projects with a duration of 90 calendar days and below which may be subjected to at least one (1) visit, all projects shall be subjected to a minimum of two (2) evaluations to be performed by the CPE. The number of evaluations beyond the prescribed minimum shall be determined by the CPES-Implementing Unit based on the size, nature and complexity of the project and shall be subject to approval by the proper authorities within the agency. The first evaluation shall be performed when the project is at least thirty percent (30%) physically complete or as maybe required by the CPES-IU using the S-curve or other appropriate means to determine whether there is substantial work completed for evaluation.

	(b) Upon Completion - only one evaluation shall be performed by the CPE right after the Project Implementation Group reports one hundred percent (100%) completion of the project.
13	The maximum amount of advance payment is fifteen percent (15%) of the Contract Price and paid in lump sum.
14	No further instructions.
15.1	The date by which "as built" drawings and operating and maintenance manuals are required is within thirty (30) calendar days after completion of contract.
15.2	The amount to be withheld for failing to produce "as built" drawings and/or operating and maintenance manuals by the date required is Five percent (5%) of contract amount.

SECTION VI

TECHNICAL SPECIFICATIONS

PART I – TECHNICAL SPECIFICATIONS

CW – CIVIL WORKS

CW-1: POWER PLANT (N/A)

CW-2: DISTRIBUTION LINE

EW – ELECTRICAL WORKS

EW-1: POWER PLANT (N/A)

EW-2: DISTRIBUTION LINE

PART II – TECHNICAL DATA SHEETS

EW – ELECTRICAL WORKS

SECTION VI – TECHNICAL SPECIFICATIONS

CIVIL WORKS

PART I – TECHNICAL SPECIFICATIONS

CW-2 – DISTRIBUTION LINE

TABLE OF CONTENTS

SECTION III – TECHNICAL SPECIFICATIONS

PART I – TECHNICAL SPECIFICATIONS

CW – CIVIL WORKS

CW-2 – DISTRIBUTION LINE

CW-2.1 STEEL POLE MATERIALS SPECIFICATIONS

CW-2.1.1 Scope

This specification covers the technical and associated requirements for tubular steel pole used for distribution lines of electric power transmission rated 7.97/13.8 kV. The poles shall be supplied complete with bolts, nuts, washers and miscellaneous fittings.

It is not NPC's intent to outline all the technical requirements or to set forth those requirements adequately covered by applicable codes and standards. Contractor shall furnish high quality work and materials meeting the requirements of this specification and electric industry standards.

The Contractor shall bear full responsibility that the steel poles have been fabricated in accordance with codes and standards specified herein.

No departure shall be made from this specification and standards unless waived or modified in writing by NPC. Contractor shall obtain from its sub-contractors a statement as to compliance with this specification without exception and/or if there are any exceptions, these shall be described in detail and included in Contractor's proposal. Contractor shall add a statement that no other exceptions are taken to this specification.

Contractor shall furnish a complete set of reproducible fabrication drawings to NPC.

CW-2.1.2 Codes and Standards

The specified material and services shall be furnished in accordance with, but not limited to, the following codes and standards or to applicable equivalent standards of the country of the manufacturer, including all addenda, in effect at the time of purchase order, unless otherwise stated in this specification:

ASTM - American Society for Testing and Materials

A36/A36M	Standard Specification for Structural Steel, Book 01.04

A123	Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products, Book 01.06, 15.08.
A143-89	Recommended Practice for Safeguarding Against Embrittlement of Hot Dip Galvanized Structural Steel Product and Procedure for Detecting Embrittlement
A153	Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware, Book 01.06.15.08.
A239-89	Standard Test Method for Locating the Thinnest Spot in a Zinc (Galvanized) Coating of Iron or Steel Articles by the Preece Test (Copper Sulfate Dip)
A307	Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile, Book 01.01, 15.08
A325	Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength, Book 15.08
A354	Specification for Quenched and Tempered Alloy Steel Bolts, Studs and Other Externally Threaded Fasteners
A370	Test Methods and Definitions for Mechanical Testing of Steel Products
A384	Recommended Practice for Safeguarding against Warpage and Distortion during Hot-dip Galvanizing of Steel Assemblies
A449	Specification for Quench and Tempered Steel Bolts and Studs
A490	Specification for Heat Treated, Steel Structural Bolts, 150 ksi (1035 Mpa) Tensile Strength
A563	Specification for Carbon and Alloy Steel Nuts
A572/A573M	Specification for High-Strength Low Alloy Columbium-Vanadium Steels of Structural Quality
A588/A588M	Specification for High Strength Low-Alloy Structural Steel with 50 ksi (345 Mpa) Minimum Yield Point to 4 in. (100mm) Thick
A633/A633M	Specification for Normalized High Strength Low Alloy Structural Steel

A673/A673M	Specification for Sampling Procedure for Impact Testing of Structural Steel
A687	Specification for High Strength Non-Headed Steel Bolts and Studs
A780	Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
A871/A871M	Specification for High Strength Low Alloy Structural Steel Plate with Atmospheric Corrosion Resistance
F436-82	Standard Specification for Hardened Steel Washers

AWS - American Welding Society

D1.1-92	Structural Welding Code – Steel
A5.1-91	Specification for Carbon Steel Covered Arc-Welding Electrodes
A5.17-89	Specification for Carbon Steel Electrodes and Fluxes for Submerged Arc-Welding

AZI - American Zinc Institute

Inspection Manual for Hot - Dip Galvanized Products (Latest Edition)

ASCE - American Society of Civil Engineers

ASCE / SEI 48-05 - Design of Steel Transmission Pole Structures.

ISO - International Organization for Standardization

9001	Quality System Model for Quality Assurance in Design/Development, Manufacture and Testing
9002	Quality System Model for Quality Assurance in Production, Installation and Servicing

These codes and standards set forth the minimum requirements which may be exceeded by Contractor if, in Contractor's judgment and with NPC's acceptance, superior or more economical materials are available for successful and continuous operation of Contractor's equipment as required by this specification.

CW-2.1.3 Technical Requirements

CW-2.1.3.1 Design

All outline dimensions in the drawing are fixed but where no dimensions are given, the poles may be modified to suit the design, subject to compliance with all the requirements of the specification.

The direct buried poles fabrication shall be manufactured for the configuration and limitations provided elsewhere in the tender documents.

For directly buried steel pole, the butt plate cover shall be fully welded to the bottom shaft.

Depending on the requirements, columns shall be either circular in cross section or octagonal, and shall be tapered from top to the base.

Cross-arm member, if required in the Bid Drawings, shall be of the same cross section as columns, with taper and shall conform to NPC's general arrangement drawings. The strength of the attachment of cross-arms to the columns shall be sufficient to develop the full capability of the cross arm.

Minimum yield strength of steel specified for rolled plates used in the design shall be 345MPa (50ksi).

Members requiring more than one length of tubular section shall be constructed by telescoping the sections together with sufficient overlap to develop the full strength of the member. Minimum overlap shall be 1.5 times the tubular diameter for each section. The length of the bottom shaft shall not exceed 7.5 m. Alternate method may be recommended by Contractor and submitted to NPC for approval.

Members that are to be painted shall be constructed of plates appropriately shaped to form a hermetically sealed tubular section having a constant taper. Hermetically sealed units are not required for galvanized tubular sections.

Rigging accessories, insulator attachment plates, ladder, lugs for bolted steps and lighting brackets and hand line attachment shall be welded to the structure.

Clearance

Poles shall maintain the clearances between conductor and steel as shown on the drawings. The path of the conductors and jumpers should be accounted for when checking these clearances.

Allowable Stresses

The allowable stresses for tubular members, guys and connection bolts shall comply with the requirements of ASCE / SEI 48-05 - Design of Steel Transmission Pole Structures.

CW-2.1.3.2 Materials

All materials shall comply with the requirements of an ASTM specification unless otherwise specified.

Material to be welded shall comply with the requirements of ANSI/AWS D1.1.

Structural Plate

Plate and "product of a coil" that is used to produce load carrying components shall be considered structural plate. Material used for grounding plates, identification plates, pole caps, disposable cage plates and similar components does not need to be classified as structural plates.

All Structural plates shall conform to ASTM Standards.

Structural plate material shall meet the Charpy impact requirements.

The silicon content of plate to be galvanized shall be limited to the following:

Shaft material	:	$Si \leq 0.06\%$
Other	:	$Si \leq 0.06\%$ or $0.15\% < Si < 0.40\%$

Bolts, Nuts and Washers

Material for headed bolts shall conform to: ASTM A307, ASTM A325, ASTM A490 or ASTM A449 when bolt diameter exceeds 38.1 mm (1.5 in.) and shall be galvanized in accordance with ASTM A153.

Nuts shall conform to ASTM A563.

Washers shall conform to ASTM F436.

Charpy Impact Requirements

Charpy impact properties shall be determined in accordance with ASTM A370 and A673.

Weld Material

The material used for making welds shall be compatible with the parent material, as defined by ANSI/AWS D1.1-92 and shall meet the impact requirements for the lowest toughness requirements of the plates being joined.

CW-2.1.3.3 Detailing

Typical Details

Telescoping splices joining sections (slip joints) shall have a minimum lap of 1.5 times the largest inside diameter of the outer section.

Circumferential Welds

Shaft-to-shaft, pole shaft-to-base plate, and pole shaft-to-flange shall be full penetration welds.

Arm shaft-to-arm bracket shall be partial penetration groove weld with fillet overlay, sized to develop the full strength of the shaft.

Other accessories (lugs and plates for grounding, jacking, climbing and identification) shall be fillet and/or groove welds sized to develop the loading requirements of the attachment. The top cover plate shall be convex in shape having the same material as the pole shaft and shall be fully welded thereon.

Longitudinal Welds

Longitudinal welds in outer section of slip joints and within 76.2 mm (3") shall be full penetration weld.

Longitudinal welds shall be a minimum of 80% penetration in other locations.

Conductor plate attachment weld shall be full penetration weld.

Bolt holes shall have a maximum diameter of bolt diameter + 3.3 mm (0.13")

Plate Bends

The minimum inside radius of plate bends shall be such that cracking does not occur. Care must be taken to prevent the steel from cracking especially at the free ends of the bend either during the bending operation or subsequently due to residual stresses.

CW-2.1.3.4 Fabrication

Fabrication shall be performed in strict compliance with the NPC's approved shop detail drawings. Material substitution or deviations from the final approved drawings shall not be made without written approval from NPC.
The manufacturer shall accurately identify all material to assure proper usage.

Pole Shaft

The pole shaft shall present the most pleasing appearance possible consistent with the strength requirements in the specification and drawings. Pole shall be continuously tapered from top to bottom with a uniform slope. No multi-ply steel plates will be allowed for the pole structure fabrication. Shaft shall be made with number of sections specified in the Standard Drawings.

The cross section of the pole shall be as specified in Drawing. Shaft diameter of a fabricated section should not be less than the design diameter.

Pole Slip Joint

Pole section shall be made with telescopic slip joints for easy assembly either in air or on the ground at the construction site. Overlapping shall not be less than one and a half (1-1/2) times the largest inside diameter of the female section.

The taper of each section at a slip joint should match the taper of the adjacent section to provide proper splice tolerances. No circumferential weld within a shaft section shall be permitted. Other type of connection will not be permitted.

Insulator String, Ground String and Guying Assembly

Insulator string, ground string and guying assembly attach to the pole shaft shall be provided and shall be referred to the general design for different type of poles.

Cross-arms

Cross-arm shall be furnished with hoisting lugs to facilitate line construction and maintenance.

Other Pole Attachments

Step Bolts or Climbing Device

Each pole shall be provided with the required sets of step bolts or climbing device where at least two maintenance personnel can climb together on opposite sides of the pole face. The step bolts shall be approximately 2.5m. above ground level to the pole cross-arm and from thereon to the ground wire peak as hereunder enumerated:

a. *For poles with less than 500 mm. Base diameter*, steps bolted to permanent lugs shall be provided. Easily detachable step bolts attached to the pole by hooking or by any other similar scheme shall not be permitted (For 69 kV and above only).

b. *For poles with more than 500 mm. Base diameter*, detachable step ladders shall be provided from 2.5 m above ground level to

the lowest cross-arm and from thereon to the ground wire peak, step bolts shall be provided as required under Item "a" above. Ladders shall be secured in place to prevent accidental lifting by handling, etc.

Step bolts shall be full thread double arming bolts with a diameter of not less than 16 mm or ¾" and 71.12 cm or 28" long spaced not more than 45 cm apart. The bolts and ladder rungs shall withstand without permanent deformation, a vertical load of at least 137 kg or 300 pounds applied at the bolt head and at the center of the ladder rung.

Grounding Provisions

Grounding clamps or nuts shall be provided near the top and base of each pole. The wire lug shall be welded to the exterior of all tubular column sections near the top and the base for grounding, in addition to any other ground wire requirements shown on NPC's general design for different type of poles.

CW-2.1.3.5 Material Preparation

Edges shall be in accordance with ANSI/AWS D1.1. Burrs or sharp notches that may be detrimental to the poles or that pose a safety hazard shall be removed. Reentry cuts shall be rounded.

Care shall be taken to prevent separation of the outer surface and reduction of the cross sectional properties below those required by design. If separation occurs during bending, it shall be repaired in accordance with ANSI/AWS D1.1. Mill scale shall not be considered as the surface.

When hot bending is required, heating shall be done evenly over the entire bend area and shall be of sufficient temperature to minimize separation and necking down of the cross section. The temperature used in hot bending shall be such that the physical properties of the steel are not diminished.

CW-2.1.3.6 Welding

Unless otherwise specified herein, or note on NPC's design drawings, welding shall conform to the AISC Specification and weld procedure qualifications shall be in accordance with AWS D1.1. A written welding procedure specification as shown in Appendix E of AWS D1.1 (FormsE-1, E-2 or E-3 as applicable) shall be prepared for each procedure and submitted for review and acceptance by NPC prior to use. Weld details on Contractor's shop detail drawings shall include identification of weld and method to be used for making the weld in accordance with AWS D1.1, Section 2, "Design of Welded Connections", and Section 4, Technique.

Preheat and interpass temperature of AWS D1.1 shall be followed. Welding shall be done by the shield metal-arc, gas shielded flux core, gas shield metal-arc or submerged-arc processes. Welding electrodes

shall be AWS A5.1, low hydrogen classification, for submerged arc welding, unless noted otherwise on NPC's design drawings. Where steel other than ASTM A36 is specified electrode selection will be subject to acceptance by NPC.

The storage of welding consumables (welding wire, electrodes, fluxes and gases) shall be in accordance with AWS D1.1 and the welding consumables manufacturer's recommendations.

Care shall be taken in assembling and fitting, and welding shall be controlled to minimize shrinkage stresses and distortion. All finished work shall be of good quality and have a neat appearance without warpage.

Caution shall be exercised to obtain full penetration welds where specified on NPC's design drawings.

When inspection of a weld zone is called for on NPC's design drawings, procedures shall be in accordance with non-destructive testing procedures of AWS D1.1 and the following additional requirements:

Circumferential and longitudinal welds within the slip joint area of tubular sections shall be shear wave ultrasonically inspected.

Longitudinal welds in tubular sections, which do not meet the acceptance criteria of visual inspection, shall be magnetic particle or dye penetrant tested.

Attachment welds shall be examined by magnetic particle or dye penetrant testing in accordance with AWS D1.1.

Contractor shall furnish a shop test report indicating complete test results of all nondestructive testing and inspection conducted.

The final weld of a component designated for stress relief on NPC's design drawings shall be subjected to ultrasonic inspection prior to and after stress relieving.

CW-2.1.3.7 Surface Preparation and Painting

Galvanizing

Unless otherwise specified, all structural steel poles shall be hot-dip galvanized after fabrication in accordance with ASTM A 123. SSPC SP8 surface preparation will proceed galvanizing. Exposed welds shall be mechanically cleaned.
Fabrication and preparation of material for galvanizing shall conform to the requirements of ASTM A 143. When specified in the drawings or specification, embrittlement test of designated galvanized material shall be performed in accordance with ASTM A 143.

Bolts, nuts and washers shall be galvanized in accordance with ASTM A153. Bolts and nuts shall be assembled after galvanizing and shall fit

with finger pressure only and nuts shall be interchangeable on any bolts without shake. Wrench tightness or spinning fit shall be caused for rejection.

Repair of damaged hot dip galvanized surfaces shall be in accordance with ASTM A780.

Inspection of galvanizing shall follow the procedures of the AZI Inspection Manual.

Heavy runs or lumps of excess zinc will not be acceptable in any area where they will interfere with bolt hole alignment (such as the "drip end" of punched angle braces, etc.), with matching flat surfaces which are to be bolted together, or are of such size and location that normal handling or erection may cause them to be dislodged. Sharp, pointed, "stickers" of zinc which could cause injuries in handling shall be removed.

Straightening of steel after galvanizing shall be accomplished without the use of heat. Steel so straightened shall be inspected to assure no deformation or cracking of galvanizing layer.

The zinc coating shall withstand the minimum number of dips of the Preece Test, according to ASTM A239-89.

Bolts shall be spun-galvanized and rechasing of bolts threads after galvanizing shall not be permitted. Nut threads shall be tapped after galvanizing but not to cause appreciable rocking of the nuts to the bolts.

All materials shall be cleaned and washed after galvanizing to remove traces of flux, flux inclusions, preflux slats, acid ash, dross or other extraneous materials. The presence of wet storage stain (White Rust) shall be caused for rejection.

Pipe, tubing or box sections shall not be double-dipped.

Painting

When a painted finish is specified, the paint shall be environmentally friendly, with high solids content, low Volatile Organic Compounds, and within toxic acceptable levels.

Only the following materials will be acceptable in the formulation of the paint system:

- Triglycidyl Isocyanurate (TGIC) or Urethane polyester powder
- two-component Organic Zinc-Rich Urethane liquid
- Zinc Rich Epoxy powder
- two-component Polyamidoamine Epoxy liquid
- two-component Acrylic Aliphatic Poly -Urethane liquid

- two-component Tar-Extended Polyurethane Liquid with Pre-catalyzed one component Polyurethane resin (touch-up)

The paint system formulation shall be agreed upon between NPC and the Contractor before acceptance of the purchase order and will be clearly stated on the purchase order.

The Contractor shall furnish as part of the scope of supply for the poles touch-up material with each type of pole structure.

CW-2.1.3.8 Preparation for Shipping and Storage

Each shipment shall include a detailed packing list identifying all items by part number, including hardware. Special care shall be exercised in the handling, packaging and shipping of the materials to prevent denting, bending, or any other damage of the sections, cross-arms and anchor bolt cages. Suitable cushioning, protective padding, dunnage or non-metallic spacers shall be used to prevent fangs and flanges welded to the tubular sections from damaging other tubular parts and to prevent damage and shifting during transit.

Cross-arm members shall be shipped loose.

Small parts and fasteners shall be carefully boxed, crated, bagged or otherwise containerized and protected for shipment. Small pieces shall be bundled, with all the pieces in any bundle having the same mark. All small pieces such as bolts, ground wire and insulator connections shall be packed in boxes of not over 68kg (150lb) gross weight each. Bolts of different sizes or length shall be wrapped in separate sacks before boxing. Description, quantity and marks or description of contents shall be shown on the outside.

All identifications shown on bundles, boxes or other containers shall be included on Contractor's shipping and packaging lists.

All materials shall be arranged to allow safe unloading at site.

Shop painted or galvanized steel will be stored in the field pending erection. Contractor shall provide storage and handling instructions to minimize damage to painted or galvanized surfaces.

CW-2.1.3.9 Marking

All parts of poles shall be appropriately marked or numbered or to identify the same as belonging to specific type of poles. The pole and its parts shall also bear the marking **"NPC"** to identify the same as the property of the National Power Corporation. All markings shall be indelible and clearly visible after galvanizing. Pieces which are part of a structure shall be marked with structure type number, followed by the proper assembly item and other identification marks.

Example: DCSPA30-A1 (Steel Pole type DCSPA, 30 m, member A1)

In marking the parts, each marking shall be prefixed by letters, which indicate the type of poles then followed by parts number. Letterings shall have a minimum height of thirty (30) mm. Special care shall be taken to see that all markings are made in such manner as not to be obliterated in transit, or in any way damage the galvanizing or affect the strength of the structure.

Identification marks shall be located conspicuously for easy reading. Marking of like pieces shall be identical in location, and pieces over 4.26 m (14 ft) in length shall be marked at both ends.

Identification marks shall be applied by stamping into the steel a 1.58 mm (1/16 inch) deep identification mark before galvanizing using 30 mm minimum height, steel die letters and numerical. After galvanizing, a straight line with minimum width of 6.35 mm (1/4 inch) shall be stenciled to underline the identification marks. The stenciled line shall be made with durable paint or ink that will adhere to the galvanized surface, and be legible. All small items that are not adaptable to die marking and are not boxed shall be identified by either attaching die stamped steel tags or standard white cloth shipping tags. The tags shall be attached with non-corrosive wire.

CW-2.1.4 Installation

When the installation and erection is by the Contractor such as for turn-key contracts, complete details of installation and erection, proper handling, transport to various sites, storage and performance guarantees, etc. shall be furnished for NPC's review and approval.

All materials shall comply with test criteria, and NPC's acceptance of the steel poles and its components shall not relieve the Contractor of his responsibility for meeting all the requirements of this specification.

The Contractor shall carry out at his own expense all tests necessary to ensure the satisfactory fabrication of steel poles and its components in accordance with the applicable standards mentioned herein in the specification.

The steel poles and its components shall be given the manufacturer's routine shop tests and quality conformance tests and shall be witnessed by the NPC. Tests results shall be submitted to NPC. No steel poles shall be shipped until released for shipment by the NPC.

CW-2.1.4.1 Material

Contractor shall furnish six (6) copies of certified mill test reports covering chemical and mechanical properties of the structural steel. Stock material may be used with NPC's concurrence where Contractor's stock can be satisfactorily identified with the specified ASTM specification.

Plate material shall be subjected to Charpy V-notch impact testing in the longitudinal direction in accordance with ASTM A370 Type A Figure II, and ASTM A 673. The guaranteed Charpy V-notch properties shall be no less than 2.07 kg-m.
All welded electrode material shall also meet the Charpy V notch impact test requirements and shall have the physical properties equal to the steel to be welded.

CW-2.1.4.2 Shop

Contractor shall furnish a shop test report for NPC's review and records showing the results of all tests made during fabrication.

CW-2.1.4.3 Quality Conformance Inspection

This is intended to eliminate defective materials and components of the steel poles. Each component shall be inspected for conformance to the fabrication drawings. This inspection shall include, but not limited to:

a. ultrasonic inspection of all plate material prior to welding for laminations;

b. visual inspection of dimensions to assure that tolerances are met;

c. visual inspection of cut edges to ANSI/AWS D.1.1 criteria;

d. visual inspection of bent surfaces for surface separations (supplemented by mag particle in questionable areas);

e. visual inspection of bolt holes to assure that they are cylindrical, perpendicular, free of burrs and without torn or ragged edges;

f. visual inspection of all welds to ANSI/AWS D1.1;

g. ultrasonic inspection of all full penetration welds after galvanizing (maybe waived if routine audits show no history of defects);

h. magnetic particle inspection of all structural partial penetration or fillet welds to ANSI/AWS D1.1;

i. visual inspection of finish;

j. magnetic thickness measurement of finish coatings.

CW-2.1.4.4 Test

Test shall be carried out by the Contractor to the satisfaction of NPC before shipment of the steel poles. All materials shall comply with test criteria, and NPC's acceptance of the steel poles and shall not relieve the Contractor if his responsibility for meeting all requirements of this specification.

The Contractor shall carry out at his own expense all test necessary to ensure the satisfactory fabrication of steel poles in accordance with the applicable standards mentioned herein in the specification.

The steel poles shall be given the manufacturer's routine shop test and quality conformance tests and shall be witnessed by NPC, unless waived in writing. No poles shall be shipped until released for shipment by NPC.

The Contractor shall make all preparation for tests and provide test apparatus and personnel and shall notify NPC, the date of the tests to be witnessed forty five (45) days in advance.

CW-2.1.4.5 Full Scale Test

The Contractor shall carry out a full-scale test of the galvanized steel pole or of a large number of structures of the same design and submit to NPC to assure that proper design and fabricating procedures have been used.

The pole shall be erected on a rigid foundation and the vertical axis through the center of gravity shall not be out of plumb by more than two tenths percent (0.2%) of the height at any level.

The pole structure shall sustain the given proof load including 10% overloads. These loads shall be applied in increments and shall be held constant for a period of five (5) minutes before increasing or removing the loads.

The Contractor shall submit for NPC's approval his proposed method and facilities of applying and measuring the loads on the structure. The load measuring devices with appropriate numbering shall be suitably calibrated prior to and following the test in accordance with the manufacturer's recommendation at the presence of NPC Design Engineer.

Structure deflections under load shall be measured by suitable procedure at points designated. Deflection readings shall be recorded for the **"before- load"** and **"load-off"** conditions.

The Contractor shall submit, forty five (45) days prior to the performance of the tests, his testing programs to NPC for review and approval. These shall include test procedures, diagrams or test arrangements showing the points of location and magnitude of the loads to be applied, the designated points for deflection measurements, etc.

The pole to be tested shall be carried out in the presence of NPC Design Engineer who shall conduct a visual check and evaluate all parts of the structure for sign of failure following the completion of each test.

After completion of test, the test structure can be considered failure if the structure experienced any of the following:

a. After the loads have been removed, the pole structure does not return to its original position within reasonable tolerance;

b. Failure (i.e. bending, yielding, breaking, etc.) of the material or weld is detected; and

c. Test structure does not pass all physical and dimensional checks as required in the test specified in this specification.

Such a failure shall be corrected and tested at the Contractor's expense.

CW-2.1.4.6 Galvanizing Test

Galvanizing tests shall be carried out according to the latest ASTM Specifications A123, A143, A153 and A239 on the structural shapes, bolts, nuts and other small miscellaneous hard wares.

CW-2.1.4.7 Trial Assembly of Prototype Structures

A trial assembly of each type of pole shall be made in horizontal position on the ground.

CW-2.1.4.8 Test Report

The Contractor shall furnish six (6) copies of a test report that shall include:

a) The designation and description of the pole tested;

b) The name of the NPC;

c) The name of the person or organization (responsible engineer) that specified the loading, electrical clearances, technical requirements and general arrangement of the prototype;

d) The name of the Engineer of Record;

e) The name of the fabricator;

f) A brief description and the location of the test facilities;

g) The names and affiliations of the test witnesses;

h) The dates of each test load case;

i) Detailed drawings of the pole, including any changes made during the testing program;

j) A rigging diagram with details of the points of attachment to the pole;

k) Calibration records of the load-measuring devices;

l) A loading diagram for each load case tested;

m) A tabulation of deflections for each load case tested;

n) In case of failure; Photographs of failure; Loads at the time of failure; a brief description of the failure; The remedial action taken; The dimension of the failed members; and test coupon reports of failed members;

o) Photographs of the overall testing arrangement and rigging;

p) Air temperature, wind speed and direction, any precipitation and any other pertinent meteorological data;

q) Mill test reports of poles used in the test report;

r) Test result of the test coupons taken following the completion of test.

CW-2.1.5 Data and Documentation Requirements

Contractor furnished data and information shall be the performance data, predicted performance, interface requirements and construction features of all Contractor's furnished steel poles and materials. The accuracy of such information and its compatibility with overall performance requirements specified by NPC are the sole responsibility of the Contractor.

All information submitted as part of the Proposal Data will become part of contract data for successful bidder. Any deviation from such data requires NPC's approval for such a deviation to be acceptable to NPC.

CW-2.1.5.1 Data and Information to be submitted after Award of Contract

The following shall be submitted after award of contract;

a. Certified mill test reports;

b. Detailed assembly and fabrication drawings;

c. Weights of each type of pole;

d. Test Reports in compliance with test requirements;

e. Certificate of Warranty for the period of one (1) year after installation or eighteen (18) months after the last delivery against factory defects/workmanship. This is to be submitted before or upon delivery;

f. Certificate of origin from the Manufacturer. This is to be submitted during delivery; and

g. ISO Certification of the Manufacturer.

CW-2.1.5.2 Guarantee

In order to assure that manufacturing defects shall be corrected by the Contractor as the case may be, a warranty clause security shall be required from the Contractor for at least twelve (12) months after the poles have been installed, or eighteen (18) months after the last delivery of poles to the designated delivery site, which ever period comes earlier, after performance of the contract.

CW-2.1.6 Measurement of Payment

Measurement of payment for the supply and installation/erection of steel poles shall be based on the quantity of poles delivered including the following:

1. Hole excavation
2. Furnishing, backfilling and compacting of gravel and sand materials
3. Installation of structure grounding

Payment will be made at the contract unit price for the item, Steel Pole, in the Bill of Quantities which payment shall constitute full compensation for furnishing all materials and labor including transport/delivery and erection of poles at the project site.

CW-2.2 GENERAL CONSTRUCTION WORKS

CW-2.2.1 Scope

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

CW-2.2.2 Access Road

The Contractor shall construct and maintain all access roads to suit his construction needs only, and public roads utilized by the Contractor shall be properly maintained by him during the duration of the contract. The flow of public traffic shall not be obstructed in the use and maintenance of public roads.

During the life of the contract, the Contractor shall observed or comply with all national and local regulations, regarding barricades, detour arrangements, warning signs and other requirements on the usage of existing public roads and that of his own access roads. Permits, if required shall be secured by the Contractor.

CW-2.2.3 Contractor's Camp Facilities

a) The Contractor shall provide and grade his camp site, employees housing, warehouse, machine and repair shops, fuel storage tanks, and provide such related facilities and sanitary conveniences that are necessary for maintaining health, peace and order in the camp and work areas.
The areas that may be used by the Contractor within the right-of-way provided will be designated by NPC. Areas that may be needed by the Contractor located outside of the right-of-way shall be negotiated and acquired by the Contractor at his own expense.

b) The Contractor shall provide, maintain, and operate, under competent supervision, such camps and facilities necessary for the housing, feeding and accommodation of his employees.

c) The Contractor will be permitted to lease space for the buildings erected by him on land furnished by NPC for conducting such business or services, as, in opinion of NPC, maybe required for the convenience of the residents of the camp, but patronage of such business for the employment of such services shall be optional on the Contractor's employees.

All leases covering business and other concessions in the campsite shall be subject to the approval of NPC and all such leases shall contain provisions making them subject to termination at any time, if, in the opinion of NPC, the lessee is guilty of misconduct, infraction of the law, or of the regulations governing operation of camps.

All leases shall be made subject to termination upon completion or termination of the contract. No concessions or leases shall be granted for the sale of intoxicating liquor or for the operation of public dance halls, games of chance, or gambling of any form.

CW-2.2.4 Water Supply

The Contractor shall be responsible for the supply, installation, operation and maintenance of a safe and adequate supply of drinking and domestic water. Whenever there is a possibility of contamination of the water supply for drinking and domestic purpose, chlorination or some other approved method of sterilization shall be carried out. Installation and maintenance of such services shall be subjected to the approval of NPC.

CW-2.2.5 Power Supply

The Contractor shall provide his own electric power supply required for construction and erection/installation work. However, should electric power be available from franchise holders/cooperatives, the Contractor may avail of such power. The Contractor shall pay for the energy consumed in accordance with the billing rates agreed upon by the Contractor and the supplier.

CW-2.2.6 Materials Storage

The Contractor shall put up his own warehouse for the storage of construction materials including cement, rebars, and line materials. Storage facilities and manner of storage shall be subject to the approval of NPC.

CW-2.2.7 Camp Security

The Contractor shall provide his own security force to the extent he deems necessary for maintaining peace and order in the camp and work areas and to safeguard materials and equipment, life and property in all areas where he operates.

CW-2.2.8 Sewerage Disposal, Sanitation and First Aid Clinic

The Contractor shall be responsible for the installation, operation and maintenance of an adequate sewerage disposal and sanitation system and shall provide toilet and wash-up facilities for his employees in the camp. Sewerage shall not be disposed in rivers, creeks or other places directly or indirectly affecting the health of residents in the vicinity.

The Contractor shall also put up a first aid clinic with adequate medicine and facilities for the immediate assistance to accident-stricken employees and sick residents in the camp.

CW-2.2.9 Fire Protection

The Contractor shall observe all necessary precaution against fire, provide sufficient portable firefighting equipment and comply with all applicable laws of the Philippines relating thereto.

CW-2.2.10 Removal of Camp and Construction Facilities

After the completion of the work but prior to provisional acceptance, the entire camp and construction facilities of the Contractor shall be dismantled and removed by the Contractor. All areas of operation along the entire length of the distribution line shall also be cleaned of rubbish and left-over materials.

The Contractor shall see to it that these areas shall be left in a clean, neat and orderly appearance satisfactory to NPC.

CW-2.2.11 Measurement of Payment

1) No separate measurement of payment will be made for the cost of the Contractor's general construction facilities, whether such facilities are mentioned herein or not.

2) There will be no separate payment for demobilization and move-out after completion of the contract.

3) All costs pertinent thereto shall be included in the various pay items in the Bill of Quantities.

CW-2.3 CLEARING OF RIGHT-OF-WAY

CW-2.3.1 Scope

This Section covers the clearing of the right-of-way for the distribution line.

CW-2.3.2 Clearing Work

NPC made a survey of the entire distribution line route and contacted the affected parties for permission and approval for clearing the six (6)-meter width right-of-way of the distribution line. Contractors are expected to inspect the proposed route to familiarize themselves with the clearing work to be done. Clearing shall be for the entire length of the line and/or as required.

Where the distribution line passes through open uncultivated land, bamboo grooves trees and in regions planted with fruit bearing trees and all other trees growth within the right-of-way, such trees and plants shall be cut so as to leave stump extending not more than 15 cms above the ground, with the exception of bamboo grooves, banana plants, and other trees and plants that can still grow out, which shall have their stumps and roots completely pulled out.

If directed by NPC, clearing shall also include the cutting or trimming of all trees outside of the right-of-way if such trees, upon falling would come within three (3) meters of the nearest conductor of the line.

The cleared materials shall be hauled to a designated stockyard as directed or otherwise disposed of as approved in writing by NPC.
Where the line passes through rice fields, sugar cane plantations or other cultivated fields where there are no tall trees or other growths that will interfere with the wires, the Contractor shall clear off only such vegetation as directed by NPC for the convenient handling of materials and equipment during erection of distribution line structures and installation of wires.

In order that the Contractor will not be delayed in the clearing work, NPC will, at its expense provide the necessary number of right-of-way agents to indicate the trees to be cut and see to it that they are properly accounted and coordinated with the LGU and to their respective owners. Cutting or trimming shall be done only upon approval of the right-of-way agents and/or other authorized representatives of NPC.

CW-2.3.3 Measurement of Payment

Measurement for payment for Clearing of Right of Way will be based on the number of linear meters cleared and accepted.

Payment will be made at the contract unit price for the item Clearing of Right of Way in the Bill of Quantities which payment shall constitute full compensation for all the labor, tools, equipment and other incidentals

necessary for the satisfactory completion of work items called for in this section.

CW-2.4 CARE OF WATER DURING CONSTRUCTION

CW-2.4.1 Scope

This Section covers the construction, installation, operation and maintenance of temporary structures and equipment necessary to protect the work from water coming from any source including river, sea and rain and subterranean, so that construction and erection/installation work can be performed on a suitably dry condition.

CW-2.4.2 Drainage and Dewatering

The Contractor shall construct drainage ditches, culverts, and other forms of conveying water away from the site of work. The Contractor shall also construct temporary cofferdams when necessary to protect pole site areas from encroachment of water.

The Contractor shall furnish, install, operate and maintain all necessary pumps and other dewatering devices to keep all work areas in amply dry condition, especially during excavation works. In addition to the normal number of pumps in operation, the Contractor shall provide standby pumps to take over in case of pump breakdown.

After the work is completed and before it is accepted by NPC, the Contractor shall remove all temporary protective structures and fill or plug all temporary drainage structures all to the satisfaction of NPC.

CW-2.4.3 Measurement of Payment

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

SECTION VI - TECHNICAL SPECIFICATIONS

ELECTRICAL WORKS

PART I - TECHNICAL SPECIFICATIONS

EW-2 DISTRIBUTION LINE

TABLE OF CONTENTS

PART I – TECHNICAL SPECIFICATIONS

ELECTRICAL WORKS

EW-2.0: DISTRIBUTION LINE

EW-2.1 GENERAL

This specification covers the furnishing of all labor, materials, equipment, tools, and other incidentals for the execution of all electrical works enumerated hereunder, or as shown on the accompanying drawings or as otherwise directed by NPC. The works shall be performed and completed in a satisfactory manner in accordance with generally accepted modern engineering practice in the supply, delivery, erection/installation, testing and commissioning of 7.97/13.8 kV Distribution Line (Extension) Project for Malaking-ilog to Paral, San Jose, Masbate.

It is expected that after the completion of the project, more households, establishments, schools, and other facilities will be served and benefit from the electricity being generated from NPC's existing Diesel Power Plant.

The Contractor shall conduct check survey of the proposed tapping point and line route and shall establish the required staking, line materials, and any other contingencies liable to affect his tender price, as no claim for extra payment in this connection will be entertained for all sites.

Any discrepancy between the bidding/tentative plan and the actual survey conducted by the Contractor shall be reported to NPC for evaluation and appropriate action.

The Contractor will be required to perform the entire quantity of work necessary to complete the erection/installation of the new 7.97/13.8 kV distribution lines at the Contract Unit Price, be it more or less than the quantity herein estimated. No separate payment will be made to the Contractor for any major discrepancy arising from the work items in this contract.

EW-2.2 SCOPE OF WORK

In accordance with the specification contained in this section and as shown on the bid drawings, the scope of this contract shall include all engineering services such as supply, delivery, erection/installation, testing and commissioning of distribution line materials.

The works required under the contract are as follows:

1. Clearing of right-of-way (6 meters) wide from the entire route;
2. Final survey and staking of steel poles;
3. Supply, Delivery and Erection/Installation of Steel Poles, Line Hardware, Insulators, Primary and Neutral Conductors, etc.;

4. Dressing of Steel Poles, Guying and Ground wires;
5. Supply, Installation and Test of Distribution Transformers including its assemblies and accessories;
6. Supply, Installation and Test of Cutout Mounted Reclosers;
7. Supply, Installation and Test of Household Connection Materials;
8. Stringing of Overhead and Neutral Conductor including Racheting, Installation of Armor Rods, Armor Tapes, Tie-wires, etc.;
9. Stringing, installation, and test of secondary conductor including its assemblies' accessories;
10. Testing and Commissioning of the Distribution Line System;
11. Tapping connection to the existing distribution line;
12. Furnishing and Installation of Pole Numbering; and
13. Supply of Lineman's Basic Equipment and Tools to be supplied as accessories and cost thereof shall be included in the bid.

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

EW-2.2.1 Contract Duration

Contract duration: Two Hundred (200) Calendar Days

The contract period is inclusive of twenty (20) rainy/unworkable days, considered unfavorable for the execution of works at the site. The number of calendar days shall be counted from the date of effectivity of the Notice to Proceed.

EW-2.3 DISTRIBUTION TRANSFORMER

EW-2.3.1 General

This specification covers the technical and associated requirements for distribution transformer including accessories for use in 7.97/13.8kV distribution line.

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

The equipment to be furnished shall be complete, with all parts in excellent working conditions, of new and high grade materials and produced with first class workmanlike manner. All materials though not expressly called for in this Specifications but which are necessary for the complete and proper operation of the distribution transformer shall be furnished by the Contractor at no additional cost to NPC.

EW-2.3.2 Technical Description

a. Construction	:	Completely self protected, pole mounted
b. Class	:	Outdoor use
c. Quantity, sets	:	Refer to Staking Sheets
d. Continuous rated output at 65°C temperature rise, kVA	:	5 & 10
e. Number of phase	:	1
f. Rated frequency, Hz	:	60
g. Type of cooling	:	OA
h. Impedance, %Z	:	2 (±10% Tolerance)
i. Audible sound level, dB	:	≤ 48
j. Polarity	:	Additive
k. Number of primary bushing	:	1
l. Winding material	:	100% copper
m. Tap changer	:	Yes, No-Load
n. Taps:		
▪ H winding, kV	:	± 2x2.5%
▪ X winding, kV	:	N/A
o. Insulation level:		
Rated operating voltage, kV		
▪ H winding	:	15
▪ X winding	:	1.2
Nominal operating voltage, kV		
▪ H winding	:	7.62
▪ X winding	:	0.24
BIL, kV		
▪ H winding	:	95
▪ X winding	:	30

EW-2.3.3 Design Requirements

EW-2.3.3.1 Rating

The transformer rating shall be the basis of the Contractor's guarantee as to performance and temperature rise.

EW-2.3.3.2 Short Circuit Withstand Capability

The transformer shall be capable of withstanding, without damage, the effects of external short circuit, on either the high or low voltage terminals with rated voltage opposite terminals.

The transformer shall withstand the thermal effects of such short circuit current for three (3) seconds.

EW-2.3.3.3 Overload Capacity

The transformer/s shall be designed and manufactured with overload capacity in accordance with applicable ANSI/IEC/IEEE standards.

EW-2.3.3.4 Electrical Insulating Oil

The Contractor shall furnish oil with quality suitable as an insulant and coolant for transformers. The oil shall be new napthenic based mineral oil. It shall be free from moisture, acid, alkali and sulfur compounds and shall not form a deposit at normal operating temperatures. Except for inhibitor no additives are permitted. It shall meet the requirements of ASTM standard.

The Contractor shall state the commercial name and specifications of the oil to be furnished. NPC reserves the right in the future to use any oil which meets the above specifications and the use of such oil shall not affect the Supplier's guarantee.

Insulating liquid must not contain more than 2PPM of Polychlorinated Biphenyl (PCB), classified as "PCB free". The Contractor shall also submit Certification from the Manufacturer of transformer that the transformer oil does not contain polychlorinated biphenyl (PCB), and to conduct laboratory analysis for PCB of each transformer by a DENR-accredited laboratory.

EW-2.3.3.5 Impedance and Reactance

The impedance and reactance shall be stated in the Proposal.

EW-2.3.3.6 Corona Level

The distribution transformer shall be free from corona when energized at 110% rated capacity.

EW-2.3.4 Design and Construction Features

EW-2.3.4.1 General

All transformers of the same design and rating shall be electrical duplicates, shall be mechanically interchangeable parts and shall be operable in parallel.

The transformer design, manufacture and assembly shall minimize vibration and shall prevent damage by inherent vibration and stress during operation, transportation and short circuits. Transformer construction shall include attached primary arrester, primary fuse and appropriate secondary over-load and short circuit protection

EW-2.3.4.2 Cores

Cores for the transformers shall be constructed of the highest quality, non-aging high permeability grain oriented silicon steel. The steel shall be in thin laminations, annealed after cutting and rolled to ensure smooth surface at the edges.

The laminations must be free from impurities and must receive stress relief treatment after punching. The laminations shall be accurately flattened, especially at the edges and insulated by suitable procedures with long life heat resistant insulating coat.

Both sides of each sheet shall be insulated with a durable, heat resistant insulation. The cores shall be held firmly by core clamp and brace to ensure adequate mechanical strength to support the winding and to withstand without damage or deformation, the forces, caused by short circuit stresses, transportation or handling to prevent shifting of the core laminations.

EW-2.3.4.3 Windings

Windings for transformer shall be of the best modern design of conductor having constant cross-section and uniform insulation or graded insulation as required. The coils shall be wound and supported in a manner to provide sufficient oil ducts which will be maintained without constriction.

End coils shall have extra insulation. Coils shall be made up, shaped and braced to provide for expansion and contraction due to temperature changes in order to avoid abrasion of insulation and provide rigidity to resist movement and distortion caused by abnormal operating conditions.

Adequate barriers shall be provided between windings and core and between high and low voltage windings. End coils shall have extra protection against abnormal line disturbances. Permanent current-carrying joint for splices shall be welded or brazed, properly formed and finished, and insulated to conform to the basic insulation.

The assembled core and coils shall be vacuum-dried, immediately impregnated and immersed in dry oil. They shall be adequately braced to withstand ocean shipment, short-circuit forces and earthquakes.

EW-2.3.4.4 Bushings

All porcelain used in bushing shall be wet process, homogenous and free from cavities or other flaws. The glazing shall be uniform in color free from blisters, burrs and other defects. All porcelain parts shall be one piece.

The bushings of the same rating shall be interchangeable. Bushing up to 110 kV shall be porcelain bulk. Bushing shall have the continuous current-carrying capacity necessary to carry the full 65°C temperature rise current and shall be in accordance with ANSI standard.

EW-2.3.4.5 Tanks

The transformers shall be housed in a steel tank with all permanent joints molded, backed up by a sturdy steel structure as required to obtain the desired rigidity and strength. The material shall be of high grade steel plate having good welding qualities. All seams, flanges, lifting and jacking lugs, braces and other parts attached to the tank shall be welded. No rivets shall be used. The cover shall be bolted type. The tank shall be able to withstand an internal pressure with oil at operating level.

All openings such as joint between the case and cover, bushings insulation mountings, etc., shall have welded on flanges to provide gaskets surfaces and allow for bolt holes. No bolts shall pass to the inside of the case and cover. Flanges shall have gaskets which will remain oil-tight and will not deteriorate under service conditions.

The transformer tank shall have solder-less type ground connector suitable for No. 8 to No. 2/0 AWG stranded conductor.

EW-2.3.5 Tolerances

The transformer/s shall be designed and manufactured with tolerances in accordance with applicable ANSI/IEEE or IEC standards.

EW-2.3.6 Accessories

EW-2.3.6.1 Lifting Lugs

Lugs shall be provided to lift the complete transformer by crane hooks. In addition, separate lugs shall be provided on all items which can be individually removed. Jacking lugs shall be provided to allow removal and rotation of wheels using the lifting jacks.

EW-2.3.6.2 Gaskets

Gaskets shall be rubberized cork of ¼" thick. A complete set of spare gaskets for every transformer shall be supplied.

EW-2.3.6.3 Transformer Mounting Bracket

Transformer Mounting Bracket for securing the transformer to its location to prevent movement in case of earthquake shall be furnished.

EW-2.3.7 Equipment and Marking

A stainless steel rating plate shall be supplied for each transformer and shall be in accordance with ANSI standard. The diagram of connections shall show the tapping and polarity marking for instantaneous induced voltages for each transformer.

The minimum recommended dielectric strength of insulation oil for the transformer shall also be engraved on this plate. The rating plate and any other instructions or designations shall be in the English language.

EW-2.3.8 Spares and Spare Parts

The Contractor shall provide a list of recommended spares and consumables which shall be supplied for one (1) year operation period, identifying each one and the specific sub-assembly to which it applies. The cost of each spares and consumables to be supplied shall be submitted by the Contractor in his bid.

EW-2.3.9 Tests and Experience Requirements

The distribution transformer shall be completely assembled and adjusted at the factory after all the standard and routine shop tests, such as temperature rise test, impulse test and other supplemental tests as required by ANSI and/or IEC standards are performed.

Test report on design and routine tests performed shall be submitted to NPC for evaluation and approval.

Equipment and Manufacturer's Experience

a. The Manufacturer should have been in the business of manufacturing the equipment of the same voltage level for not less than: years : 10

b. The same type of equipment being offered should have been in the actual service for not less than: years : 5

NOTE: Experience less than what is required will be ground for rejection of equipment being offered.

The Contractor shall submit for approval the brochures and/or catalogues with complete technical specification of the distribution transformer to be supplied prior to fabrication and/or delivery at site.

EW-2.4 CUTOUT MOUNTED RECLOSER

EW-2.4.1 General

The cutout mounted recloser shall have rated characteristics as specified in the Technical Data Sheets (Part II of the Technical Specification).

The cutout mounted recloser shall be mechanically and electrically trip free. Any applied close signal, either mechanically or electrically, shall not inhibit the recloser from tripping on the programmed time-current curve.

Close and trip capacitors shall be used to store the necessary energy for operating the recloser. Only the close capacitor energy shall be used for closing while both capacitors are available for opening. Trip energy shall be available following any electrical close.

EW-2.4.2 Interrupting Medium

The interrupting medium shall be vacuum type.

EW-2.4.3 Insulation Medium

Environmentally friendly cycloaliphatic epoxy or equivalent shall be used as dielectric medium. SF6 gas shall not be used.

EW-2.4.4 Housing Materials

The housing shall be weatherproof, capable of withstanding harsh environment. It shall be constructed of UV-resistant polycarbonate with fiberglass reinforcement or better and shall have passed the accelerated UV-exposure test. It shall also be watertight, providing protection when in dropped open state. All support structures and associated bolts and nuts shall be hot dipped galvanized.

EW-2.4.5 Mounting

The cutout mounted recloser shall be supplied with suitable porcelain or polymer cutout mounting.

A detailed drawing of the mounting arrangement shall be submitted to NPC for approval. The minimum clearances shall be included indicated on the drawing.

EW-2.4.6 Operating Mechanism

A low voltage system shall operate a closing mechanism. Tripping energy shall be supplied from a spring mechanism automatically tensioned when the recloser is closed.

The cutout mounted recloser shall be incorporated with a standard operating stick to manually close the recloser upon clearing of the permanent fault.

EW-2.4.7 Current Transformer

A sensing current transformer for use with the recloser control and protection functions shall be an integral part of the cutout mounted recloser.

They shall be of class and ratio adequate to ensure they do not saturate under fault conditions up to the full rated interrupting current.

Current transformers shall be thermally rated to the recloser current rating regardless of the ratio selected.

EW-2.4.8 Power Supply

The cutout mounted recloser shall be completely self-powered with guaranteed sufficient hold-up times and reliability.

EW-2.4.9 Control

The cutout mounted recloser shall have built-in electronics for control, fault protection, and wireless communication.

EW-2.4.10 Sequence of Operation

In the event of fault on the line controlled by the cutout mounted recloser, the recloser shall automatically open, and after a minimum dead time, it shall automatically reclose and remain closed should the fault along the line is cleared.

In case the fault persists, the recloser shall again disconnect the line being controlled. The recloser shall be capable of not less than three automatic reclose operations at rated short circuit current should the fault persist and then drop in the open position until manually reset with the use of a standard operating stick.

If the fault is transient in nature, the equipment shall remain closed, and the operating mechanism shall automatically reset.

The number of operations to lockout shall be adjustable in any combination of instantaneous and time-delayed trips up to a minimum of four with a minimum dead time of 0.5 seconds for the first operations.

The Automatic Circuit Recloser shall be mechanically and electrically trip free. Any applied close signal, either mechanically or electrically, shall not inhibit the recloser from tripping on the programmed time-current curve.

Close and trip capacitors shall be used to store the necessary energy for operating the recloser. Only the close capacitor energy shall be used for closing while both capacitors are available for opening. Trip energy shall be available following any electrical close operation.

EW-2.4.11 Protection

The cutout mounted recloser to be supplied shall be equipped with but not limited to Instantaneous and AC Time Overcurrent Protection.

A sequence coordination feature shall be included to allow the control to step through selected operation in the operating sequence without tripping.

The control shall include a cold load pick up feature to prevent the control from tripping while energizing non fault system loads.

The Cold Load Pick up feature shall be able to be programmed IN or OUT of service.

EW-2.4.12 Safety Features

The control software and connection to wireless communication shall have a programmable security code to limit access of control programming functions to authorized personnel.

EW-2.4.13 Event Recorder/Histogram

Event recorder shall be provided to record and store events in a non-volatile memory. The recorder shall include time and date of event and histogram features displays statistical information including tagged min/max values.

EW-2.4.14 Other Technical Requirements

Operating and Configuration Editor Software Program

Laptop and all software and configuration editor software program including licenses and other hardware shall be supplied and included in the cost of the equipment in the Bill of Quantities. A set of each type of software including licenses plus instruction manuals shall be provided by the Contractor.

All Recloser shall be properly configured, calibrated, and set at factory prior to delivery based on the desired initial pick-up current trip setting requirement of each site at present and/or forecasted load data to be provided by SPUG.

EW-2.4.15 Test and Inspection

The Contractor shall provide a test specification covering all tests on the Contractor's premises, successful completion, as deemed by NPC, of Inspection and Tests on Contractor's premises shall be a prerequisite to shipment of all materials, equipment, software or system(s). Following successful completion of inspection and tests on his premises, the Contractor shall obtain the approval to proceed with the delivery of the equipment, materials, software or system(s) from NPC in accordance with the Technical Specification for the equipment.

Test report on design and routine tests performed in accordance with ANSI/IEEE and/or IEC standard shall be submitted to NPC for evaluation and approval.

All test certificates shall include the manufacturer's serial number.

EW-2.5 FUSE CUTOUT WITH LIGHTNING ARRESTER COMBINATION

This specification covers the supply and delivery of fuse cutout with lightning arrester combination for use in 7.97/13.8 kV distribution line.

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

EW-2.5.1 Technical Characteristics and Requirements

Fuse Cut-Out

a.	Type	:	Open drop out and expulsion fuse cut out
b.	Rated Voltage, kV	:	15
c.	Rated Frequency, Hz	:	60
d.	BIL, kV	:	110

Fuse cutouts shall be satisfactory use in a tropical climate with high relative humidity. The cutouts will be mounted by means of steel brackets on steel poles cross arms.

The cutouts are intended for use with button head type fuse links and must be able to accommodate fuse links meeting the interchangeability requirements of ANSI standard.

The cutouts to be supplied shall include the following:

1. Fuse Support Assembly
2. Fuse Holder Assembly
3. Mounting Bracket
4. Lock Washers

Fuse Link

a.	Type	:	Universal button head
b.	Rated Voltage, kV	:	15
c.	Continuous current rating, A	:	Refer to Staking Sheet

The fuse link to be supplied shall be universal button head type with tin fuse element suitable for 15 kV open type distribution cutout to be used in the overcurrent protection of circuits and are intended to coordinate with automatic circuit recloser and transformer protection equipment. The fuse link shall meet the electrical and mechanical interchangeability requirement in accordance with ANSI standard.

Lightning Arrester

a.	Type	:	Metal oxide varistor (MOV), gapless type

b.	Duty cycle voltage, kV	:	12
c.	Maximum continuous operating voltage, kV phase to ground		10.2
d.	Frequency, Hz	:	60
e.	BIL, kV	:	110

Gapless arresters shall have elements fabricated from non-linear resistance metal oxide materials to perform both the surge discharge and power frequency reseal functions.

Arresters of this type shall be protected in a hermetically sealed wet-process porcelain jacket, which shall have a high creepage distance and a high dielectric strength.

Both line lead and isolator terminals shall accommodate 1/0 AWG to 2/0 AWG ACSR.

The arrester shall be supplied with a bracket suitable for the intended applications as shown in the Bid Drawings that conforms with the requirements of NEMA or with appropriate bracket as a cutout arrester combination on it.

All mounting bolts and conductor connection requires lock washer. Lock washers shall be fabricated from material that complies with the requirements as per ANSI standard.

All exposed steel or iron part of the arrester shall be hot-dipped galvanized in accordance with ASTM standard.

EW-2.5.2 Test and Experience Requirements

Test report on design and routine tests performed in accordance with ANSI and/or IEC standard shall be submitted to NPC for evaluation and approval.

Equipment and Manufacturer's Experience

a.	The Manufacturer should have been in the business of manufacturing the equipment of the same voltage level for not less than: years	:	10

NOTE: Experience less than what is required will be ground for rejection of equipment being offered.

EW-2.6 LINE MATERIALS

EW-2.6.1 Scope

This section covers the line material specification for 7.97/13.8 kV distribution line in accordance with the requirements specified hereunder and as shown on the drawings.

EW-2.6.2 Line Materials Specifications

Describe herein is the general specification of the line materials and equipment to be supplied for this project.

EW-2.6.2.1 Cross arms

The cross arms to be supplied for this project shall be in accordance to ASCE manual 72 "Design of Steel Transmission Pole Structures". The materials shall meet ASTM A-570 specification (36 KSI min. steel strength) while the galvanizing shall be in accordance with ASTM A-123 specification.

EW-2.6.2.2 Conductors

The conductors to be furnished shall be in accordance with, but not limited to, the latest issues of approved standards for ACSR conductors.

EW-2.6.2.3 Insulators

Insulators to be utilized in the project shall be in accordance to ANSI Class 55-4 and 56-2 for pin, Class 52-1 for suspension, Class 53-2 and Class 53-4 for spool standard as to material, ultimate tensile strength, leakage, distance, etc.

EW-2.6.2.4 Line Hardware

Line hardware shall be made either of aluminum alloy, malleable iron or ductile iron with tensile strength in accordance with ANSI standard.

EW-2.6.2.5 Bolts

All bolts such as carriage, double arming, oval, machine, etc. shall be hot dip galvanized as per ASTM A-153.

EW-2.6.3 Tests

All materials to be supplied under this specification shall comply with test criteria and NPC's acceptance of the conductors, insulators, line hardware and accessories and its components and shall not relieve the Contractor of his responsibility for meeting all the requirements of this specification.

The Contractor shall carry out at his own expense all tests necessary to ensure the satisfactory design and manufacture of line transformer, line

materials and its components in accordance with the applicable standards mentioned herein in the specification.

All tests required in the applicable standards for the equipment shall be witnessed by NPC representative unless otherwise waived. No line hardware and accessories shall be shipped until release for shipment by the NPC.

EW-2.6.3.1 Testing of Conductors

Power conductors or cables shall be subjected to factory routine tests in accordance with IEC 1089 or applicable standards.

EW-2.6.3.2 Testing of Insulators

Insulator units shall be subjected to factory routine test in accordance with ANSI Standards for wet process porcelain insulator.

EW-2.6.3.3 Testing of Line Hardware

Line hardware and accessories shall be subjected to factory routine tests in accordance with applicable ASTM or IEC Standards.

EW-2.6.4 Manufacturer's Experience

a. The Manufacturer should have been in the business of manufacturing the equipment of the same voltage level for not less than: years : 10

b. The same type of equipment being offered should have been in the actual service for not less than: years : 5

NOTE: Experience less than what is required will be ground for rejection of equipment being offered.

The Contractor shall submit for approval the brochures and/or catalogues with complete technical specification of the conductors, insulators, line hardware and accessories and its components to be supplied prior to fabrication and/or delivery at site.

EW-2.7 HOUSEHOLD CONNECTION MATERIALS

EW-2.7.1 Scope

This specification covers the technical and associated requirements for the complete household wiring materials and their associated materials and installation tools, for use in 7.97/13.8 kV distribution lines.

It is not NPC's intent to specify all technical requirements nor to set forth those requirements adequately covered by applicable codes and

standards. Contractor shall furnish high quality materials meeting the requirements of this specification and industry standards.

The Contractor shall bear full responsibility that the power conductors have been designed and manufactured in accordance with all codes, standards and applicable governmental regulations and perform under the condition and to the standards specified herein.

The general electrical works i.e. dimensions, clearances and distances of conductors/wires must be maintained in accordance with the drawings and/or as per conditions set forth by the Philippine Electrical Code and its equivalent standards.

All materials to be used in the work shall be new, of high quality, free from all defects and of proven acceptability for the purpose of intended.

EW-2.7.2 Service Drop Wire

The service drop wire shall be of duplex type with one insulated phase conductor twisted around on a neutral conductor (ACSR). All wires of conductor shall be aluminum and concentrically stranded. Conductor insulation shall be of black polyethylene (PE) and is rated for 600V phase to phase.

The type and size of service drop wire to be supplied shall be as stated in the Technical Data Sheets and shall be manufactured according to applicable ASTM or equivalent IEC Standards

EW-2.7.3 Household Billing Meter

This specification covers the technical and associated requirements for the kilowatt-hour meter and accessories for the electricity billing requirement of each household.

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

The kilowatt-hour meter to be supplied shall be certified and approved by the ERC (Energy Regulatory Commission)

All materials and parts which are not specifically mentioned herein but are necessary for the proper installation and safe used of kilowatt-hour meter shall be furnished at no additional cost to NPC.

EW-2.7.3.1 Technical Characteristics and Requirements

a.	Type	:	Electronic/Digital
b.	Accuracy class	:	0.5 or better

c.	Rated Voltage, V	:	240
d.	Current range, A	:	10(30A)
e.	Frequency, Hz	:	60
f.	Phase / no of wire	:	1 / 2

The kilowatt-hour meter shall be furnished and installed by the Contractor as shown on the bid drawings complete with housing and mounting accessories for outdoor metering purposes. It shall be capable of measuring the power consumed by the household.

The meter shall comply in all aspects with the specification for meters specified in the latest edition of ANSI and/or IEC Standard. The meter to be supplied shall be tamper-proof and provided with user-friendly interface. It shall be designed to operate continuously for the normal life of the meter in an outdoor tropical location exposed to the elements of rust, corrosion, or other damages which might adversely affect the meter's accuracy or reliability.

EW-2.7.3.2 Test and Experience Requirements

Test report on design and routine tests performed in accordance with ANSI and/or IEC standard shall be submitted to NPC for evaluation and approval.

Equipment and Manufacturer's Experience

a.	The Manufacturer should have been in the business of manufacturing the equipment of the same voltage level for not less than: years	:	10
b.	The same type of equipment being offered should have been in the actual service for not less than: years	:	5

NOTE: Experience less than what is required will be ground for rejection of equipment being offered.

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

EW-2.7.4 Overcurrent Protective Device

The enclosed overcurrent protective device (circuit breakers) to be supplied shall be rated 600V, 1-ph, 60Hz. Each circuit breaker shall be equipped with thermal-magnetic trip element.

EW-2.7.5 Lighting Fixtures, Luminaires and Accessories

Lighting Fixtures

All lighting fixtures to be supplied shall be free of leaks, warps, dents and other irregularities.
The hangers and brackets of all kinds for safe and proper installation of lighting fixtures shall be furnished by the Contractor at his own expense.

The housing of lighting fixture shall be fabricated of corrosion resistant material and shall provide good ventilation and easy installation.

All lighting fixtures, samples and catalogues shall be submitted for NPC's review and approval prior to the order.

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

Lighting Luminaire(s)

a. Compact LED Bulb

The Compact LED Bulb to be supplied shall be rated 240V, 60Hz, 9 Watts, cool white or approved equivalent, classic globe shaped with E27 base and frosted finish complete with all the required mounting accessories.

EW-2.7.6 Household Wiring

Conductors to be supplied shall be a solid or stranded annealed copper conductor as stated in the Technical Data Sheets. The minimum size of conductor to be used shall be 3.5mm^2.

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

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

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

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

EW-2.7.7 Switches and Single-Phase Outlets

EW-2.7.7.1 General

Switches and single-phase outlets shall comply with NEMA Standard. The ratings of switches and single-phase outlets with one conductor earthed shall be as specific herein. All switches and single-phase outlets shall be flush mounted, impact resistance and slash roof type.

EW-2.7.7.2 Switches

Switches for lighting fixtures shall be of the toggle quiet and flush mounted and fixed to the wall 1.37 m above the finished floor level. The rating of the switches and shall be 10A, 230VAC, single-phase.

EW-2.7.7.2 Single Phase Outlets

All outlets shall be provided with the separate earthing and pins connected to the yellow/green part in the feeder cable. Outlets with rated voltage not exceeding 250 Volts shall be in accordance with PEC for 2-pole three wire (indoor and outdoor).

EW-2.7.8 Junction/ Utility and Pull Boxes

Junction / Utility Boxes

All junction/utility boxes for concealed work shall be of hot dip galvanized steel or un-plasticized polyvinyl Chloride.

Utility boxes shall be firmly anchored in place and where required provided with fixture supports.

Pull Boxes

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

Boxes and fitting required for the lighting and power system including all necessary hardware and accessories such as screws, bolts, concrete inserts, clamps, locknuts, couplings shall be furnished by the Contractor. The required quantities of various items and associated materials shall be furnished in accordance with the NPC requirements.

EW-2.8 POLE ERECTION AND LINE MATERIAL INSTALLATION

EW-2.8.1 Scope

The general outline of the pole structures are those indicated on the attached drawings of the Specification. The general dimensions, clearances and distances of conductors/wires must be maintained in accordance with the drawings.

If poles are stored after delivery, it shall be arranged with care and shall be placed so that no pole will come in contact with water on the ground. The Contractor shall use standard and accepted practice and method of erecting the poles depending on their location. Insofar as practicable, the poles shall be selected and matched so that the poles in each structure will be of equal cross-section. Except as otherwise provided in this paragraph or drawings, or otherwise directed by NPC, all poles shall be set in accordance with the following table:

		Depth of Pole Setting			
Length of Poles		In Earth		In Rock	
Meter	Feet	Meter	Feet	Meter	Feet
7.62	25	1.37	4.5	1.22	4.0
9.15	30	1.52	5.0	1.22	4.0
10.67	35	1.68	5.5	1.22	4.0
12.19	40	1.83	6.0	1.22	4.0
13.72	45	1.98	6.5	1.37	4.5
15.24	50	2.13	7.0	1.52	5.0

The Contractor shall excavate holes for pole setting to a depth indicated in table above. The diameter of the holes shall be 20 cm larger than the pole diameter at ground level. Poles set in holes partly in earth and rock shall be set to a depth shown for earth. Poles at angle and dead end points and at the other points of unbalanced stress shall be set at six (6) inches deeper than shown above, and poles with extra large diameters shall be used at these points whenever possible. Pole structures located in steeply sloping ground shall have their depth of setting measured on the downhill sides and shall be at least as deep as shown in the above tabulation. All poles shall be set to within three (3) inches of the specified setting. All holes shall be dug in the correct locations and shall be large enough to provide for the use of tamping bars all around the poles to the full depth of the holes.

All poles shall be set truly vertical and exact in alignment.

After the poles have been set and aligned properly, the holes shall be backfilled with materials consisting of 80% gravel whose sizes ranges from 7.6 cm to 10 cm diameter and 20% sand whose sizes ranges from 3 mm to 8 mm by volume. The gravel and sand material shall be filled around the holes and compacted thoroughly at 30 cm (12 inches) layer by tampering

tools before placing the next 30 cm layer of gravel and sand, until the backfill material reaches the ground surface level. Materials from the excavated holes shall be placed and tamped around the poles to a height of 30 cm. (12 inches) above ground line and shall be spread sloping radially outward until it intersects with the ground surface. In cases where the poles are located/erected in the rice field areas, excavated materials shall be spread and leveled evenly over the site, subject to the approval of NPC. No spreading and tamping of excavated materials shall be done unless cleared by the inspector or representatives of NPC.

In section of the line where the soil bearing capacity is reduced or where special conditions so require, the Contractor shall furnish and place concrete foundation subject to the approval of NPC.

EW-2.8.1.1 Pole Numbering

The Contractor shall number each structure for ground patrol with the numbering indicated on the plan and profile drawings (staking sheets) or as instructed. Numbers shall be printed in 100 mm (4") black letters on a yellow background on the pole surface. The reflectorized paint shall be weather resistant approved by NPC. The numbers shall be painted approximately 3.0 meters from the ground vertically on the flat surface of the poles.

The cost of labor shall be included in the unit bid price for the supply, delivery and erection of different length of poles.

EW-2.8.2 Structure Dressings / Insulator Assemblies

The cross-arms and hardware shall be assembled and installed properly in accordance with the drawings. All nuts and locknuts shall be adequately tightened.

Braces such as flat braces, x-braces, shall be attached where required. The poles and braces shall be bored as required and shall be attached by the Contractor in accordance with the drawings. All nuts shall be tightened adequately.

The Contractor shall assemble and install the insulator assemblies as shown in the drawing.

The number of suspension insulators to be used for a single string of strain assembly shall be as indicated in the drawing.

EW-2.8.3 Guy and Anchor Assemblies

Guy and anchor assemblies shall be installed where required in accordance with the details shown in the drawings. However, NPC reserves the right to direct the Contractor to change the location of the guy and anchor assemblies as may be found desirable in the field. The guy assemblies shall be log type. Installing a guy assembly shall consist of excavating earth to a depth of at least 5'-0", installing anchor log in

position, backfilling and compacting the backfill and installing the guy wire. The anchor rod shall protrude six (6) inches vertically or diagonally above the ground line when installed. The guy wire loop end shall be protected by a serving sleeves for holding down the loose end of guy strand beyond the guy clamp.

EW-2.8.4 Conductors (including Compression Joints, Armor Rods, Repair Sleeves and Jumpers) Requirement

The Contractor shall install, join, string and sag the conductor in accordance with the drawings.

EW-2.8.4.1 Tools and Special Equipment

The Contractor shall furnish all tools and special equipment necessary to install, join, string and sag the conductor in accordance with the best modern practices. NPC reserves the right to approve the tools and equipment to be used by the Contractor.

EW-2.8.4.2 Compression Joints

All joints in the conductors shall be in accordance with the recommendations of the conductor manufacturer unless otherwise specified by NPC. All splices in conductors shall be made at least fifty (50) feet (15.24 m.) away from the structure and no joints will be permitted in spans crossing over existing transmission lines or other public utility lines, unless approved by NPC. River crossing spans shall also be free from joints.

The Contractor shall furnish all necessary accessories, special tools, compressors, etc., required for making conductor splices.

The Contractor shall furnish filler paste for all compression joint consisting of seventy percent (70%) zinc chromate and thirty percent (30%) raw linseed oil by weight. The paste shall be applied in the manner recommended by the manufacturer of the compression joints.

EW-2.8.4.3 Armor Rods

The Contractor shall install Armor rods where required at points in accordance with manufacturer's recommendations and as shown on the drawings. Where it becomes necessary to shift the point of attachment after the armor rods are installed, such shift shall not exceed two and a half (2-1/2) feet (63.5 mm.) either way from the center. If the required shift exceeds this limit, the Contractor without additional cost shall reinstall the preformed armor rods.

EW-2.8.4.4 Equipment Stringing

The stringing operation shall be conducted using method which will not injure the conductor. Particular care shall be exercised to ensure that the conductor is not twisted in any manner. NPC reserves the right to approve

the stringing method used by the Contractor. Where the conductor has been damaged as a result of negligence on the part of the Contractor, the Contractor shall repair or remove the damage section including, if necessary, furnishing additional material without additional cost.

EW-2.8.4.5 Sagging

General

All distribution line conductors shall be sagged in accordance with the sag and tension chart for specific type of cable. These sag and tension are in accordance with the recommendation of the conductor manufacturer. The loading of the conductor shall be such that the design loadings of the structure shall not be exceeded during stringing.

Check

a) Tension

As required by NPC to avoid over-stressing the conductor while stringing, the conductor tension shall be measured by dynamometer to be furnished by the Contractor. The dynamometers used shall be frequently calibrated in order to ensure their accuracy.

b) Sags

All sags shall be measured by the line of sight method. While the sag in all conductors shall be in accordance with the stringing sags specified, maximum increase of five percent (5%) will be acceptable provided the five percent does not exceed six (6) inches (152 mm) and provided that all conductors in the same span assume the same sag and the necessary ground clearance is obtained. In any span where five percent (5%) of the specified sag is less than two (2) inches (51mm), a maximum increase of two inches will be acceptable. A telescope shall be used for the line-of-sight sagging. The Contractor shall furnish the necessary men for signaling and climbing purposes. The methods for checking sag and the points at which the checks are to be made shall be agreed upon between NPC and the Contractor. It is the intent of these specifications that NPC shall be assured, by means of sufficient and reasonable number of checks and the ground clearances as tabulated in the pertinent drawings are obtain at all points, that the tensions are obtain and the general appearances of the line will be satisfactory.

c) Sagging Information

The Contractor shall submit to NPC, on approved form, the following information concerning the sagging of the conductor and shield wire:

1. Date
2. Type of conductor or shield wire sagged
3. Span sagged
4. Measured sag, in meters
5. Temperature in °C or °F
6. Relative elevations of point of supports.

EW-2.8.4.6 Jumper Connection

At all dead-end structures or angle structures, where required, the jumper connections shall be formed in a neat and workmanlike manner.

EW-2.8.4.7 Repair Sleeves

Compression type repair sleeves may be used to repair minor damage to the conductor. Provided that:

1) At the location of the damage on the conductor to be repaired not more than one third (1/3) of the outer aluminum strands are damaged over a length of not more than four (4) inches

2) Not more than two (2) strands in the outer layer are broken, no strands in the inner layer of aluminum strands are broken, and the cross-sectional area of the damage strands is not reduced by more than twenty five percent (25%)

EW-2.9 FACTORY ASSEMBLY AND TESTS

EW-2.9.1 General

The Contractor shall carry out at his own expense, all tests necessary to ensure the satisfactory design and manufacture of all equipment in accordance with relevant ANSI and IEC standard.

All parts shall be properly marked for ease of assembly in the field. Test report on design and routine tests performed in accordance with ANSI or IEC standard shall be submitted to NPC for evaluation and approval.

The test equipment, test method, measurements and computations shall be in accordance with the latest applicable requirements of ANSI and IEC standard.

EW-2.9.2 Shop Test

Routine, design, quality and conformance test and other necessary tests shall be performed in accordance with ANSI Standard or equivalent IEC Standard. Design tests is required if the equipment is manufacturer's new design or previous design with significant design changes. In this case, certified test report of duplicated production type is acceptable.

The Contractor shall make all preparation for tests and provide the required test apparatus and personnel and shall notify NPC in advance of the test

schedule.

The test methods, measurements and computation shall be in accordance with the latest applicable requirements of ANSI and IEC standard and shall be submitted for NPC's approval.

EW-2.9.3 Field and Acceptance Test

Field tests and acceptance tests shall be performed by the Contractor to be witnessed by NPC on the various components of the distribution line to determine whether requirements of the specification have been fulfilled. The Contractor shall provide instructions and acceptance criteria for field testing and commissioning for NPC's reference and application for the distribution line system.

Four (4) certified copies of the reports of all routine tests mentioned herein based on specification standard shall be furnished to NPC immediately within a maximum of fifteen (15) days following the completion of the tests. For equipment and materials which had the required type test already, the type test certificates shall be submitted by the Contractor together with his proposal.

If however, NPC opted not to witness the Factory Acceptance Tests, NPC will issue a Certificate of Waiver of Tests Witnessing/Inspection for the equipment and materials. In such case, the Contractor shall proceed with the Factory Tests in accordance with the requirement of the specification and the manufacturer's test specification as approved by NPC.

If any of the distribution line component i.e. steel poles, insulators, conductors, etc. fail to pass any test, NPC may, at his own judgment, direct the Contractor to make any necessary corrections or alterations to it for minor defects or to replace it forthwith for major defects. Any and all expenses that might result by the supply and installations of new parts or by modification of existing parts and any and all expenses resulting in additional tests made necessary by failure of the distribution line component to meet the guarantees and other requirements of the specification shall be borne by the Contractor. The costs of witnessing the Factory Acceptance Tests by NPC or his representative(s) as a result of re-test to be conducted on the equipment shall also be borne by the Contractor.

EW-2.9.4 Final Completion of Work

After all the conductors and neutral wires are completely strung, Contractor and NPC shall conduct a joint final inspection from tapping point to receiving end of the line. The Contractor must satisfy NPC that all minimum requirements indicated on the General Design Data for 7.97/13.8 kV, Single Circuit, Steel Pole Distribution Line had been met, especially the minimum clearance to ground of the conductor. A continuity test of the line from the tapping point to the receiving end must also be conducted in order to ensure that the entire line is continuous. The decision made by NPC in any defect as found by him shall be final and all the requirements

must be complied by the contractor after receipt of official written communication before a Certificate of Final Completion of work is to be provided.

EW-2.10 DATA AND DOCUMENTATION REQUIREMENTS

Contractor furnished data and information shall be the performance data, predicted performance, interface requirements and construction features of all Contractor's furnished steel poles and materials. The accuracy of such information and its compatibility with overall performance requirements specified by NPC are the sole responsibility of the Contractor.

All information submitted as part of the Proposal Data will become part of contract data for successful bidder. Any deviation from such data requires NPC's approval for such a deviation to be acceptable to NPC.

EW-2.10.1 Data and Information to be Submitted with the Bid

Together with the bid, the bidder shall submit the following information:

a. Completely Filled-in Technical Data Sheets.

EW-2.10.2 Data and Information to be Submitted Before/During Project Implementation

The following shall be submitted after before/during project implementation;

a. Technical Specifications/Brochures of proposed equipment to support the submitted Technical Data Sheet; and

b. Staking Sheets and Construction Drawings as required for project implementation;

c. PCB Test Result of each transformer from a DENR accredited laboratory.

EW-2.11 MEASUREMENT OF PAYMENT

EW-2.11.1 Steel Poles

Measurement of payment for the supply and erection of steel poles shall be based on the length and type of poles erected including the following:

1. Pit excavation
2. Furnishing, backfilling and compacting of gravel and sand materials
3. Installation of structure grounding

Payment will be made at the contract unit price for the corresponding item under each length and type of poles in the Bill of Quantities. Payment thereof shall constitute the full compensation for furnishing all poles and labor necessary to complete the work.

EW-2.11.2 Structure Dressing

Measurement of payment for the supply and installation of structure dressings will be based on the quantity and type of structure dressing supplied and installed as shown on the bid drawings. Payment will be made at the unit bid price for corresponding items under each type of structure dressing supplied and installed as specified in the Bill of Quantities.

EW-2.11.3 Transformer Assemblies

Measurement of payment for the supply, installation and test of transformer assemblies will be based on the number and type of transformer assemblies supplied and installed as shown on the bid drawings. Payment will be made at the unit bid price for corresponding items under each type of transformer assembly supplied, installed and tested as specified in the Bill of Quantities.

EW-2.11.4 Guy and Anchor Assemblies

Measurement of payment for the supply and installation of guy and anchor assemblies will be based on the number of each type of assembly supplied and installed as shown on the bid drawings. Payment will be made at the unit bid price for each type of guy and anchor assembly supplied and installed as specified in the Bill of Quantities.

EW-2.11.5 Secondary and Miscellaneous Assemblies

Measurement of payment for the supply and installation of secondary and miscellaneous assemblies will be based on the number of each type of assembly supplied and installed as shown on the bid drawings. Payment will be made at the unit bid price for each type of secondary and miscellaneous assembly supplied and installed as specified in the Bill of Quantities.

EW-2.11.6 Conductors

Measurement of payment for the supply, installation and test of conductor will be based on the linear kilometer of conductor supplied and installed as shown on the bid drawings or as otherwise directed. Payment will be made at the unit bid price for each type of conductor supplied, installed and tested as specified in the Bill of Quantities. No separate payment for compression joints, allowances for increased length due to sags or difference of elevation of wire supports, and the cost thereof shall be included in the unit bid price per kilometer of conductor installed.

EW-2.11.7 Household Connection Materials

Measurement of payment for the supply, installation and test of Household Connection Materials will be based on the quantity of each material supplied, installed and tested as shown in the bid drawings or as otherwise

directed. Payment will be made at the unit bid price for each item under Household Connection Materials in the Bill of Quantities.

PART II – TECHNICAL DATA SHEETS

ELECTRICAL WORKS

EW-2: DISTRIBUTION LINE

A. General

The Bidder is required to provide all the information required under the Column "Contractor's Data". Although not given by NPC, the Contractor's Data shall be based on the International Standards

NPC requirements are indicated below. The Contractor shall indicate their data corresponding to the said NPC requirements to facilitate evaluation of Contractor's compliance to the specifications.

Non-compliance to the technical requirements including manufacturer's experience less than what is required shall be ground for disqualification.

B. Technical Data and Requirements

B.1 Distribution Transformer

	NPC Requirements	Contractor's Data
1. Manufacturer	By Contractor	
2. Place of manufacture	By Contractor	
3. Type	Completely self-protected pole mounted transformer	
4. Continuous rated output at 65°C temperature rise, kVA	5 & 10	
5. Number of phase	1	
6. Rated operating frequency, Hz	60	
7. Type of cooling	OA	
8. Insulation	Mineral Oil with its electrical and chemical characteristics is Polychlorinated Biphenyls (PCB) free	

Name of Firm	Name & Signature of Representative	Designation

	NPC Requirements	Contractor's Data
9. Impedance, %Z	2, ±10%	
10. Audible sound level, dB	≤ 48	
11. Bushing material	Porcelain	
12. Number of primary bushing	1	
13. Winding material	100% copper	
14. Polarity	Additive	
15. Insulation level:		
a. Rated operating voltage, kV:		
▪ H-winding	15	
▪ X-winding	1.2	
b. Nominal operating voltage, kV:		
▪ H-winding	7.62	
▪ X-winding	0.24	
c. Basic insulation level (BIL), kV:		
▪ H-winding	95	
▪ X-winding	30	
16. Taps changer	Yes, no-load	
17. Taps:		
▪ H-winding	±2x2.5%	
▪ X-winding	N/A	
18. No-load and load losses	Not more than 10% of the manufacturer's specified value	
19. Total losses	Not more than 6% of the manufacturer's specified value	

Name of Firm | Name & Signature of Representative | Designation

	NPC Requirements	Contractor's Data
20. Test requirement:		
a. Design and Routine Test Reports	Yes	
21. Transformer oil analysis /certification to be provided before shipping (yes, no)	Yes	
22. Manufacturer's experience		
a. The manufacturer should have been in the business of manufacturing the conductor for not less than: years	10	
b. The materials offered should have been in the actual service for not less than: years	5	
23. Total weight, kg	By Contractor	
24. Weight of oil, kg	By Contractor	
25. Accessories as specified in EW-2.3.6	To be provided	

B.2 Cutout Mounted Recloser

	NPC Requirements	Contractor's Data
1. Manufacturer	By Contractor	
2. Place of manufacture	By Contractor	
3. Rated operating voltage, kV	15	
4. Normal operating voltage, kV	13.8	
5. Rated frequency, Hz	60	
6. Min. Trip Current (A)	By Supplier	
7. Basic insulation level (BIL), kV	110	
8. Rated Continuous Current (A)	100	
9. Interrupting Current (kAic)	6	

Name of Firm | Name & Signature of Representative | Designation

	NPC Requirements	Contractor's Data
10. Power Frequency Withstand Voltage (wet and dry)	50	
11. Rated Symmetrical Interrupting Current (kA)	≥ 8	
12. Rated Short-time Withstand Current (kA)	≥ 8	
13. Rated Making Current (RMS) (kA)	≥8	
14. Current Sensing	By Supplier	
15. Voltage Sensing	By Supplier	
16. Rated Operating Sequence	4	
17. Interrupting Medium	Vacuum	
18. Insulating Medium	Cycloaliphatic Epoxy or equivalent	
19. Duty Cycle	0-.5s-CO-2s-CO-5s-CO	
20. Mechanical Operations	2000 (min.)	
21. Creepage Distance (mm)	465	
22. AC Supply	By Supplier	
23. DC (Aux.) Supply	By Supplier	
24. Controller	Electronic Type	
25. Min. Protection Features	Instantaneous and AC Time Overcurrent	
26. Programming (Configuration) and Maintenance Human-Machine Interface equipped w/ Operating and Configuration Editor Software Program to be provided	To be provided	
a. Type	Laptop Computer	
b. Hardware		
1. Processor	I7 or equivalent	
2. Clock Frequency, GHz	2.0 (min.)	
3. RAM Cap., GB	16	

Name of Firm | Name & Signature of Representative | Designation

	NPC Requirements	Contractor's Data
4. SSD Drive, GB	512	
5. Hard Disc Cap., TB	1	
6. Video Card Cap.	Dedicated 4GB min.	
c. Software	Licensed Windows, pre-installed with back-up CDROM bundled with latest version of MS Office and reference manuals	
1. Operating System		
2. Communication Sack	OSI-TCP / IP	
3. Configuration and Control Tools	Provided with back-up	
4. Testing, Maintenance, Diagnostic Software and Hardware	Provided with back-up	
27. Standard Operating Stick	To be provided	
28. Cutout Holder (Porcelain/ Polymer)	By Supplier	
29. Total Weight (kg)	By Supplier	

B.3 Fuse cutouts with Lightning Arrester Combination

	NPC Requirements	Contractor's Data
1. Manufacturer	By Contractor	
2. Place of manufacture	By Contractor	
3. Fuse cutout type	Open drop-out and expulsion fuse cut out	
4. Rated operating voltage, kV	15	
5. Nominal operating voltage, kV	13.8	
6. Rated frequency, Hz	60	
7. Basic insulation level (BIL), kV	110	

Name of Firm | Name & Signature of Representative | Designation

	NPC Requirements	Contractor's Data
8. Fuse link		
a. Type	Universal button-head, type k	
b. Continuous rating, A	Refer to staking sheets	
c. Interrupting rating, kA	8	
9. Lightning arrester:		
a. Type	Metal oxide varistor, gap less	
b. Material	Porcelain	
c. Creepage length, mm	≥465	
d. Duty cycle voltage rating, kV	12	
e. Maximum continuous operation voltage (MCOV), kV	10.2	
f. Basic insulation level (BIL), kV	110	
10. Mounting brackets, connectors, bolts, nuts, and other accessories	Included	

B.4 Primary Conductor

1. Manufacturer	By Contractor	
2. Place of Manufacture	By Contractor	
3. Type	1/0 AWG ACSR	
4. Code Word	"Raven"	
5. Total Cross-sectional area, mm^2	62.44 (approx.)	
6. Outer Layers:		
a. Material	Aluminium	

Name of Firm | Name & Signature of Representative | Designation

	NPC Requirements	Contractor's Data
b. Cross sectional area, mm^2	53.52	
c. Stranding No./dia., mm	6 / 3.37	
7. Core:		
a. Material	Steel	
b. Cross sectional area, mm^2	8.92 (approx.)	
c. Stranding No./dia., mm	1 / 3.37	
8. Conductor overall diameter, mm	9.35 (approx.)	
9. Ultimate Breaking Strength, kN	19.04 (approx.)	
10. Rated DC Resistance at 20°, Ω/km	0.5343 (approx.)	
11. Weight of Conductor, kg/m	0.216 (approx.)	
12. Test Requirements:		
a. Stress –Strain Test and Report Required	Yes	
b. Breaking Strength test and Report Required	Yes	
c. Certified Stress-Strain Test Reports on a Cable identical to the specified conductor are acceptable	Yes	
13. Manufacturer's Experience:		
a. The manufacturer should have been in the business of manufacturing the conductor for not less than: years	10	
b. The materials offered should have been in the actual service for not less than: years	5	

Name of Firm | Name & Signature of Representative | Designation

B.5 Primary Neutral Conductor

	NPC Requirements	Contractor's Data
1. Manufacturer	By Contractor	
2. Place of Manufacture	By Contractor	
3. Type	#2 AWG ACSR	
4. Code Word	"Sparrow"	
5. Stranding No./dia., mm	6-Al. & 1-Stl / 2.67	
6. Ultimate Breaking Strength, kN	By Contractor	
7. Manufacturer's Experience:		
a. The manufacturer should have been in the business of manufacturing the conductor for not less than: years	10	
b. The materials offered should have been in the actual service for not less than: years	5	

B.6 Transformer Secondary Conductor

1. Manufacturer	By Contractor	
2. Place of Manufacture	By Contractor	
3. Type	#2 AWG Poly AAC	
4. Code Word	"Peach"	
5. Rated voltage	600V (L-L)	
6. Phase conductor		
a. Material	Aluminium	
b. Stranding No./dia., mm	7 / 2.47	
c. Insulation	Black polyethylene (PE)	

Name of Firm | Name & Signature of Representative | Designation

B.7 Steel Pole

	NPC Requirements	Contractor's Data
1. Structural grade of steel used	ASTM A572 grade 50ksi (345 MPa)	
2. Number of pole sections	1 (not segmented)	
3. Pole shape	Octagonal	
4. Welding method of processing steel pole	Submerged-Arc Welding and Automatic Shielded Inert Gas Metal-Arched Welding (SIGMA)	
5. Pole marking	According to CW-2.1.3.9	
6. Test requirements:		
a. According to CW-2.1.4.4	Yes	
b. Steel Pole Full Scale Test required in the presence of NPC Design Engineers	Yes	
c. Required number of NPC's personnel to witness tests.	Three (3)	
7. Manufacturer's Experience:		
a. Name of manufacturer	By Contractor	
b. Country of origin	By Contractor	
c. Manufacturing experience of similar Steel Poles for not less than: years	5	

Name of Firm | Name & Signature of Representative | Designation

B.8 Household Connection Materials

B.7.1. Service Drop Wire

	NPC Requirements	Contractor's Data
1. Manufacturer	By Contractor	
2. Place of Manufacture	By Contractor	
3. Type	#6 AWG Duplex	
4. Phase conductor		
a. Material	Aluminium	
b. Stranding no.	7 Al	
c. Insulation	Yes, black polyethylene (PE)	
5. Bare Neutral Messenger		
a. Material		
▪ Outer layers	Aluminium	
▪ Inner core	Steel	
b. Size AWG	2	
c. Stranding no.	6-Al / 1-Stl	
d. Breaking strength, lbs	≥2835	

B.7.2. Kilowatt-hour Demand Meter

	NPC Requirements	Contractor's Data
1. Manufacturer	By Contractor	
2. Place of Manufacture	By Contractor	
3. Accuracy Class	0.5 or better	
4. No. of Phase / Wire	1 / 2	
5. Voltage, V	230	
6. Current Range	10 (30)	

Name of Firm | Name & Signature of Representative | Designation

	NPC Requirements	Contractor's Data
7. Frequency, Hz	60	
8. Enclosure degree of protection	IP54	
9. Cable entrance	Bottom	
10. Tamper proof	Yes	
11. Access for maintenance testing	Front access	
12. LCD display	kWh	
13. The Kilowatt-hour meter to be provided is certified and approved by ERC	Yes	

B.7.3. Overcurrent Protective Device

1. Manufacturer	By Contractor	
2. Place of Manufacture	By Contractor	
3. Type	Enclosed Circuit Breaker	
4. Rated voltage, V	600	
5. No of phase	1	
6. Ampere trip rating	20AT	
7. Interrupting capacity, kA	10	

B.7.4. Lighting fixtures/luminaires

1. Manufacturer	By Contractor	
2. Place of Manufacture	By Contractor	
3. Type	Compact LED lamp	
4. Wattage, W	9	
5. Color	Cool white	
6. Efficacy, lm/W	60 - 92	

Name of Firm | Name & Signature of Representative | Designation

	NPC Requirements	Contractor's Data
7. Lumens, lm	≥850	
8. Socket base	E27	

B.7.5. Household Wirings

1. Manufacturer	By Contractor	
2. Place of Manufacture	By Contractor	
3. Feeder conductor		
▪ Type	THHN	
▪ Size, mm^2	8	
▪ Operating temperature, °C	90	
▪ Ampacity	By Contractor	
▪ Material	Stranded Copper	
4. Branch circuit conductor		
▪ Type	PDX	
▪ Size, mm^2	3.5	
▪ Operating temperature, °C	90	
▪ Ampacity	By Contractor	
▪ Material	Stranded Copper	

Name of Firm | Name & Signature of Representative | Designation

SECTION VII

BILL OF QUANTITIES

SECTION VII - BILL OF QUANTITIES

MALAKING-ILOG DPP TO PARAL, SAN JOSE, MASBATE

Item No.	Description of Work or Materials	Work to Be Done	Reference	Unit	Estimated Quantity	Unit Price in Pesos (Words and Figures)	Total Amount (In Figures)
1.1	**7.97/13.8kV DISTRIBUTION LINE**						
1.1.1	Right of Way	Clearing & Grubbing	NPC's Tech Specs & Drawings	mtrs	7540	_____ _____(P_____)	(P_____)
1.2	**7.97/13.8kV STEEL POLES WITH UNIVERSAL HOLES, GROUNDING CLAMP, AND GUYING ATTACHMENT FOR DIFFERENT TYPE OF STRUCTURES**						
1.2.1	25 Footer Secondary Steel Poles						
	Type "QS"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	poles	15	_____ _____(P_____)	(P_____)
	Type "RS"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	poles	8	_____ _____(P_____)	(P_____)
	Type "SS"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	poles	1	_____ _____(P_____)	(P_____)
	Type "TS"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	poles	6	_____ _____(P_____)	(P_____)
1.2.2	30 Footer Single Phase Steel Poles						
	Type "QNA"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	poles	7	_____ _____(P_____)	(P_____)
	Type "RNA"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	poles	2	_____ _____(P_____)	(P_____)

Name of Firm

Name and Signature of Authorized Representative

Designation

SECTION VII - BILL OF QUANTITIES
MALAKING-ILOG DPP TO PARAL, SAN JOSE, MASBATE

Item No.	Description of Work or Materials	Work to Be Done	Reference	Unit	Estimated Quantity	Unit Price in Pesos (Words and Figures)	Total Amount (In Figures)
1.2.3	35 Footer Single Phase Steel Poles						
	Type "QNA"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	pole	4	_____ _____(P_____)	(P_____)
	Type "RNA"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	poles	2	_____ _____(P_____)	(P_____)
	Type "TNA"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	pole	2	_____ _____(P_____)	(P_____)
1.2.4	35 Footer Two (V) Phase Steel Poles						
	Type "QNB"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	pole	1	_____ _____(P_____)	(P_____)
	Type "SNB"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	poles	1	_____ _____(P_____)	(P_____)
	Type "TNB"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	poles	1	_____ _____(P_____)	(P_____)
1.2.5	40 Footer Single Phase Steel Poles						
	Type "QNA"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	poles	3	_____ _____(P_____)	(P_____)
	Type "TNA"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	pole	1	_____ _____(P_____)	(P_____)

Name of Firm

Name and Signature of Authorized Representative

Designation

SECTION VII - BILL OF QUANTITIES
MALAKING-ILOG DPP TO PARAL, SAN JOSE, MASBATE

Item No.	Description of Work or Materials	Work to Be Done	Reference	Unit	Estimated Quantity	Unit Price in Pesos (Words and Figures)	Total Amount (In Figures)
1.2.6	40 Footer Two (V) Phase Steel Poles						
	Type "QNB"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	poles	9	_____ _____(P_____)	(P_____)
	Type "RNB"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	poles	2	_____ _____(P_____)	(P_____)
1.2.7	40 Footer Three Phase Steel Poles						
	Type "QNC"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	poles	5	_____ _____(P_____)	(P_____)
	Type "RNC"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	pole	9	_____ _____(P_____)	(P_____)
	Type "SNC"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	pole	4	_____ _____(P_____)	(P_____)
1.2.8	45 Footer Single Phase Steel Poles						
	Type "QNA"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	poles	10	_____ _____(P_____)	(P_____)
	Type "RNA"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	pole	1	_____ _____(P_____)	(P_____)
	Type "SNA"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	pole	2	_____ _____(P_____)	(P_____)

Name of Firm

Name and Signature of Authorized Representative

Designation

SECTION VII - BILL OF QUANTITIES

MALAKING-ILOG DPP TO PARAL, SAN JOSE, MASBATE

Item No.	Description of Work or Materials	Work to Be Done	Reference	Unit	Estimated Quantity	Unit Price In Pesos (Words and Figures)	Total Amount (In Figures)
1.2.9	45 Footer Two (V) Phase Steel Poles						
	Type "QNB"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	poles	1	_____ _____(P_____)	(P_____)
	Type "RNB"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	pole	5	_____ _____(P_____)	(P_____)
1.2.10	45 Footer Three Phase Steel Poles						
	Type "QNC"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	poles	2	_____ _____(P_____)	(P_____)
	Type "RNC"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	pole	4	_____ _____(P_____)	(P_____)
	Type "TNC"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	pole	1	_____ _____(P_____)	(P_____)
1.2.11	50 Footer Two (V) Phase Steel Poles						
	Type "QNB"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	poles	4	_____ _____(P_____)	(P_____)
	Type "RNB"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	pole	10	_____ _____(P_____)	(P_____)
	Type "SNB"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	pole	4	_____ _____(P_____)	(P_____)

Name of Firm

Name and Signature of Authorized Representative

Designation

SECTION VII - BILL OF QUANTITIES

MALAKING-ILOG DPP TO PARAL, SAN JOSE, MASBATE

Item No.	Description of Work or Materials	Work to Be Done	Reference	Unit	Estimated Quantity	Unit Price in Pesos (Words and Figures)	Total Amount (In Figures)
1.2.12	50 Footer Three Phase Steel Poles						
	Type "QNC"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	poles	4	_____ _____(P_____)	(P_____)
	Type "RNC"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	pole	4	_____ _____(P_____)	(P_____)
	Type "SNC"	Supply, Delivery & Erection	NPC's Tech Specs & Drawings	pole	4	_____ _____(P_____)	(P_____)
1.3	**STEEL POLE STRUCTURE DRESSING**						
1.3.1	Type "NA1 (A1)"	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	structures	24	_____ _____(P_____)	(P_____)
1.3.2	Type "NA2 (A2)"	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	structures	4	_____ _____(P_____)	(P_____)
1.3.3	Type "NA3 (A3)"	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	structures	3	_____ _____(P_____)	(P_____)
1.3.3	Type "NA4 (A4)"	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	structures	2	_____ _____(P_____)	(P_____)
1.3.4	Type "NA5 (A5)"	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	structures	1	_____ _____(P_____)	(P_____)
1.3.5	Type "NA5-2 (A5-2)"	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	structures	1	_____ _____(P_____)	(P_____)

Name of Firm

Name and Signature of Authorized Representative

Designation

SECTION VII - BILL OF QUANTITIES

MALAKING-ILOG DPP TO PARAL, SAN JOSE, MASBATE

Item No.	Description of Work or Materials	Work to Be Done	Reference	Unit	Estimated Quantity	Unit Price in Pesos (Words and Figures)	Total Amount (In Figures)
1.3.6	Type "NB1 (B1)"	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	structure	14	_____ _____(P_____)	(P_____)
1.3.7	Type "NB2 (B2)"	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	structures	17	_____ _____(P_____)	(P_____)
1.3.8	Type "NB7 (B7)"	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	structures	7	_____ _____(P_____)	(P_____)
1.3.9	Type "NC1 (C1)"	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	structures	9	_____ _____(P_____)	(P_____)
1.3.10	Type "NC2 (C2)"	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	structures	14	_____ _____(P_____)	(P_____)
1.3.11	Type "NC7 (C7)"	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	structures	2	_____ _____(P_____)	(P_____)
1.3.12	Type "NC7-2 (C7-2)"	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	structure	5	_____ _____(P_____)	(P_____)
1.3.14	Type "NC8X (C8X)"	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	structure	4	_____ _____(P_____)	(P_____)
1.4	**GUYING, ANCHOR, TRANSFORMER, SECONDARY AND MISCELLANEOUS ASSEMBLY**						
1.4.1	Type "NE1-2 (E1-2)" Guying Assembly	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	assy	40	_____ _____(P_____)	(P_____)

Name of Firm

Name and Signature of Authorized Representative

Designation

SECTION VII - BILL OF QUANTITIES

MALAKING-ILOG DPP TO PARAL, SAN JOSE, MASBATE

Item No.	Description of Work or Materials	Work to Be Done	Reference	Unit	Estimated Quantity	Unit Price in Pesos (Words and Figures)	Total Amount (In Figures)
1.4.2	Type "NE1-2A (E1-2A)" Guying Assembly	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	assy	45	_____ _____(P_____)	(P_____)
1.4.3	Type "NF2-2 (F2-2)" Anchor Assembly	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	assy	40	_____ _____(P_____)	(P_____)
1.4.4	Type "NF2-2A (F2-2A)" Anchor Assembly	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	assy	45	_____ _____(P_____)	(P_____)
1.4.5	Type "NG12-1 (G12-1)" 5kVA Transformer Assembly	Supply, Delivery, Installation & Test	NPC's Tech Specs & Drawings	assy	3	_____ _____(P_____)	(P_____)
1.4.6	Type "NG12-1 (G12-1)" 10kVA Transformer Assembly	Supply, Delivery, Installation & Test	NPC's Tech Specs & Drawings	assy	1	_____ _____(P_____)	(P_____)
1.4.7	Type "NG12-1 (G12-2)" 5kVA Transformer Assembly	Supply, Delivery, Installation & Test	NPC's Tech Specs & Drawings	assy	1	_____ _____(P_____)	(P_____)
1.4.8	Type "NG12-2 (G12-2)" 10kVA Transformer Assembly	Supply, Delivery, Installation & Test	NPC's Tech Specs & Drawings	assy	2	_____ _____(P_____)	(P_____)
1.4.9	Type "NG12-3 (G12-3)" 5kVA Transformer Assembly	Supply, Delivery, Installation & Test	NPC's Tech Specs & Drawings	assy	1	_____ _____(P_____)	(P_____)
1.4.10	Type "NG12-3 (G12-3)" 10kVA Transformer Assembly	Supply, Delivery, Installation & Test	NPC's Tech Specs & Drawings	assy	2	_____ _____(P_____)	(P_____)
1.4.11	Type "NJ5 (J5)" Secondary Assembly	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	assy	5	_____ _____(P_____)	(P_____)

Name of Firm

Name and Signature of Authorized Representative

Designation

SECTION VII - BILL OF QUANTITIES

MALAKING-ILOG DPP TO PARAL, SAN JOSE, MASBATE

Item No.	Description of Work or Materials	Work to Be Done	Reference	Unit	Estimated Quantity	Unit Price in Pesos (Words and Figures)	Total Amount (In Figures)
1.4.12	Type "NJ7 (J7)" Secondary Assembly	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	assy	1	_____ _____(P_____)	(P_____)
1.4.13	Type "NJ10 (J10)" Secondary Assembly	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	assy	8	_____ _____(P_____)	(P_____)
1.4.14	Type "NJ15 (J15)" Secondary Assembly	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	assy	49	_____ _____(P_____)	(P_____)
1.4.15	Type "NJ15A (J15A)" Secondary Assembly	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	assy	40	_____ _____(P_____)	(P_____)
1.4.16	Type "NM2-11 (M2-11)" Miscellaneous Assembly	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	assy	10	_____ _____(P_____)	(P_____)
1.4.17	Type "NM2-11A (M2-11A)" Miscellaneous Assembly	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	assy	102	_____ _____(P_____)	(P_____)
1.4.18	Type "NM5-5 (M5-5)" Miscellaneous Assembly	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	assy	4	_____ _____(P_____)	(P_____)
1.4.19	Type "NM5-9 (M5-9)" Miscellaneous Assembly	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	assy	2	_____ _____(P_____)	(P_____)
1.4.20	Type "NM5-10 (M5-10)" Miscellaneous Assembly	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	assy	3	_____ _____(P_____)	(P_____)
1.5	**PRIMARY CONDUCTOR, 1/0 AWG ACSR, 6-Al./1-Stl. STRANDING, "RAVEN"**	Supply, Delivery, String & Test	NPC's Tech Specs & Drawings	mtrs	15598	_____ _____(P_____)	(P_____)

Name of Firm

Name and Signature of Authorized Representative

Designation

SECTION VII - BILL OF QUANTITIES

MALAKING-ILOG DPP TO PARAL, SAN JOSE, MASBATE

Item No.	Description of Work or Materials	Work to Be Done	Reference	Unit	Estimated Quantity	Unit Price in Pesos (Words and Figures)	Total Amount (In Figures)
1.6	**NEUTRAL CONDUCTOR, 2 AWG ACSR, 6-Al./1-Stl. STRANDING, "SPARROW"**	Supply, Delivery, String & Test	NPC's Tech Specs & Drawings	mtrs	9430	_____ _____(P_____)	(P_____)
1.7	**SINGLE WIRE, INSULATED, 600V, 2 AWG AAC, 7-Al. STRANDING** (FOR DISTRIBUTION TRANSFORMER SECONDARY CONDUCTOR)	Supply, Delivery, String & Test	NPC's Tech Specs & Drawings	mtrs	5880	_____ _____(P_____)	(P_____)
1.8	**FUSE LINKS FOR FUSE CUTOUTS**						
1.8.1	Fuse link, 2 Amps	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	pcs	5	_____ _____(P_____)	(P_____)
1.8.2	Fuse link, 4 Amps	Supply, Delivery & Installation	NPC's Tech Specs & Drawings	pcs	4	_____ _____(P_____)	(P_____)
1.8.3	Fuse link, 2 Amps	Supply & Delivery (Spare)	NPC's Tech Specs & Drawings	pcs	5	_____ _____(P_____)	(P_____)
1.8.4	Fuse link, 4 Amps	Supply & Delivery (Spare)	NPC's Tech Specs & Drawings	pcs	4	_____ _____(P_____)	(P_____)
1.9	**CUTOUT MOUNTED RECLOSER**	Supply, Delivery, Installation & Test	NPC's Tech Specs & Drawings	sets	3	_____ _____(P_____)	(P_____)
1.10	**HOUSEHOLD CONNECTION MATERIALS**						
1.10.1	Electronic/Digital Kilowatt-Hour Meter, Outdoor Type, 1-Phase, 230V, 10(30)AT with ERC Approval	Supply, Delivery, Installation & Test	NPC Tech Specs & Drawings	pcs	421	_____ _____(P_____)	(P_____)
1.10.2	Duplex Wire, #6 AWG, 7-Al. & 6-Al./1-Stl. Stranding	Supply, Delivery, Installation & Test	NPC Tech Specs & Drawings	mtrs	10525	_____ _____(P_____)	(P_____)

Name of Firm

Name and Signature of Authorized Representative

Designation

SECTION VII - BILL OF QUANTITIES
MALAKING-ILOG DPP TO PARAL, SAN JOSE, MASBATE

Item No.	Description of Work or Materials	Work to Be Done	Reference	Unit	Estimated Quantity	Unit Price in Pesos (Words and Figures)	Total Amount (In Figures)
1.10.3	Service Entrance Cap, Weather-Proof Type, 3/4" Diameter with Locknut and Bushings	Supply, Delivery, & Installation	NPC Tech Specs & Drawings	pcs	421	_____ _____(P_____)	(P_____)
1.10.4	Rigid Steel Conduit (RSC), 3/4" Diameter x 10' long with eigth (8) Pieces C-Clamp (Galvanized Iron with Screw), Locknut, Elbow, and Bushings	Supply, Delivery, & Installation	NPC Tech Specs & Drawings	sets	421	_____ _____(P_____)	(P_____)
1.10.5	8mm² 600V THHN/THWN-2 Copper Wire For Service Entrance	Supply & Delivery & Lay	NPC Tech Specs & Drawings	mtrs	2947	_____ _____(P_____)	(P_____)
1.10.6	3.5mm² (#12) PDX Wire For Household Wiring	Supply & Delivery & Lay	NPC Tech Specs & Drawings	mtrs	12630	_____ _____(P_____)	(P_____)
1.10.7	20AT, 2-Pole, Single-Phase Miniature Circuit Breaker (MCB) with Enclosure	Supply, Delivery Installation & Test	NPC Tech Specs & Drawings	pcs	421	_____ _____(P_____)	(P_____)
1.10.8	Wire Holder, Universal Service Type No. 22	Supply, Delivery & Installation	NPC Tech Specs & Drawings	pcs	421	_____ _____(P_____)	(P_____)
1.10.9	Tapping Connector, Compression-Type for No. #2 AWG to #6 AWG	Supply, Delivery & Installation	NPC Tech Specs & Drawings	pcs	842	_____ _____(P_____)	(P_____)
1.10.10	Electrical Tape, Big	Supply & Delivery	NPC Tech Specs & Drawings	pcs	421	_____ _____(P_____)	(P_____)
1.10.11	9Watts Cool White LED Bulb, E27 Base complete with the required accessories	Supply, Delivery & Installation	NPC Tech Specs & Drawings	pcs	842	_____ _____(P_____)	(P_____)
1.10.12	Surface Mounted Outlet, Duplex, 240V, 1-phase	Supply, Delivery & Installation	NPC Tech Specs & Drawings	pcs	421	_____ _____(P_____)	(P_____)

Name of Firm

Name and Signature of Authorized Representative

Designation

SECTION VII - BILL OF QUANTITIES

MALAKING-ILOG DPP TO PARAL, SAN JOSE, MASBATE

Item No.	Description of Work or Materials	Work to Be Done	Reference	Unit	Estimated Quantity	Unit Price in Pesos (Words and Figures)	Total Amount (In Figures)
1.10.13	Surface Mounted 1 Gang Switch, 240V, 1-phase	Supply, Delivery & Installation	NPC Tech Specs & Drawings	pcs	842	_____ _____(P_____)	(P_____)
1.10.14	PVC Octagonal utility box complete with the required mounting accessories,cover, etc.	Supply, Delivery & Installation	NPC Tech Specs & Drawings	pcs	842	_____ _____(P_____)	(P_____)
1.10.15	Insulated Staple Wire	Supply & Delivery	NPC Tech Specs & Drawings	pcs	21050	_____ _____(P_____)	(P_____)
1.11	**LINEMAN'S TOOLS**						
1.11.1	Climber Set, Complete With Post Belt, Body Belt and Pair of Safety shoes	Supply & Delivery	NPC's Technical specifications	sets	2	_____ _____(P_____)	(P_____)
1.11.2	Disconnect Tools (Hot Stick), 20 kV, Telescopic, Heavy Duty, 30' Extended Length	Supply & Delivery	NPC's Technical specifications	pc	1	_____ _____(P_____)	(P_____)
1.11.3	Lineman's Gloves, Pair, Insulated	Supply & Delivery	NPC's Technical specifications	pairs	2	_____ _____(P_____)	(P_____)
1.11.4	Pliers, Heavy Duty, Electrical, 10" long	Supply & Delivery	NPC's Technical specifications	pc	1	_____ _____(P_____)	(P_____)
1.11.5	Compression Connector Tools, Burndy	Supply & Delivery	NPC's Technical specifications	set	1	_____ _____(P_____)	(P_____)
1.11.6	Wrench, Adjustable, 10"	Supply & Delivery	NPC's Technical specifications	pc	1	_____ _____(P_____)	(P_____)
1.11.7	Wrench, Adjustable, 12"	Supply & Delivery	NPC's Technical specifications	pc	1	_____ _____(P_____)	(P_____)

Name of Firm

Name and Signature of Authorized Representative

Designation

SECTION VII - BILL OF QUANTITIES

MALAKING-ILOG DPP TO PARAL, SAN JOSE, MASBATE

Item No.	Description of Work or Materials	Work to Be Done	Reference	Unit	Estimated Quantity	Unit Price in Pesos (Words and Figures)	Total Amount (In Figures)
1.11.8	Coffing Hoist, Rachet Type, 1.5 tons	Supply & Delivery	NPC's Technical specifications	pc	1	_____ _____(P_____)	(P_____)
1.11.9	Hammer Ball, 10 lbs.	Supply & Delivery	NPC's Technical specifications	pc	1	_____ _____(P_____)	(P_____)
1.11.10	Hammer, Claw, Heavy Duty	Supply & Delivery	NPC's Technical specifications	pc	1	_____ _____(P_____)	(P_____)
1.11.11	Cutter, Bolt, Heavy Duty, 36"	Supply & Delivery	NPC's Technical specifications	pc	1	_____ _____(P_____)	(P_____)
1.11.12	Wire Grip, Suitable for #2 AWG ACSR to 4/0 AWG ACSR	Supply & Delivery	NPC's Technical specifications	pc	1	_____ _____(P_____)	(P_____)
1.11.13	Shotgun Stick 20 kV, 10' Long	Supply & Delivery	NPC's Technical specifications	pc	1	_____ _____(P_____)	(P_____)
1.11.14	Pulley with Rope, Plastic, 1/2" x 75'	Supply & Delivery	NPC's Technical specifications	set	1	_____ _____(P_____)	(P_____)
1.10.15	Double Pulley with Rope, Plastic	Supply & Delivery	NPC's Technical specifications	set	1	_____ _____(P_____)	(P_____)
1.11.16	Sling, Webbing, 2" Width, 6' Length, Return Eye, Type (Eye Length: 4" Approx.)	Supply & Delivery	NPC's Technical specifications	set	1	_____ _____(P_____)	(P_____)
1.11.17	Clampstick, Grip-all, Hinged Style, Folded: 8' 4", Extended: 1-¼ x 16'6"	Supply & Delivery	NPC's Technical specifications	set	1	_____ _____(P_____)	(P_____)

Name of Firm

Name and Signature of Authorized Representative

Designation

SECTION VII - BILL OF QUANTITIES

MALAKING-ILOG DPP TO PARAL, SAN JOSE, MASBATE

Item No.	Description of Work or Materials	Work to Be Done	Reference	Unit	Estimated Quantity	Unit Price in Pesos (Words and Figures)	Total Amount (In Figures)
1.11.18	Cluster, Grounding, C-type Grounding Clamps, Aluminum Body, Smooth Jaw, Bronze Eye-Screw with ACME Thread, 1/0 Copper Ground Cable, 6'	Supply & Delivery	NPC's Technical specifications	set	1	_____ _____(P_____)	(P_____)
1.11.19	Cluster, Grounding, C-type Grounding Clamps, Aluminum Body, Smooth Jaw, Bronze Eye-Screw with ACME Thread, 1/0 Copper Ground Cable, 10'	Supply & Delivery	NPC's Technical specifications	set	1	_____ _____(P_____)	(P_____)
1.11.20	Fiberglass Extension Ladder, D-Shaped Rungs, ANSI Duty Rating: Type IA (300 lbs.) Closed Height: 20', Open Height: 35'	Supply & Delivery	NPC's Technical specifications	pc.	1	_____ _____(P_____)	(P_____)
	TOTAL AMOUNT OF BID					_____ _____(P_____)	(P_____)

Name of Firm

Name and Signature of Authorized Representative

Designation

SECTION VIII

BIDDING FORMS

SECTION VIII – BIDDING FORMS

TABLE OF CONTENTS

Standard Form No: NPCSF-INFR-01

Checklist of Technical & Financial Envelope Requirements for Bidders

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

1. ELIGIBILITY DOCUMENTS

a. (CLASS A)

- 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

- Special PCAB License in case of Joint Ventures; and registration for the type and cost of the contract to be bid

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

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

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

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

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

- Duly signed computation of its Net Financial Contracting Capacity (NFCC) at least equal to the ABC *(NPCSF-INFR-04)*;

b. (CLASS B)

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

2. Technical Documents

- Bid Security, any one of the following:

  - Bid Securing Declaration (*NPCSF-INFR-06c*)

    OR

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

    OR

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

  OR

- Surety Bond callable upon demand issued by a reputable surety or insurance company *(NPCSF-INFR-06b) - 5% of ABC, with*

  - Certification from the Insurance Commission as authorized company to issue surety

➢ Duly signed, completely filled-out and notarized Omnibus Sworn statement (Revised) (NPCSF-INFR-07), complete with the following attachments:

- For Sole Proprietorship:

  - Special Power of Attorney

- For Partnership/Corporation/Cooperative/Joint Venture:

  - Document showing proof of authorization (e.g., duly notarized Secretary's Certificate, Board/Partnership Resolution, or Special Power of Attorney, whichever is applicable)

➢ Organization Chart for the project *(NPCSF-INFR-08)*

➢ Duly Signed and completely filled-out List of Contractor's Key Personnel (based on the minimum key personnel) *(NPCSF-INFR-09)*

➢ Duly Signed List of Contractor's Equipment (owned, leased or under purchase agreement *(NPCSF-INFR-12)*

➢ Documents to be submitted with the Bid Proposal as specified in Clause EW-2.10.1 of Section VI – Electrical Works (EW);

➢ Complete eligibility documents of proposed sub-contractor, if applicable

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

➢ Duly signed Bid Letter indicating the total bid amount in accordance with the prescribed form *(NPCSF-INFR-13)*

➢ Duly signed and completely filled-out Bill of Quantities *(Section VII)* indicating the unit and total prices per item and the total amount in the prescribed Bill of Quantities form.

➢ Duly Signed Detailed Estimates for each items of work showing the computations in arriving at each item's unit prices used in coming up with the bid *(NPCSF-INFR-14)*

➢ Summary sheets indicating the direct unit prices of construction materials, labor rates and equipment rental rates used in coming up with the bid *(NPCSF-INFR-15)*

CONDITIONS:

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

Standard Form Number: NPCSF-INFR-02

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

Business Name : _____
Business Address : _____

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

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

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

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

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

Standard Form Number: NPCSF-INFR-03

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

Business Name : _____
Business Address : _____

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

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

Submitted by : _____
(Printed Name & Signature)

Designation : _____
Date : _____

Standard Form Number: NPCSF-INFR-04

NET FINANCIAL CONTRACTING CAPACITY (NFCC)

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

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

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

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

NFCC = P _____

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

Submitted by:

_____
Name of Bidder/Contractor

_____
Signature of Authorized Representative

Date : _____

Standard Form Number: NPCSF-INFR-05

JOINT VENTURE AGREEMENT

KNOW ALL MEN BY THESE PRESENTS:

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

- and –

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

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

NAME OF PROJECT **CONTRACT AMOUNT**

_____ _____

That the capital contribution of each member firm:

NAME OF FIRM	CAPITAL CONTRIBUTION
1.	₱
2.	₱

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

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

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

_____ _____

Name & Signature of Authorized Representative *Name & Signature of Authorized Representative*

_____ _____

Official Designation *Official Designation*

_____ _____

Name of Firm *Name of Firm*

Witnesses

1. _____ 2. _____

[Jurat]

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

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

Standard Form Number: NPCSF-INFR-06a

FORM OF BID SECURITY (BANK GUARANTEE)

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

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

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

THE CONDITIONS of this obligation are that:

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

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

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

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

   a) fails or refuses to execute the Contract; or

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

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

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

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

DATE _____ SIGNATURE OF THE BANK _____

WITNESS _____ SEAL _____

_____

(Signature, Name and Address)

Standard Form Number: NPCSF-INFR-06b

FORM OF BID SECURITY (SURETY BOND)

BOND NO.: _____ DATE BOND EXECUTED: _____

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

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

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

NOW, THEREFORE, the conditions of this obligation are:

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

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

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

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

    d) fails or refuses to execute the Contract; or

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

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

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

PROVIDED HOWEVER, that the Surety shall not be:

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

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

Standard Form Number: NPCSF-INFR-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-INFR-06c

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

BID-SECURING DECLARATION

SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8 kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

LuzP23Z1619Sdg

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

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

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

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

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

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

---

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

Standard Form No: NPCSF-INFR-07b

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 Number: NPCSF-INFR-08

CONTRACTOR'S ORGANIZATIONAL CHART FOR THE CONTRACT

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

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

NOTES:

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

Standard Form Number: NPCSF-INFR-09

LIST OF KEY PERSONNEL PROPOSED TO BE ASSIGNED TO THE CONTRACT

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

Business Name: _____

Business: _____

_____

Particulars	Project Manager *(if applicable)*	Project Engineer	Materials Engineer *(if applicable)*	Safety Officer *(if applicable)*	
1 Name					
2 Address					
3 Date of Birth					
4 Education					
5 License/Qualification Details:					
a. Profession/Specialization					
b. Registration Number					
c. Registration Date					
d. Valid Until					
6 Experience Data:					
a. Years employed by the Bidder					
b. General Experience (yrs.)					
c. Professional Experience on similar project (yrs.)					

Submitted by: _____

(Printed Name & Signature)

Designation: _____

Date: _____

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

Standard Form Number: NPCSF-INFR-10a

NOTE: THIS FORM SHALL BE SUBMITTED DURING POST-QUALIFICATION

KEY PERSONNEL'S CERTIFICATE OF EMPLOYMENT
(PROFESSIONAL PERSONNEL)

_____
Issuance Date

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

Dear Sir:

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

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

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

NAME OF PROJECT	OWNER	COST	DATE COMPLETED

At present, I am supervising the following projects:

NAME OF PROJECT	OWNER	COST	DATE COMPLETED

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

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

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

_____
(Name and Signature)
AFFIANT

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

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

Standard Form Number: NPCSF-INFR-10b

NOTE: THIS FORM SHALL BE SUBMITTED DURING POST-QUALIFICATION

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

_____
Issuance Date

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

Dear Sir:

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

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

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

NAME OF PROJECT	OWNER	COST	DATE COMPLETED

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

NAME OF PROJECT	OWNER	COST	DATE COMPLETED

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

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

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

_____
(Name and Signature)
AFFIANT

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

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

Standard Form Number: NPCSF-INFR-11

NOTE: THIS FORM SHALL BE SUBMITTED DURING POST-QUALIFICATION

KEY PERSONNEL
(FORMAT OF BIO-DATA)

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

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

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

10. Experience:

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

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

Standard Form Number: NPCSF-INFR-11
Page 2 of 2

1. Name : _____

2. Name and Address of Owner : _____

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

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

5. Contract Amount Expressed in Philippine Currency : _____

6. Position : _____

7. Structures for which the employee was responsible : _____

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

_____
Name and Signature of Employee

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

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

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

Standard Form Number: NPCSF-INFR-12

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

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

Business Name: _____

Business: _____

_____

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

Submitted by: _____

(Printed Name & Signature)

Designation: _____

Date: _____

One of the requirements from the bidder to be included in its Technical Envelope is the list of its equipment units pledged for the contract to be bid, based on minimum equipment required in the bidding documents, which are owned, leased, and/or under purchase agreements.
This shall be supported by proof of ownership and/or certification of availability of equipment from the equipment lessor for the duration of the project, to be submitted during post-qualification.

Standard Form No. : NPCSF-INFR-13

BID LETTER

Date: _____

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

We, the undersigned, declare that:

(a) We have examined and have no reservation to the Bidding Documents, including Addenda, for the Contract **SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8 kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE (LuzP23Z1619Sdg)**.

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

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

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

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

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

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

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

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

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

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

(j) We likewise certify/confirm that the undersigned, is the duly authorized representative of the bidder, and granted full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for the **SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8 kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE (LuzP23Z1619Sdg)** of the National Power Corporation.

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

Name: _____

In the capacity of: _____

Signed: _____

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

Date: _____

Standard Form No. : NPCSF-INFR-14

DETAILED COST ESTIMATE FORM

Name of Bidder : _____

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

_____ _____

Name, Signature of Authorized Representative Designation

Standard Form No. : NPCSF-INFR-15

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

Name of Bidder : _____

I. Unit Prices of Materials

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

II. Manpower Hourly Rates

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

III. Equipment Hourly Rental Rates

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

Name, Signature of Authorized Representative

Designation

SECTION IX

STAKING SHEETS

STAKING SHEET

SUPPLY, DELIVERY, ERECTION/INSTALLATION, TEST AND COMMISSIONING OF 7.97/13.8kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

Specs No: LuzP23Z1619Sdg

Location: MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

Primary Conductor: 1/0 AWG ACSR
Neutral Conductor: #2 AWG ACSR
Secondary Conductor: #2 AWG Poly AAC
Service Drop Wire: #6 AWG Duplex Wire
Ruling Span (meter): 60

Pole Code			Pole No.		Primary				Def.	"C" former Assy "G"		Metering Assy "H"		Guying Assy "E"		Capacitor Assy "M"		Anchor Assy "F"		Secondary Assy "J"				Service Assy			Regulator Assy		Misc Assy "M"		Remarks
					Span	Phase	Type															Class	Span							
Qty	Type	Height	From	To	Meter	3W/1	code	Qty	angle	Code	Qty	Code	Qty	Code	Qty	Code	Qty	Code	Qty	Code	Qty		meter	Code	Qty	meter	Code	Qty	Code	Qty	
			Existing Pole	1	35.97	3	C7	1	99°L					E1-2A	2			F2-2A	2												To be added in the existing tapping pole for the extension of the distribution line.
																															Provide: 3 - Recloser Type Cutout
1	RNC-SP	40	1	2	60.64	3	C2	1	12°R					E1-2A	1			F2-2A	1										M2-11A	1	
1	RNC-SP	40	2	3	58.17	3	C2	1	29°R					E1-2	1			F2-2	1										M2-11A	1	
1	QNC-SP	40	3	4	45.73	3	C1	1																					M2-11A	1	
1	QNC-SP	50	4	5	75.14	3	C1	1	4°R																				M2-11A	1	
1	RNC-SP	50	5	6	35.20	3	C2	1	6°R					E1-2A	1			F2-2A	1										M2-11A	1	
1	RNC-SP	40	6	7	46.38	3	C2	1	22°L					E1-2A	1			F2-2A	1										M2-11A	1	
1	SNC-SP	40	7	8	31.61	3	C7-2	1	46°L					E1-2A	1			F2-2A	1										M2-11A	1	
1	SNC-SP	40	8	9	55.31	3	C7-2	1	56°R					E1-2A	1			F2-2A	1										M2-11A	1	
1	RNC-SP	40	9	10	41.58	3	C2	1	14°R					E1-2A	1			F2-2A	1										M2-11A	1	
1	SNC-SP	40	10	11	47.13	3	C7-2	1	39°R					E1-2A	1			F2-2A	1										M2-11A	1	
1	SNC-SP	40	11	12	57.01	3	C7-2	1	50°L					E1-2A	1			F2-2A	1										M2-11A	1	
1	RNC-SP	40	12	13	42.34	3	C2	1	14°L					E1-2A	1			F2-2A	1										M2-11A	1	
1	RNC-SP	40	13	14	48.90	3	C2	1	20°R					E1-2A	1			F2-2A	1										M2-11A	1	
1	QNC-SP	40	14	15	53.96	3	C1	1																					M2-11A	1	
1	QNC-SP	40	15	16	53.96	3	C1	1																					M2-11A	1	
1	RNC-SP	40	16	17	47.75	3	C2	1	7°L					E1-2	1			F2-2	1										M2-11A	1	
1	RNC-SP	40	17	18	43.95	3	C2	1	14°R					E1-2A	1			F2-2A	1										M2-11A	1	
1	RNC-SP	40	18	19	58.23	3	C2	1	29°L					E1-2	1			F2-2	1										M2-11A	1	
2	RNC-SP	50	19	20	193.05	3	C8X	1	22°R					E1-2	2			F2-2	2										M2-11A	1	
2	SNC-SP	50	20	21	65.03	3	C8X	1	43°R					E1-2	2			F2-2	2										M2-11A	1	
2	QNC-SP	50	21	22	150.72	3	C8X	1						E1-2	2			F2-2	2										M2-11A	1	
			22							G12-3	1																		M2-11	1	5kVA TR @ Ph-B w/ 2A Fuse Link
			22	22L1																J15A	1	OS	40								
1	QS-SP	25	22L1																	J15	1	OS							M2-11A	1	
																				J15A	1										
			22	22R1																		OS	45.87								
1	TS-SP	25	22R1	22R2					70°L					E1-2A	1			F2-2A	1	J15	2	OS	35.88								
1	SS-SP	25	22R2	22R3					31°R					E1-2A	1			F2-2A	1	J7	1	OS	30.06								
1	TS-SP	25	22R3	22R4					95°L					E1-2A	1			F2-2A	1	J15	2	OS	44.26								
1	QS-SP	25	22R4											E1-2A	1			F2-2A	1	J15	1	OS							M2-11A	1	
																				J15A	1										

STAKING SHEET

SUPPLY, DELIVERY, ERECTION/INSTALLATION, TEST AND COMMISSIONING OF 7.97/13.8kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

Specs No: LuzP23Z1619Sdg

Location: MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

Primary Conductor: 1/0 AWG ACSR
Neutral Conductor: #2 AWG ACSR
Secondary Conductor: #2 AWG Poly AAC
Service Drop Wire: #6 AWG Duplex Wire
Ruling Span (meter): 60

Pole Code			Pole No.		Primary				Def	X' former Assy		Metering Assy		Guying Assy		Capacitor Assy		Anchor Assy		Secondary Assy				Service Assy			Regulator Assy		Misc Assy		Remarks
					Span	Phase	Type			"G"		"M"		"B"		"M"		"F"		"a"		Class	Span						"M"		
Qty	Type	Height	From	To	Meter	3/W/1	code	Qty	angle	Code	Qty	Code	Qty	Code	Qty	Code	Qty	Code	Qty	Code	Qty	UNDER	meter	Code	Qty	meter	Code	Qty	Code	Qty	
2	SNC-SP	50	22	23	63.03	3	C8X	1	32°L					E1-2	1			F2-2	1												
1	TNC-SP	45	23	24	65.37	3	C7-2	1	54°R					E1-2	1			F2-2	1												
1	QNC-SP	45	24	25	65.37	3	C1	1																					M2-11A	1	
1	RNC-SP	45	25	26	49.63	3	C2	1	20°L					E1-2	1			F2-2	1										M2-11A	1	
1	QNC-SP	40	26	27	49.63	3	C1	1																					M2-11A	1	
1	RNC-SP	50	27	28	73.32	3	C2	1	10°L					E1-2	1			F2-2	1										M2-11A	1	
1	QNC-SP	50	28	29	59.18	3	C1	1																					M2-11A	1	
1	QNC-SP	45	29	30	59.18	3	C1	1												J15A	1	UB	59.18						M2-11A	1	
1	RNC-SP	45	30	31	61.56	3	C2	1	7°R	G12-3	1			E1-2A	1			F2-2A	1	J15A	1	UB	61.56						M2-11	1	10kVA TR @ Ph-B w/ 4A Fuse Link
1	QNC-SP	40	31	32	60.49	3	C1	1												J15A	1	UB	60.49						M2-11A	1	
1	RNC-SP	45	32	33	62.7	3	C2	1	12°R					E1-2A	1			F2-2A	1	J15A	1	UB	62.7						M2-11A	1	
1	RNC-SP	45	33				C7	1	30°R	G12-3	1			E1-2A	1			F2-2A	1	J15A	1	UB	56.18						M2-11	1	10kVA TR @ Ph-B w/ 4A Fuse Link
			33	34	56.18	V																							M5-5	4	
																													M5-9	2	
																													M5-10	2	
1	RNB-SP	40	34	35	55.82	V	B2	1	17°R					E1-2A	1			F2-2A	1	J15A	1	UB	55.82						M2-11A	1	
1	RNB-SP	50	35	36	70.26	V	B2	1	24°L					E1-2A	1			F2-2A	1	J15A	1	UB	70.26						M2-11A	1	
1	RNB-SP	50	36	37	72.03	V	B2	1	12°R					E1-2A	1			F2-2A	1	J15	1	UB	72.03						M2-11A	1	
1	RNB-SP	50	37	38	67.61	V	B2	1	8°L					E1-2	1			F2-2	1	J15	1	UB	67.61						M2-11A	1	
1	RNB-SP	45	38	39	45.88	V	B2	1	6°R					E1-2A	1			F2-2A	1	J15	1	UB	45.88						M2-11A	1	
1	QNB-SP	40	39	40	45.66	V	B1	1												J15	1	UB	45.66						M2-11A	1	
1	RNB-SP	45	40	41	67.66	V	B2	1	15°R					E1-2	1			F2-2	1	J15	1	UB	67.66						M2-11A	1	
1	RNB-SP	45	41	42	64.68	V	B2	1	9°L					E1-2	1			F2-2	1	J15	1	UB							M2-11A	1	
1	QNB-SP	50	42	43	72.87	V	B1	1																					M2-11A	1	
1	QNB-SP	50	43	44	65.35	V	B1	1	3°L																				M2-11A	1	
1	QNB-SP	50	44	45	76.08	V	B1	1	2°L																				M2-11A	1	
1	SNB-SP	50	45	46	41.18	V	B7	2	35°L					E1-2A	1			F2-2A	1	J15A	1	UB	41.18						M2-11A	1	
1	QNB-SP	40	46	47	41.18	V	B1	1												J15A	1	UB	41.18						M2-11A	1	
1	RNB-SP	50	47	48	70.19	V	B2	1	19°R					E1-2A	1			F2-2A	1	J15A	1	UB	70.19						M2-11A	1	
1	RNB-SP	50	48	49	77.13	V	B2	1	22°R	G12-2	1			E1-2A	1			F2-2A	1	J15A	1	UB	77.13						M2-11	1	5kVA TR @ Ph-A w/ 2A Fuse Link
1	SNB-SP	50	49	50	69.02	V	B7	2	35°L					E1-2A	1			F2-2A	1	J15A	1	UB	69.02						M2-11A	1	
1	RNB-SP	50	50	51	46.50	V	B2	1	14°L					E1-2A	1			F2-2A	1	J15A	1	UB	46.5						M2-11A	1	
1	QNB-SP	40	51	52	46.50	V	B1	1												J15	1	UB	46.5						M2-11A	1	

STAKING SHEET

SUPPLY, DELIVERY, ERECTION/INSTALLATION, TEST AND COMMISSIONING OF 7.97/13.8kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

Specs No: LuzP23Z1619Sdg

Location: MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

Primary Conductor: 1/0 AWG ACSR
Neutral Conductor: #2 AWG ACSR
Secondary Conductor: #2 AWG Poly AAC
Service Drop Wire: #6 AWG Duplex Wire
Ruling Span (meter): 60

Pole Code			Pole No.		Primary				Def.	2" Armor Assy "G"		Metering Assy "M"		Guying Assy "E"		Capacitor Assy "M"		Anchor Assy "F"		Secondary Assy				Service Assy			Regulator Assy		Misc Assy "M"		Remarks
					Span	Phase	Type													"T"		Class	Span								
Qty	Type	Height	From	To	Meter	3W/1	code	Qty	angle	Code	Qty	Code	Qty	Code	Qty	Code	Qty	Code	Qty	Code	Qty	UB/OS	meter	Code	Qty	meter	Code	Qty	Code	Qty	
1	RNB-SP	50	52	53	72.67	V	B2	1	6°R					E1-2A	1			F2-2A	1	J15	1	UB	72.67						M2-11A	1	
1	RNB-SP	50	53	54	57.13	V	B2	1	14°L					E1-2	1			F2-2	1	J15	1	UB							M2-11A	1	
1	QNB-SP	40	54	55	57.45	V	B1	1																							
			55							G12-2	1																		M2-11	1	10kVA TR @ Ph-A w/ 4A Fuse Link
			55	55R1																J15	1	OS	40							
1	QS-SP	25	55R1	55R2																J5	1	OS	40							
1	QS-SP	25	55R2	55R3																J5	1	OS	40							
			55R3																											
			55R3	55R3R1																J15	1	OS	32.26							
1	QS-SP	25	55R3R1											E1-2A	1			F2-2A	1	J15A	1	OS							M2-11A	1	
1	TS-SP	25	55R3	55R4					88°L					E1-2A	1			F2-2A	1	J15A	1	OS	40							
1	QS-SP	25	55R4	55R5																J5	1	OS	40						M2-11A	1	
1	RS-SP	25	55R5	55R6					9°R					E1-2A	1			F2-2A	1	J10	1	OS	40							
1	QS-SP	25	55R6	55R7																J5	1	OS	40							
1	QS-SP	25	55R7											E1-2A	1			F2-2A	1	J15	1	OS							M2-11A	1	
																				J15A	1									
1	RNB-SP	40	55	56	47.98	V	B2	1	25°R					E1-2A	1			F2-2A	1	J15A	1	UB	47.98							
1	TNB-SP	35	56	57	41.50	V	B7	2	65°L					E1-2	1			F2-2	1	J15	1	UB	41.5						M2-11A	1	
1	QNB-SP	40	57	58	41.50	V	B1	1												J15	1	UB	41.5						M2-11A	1	
1	SNB-SP	50	58	59	82.72	V	B7	2	32°R					E1-2	1			F2-2	1	J15	1	UB	82.72						M2-11A	1	
1	RNB-SP	50	59	60	64.18	V	B2	1	20°R					E1-2	1			F2-2	1	J15	1	UB	64.18						M2-11A	1	
1	RNB-SP	45	60	61	50.44	V	B2	1	14°L					E1-2	1			F2-2	1	J15	1	UB	50.44						M2-11A	1	
1	QNB-SP	40	61	62	50.44	V	B1	1												J15A	1	UB	50.44						M2-11A	1	
1	RNB-SP	50	62	63	75.60	V	B2	1	11°L					E1-2	1			F2-2	1	J15A	1	UB							M2-11A	1	
1	QNB-SP	50	63	64	71.72	V	B1	1	4°R																				M2-11A	1	
1	SNB-SP	50	64	65	49.83	V	B7	2	40°L					E1-2	1			F2-2	1										M2-11A	1	
1	QNB-SP	40	65	66	49.83	V	B1	1																					M2-11A	1	
1	SNB-SP	35	66	67	42.26	V	B7	2	40°R					E1-2	1			F2-2	1	J15	1	UB	42.26						M2-11A	1	
1	QNB-SP	35	67	68	42.26	V	B1	1												J15	1	UB	42.26						M2-11A	1	
			68																											
			68	68R1																		OS	48.31							
1	QS-SP	25	68R1	68R2																J15A	1	OS	45							

STAKING SHEET

SUPPLY, DELIVERY, ERECTION/INSTALLATION, TEST AND COMMISSIONING OF 7.97/13.8kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

Specs No: LuzP23Z1619Sdg

Location: MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

Primary Conductor: 1/0 AWG ACSR
Neutral Conductor: #2 AWG ACSR
Secondary Conductor: #2 AWG Poly AAC
Service Drop Wire: #6 AWG Duplex Wire
Ruling Span (meter): 60

Pole Code			Pole No.		Primary				Def. angle	Σ factor Assy "G"		Metering Assy "M"		Guying Assy "E"		Capacitor Assy "M"		Anchor Assy "F"		Secondary Assy				Service Assy			Regulator Assy		Misc Assy "M"		Remarks
					Span	Phase	Type													"T"		Class	Span							
Qty	Type	Height	From	To	Meter	3W/1	code	Qty		Code	Qty	Code	Qty	Code	Qty	Code	Qty	Code	Qty	Code	Qty	UM/OS/R	meter	Code	Qty	meter	Code	Qty	Code	Qty	
1	RS-SP	25	68R2	68R3					24°L					E1-2	1			F2-2	1	J10	1	OS	45								
1	RS-SP	25	68R3	68R4					13°L					E1-2	1			F2-2	1	J10	1	OS	45								
1	QS-SP	25	68R4											E1-2A	1			F2-2A	1	J15	1	OS							M2-11A	1	
																				J15A	1									
1	QNB-SP	40	68	69	42.25	V	B1	1												J15	1	UB	42.25							
1	QNB-SP	40	69	70	42.25	V	B1	1												J15	1	UB	42.25						M2-11A	1	
1	RNB-SP	45	70	71	67.96	V	B2	1	9°L					E1-2	1			F2-2	1	J15	1	UB	67.96						M2-11A	1	
1	QNB-SP	45	71			V	B7	1		G12-2	1																		M2-11	1	10kVA TR @ Ph-A w/ 4A Fuse Link
			71	72	68.08	1	A5-2	1												J15A	1	UB	68.08						M5-10	1	
			72																												
			72	72L1																J15A	1	OS	46.48								
1	RS-SP	25	72L1	72L2					11°L					E1-2	1			F2-2	1	J10	1	OS	45								
1	RS-SP	25	72L2	72L3					7°L					E1-2	1			F2-2	1	J10	1	OS	45								
1	RS-SP	25	72L3	72L4					20°R					E1-2	1			F2-2	1	J10	1	OS	45								
1	RS-SP	25	72L4	72L5					13°R					E1-2	1			F2-2	1	J10	1	OS	45								
1	QS-SP	25	72L5											£1-2	1			F2-2	1	J15	1	OS							M2-11A	1	
																				J15A	1									
1	QNA-SP	40	72	73	67.97	1	A1	1														UB	67.97						M2-11A	1	
			73																										M2-11A	1	
			73	73R1																J15	1	OS	45								
1	QS-SP	25	73R1	73R2					5°L											J5	1	OS	45								
1	TS-SP	25	73R2	73R3					86°R					E1-2	1			F2-2	1	J15	2	OS	45								
1	RS-SP	25	73R3	73R4					22°R					E1-2	1			F2-2	1	J10	1	OS	40								
1	QS-SP	25	73R4											E1-2	1			F2-2	1	J15	1	OS							M2-11A	1	
																				J15A	1									
1	QNA-SP	45	73	74	73.92	1	A1	1														UB	73.92								
1	QNA-SP	45	74	75	54.28	1	A1	1												J15	1	UB	54.28						M2-11A	1	
1	RNA-SP	35	75	76	48.17	1	A2	1	24°R					E1-2	1			F2-2	1										M2-11A	1	
1	RNA-SP	45	76	77	77.01	1	A2	1												J15A	1	UB	77.01						M2-11A	1	
1	QNA-SP	45	77	78	77.22	1	A1	1												J15	1	UB	77.22						M2-11A	1	
1	QNA-SP	45	78	79	56.72	1	A1	1		G12-1	1									J15	1	UB	56.72						M2-11	1	5kVA TR @ Ph-C w/ 2A Fuse Link

STAKING SHEET

SUPPLY, DELIVERY, ERECTION/INSTALLATION, TEST AND COMMISSIONING OF 7.97/13.8kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

Specs No: LuzP23Z1619Sdg

Location: MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

Primary Conductor: 1/0 AWG ACSR
Neutral Conductor: #2 AWG ACSR
Secondary Conductor: #2 AWG Poly AAC
Service Drop Wire: #6 AWG Duplex Wire
Ruling Span (meter): 60

Pole Code			Pole No.		Primary				Def.	"G"		"M"		"E"		"C"		"F"		Secondary				Service			Regulator		"M"		Remarks
					Span	Phase	Type															Class	Span								
Qty	Type	Height	From	To	Meter	3W/1	code	Qty	angle	Code	Qty	Code	Qty	Code	Qty	Code	Qty	Code	Qty	Code	Qty	meter	meter	Code	Qty	meter	Code	Qty	Code	Qty	
1	QNA-SP	40	79	80	56.73	1	A1	1												J15	1	UB	56.73						M2-11A	1	
1	TNA-SP	40	80	81	56.31	1	A3	1	61°L					E1-2	1			F2-2	1	J15A	1	UB	56.31						M2-11A	1	
1	SNA-SP	45	81	82	74.00	1	A3	1	39°R					E1-2	1			F2-2	1	J15A	1	UB	74						M2-11A	1	
1	QNA-SP	45	82	83	74.00	1	A1	1												J15A	1	UB	74						M2-11A	1	
1	QNA-SP	45	83	84	76.32	1	A1	1												J15A	1	UB							M2-11A	1	
1	QNA-SP	45	84	85	73.19	1	A1	1																					M2-11A	1	
1	QNA-SP	45	85	86	55.00	1	A1	1	4°R	G12-1	1																		M2-11	1	5kVA TR @ Ph-C w/ 2A Fuse Link
1	QNA-SP	35	86	87	55.00	1	A1	1																					M2-11A	1	
1	QNA-SP	30	87	88	45.72	1	A1	1																					M2-11A	1	
1	QNA-SP	30	88	89	45.72	1	A1	1																					M2-11A	1	
1	RNA-SP	30	89	90	60.00	1	A2	1	25°L					E1-2	1			F2-2	1										M2-11A	1	
1	QNA-SP	30	90	91	60.00	1	A1	1																					M2-11A	1	
1	QNA-SP	30	91	92	52.44	1	A1	1																					M2-11A	1	
1	QNA-SP	30	92	93	52.44	1	A1	1																					M2-11A	1	
1	RNA-SP	30	93	94	45.61	1	A2	1	8°L					E1-2	1			F2-2	1										M2-11A	1	
1	QNA-SP	30	94	95	45.61	1	A1	1																					M2-11A	1	
1	QNA-SP	30	95	96	45.70	1	A1	1																					M2-11A	1	
1	QNA-SP	35	96	97	45.70	1	A1	1																					M2-11A	1	
1	SNA-SP	45	97	98	72.25	1	A3	1	45°R					E1-2A	1			F2-2A	1										M2-11A	1	
1	QNA-SP	45	98	99	71.30	1	A1	1												J15	1	UB	71.3						M2-11A	1	
1	QNA-SP	45	99	100	70.69	1	A1	1												J15	1	UB	70.69						M2-11A	1	
1	QNA-SP	40	100	101	59.06	1	A1	1	4°R											J15	1	UB	59.06						M2-11A	1	
1	QNA-SP	35	101	102	59.06	1	A1	1												J15A	1	UB	59.06						M2-11A	1	
			102							G12-1	1																		M2-11	1	10kVA TR @ Ph-C w/ 4A Fuse Link
			102	102R1																J15	1	OS	61.03								
1	TS-SP	25	102R1	102R2					86°L					E1-2A	1			F2-2A	1	J15	2	OS	35								
1	QS-SP	25	102R2											E1-2A	1			F2-2A	1	J15	1	OS							M2-11A	1	
																				J15A	1										
1	TNA-SP	35	102	103	56.22	1	A4	1	78°L					E1-2A	1			F2-2A	1	J15A	1	UB	56.22								
			103																												
			103	103R1																J15	1	OS	57.11								
1	TS-SP	25	103R1	103R2					88°L					E1-2A	1			F2-2A	1	J15	2	OS	45.62								
1	QS-SP	25	102R2											E1-2A	1			F2-2A	1	J15	1	OS							M2-11A	1	

STAKING SHEET

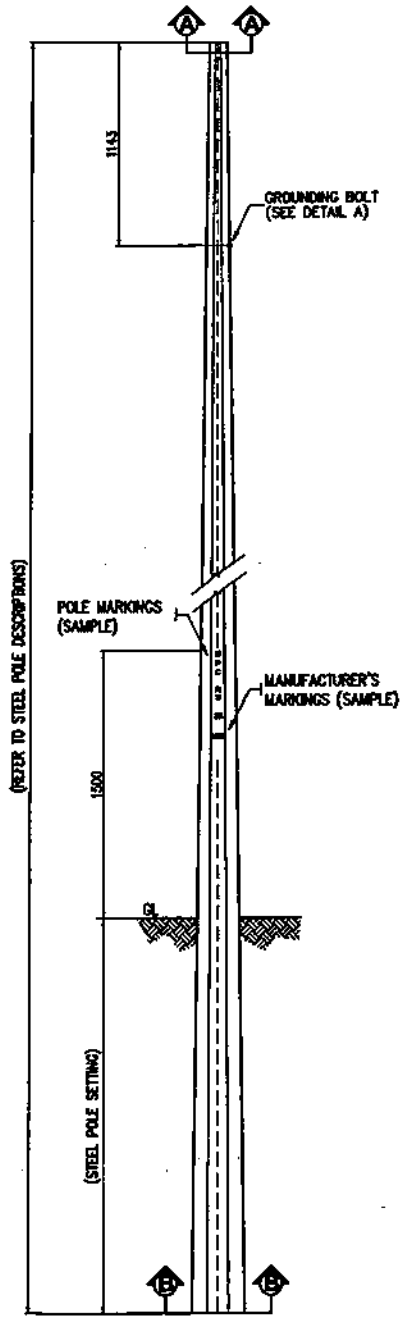
SUPPLY, DELIVERY, ERECTION/INSTALLATION, TEST AND COMMISSIONING OF 7.97/13.8kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

Specs No: LuzP23Z1619Sdg

Location: MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

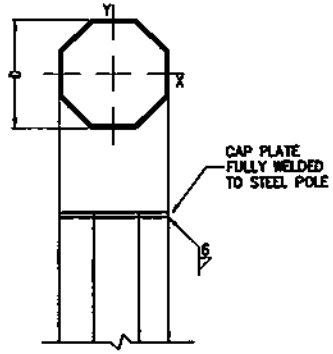
Primary Conductor: 1/0 AWG ACSR
Neutral Conductor: #2 AWG ACSR
Secondary Conductor: #2 AWG Poly AAC
Service Drop Wire: #6 AWG Duplex Wire
Ruling Span (meter): 60

Pole Code			Pole No.		Primary				Def.	X' former Assy		Metering Assy		Gang Assy		Capacitor Assy		Anchor Assy		Secondary Assy				Service Assy			Regulator Assy		Misc Assy		Remarks
					Span	Phase	Type			"G"		"M"		"G"		"M"		"E"		"T"		Class	Span						"M"		
Qty	Type	Height	From	To	Meter	3W1	code	Qty	angle°	Code	Qty	Code	Qty	Code	Qty	Code	Qty	Code	Qty	Code	Qty	material	meter	Code	Qty	meter	Code	Qty	Code	Qty	
																				J15A	1									
1	RNA-SP	35	103	104	49.13	1	A1	1	9°L					E1-2A	1			F2-2A	1	J15A	1	UB	49.13						M2-11A	1	
1	TNA-SP	35	104	105	50.00	1	A4	1						E1-2A	1			F2-2A	1	J15A	1	UB	50						M2-11A	1	
1	QNA-SP	35	105			1	A5	1		G12-1	1			E1-2A	1			F2-2A	1	J15A	1	UB							M2-11	1	10kVA TR @ Ph-C w/ 4A Fuse Link



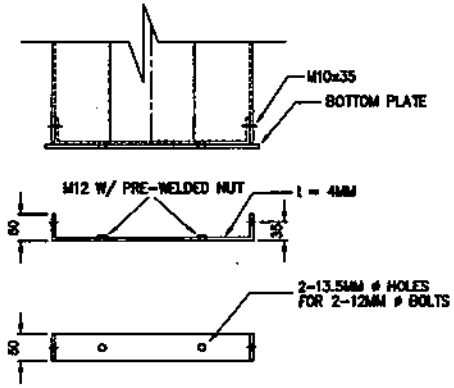
ELEVATION STEEL POLE

SCALE NTS



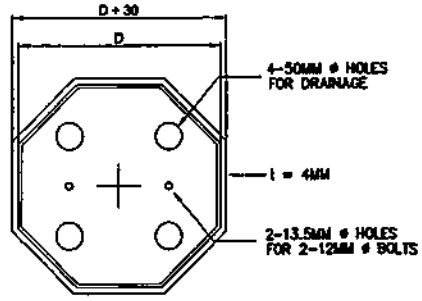
TOP PLATE (SECTION A-A)

SCALE NTS



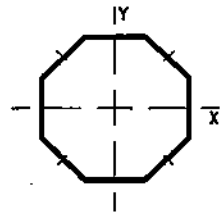
BOTTOM PLATE CONNECTOR

SCALE NTS



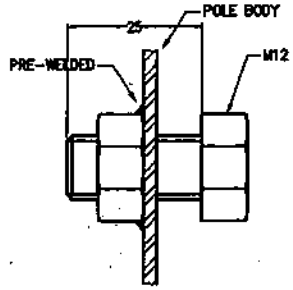
BOTTOM PLATE (SECTION B-B)

SCALE NTS



HOLE PLANES

SCALE NTS



DETAIL A

SCALE NTS

NOTES:

1. ALL DIMENSIONS ARE MILLIMETERS.
2. POLE SHAFT MATERIALS SHALL CONFORM TO ASTM A572 WITH MINIMUM YIELD STRENGTH OF 345 MPa (50 ksi).
3. DRILL HOLES ON CENTERLINES OF POLE FACES.
4. HOLE DIAMETER AND LOCATION SHALL BE REFERRED TO ELECTRICAL DRAWINGS.
5. ALL THREADS MUST BE HAND-TAPPED AFTER GALVANIZING.
6. POLES SHALL BE OCTAGONAL (8 SIDES) AND THE DIAMETERS ARE MEASURED ON THE OUTSIDE AND ACROSS THE FLAT SURFACE.
7. ALL POLES ARE HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM A123M WITH MINIMUM COATING THICKNESS OF 85 MICRONS. TIP AND BUTT OF POLES SHALL BE COVERED WITH PLATE SIMILAR TO SHAFT BODY THICKNESS.

REV.	DATE	NATURE OF REVISION	BY	CHKD.	RECD.	APP'D.

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

TITLE: 7.97/13.8KV DIRECT BURIED STEEL POLE (ELEVATION, SECTIONS AND DETAIL)

	BY	CHKD	DATE
DESIGNED			
DRAWN			
REVIEWED	PRINCIPAL ENGR. / MGNT.		
CIVIL/ARCH'T			
ELEC.			
MECH.			

SUBMITTED: H. L. MENDOZA, Principal Power A, OSD
RECOMMENDED: A. C. ESPIRITU, Manager, OEAD
APPROVED: G. B. MAGPOC, JR., Manager, OSD

DWG. NO. MIPDL-BDC-04.001 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS BID DRAWING REV. 0

7.97/13.8 KV STEEL POLE DESCRIPTIONS

Types of Pole \ Length	25 ft	30 ft	35 ft	40 ft	50 ft
	7.62 m	9.14 m	10.67 m	12.19 m	15.24 m
Qs (0°–5°)					
Tip Diameter (mm)	100	100	100	100	100
Butt Diameter (mm)	208	210	213	215	220
Thickness (mm)	4	4	4	4	4
Embedded to Ground (m)	1.35	1.52	1.68	1.83	2.13
Rs (5°–30°)					
Tip Diameter (mm)	100	100	100	100	100
Butt Diameter (mm)	238	240	243	245	250
Thickness (mm)	4	4	4	4	4
Embedded to Ground (m)	1.35	1.52	1.68	1.83	2.13
Ss (30°–60°)					
Tip Diameter (mm)	100	100	100	100	100
Butt Diameter (mm)	273	275	278	280	285
Thickness (mm)	4	4	4	4	4
Embedded to Ground (m)	1.35	1.52	1.68	1.83	2.13
Ts (60°–90°)					
Tip Diameter (mm)	100	100	100	100	100
Butt Diameter (mm)	288	290	293	295	300
Thickness (mm)	4	4	4	4	4
Embedded to Ground (m)	1.35	1.52	1.68	1.83	2.13

SECONDARY

Types of Pole \ Length	30 ft	35 ft	40 ft	45 ft	50 ft
	9.14 m	10.67 m	12.19 m	13.71 m	15.24 m
QNA (0°–5°)					
Tip Diameter (mm)	130	130	130	130	130
Butt Diameter (mm)	225	240	255	265	280
Thickness (mm)	4	4	4	4	4
Embedded to Ground (m)	1.52	1.68	1.83	1.98	2.13
RNA (5°–30°)					
Tip Diameter (mm)	130	130	130	130	130
Butt Diameter (mm)	265	280	300	315	345
Thickness (mm)	4	4	4	4	4
Embedded to Ground (m)	1.52	1.68	1.83	1.98	2.13
SNA (30°–60°)					
Tip Diameter (mm)	130	130	130	130	130
Butt Diameter (mm)	310	345	375	410	445
Thickness (mm)	4	4	4	4	4
Embedded to Ground (m)	1.52	1.68	1.83	1.98	2.13
TNA (60°–90°)					
Tip Diameter (mm)	130	130	130	130	130
Butt Diameter (mm)	330	365	395	430	465
Thickness (mm)	4	4	4	4	4
Embedded to Ground (m)	1.52	1.68	1.83	1.98	2.13

1 PHASE

NOTES:

1. THE MATERIAL FOR POLE SHALL BE 345 MPa (50 ksi) MINIMUM YIELD STRENGTH OF ROLLED STEEL PLATE.
2. TYPE AND THICKNESS OF POLES SHALL BE EMBOSSED LEGIBLY ON THE BODY 1.5 METERS HIGH ABOVE THE GROUND LINE BEFORE GALVANIZING. THE HEIGHT OF THE LETTERS SHALL BE THREE (3) CENTIMETERS.
3. THE SPANNING ARE AS FOLLOWS:
   FOR SECONDARY– SPAN OF 30 METERS, 40 METERS AND 50 METERS.
   FOR PHASE 1– MAXIMUM SPAN OF 100 METERS.
4. THE POLES SHALL BE OCTAGONAL (8 SIDES) AND THE DIAMETERS ARE MEASURED ON THE OUTSIDE AND ACROSS THE FLAT SURFACE.

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

TITLE: 7.97/13.8kV DIRECT BURIED STEEL POLE (SECONDARY AND 1 PHASE)

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

SUBMITTED: H. L. MENDOZA, Principal Engineer A, DSD
RECOMMENDED: A. C. ESPIRITU, Manager, DSD
APPROVED: G. B. MAGPOC, JR., Manager, DDD

DWG. NO. MIPDL-BDC-04.002 | SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS | BID DRAWING | REV. 0

7.97/13.8 KV STEEL POLE DESCRIPTIONS

Length / Type of Pole	30 ft	35 ft	40 ft	45 ft	50 ft
	9.14 m	10.67 m	12.19 m	13.71 m	15.24 m
QNB (0°–5°)					
Tip Diameters (mm)	150	150	150	150	150
Butt Diameter (mm)	240	255	270	285	300
Thickness (mm)	4	4	4	4	4
Embedded to Ground (m)	1.52	1.68	1.83	1.98	2.13
RNB (5°–30°)					
Tip Diameters (mm)	150	150	150	150	150
Butt Diameter (mm)	300	320	335	365	400
Thickness (mm)	4	4	4	4	4
Embedded to Ground (m)	1.52	1.68	1.83	1.98	2.13
SNB (30°–60°)					
Tip Diameters (mm)	150	150	150	150	150
Butt Diameter (mm)	350	380	415	450	485
Thickness (mm)	4	4	4	4	4
Embedded to Ground (m)	1.52	1.68	1.83	1.98	2.13
TNB (60°–90°)					
Tip Diameters (mm)	150	150	150	150	150
Butt Diameter (mm)	370	400	435	475	510
Thickness (mm)	4	4	4	4	4
Embedded to Ground (m)	1.52	1.68	1.83	1.98	2.13

2 PHASE

Length / Type of Pole	30 ft	35 ft	40 ft	45 ft	50 ft
	9.14 m	10.67 m	12.19 m	13.71 m	15.24 m
QNC (0°–5°)					
Tip Diameters (mm)	200	200	200	200	200
Butt Diameter (mm)	260	270	285	300	320
Thickness (mm)	4	4	4	4	4
Embedded to Ground (m)	1.52	1.68	1.83	1.98	2.13
RNC (5°–30°)					
Tip Diameters (mm)	200	200	200	200	200
Butt Diameter (mm)	310	340	365	380	420
Thickness (mm)	4	4	4	4	4
Embedded to Ground (m)	1.52	1.68	1.83	1.98	2.13
SNC (30°–60°)					
Tip Diameters (mm)	200	200	200	200	200
Butt Diameter (mm)	370	400	435	470	510
Thickness (mm)	4	4	4	4	4
Embedded to Ground (m)	1.52	1.68	1.83	1.98	2.13
TNC (60°–90°)					
Tip Diameters (mm)	200	200	200	200	200
Butt Diameter (mm)	390	425	455	495	535
Thickness (mm)	4	4	4	4	4
Embedded to Ground (m)	1.52	1.68	1.83	1.98	2.13

3 PHASE

NOTES:

1. PLATES MATERIALS FOR STEEL POLE SHALL BE 345MPa (50 ksi) MINIMUM YIELD STRENGTH.
2. STEEL POLE TYPES AND LENGTHS SHALL BE MARKED LEGIBLY ON THE BODY AS SPECIFIED IN THE SPECIFICATIONS.
3. STEEL POLE TIPS & BUTTS SHALL BE COVERED WITH PLATES SIMILAR TO SHAFT BODY THICKNESS.
4. STEEL POLES SHALL BE HOT–DIP GALVANIZED IN ACCORDANCE WITH ASTM A123M WITH MINIMUM COATING THICKNESS OF 85 MICRONS.
5. STEEL POLES SHALL BE OCTAGONAL AND THE DIAMETERS ARE MEASURED ON THE OUTSIDE SURFACE & ACROSS THE FLATS.

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALASIMSIM TO FARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

TITLE: **7.97/13.8kV DIRECT BURIED STEEL POLE (2 PHASE AND 3 PHASE)**

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

SUBMITTED: H. L. MENDOZA, Project Engineer A, OSD
RECOMMENDED: A. C. [illegible], Manager, OSD
APPROVED: G. B. MAGPOC, JR., Manager, OSD

DWG. NO. MIPDL-BDC-04.003 | SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS | **BID DRAWING** | REV. 0

SECTION X – BID DRAWINGS

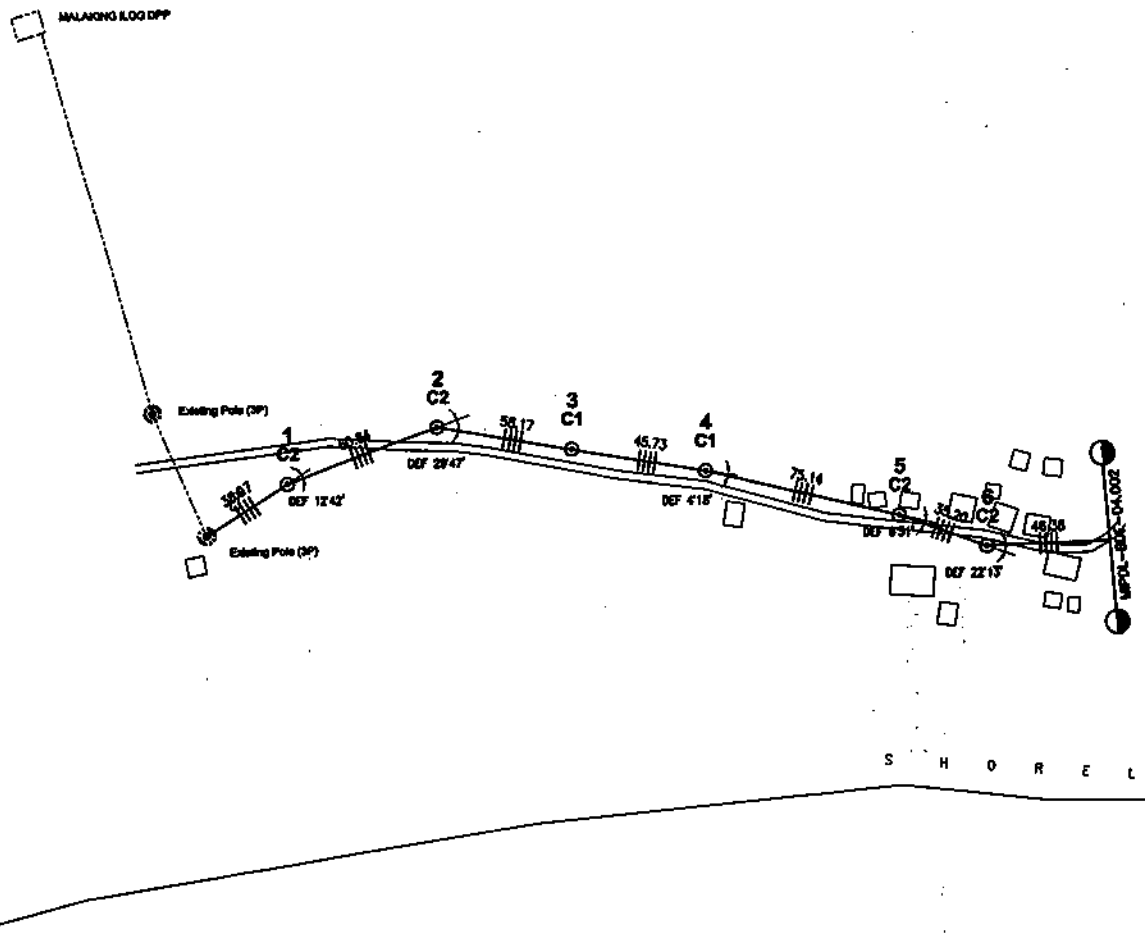
EW – ELECTRICAL WORKS

DRAWING NO.	TITLE
MIPDL-BDE-04.001	DISTRIBUTION LINE ROUTE & PLAN (1/17) (MALAKING-ILOG TO PARAL)
MIPDL-BDE-04.002	DISTRIBUTION LINE ROUTE & PLAN (2/17) (PANGAPUYAN ISLAND)
MIPDL-BDE-04.003	DISTRIBUTION LINE ROUTE & PLAN (3/17) (PANGAPUYAN ISLAND)
MIPDL-BDE-04.004	DISTRIBUTION LINE ROUTE & PLAN (4/17) (PANGAPUYAN ISLAND)
MIPDL-BDE-04.005	DISTRIBUTION LINE ROUTE & PLAN (5/17) (PANGAPUYAN ISLAND)
MIPDL-BDE-04.006	DISTRIBUTION LINE ROUTE & PLAN (6/17) (PANGAPUYAN ISLAND)
MIPDL-BDE-04.007	DISTRIBUTION LINE ROUTE & PLAN (7/17) (PANGAPUYAN ISLAND)
MIPDL-BDE-04.008	DISTRIBUTION LINE ROUTE & PLAN (8/17) (PANGAPUYAN ISLAND)
MIPDL-BDE-04.009	DISTRIBUTION LINE ROUTE & PLAN (9/17) (PANGAPUYAN ISLAND)
MIPDL-BDE-04.010	DISTRIBUTION LINE ROUTE & PLAN (10/17) (PANGAPUYAN ISLAND)
MIPDL-BDE-04.011	DISTRIBUTION LINE ROUTE & PLAN (11/17) (PANGAPUYAN ISLAND)
MIPDL-BDE-04.012	DISTRIBUTION LINE ROUTE & PLAN (12/17) (PANGAPUYAN ISLAND)
MIPDL-BDE-04.013	DISTRIBUTION LINE ROUTE & PLAN (13/17) (PANGAPUYAN ISLAND)
MIPDL-BDE-04.014	DISTRIBUTION LINE ROUTE & PLAN (14/17) (PANGAPUYAN ISLAND)

MIPDL-BDE-04.015	DISTRIBUTION LINE ROUTE & PLAN (15/17) (PANGAPUYAN ISLAND)
MIPDL-BDE-04.016	DISTRIBUTION LINE ROUTE & PLAN (16/17) (PANGAPUYAN ISLAND)
MIPDL-BDE-04.017	DISTRIBUTION LINE ROUTE & PLAN (17/17) (PANGAPUYAN ISLAND)
MIPDL-BDE-04.018	7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" GENERAL DESIGN DATA
MIPDL-BDE-04.019	7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" STANDARD HOLE LOCATION
MIPDL-BDE-04.020	7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" SINGLE PHASE (A1)
MIPDL-BDE-04.021	7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" SINGLE PHASE (A2)
MIPDL-BDE-04.022	7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" SINGLE PHASE (A3)
MIPDL-BDE-04.023	7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" SINGLE PHASE (A4)
MIPDL-BDE-04.024	7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" SINGLE PHASE (A5)
MIPDL-BDE-04.025	7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" SINGLE PHASE (A5-2)
MIPDL-BDE-04.026	7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" TWO PHASE (B1)
MIPDL-BDE-04.027	7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" TWO PHASE (B2)
MIPDL-BDE-04.028	7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" TWO PHASE (B3)
MIPDL-BDE-04.029	7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" TWO PHASE (B7)
MIPDL-BDE-04.030	7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" THREE PHASE (C1)
MIPDL-BDE-04.031	7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" THREE PHASE (C2)

MIPDL-BDE-04.032	7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" THREE PHASE (C7)
MIPDL-BDE-04.033	7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" THREE PHASE (C7-2)
MIPDL-BDE-04.034	7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" THREE PHASE (C8X)
MIPDL-BDE-04.035	7.97/13.8kV DISTRIBUTION LINE SINGLE DOWN GUY, THROUGH BOLT TYPE AND ANCHOR LOG DETAIL (E1-2 & F2-2)
MIPDL-BDE-04.036	7.97/13.8kV DISTRIBUTION LINE TRUSS GUY & ANCHOR LOG DETAIL (E1-2A & F2-2A)
MIPDL-BDE-04.037	7.97/13.8kV DISTRIBUTION LINE SECONDARY ASSEMBLIES (J5, J7, J10, J15, J15A)
MIPDL-BDE-04.038	7.97/13.8kV DISTRIBUTION LINE SINGLE PHASE TRANSFORMER (G12-1)
MIPDL-BDE-04.039	7.97/13.8kV DISTRIBUTION LINE SINGLE PHASE TRANSFORMER (G12-2)
MIPDL-BDE-04.040	7.97/13.8kV DISTRIBUTION LINE SINGLE PHASE TRANSFORMER (G12-3)
MIPDL-BDE-04.041	7.97/13.8kV DISTRIBUTION LINE MISCELLANEOUS PRIMARY ASSEMBLIES (M5-1, M5-2, M5-5, M5-8, M5-9)
MIPDL-BDE-04.042	7.97/13.8kV DISTRIBUTION LINE MISCELLANEOUS PRIMARY ASSEMBLIES (M3-4, M5-10, M5-11, M5-23)
MIPDL-BDE-04.043	7.97/13.8kV DISTRIBUTION LINE GROUNDING ASSEMBLY (M2-11 & M2-11A)
MIPDL-BDE-04.044	7.97/13.8kV DISTRIBUTION LINE MATERIAL SPECIFICATIONS AND DRAWINGS (1/2)
MIPDL-BDE-04.045	7.97/13.8kV DISTRIBUTION LINE MATERIAL SPECIFICATIONS AND DRAWINGS (2/2)
MIPDL-BDE-04.046	7.97/13.8kV DISTRIBUTION LINE TAP ASSEMBLY GUIDE FOR ACSR CONDUCTOR

MIPDL-BDE-04.047	7.97/13.8kV DISTRIBUTION LINE PREFORMED ARMOR RODS ACSR CONDUCTORS
MIPDL-BDE-04.048	7.97/13.8kV DISTRIBUTION LINE TYING GUIDE, SINGLE INSULATOR, ALUMINUM ALLOY OR ALUMINUM TIE WIRE, ACSR ALUMINUM ALLOY, STRAIGHT OR PREFORMED ARMOR RODS
MIPDL-BDE-04.049	7.97/13.8kV DISTRIBUTION LINE TYING GUIDE, DOUBLE INSULATOR, ALUMINUM ALLOY OR ALUMINUM TIE WIRE, ACSR ALUMINUM ALLOY, STRAIGHT OR PREFORMED ARMOR RODS
MIPDL-BDE-04.050	7.97/13.8kV DISTRIBUTION LINE CROSSARM DRILLING GUIDE
MIPDL-BDE-04.051	7.97/13.8kV DISTRIBUTION LINE TYPICAL CONNECTION DIAGRAM
MIPDL-BDE-04.052	7.97/13.8kV DISTRIBUTION LINE TYPICAL SERVICE DROP ELEVATION AND DETAILS
MIPDL-BDE-04.053	7.97/13.8kV DISTRIBUTION LINE TYPICAL HOUSEHOLD WIRING
MIPDL-BDE-04.054	7.97/13.8kV DISTRIBUTION LINE TYPICAL HOUSEHOLD WIRING INSTALLATION DETAILS



NOTES:

1. ALL DIMENSIONS/CLEARANCES AS SHOWN ARE IN METERS UNLESS OTHERWISE SPECIFIED
2. THE SUPPLIER SHALL BE REQUIRED TO CONDUCT AN ACTUAL SITE INSPECTION/SURVEY TO DETERMINE THE FULL EXTENT OF THE PROJECT
3. LOCATION OF DISTRIBUTION TRANSFORMERS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. ACTUAL LOCATIONS AND PHASE CONNECTION FOR LOAD BALANCING SHALL BE DETERMINED BY THE SUPPLIER OR AS PER INSTRUCTED/DIRECTED BY NPC'S FIELD REPRESENTATIVE TO SUIT ACTUAL SYSTEM REQUIREMENTS
4. NECESSARY CALCULATION SUCH AS LOAD BALANCING, VOLTAGE DROP, CONDUCTOR SAG, ETC. SHALL BE DONE BY THE SUPPLIER SUBJECT TO NPC'S REVIEW AND APPROVAL
5. POLE DESIGNATIONS/NUMBERINGS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. NEW POLE DESIGNATION/NUMBERING SHALL BE CONSISTENT WITH THE EXISTING POLE DESIGNATION/NUMBERING (IF ANY) OR AS PER DIRECTED/INSTRUCTED BY THE DISTRIBUTION LINE SYSTEM END-USER
6. ONLY THE SECTION OR SEGMENT OF THE LINE IDENTIFIED WITH UNDERBUILD AND OPEN-SECONDARY SHALL BE PROVIDED WITH 1-#2AWG INSULATED CABLE TO BE WRAPPED AROUND WITH THE PRIMARY NEUTRAL CONDUCTOR. ACTUAL LINE LENGTH OF THE SECONDARY CONDUCTOR SHALL BE DETERMINED AT SITE BASED ON THE ACTUAL SITE REQUIREMENTS. SEE ALSO "TYPICAL PRIMARY CONNECTION DRAWING FOR FURTHER REFERENCE"
7. SEE ALSO STAKING SHEET AND BILL OF QUANTITIES FOR FURTHER REFERENCE

LEGENDS:

- POLE / NUMBER
- DEFLECTION ANGLE
- THREE PHASE DISTRIBUTION LINE
- V-PHASE DISTRIBUTION LINE
- SINGLE PHASE DISTRIBUTION LINE
- UNDERBUILD
- OPEN SECONDARY
- DISTRIBUTION TRANSFORMER
- HOUSEHOLD

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MARBATE

LOCATION: SAN JOSE, MARBATE

TITLE: DISTRIBUTION LINE ROUTE & PLAN (1/17)
(MALAKING-ILOG TO PARAL)

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

SUBMITTED: B. M. AGUILA, Project Engineer, EBCD
RECOMMENDED: C. Z. C. LUGOD, JR., Manager, EBCD
APPROVED: G. B. MAGPOC, JR., Manager, DDD

DWG. NO. MIPDL-BDE-04.001 PR NO. LuzP23Z1619Sdg

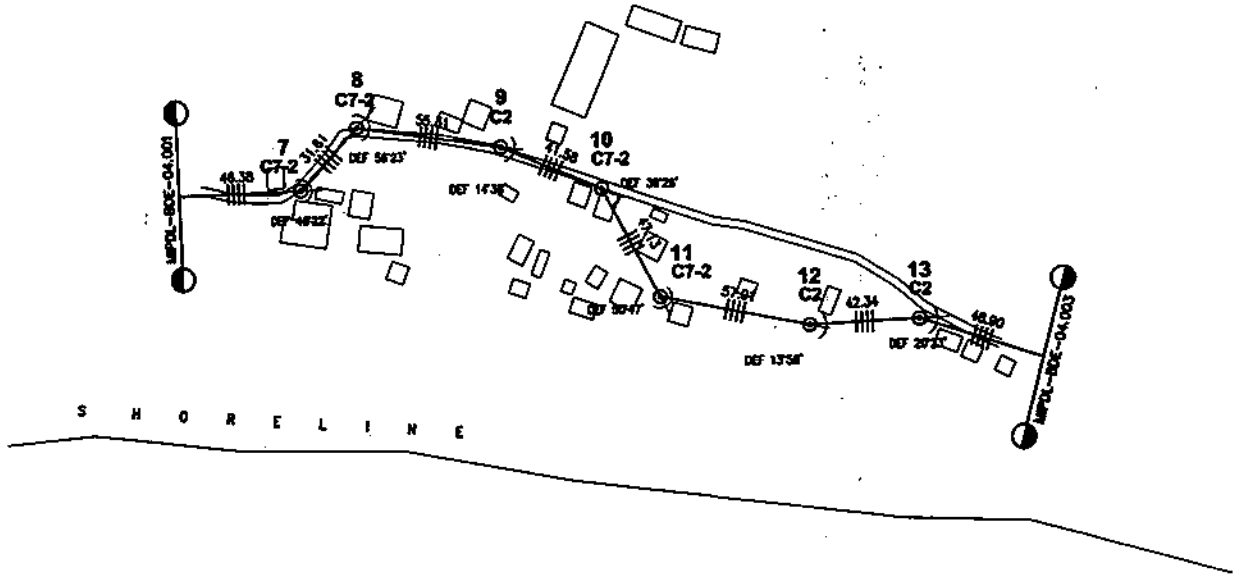
SCALE: NTS BID DRAWING REV. 0

NOTES:

1. ALL DIMENSIONS/CLEARANCES AS SHOWN ARE IN METERS UNLESS OTHERWISE SPECIFIED
2. THE SUPPLIER SHALL BE REQUIRED TO CONDUCT AN ACTUAL SITE INSPECTION/SURVEY TO DETERMINE THE FULL EXTENT OF THE PROJECT
3. LOCATION OF DISTRIBUTION TRANSFORMERS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. ACTUAL LOCATIONS AND PHASE CONNECTION FOR LOAD BALANCING SHALL BE DETERMINED BY THE SUPPLIER OR AS PER INSTRUCTED/DIRECTED BY NPC'S FIELD REPRESENTATIVE TO SUIT ACTUAL SYSTEM REQUIREMENTS
4. NECESSARY CALCULATION SUCH AS LOAD BALANCING, VOLTAGE DROP, CONDUCTOR SAG, ETC. SHALL BE DONE BY THE SUPPLIER SUBJECT TO NPC'S REVIEW AND APPROVAL
5. POLE DESIGNATIONS/NUMBERINGS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. NEW POLE DESIGNATION/NUMBERING SHALL BE CONSISTENT WITH THE EXISTING POLE DESIGNATION/NUMBERING (IF ANY) OR AS PER DIRECTED/INSTRUCTED BY THE DISTRIBUTION LINE SYSTEM END-USER
6. ONLY THE SECTION OR SEGMENT OF THE LINE IDENTIFIED WITH UNDERBUILD AND OPEN-SECONDARY SHALL BE PROVIDED WITH 1-#2AWG INSULATED CABLE TO BE WRAPPED AROUND WITH THE PRIMARY NEUTRAL CONDUCTOR. ACTUAL LINE LENGTH OF THE SECONDARY CONDUCTOR SHALL BE DETERMINED AT SITE BASED ON THE ACTUAL SITE REQUIREMENTS. SEE ALSO "TYPICAL PRIMARY CONNECTION DRAWING FOR FURTHER REFERENCE"
7. SEE ALSO STAKING SHEET AND BILL OF QUANTITIES FOR FURTHER REFERENCE

LEGENDS:

- POLE / NUMBER
- DEFLECTION ANGLE
- THREE PHASE DISTRIBUTION LINE
- V-PHASE DISTRIBUTION LINE
- SINGLE PHASE DISTRIBUTION LINE
- UNDERBUILD
- OPEN SECONDARY
- DISTRIBUTION TRANSFORMER
- HOUSEHOLD



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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

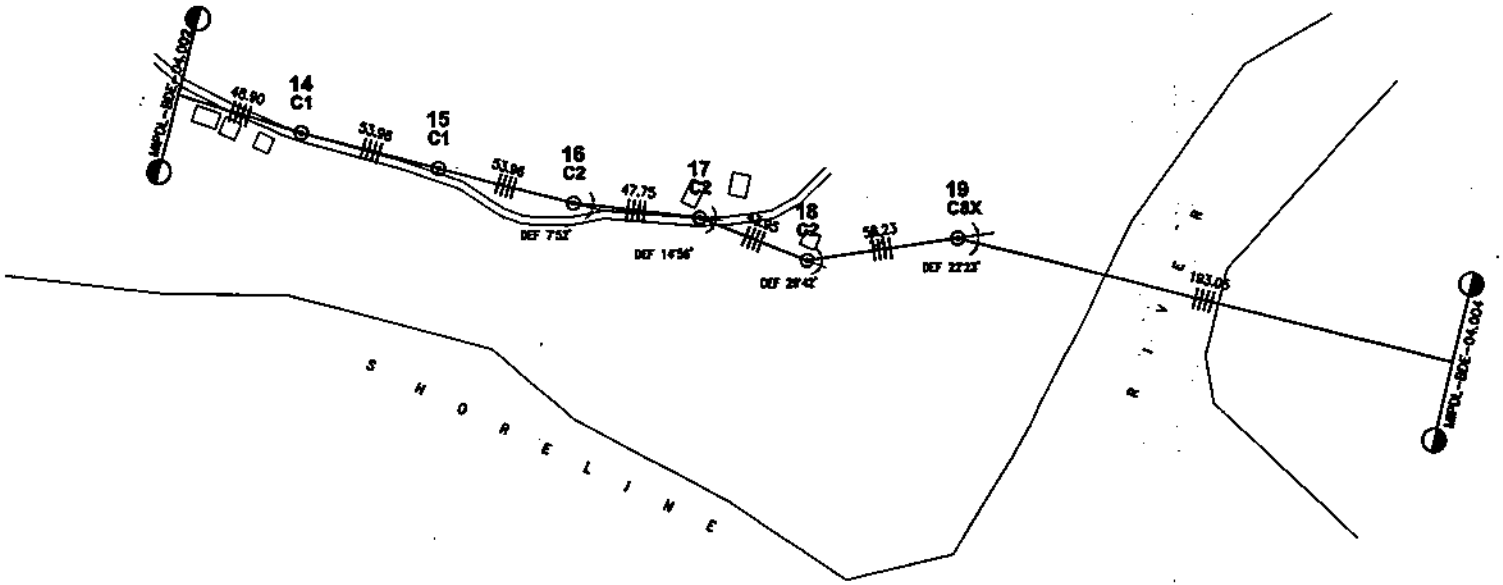
TITLE: DISTRIBUTION LINE ROUTE & PLAN (2/17)
(MALAKING-ILOG TO PARAL)

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

SUBMITTED: B. M. AGUILA, Manager, DDO
RECOMMENDED: C/Z C. LUGOD, JR., Manager, DDO
APPROVED: G. B. MAGPOC, JR., Manager, DDO

DWG NO. MIPDL-BDE-04.002 PR NO. LuzP23Z1619Sdg

SCALE: NTS | BID DRAWING | REV. 0



NOTES:

1. ALL DIMENSIONS/CLEARANCES AS SHOWN ARE IN METERS UNLESS OTHERWISE SPECIFIED
2. THE SUPPLIER SHALL BE REQUIRED TO CONDUCT AN ACTUAL SITE INSPECTION/SURVEY TO DETERMINE THE FULL EXTENT OF THE PROJECT
3. LOCATION OF DISTRIBUTION TRANSFORMERS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. ACTUAL LOCATIONS AND PHASE CONNECTION FOR LOAD BALANCING SHALL BE DETERMINED BY THE SUPPLIER OR AS PER INSTRUCTED/DIRECTED BY NPC'S FIELD REPRESENTATIVE TO SUIT ACTUAL SYSTEM REQUIREMENTS
4. NECESSARY CALCULATION SUCH AS LOAD BALANCING, VOLTAGE DROP, CONDUCTOR SAG, ETC. SHALL BE DONE BY THE SUPPLIER SUBJECT TO NPC'S REVIEW AND APPROVAL
5. POLE DESIGNATIONS/NUMBERINGS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. NEW POLE DESIGNATION/NUMBERING SHALL BE CONSISTENT WITH THE EXISTING POLE DESIGNATION/NUMBERING (IF ANY) OR AS PER DIRECTED/INSTRUCTED BY THE DISTRIBUTION LINE SYSTEM END-USER
6. ONLY THE SECTION OR SEGMENT OF THE LINE IDENTIFIED WITH UNDERBUILD AND OPEN-SECONDARY SHALL BE PROVIDED WITH 1-#2AWG INSULATED CABLE TO BE WRAPPED AROUND WITH THE PRIMARY NEUTRAL CONDUCTOR. ACTUAL LINE LENGTH OF THE SECONDARY CONDUCTOR SHALL BE DETERMINED AT SITE BASED ON THE ACTUAL SITE REQUIREMENTS. SEE ALSO "TYPICAL PRIMARY CONNECTION DRAWING FOR FURTHER REFERENCE"
7. SEE ALSO STAKING SHEET AND BILL OF QUANTITIES FOR FURTHER REFERENCE

LEGENDS:

- POLE / NUMBER
- DEFLECTION ANGLE
- THREE PHASE DISTRIBUTION LINE
- V-PHASE DISTRIBUTION LINE
- SINGLE PHASE DISTRIBUTION LINE
- UNDERBUILD
- OPEN SECONDARY
- DISTRIBUTION TRANSFORMER
- HOUSEHOLD

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, NABBATE

LOCATION: SAN JOSE, NABBATE

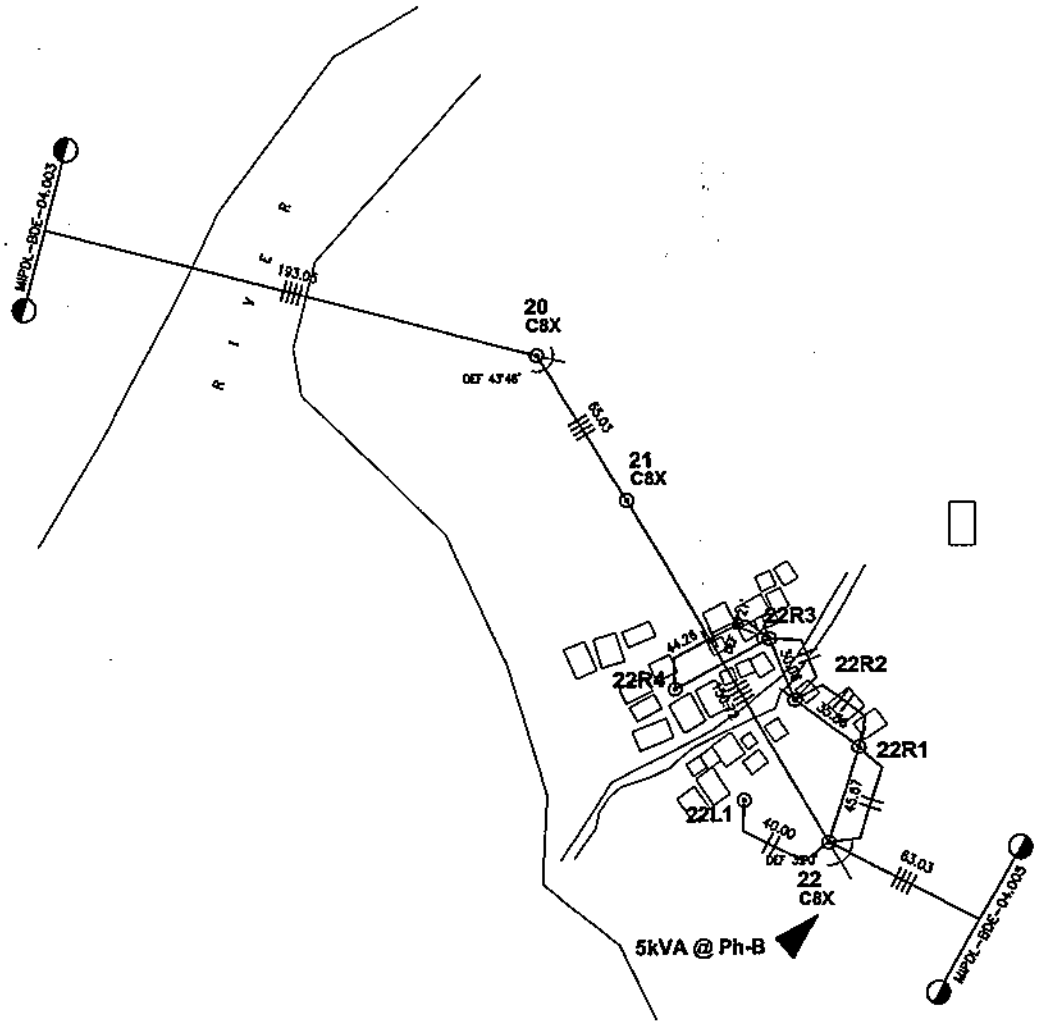
TITLE: DISTRIBUTION LINE ROUTE & PLAN (3/17)
(MALAKING-ILOG TO PARAL)

	BY	CHKD	DATE
DRAWN	JRPO		
TRACED			
REVIEWED	PRINCIPAL ENGR. / ARCHT.		
CHECKED			
DSGN.			
MECH.			

SUBMITTED: E-M. AGUILA
RECOMMENDED: C. Z. C. LUGOD, JR.
APPROVED: G. B. MAGPOC, JR.

DWG NO.: MIPDL-BDE-04.003 PR NO.: LuzP23Z1619Sdg

SCALE: NTS BID DRAWING REV. 0



NOTES:

1. ALL DIMENSIONS/CLEARANCES AS SHOWN ARE IN METERS UNLESS OTHERWISE SPECIFIED
2. THE SUPPLIER SHALL BE REQUIRED TO CONDUCT AN ACTUAL SITE INSPECTION/SURVEY TO DETERMINE THE FULL EXTENT OF THE PROJECT
3. LOCATION OF DISTRIBUTION TRANSFORMERS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. ACTUAL LOCATIONS AND PHASE CONNECTION FOR LOAD BALANCING SHALL BE DETERMINED BY THE SUPPLIER OR AS PER INSTRUCTED/DIRECTED BY NPC'S FIELD REPRESENTATIVE TO SUIT ACTUAL SYSTEM REQUIREMENTS
4. NECESSARY CALCULATION SUCH AS LOAD BALANCING, VOLTAGE DROP, CONDUCTOR SAG, ETC. SHALL BE DONE BY THE SUPPLIER SUBJECT TO NPC'S REVIEW AND APPROVAL
5. POLE DESIGNATIONS/NUMBERINGS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. NEW POLE DESIGNATION/NUMBERING SHALL BE CONSISTENT WITH THE EXISTING POLE DESIGNATION/NUMBERING (IF ANY) OR AS PER DIRECTED/INSTRUCTED BY THE DISTRIBUTION LINE SYSTEM END-USER
6. ONLY THE SECTION OR SEGMENT OF THE LINE IDENTIFIED WITH UNDERBUILD AND OPEN-SECONDARY SHALL BE PROVIDED WITH 1-#2AWG INSULATED CABLE TO BE WRAPPED AROUND WITH THE PRIMARY NEUTRAL CONDUCTOR. ACTUAL LINE LENGTH OF THE SECONDARY CONDUCTOR SHALL BE DETERMINED AT SITE BASED ON THE ACTUAL SITE REQUIREMENTS. SEE ALSO "TYPICAL PRIMARY CONNECTION DRAWING FOR FURTHER REFERENCE"
7. SEE ALSO STAKING SHEET AND BILL OF QUANTITIES FOR FURTHER REFERENCE

LEGENDS:

- 1 — POLE / NUMBER
- 21° — DEFLECTION ANGLE
- — THREE PHASE DISTRIBUTION LINE
- — V-PHASE DISTRIBUTION LINE
- — SINGLE PHASE DISTRIBUTION LINE
- — UNDERBUILD
- — OPEN SECONDARY
- — DISTRIBUTION TRANSFORMER
- — HOUSEHOLD

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

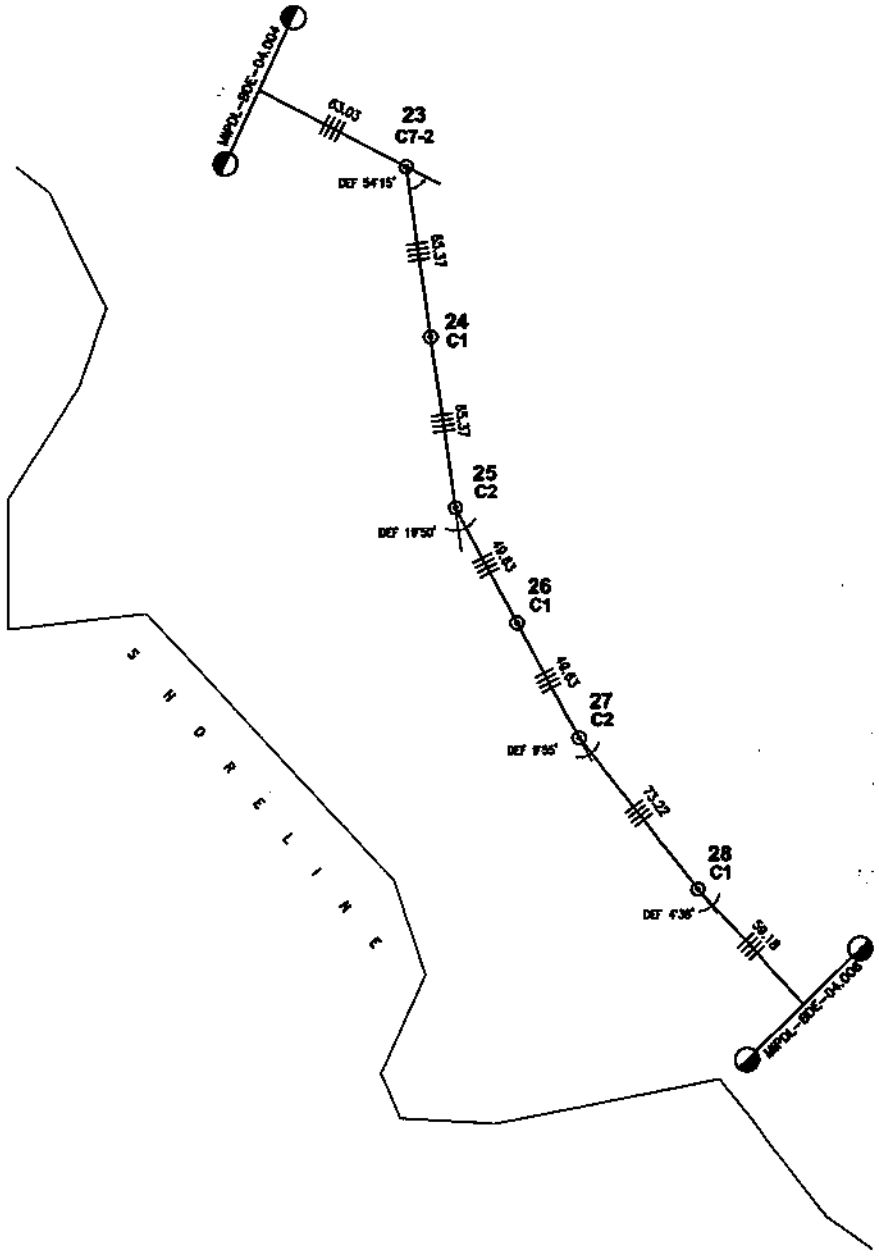
TITLE: **DISTRIBUTION LINE ROUTE & PLAN (4/17)**
(MALAKING-ILOG TO PARAL)

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

SUBMITTED: B. M. AGUILA, Principal Engineer I, EDCD
RECOMMENDED: C. P. C. LUGOD, JR., Manager, EDCD
APPROVED: G. B. MAGPOC, JR., Manager, DDO

DWG. NO. MIPDL-BDE-04.004 PR NO. LuzP23Z1619Sdg

SCALE: NTS **BID DRAWING** REV. 0



NOTES:

1. ALL DIMENSIONS/CLEARANCES AS SHOWN ARE IN METERS UNLESS OTHERWISE SPECIFIED
2. THE SUPPLIER SHALL BE REQUIRED TO CONDUCT AN ACTUAL SITE INSPECTION/SURVEY TO DETERMINE THE FULL EXTENT OF THE PROJECT
3. LOCATION OF DISTRIBUTION TRANSFORMERS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. ACTUAL LOCATIONS AND PHASE CONNECTION FOR LOAD BALANCING SHALL BE DETERMINED BY THE SUPPLIER OR AS PER INSTRUCTED/DIRECTED BY NPC'S FIELD REPRESENTATIVE TO SUIT ACTUAL SYSTEM REQUIREMENTS
4. NECESSARY CALCULATION SUCH AS LOAD BALANCING, VOLTAGE DROP, CONDUCTOR SAG, ETC. SHALL BE DONE BY THE SUPPLIER SUBJECT TO NPC'S REVIEW AND APPROVAL
5. POLE DESIGNATIONS/NUMBERINGS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. NEW POLE DESIGNATION/NUMBERING SHALL BE CONSISTENT WITH THE EXISTING POLE DESIGNATION/NUMBERING (IF ANY) OR AS PER DIRECTED/INSTRUCTED BY THE DISTRIBUTION LINE SYSTEM END-USER
6. ONLY THE SECTION OR SEGMENT OF THE LINE IDENTIFIED WITH UNDERBUILD AND OPEN-SECONDARY SHALL BE PROVIDED WITH 1-#2AWG INSULATED CABLE TO BE WRAPPED AROUND WITH THE PRIMARY NEUTRAL CONDUCTOR. ACTUAL LINE LENGTH OF THE SECONDARY CONDUCTOR SHALL BE DETERMINED AT SITE BASED ON THE ACTUAL SITE REQUIREMENTS. SEE ALSO "TYPICAL PRIMARY CONNECTION DRAWING FOR FURTHER REFERENCE"
7. SEE ALSO STAKING SHEET AND BILL OF QUANTITIES FOR FURTHER REFERENCE

LEGENDS:

- POLE / NUMBER
- DEFLECTION ANGLE
- THREE PHASE DISTRIBUTION LINE
- V-PHASE DISTRIBUTION LINE
- SINGLE PHASE DISTRIBUTION LINE
- UNDERBUILD
- OPEN SECONDARY
- DISTRIBUTION TRANSFORMER
- HOUSEHOLD

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.2/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALASKING-ILOG TO PARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

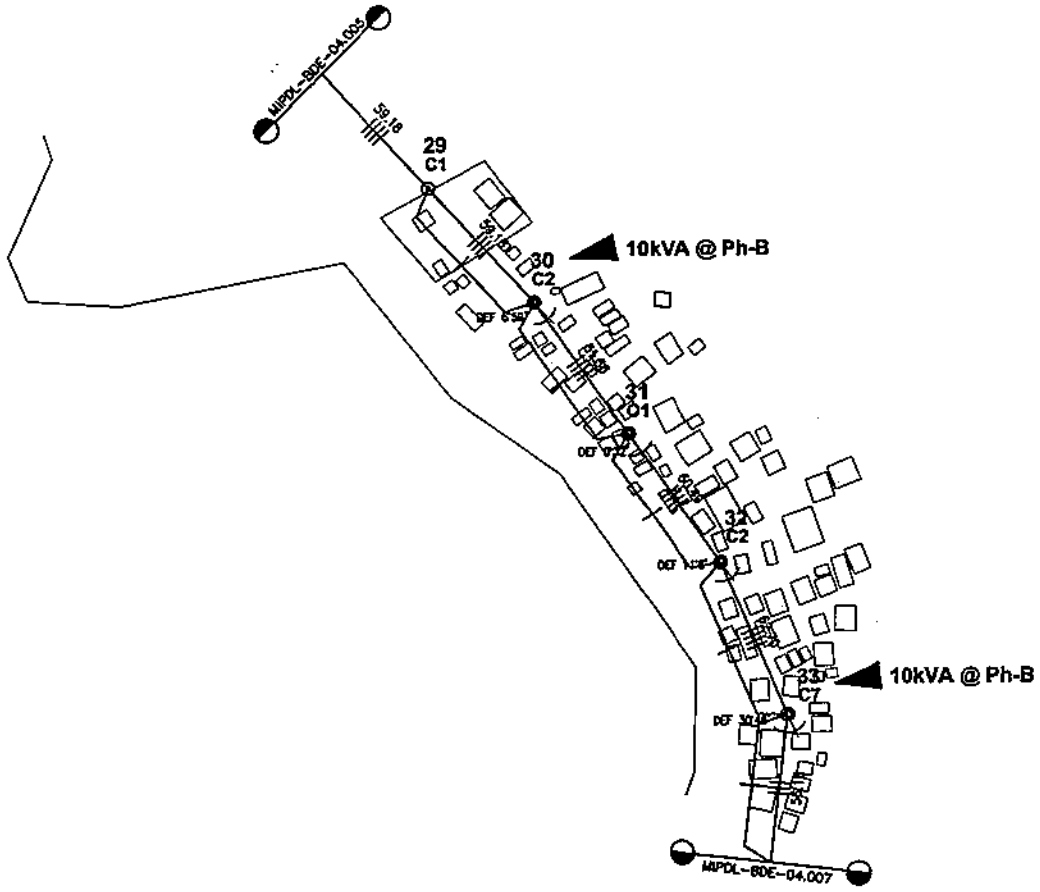
TITLE: DISTRIBUTION LINE ROUTE & PLAN (5/17)
(MALASKING-ILOG TO PARAL)

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

SUBMITTED: B. M. AGUILA
RECOMMENDED: Cr.Z. C. LUGOD, JR.
APPROVED: G. B. MAGPOC, JR.

DWG NO. MIPDL-BDE-04.005 | PR NO. LuzP23Z1619Sdg

SCALE: NTS | BID DRAWING | REV. 0



NOTES:

1. ALL DIMENSIONS/CLEARANCES AS SHOWN ARE IN METERS UNLESS OTHERWISE SPECIFIED
2. THE SUPPLIER SHALL BE REQUIRED TO CONDUCT AN ACTUAL SITE INSPECTION/SURVEY TO DETERMINE THE FULL EXTENT OF THE PROJECT
3. LOCATION OF DISTRIBUTION TRANSFORMERS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. ACTUAL LOCATIONS AND PHASE CONNECTION FOR LOAD BALANCING SHALL BE DETERMINED BY THE SUPPLIER OR AS PER INSTRUCTED/DIRECTED BY NPC'S FIELD REPRESENTATIVE TO SUIT ACTUAL SYSTEM REQUIREMENTS
4. NECESSARY CALCULATION SUCH AS LOAD BALANCING, VOLTAGE DROP, CONDUCTOR SAG, ETC. SHALL BE DONE BY THE SUPPLIER SUBJECT TO NPC'S REVIEW AND APPROVAL
5. POLE DESIGNATIONS/NUMBERINGS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. NEW POLE DESIGNATION/NUMBERING SHALL BE CONSISTENT WITH THE EXISTING POLE DESIGNATION/NUMBERING (IF ANY) OR AS PER DIRECTED/INSTRUCTED BY THE DISTRIBUTION LINE SYSTEM END-USER
6. ONLY THE SECTION OR SEGMENT OF THE LINE IDENTIFIED WITH UNDERBUILD AND OPEN-SECONDARY SHALL BE PROVIDED WITH 1-#2AWG INSULATED CABLE TO BE WRAPPED AROUND WITH THE PRIMARY NEUTRAL CONDUCTOR. ACTUAL LINE LENGTH OF THE SECONDARY CONDUCTOR SHALL BE DETERMINED AT SITE BASED ON THE ACTUAL SITE REQUIREMENTS. SEE ALSO "TYPICAL PRIMARY CONNECTION DRAWING FOR FURTHER REFERENCE"
7. SEE ALSO STAKING SHEET AND BILL OF QUANTITIES FOR FURTHER REFERENCE

LEGENDS:

- POLE / NUMBER
- DEFLECTION ANGLE
- THREE PHASE DISTRIBUTION LINE
- V-PHASE DISTRIBUTION LINE
- SINGLE PHASE DISTRIBUTION LINE
- UNDERBUILD
- OPEN SECONDARY
- DISTRIBUTION TRANSFORMER
- HOUSEHOLD

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.2/12.47kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

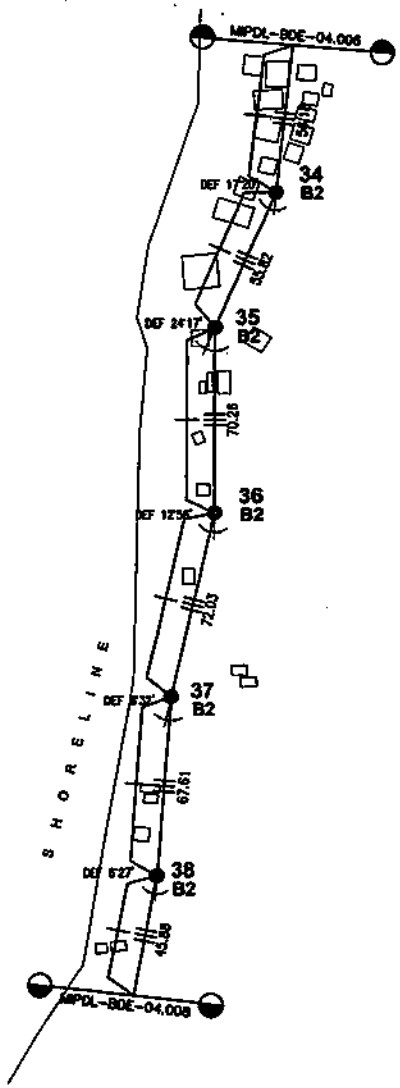
TITLE: DISTRIBUTION LINE ROUTE & PLAN (6/17)
(MALAKING-ILOG TO PARAL)

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

SUBMITTED: B. M. AGUILA, Project Engineer, EBDD
RECOMMENDED: E. Z. C. LUGOD, JR., Manager, EBDD
APPROVED: G. B. MAGPOC, JR., Manager, DDD

DWG. NO. MIPDL-BDE-04.006 | PR NO. LuzP23Z1619Sdg

SCALE: NTS | BID DRAWING | REV. 0



NOTES:

1. ALL DIMENSIONS/CLEARANCES AS SHOWN ARE IN METERS UNLESS OTHERWISE SPECIFIED
2. THE SUPPLIER SHALL BE REQUIRED TO CONDUCT AN ACTUAL SITE INSPECTION/SURVEY TO DETERMINE THE FULL EXTENT OF THE PROJECT
3. LOCATION OF DISTRIBUTION TRANSFORMERS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. ACTUAL LOCATIONS AND PHASE CONNECTION FOR LOAD BALANCING SHALL BE DETERMINED BY THE SUPPLIER OR AS PER INSTRUCTED/DIRECTED BY NPC'S FIELD REPRESENTATIVE TO SUIT ACTUAL SYSTEM REQUIREMENTS
4. NECESSARY CALCULATION SUCH AS LOAD BALANCING, VOLTAGE DROP, CONDUCTOR SAG, ETC. SHALL BE DONE BY THE SUPPLIER SUBJECT TO NPC'S REVIEW AND APPROVAL
5. POLE DESIGNATIONS/NUMBERINGS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. NEW POLE DESIGNATION/NUMBERING SHALL BE CONSISTENT WITH THE EXISTING POLE DESIGNATION/NUMBERING (IF ANY) OR AS PER DIRECTED/INSTRUCTED BY THE DISTRIBUTION LINE SYSTEM END-USER
6. ONLY THE SECTION OR SEGMENT OF THE LINE IDENTIFIED WITH UNDERBUILD AND OPEN-SECONDARY SHALL BE PROVIDED WITH 1-#2AWG INSULATED CABLE TO BE WRAPPED AROUND WITH THE PRIMARY NEUTRAL CONDUCTOR. ACTUAL LINE LENGTH OF THE SECONDARY CONDUCTOR SHALL BE DETERMINED AT SITE BASED ON THE ACTUAL SITE REQUIREMENTS. SEE ALSO "TYPICAL PRIMARY CONNECTION DRAWING FOR FURTHER REFERENCE"
7. SEE ALSO STAKING SHEET AND BILL OF QUANTITIES FOR FURTHER REFERENCE

LEGENDS:

- 1 / 21° — POLE / NUMBER
- DEFLECTION ANGLE
- THREE PHASE DISTRIBUTION LINE
- V-PHASE DISTRIBUTION LINE
- SINGLE PHASE DISTRIBUTION LINE
- UNDERBUILD
- OPEN SECONDARY
- DISTRIBUTION TRANSFORMER
- HOUSEHOLD

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MARINDUQUE

LOCATION: SAN JOSE, MARINDUQUE

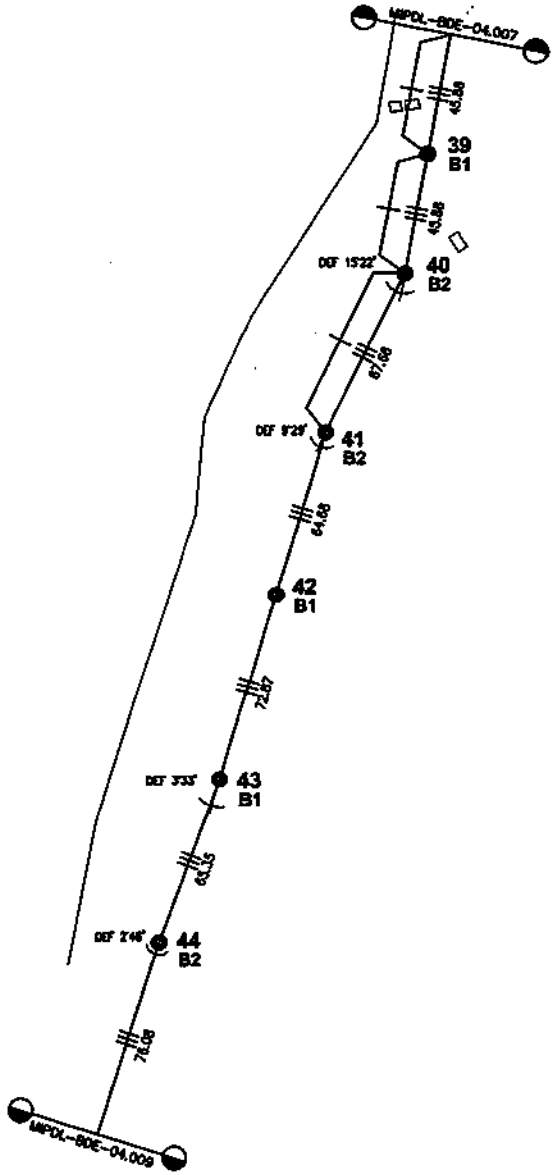
TITLE: **DISTRIBUTION LINE ROUTE & PLAN (7/17)**
(MALAKING-ILOG TO PARAL)

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

SUBMITTED: S. M. AGUILA, Electrical Engineer A, EDCD
RECOMMENDED: C. Z. C. LUGOD, JR., Manager, EDCD
APPROVED: G. B. MAGPOC, JR., Manager, DDD

DWG. NO. MIPDL-BDE-04.007 | PR NO. LuzP23Z1619Sdg

SCALE: NTS | **BID DRAWING** | REV. 0



NOTES:

1. ALL DIMENSIONS/CLEARANCES AS SHOWN ARE IN METERS UNLESS OTHERWISE SPECIFIED
2. THE SUPPLIER SHALL BE REQUIRED TO CONDUCT AN ACTUAL SITE INSPECTION/SURVEY TO DETERMINE THE FULL EXTENT OF THE PROJECT
3. LOCATION OF DISTRIBUTION TRANSFORMERS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. ACTUAL LOCATIONS AND PHASE CONNECTION FOR LOAD BALANCING SHALL BE DETERMINED BY THE SUPPLIER OR AS PER INSTRUCTED/DIRECTED BY NPC'S FIELD REPRESENTATIVE TO SUIT ACTUAL SYSTEM REQUIREMENTS
4. NECESSARY CALCULATION SUCH AS LOAD BALANCING, VOLTAGE DROP, CONDUCTOR SAG, ETC. SHALL BE DONE BY THE SUPPLIER SUBJECT TO NPC'S REVIEW AND APPROVAL
5. POLE DESIGNATIONS/NUMBERINGS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. NEW POLE DESIGNATION/NUMBERING SHALL BE CONSISTENT WITH THE EXISTING POLE DESIGNATION/NUMBERING (IF ANY) OR AS PER DIRECTED/INSTRUCTED BY THE DISTRIBUTION LINE SYSTEM END-USER
6. ONLY THE SECTION OR SEGMENT OF THE LINE IDENTIFIED WITH UNDERBUILD AND OPEN-SECONDARY SHALL BE PROVIDED WITH 1-#2AWG INSULATED CABLE TO BE WRAPPED AROUND WITH THE PRIMARY NEUTRAL CONDUCTOR. ACTUAL LINE LENGTH OF THE SECONDARY CONDUCTOR SHALL BE DETERMINED AT SITE BASED ON THE ACTUAL SITE REQUIREMENTS. SEE ALSO "TYPICAL PRIMARY CONNECTION DRAWING FOR FURTHER REFERENCE"
7. SEE ALSO STAKING SHEET AND BILL OF QUANTITIES FOR FURTHER REFERENCE

LEGENDS:

- POLE / NUMBER
- DEFLECTION ANGLE
- THREE PHASE DISTRIBUTION LINE
- V-PHASE DISTRIBUTION LINE
- SINGLE PHASE DISTRIBUTION LINE
- UNDERBUILD
- OPEN SECONDARY
- DISTRIBUTION TRANSFORMER
- HOUSEHOLD

REV.	DATE	NATURE OF REVISION	BY	CHKD.	RECD.	APP'D.

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MARBATE

LOCATION: SAN JOSE, MARBATE

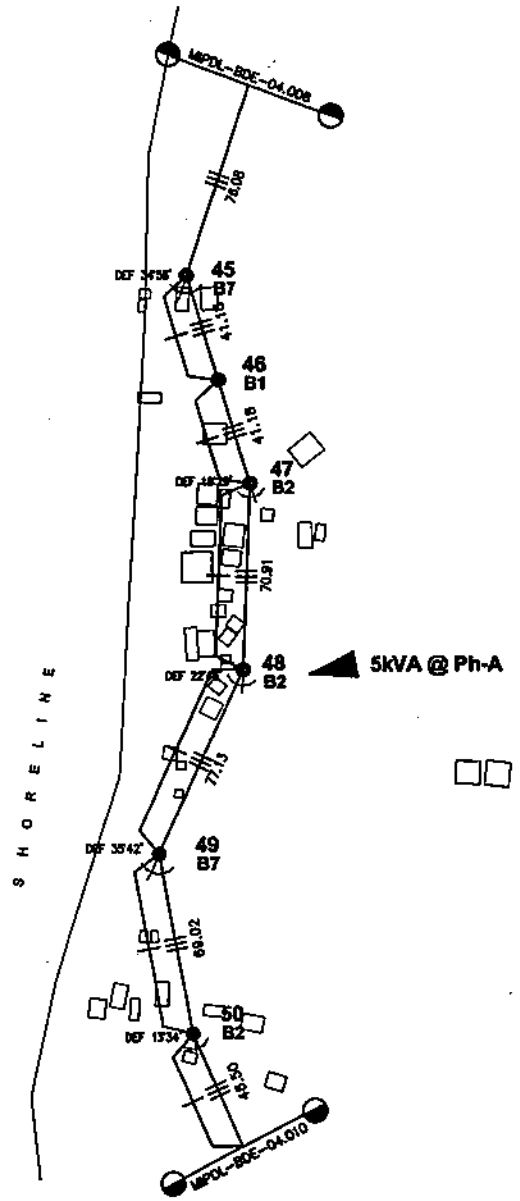
TITLE: DISTRIBUTION LINE ROUTE & PLAN (8/17)
(MALAKING-ILOG TO PARAL)

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

SUBMITTED: E. M. AGUILA
RECOMMENDED: C. Z. C. LUGOD, JR.
APPROVED: G. B. MAGPOC, JR.

DWG. NO. MIPDL-BDE-04.008 PR NO. LuzP23Z1619Sdg

SCALE: NTS BID DRAWING REV. 0



NOTES:

1. ALL DIMENSIONS/CLEARANCES AS SHOWN ARE IN METERS UNLESS OTHERWISE SPECIFIED
2. THE SUPPLIER SHALL BE REQUIRED TO CONDUCT AN ACTUAL SITE INSPECTION/SURVEY TO DETERMINE THE FULL EXTENT OF THE PROJECT
3. LOCATION OF DISTRIBUTION TRANSFORMERS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. ACTUAL LOCATIONS AND PHASE CONNECTION FOR LOAD BALANCING SHALL BE DETERMINED BY THE SUPPLIER OR AS PER INSTRUCTED/DIRECTED BY NPC'S FIELD REPRESENTATIVE TO SUIT ACTUAL SYSTEM REQUIREMENTS
4. NECESSARY CALCULATION SUCH AS LOAD BALANCING, VOLTAGE DROP, CONDUCTOR SAG, ETC. SHALL BE DONE BY THE SUPPLIER SUBJECT TO NPC'S REVIEW AND APPROVAL
5. POLE DESIGNATIONS/NUMBERINGS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. NEW POLE DESIGNATION/NUMBERING SHALL BE CONSISTENT WITH THE EXISTING POLE DESIGNATION/NUMBERING (IF ANY) OR AS PER DIRECTED/INSTRUCTED BY THE DISTRIBUTION LINE SYSTEM END-USER
6. ONLY THE SECTION OR SEGMENT OF THE LINE IDENTIFIED WITH UNDERBUILD AND OPEN-SECONDARY SHALL BE PROVIDED WITH 1-ØX4/0 INSULATED CABLE TO BE WRAPPED AROUND WITH THE PRIMARY NEUTRAL CONDUCTOR. ACTUAL LINE LENGTH OF THE SECONDARY CONDUCTOR SHALL BE DETERMINED AT SITE BASED ON THE ACTUAL SITE REQUIREMENTS. SEE ALSO "TYPICAL PRIMARY CONNECTION DRAWING FOR FURTHER REFERENCE"
7. SEE ALSO STAKING SHEET AND BILL OF QUANTITIES FOR FURTHER REFERENCE

LEGENDS:

- POLE / NUMBER
- DEFLECTION ANGLE
- THREE PHASE DISTRIBUTION LINE
- V-PHASE DISTRIBUTION LINE
- SINGLE PHASE DISTRIBUTION LINE
- UNDERBUILD
- OPEN SECONDARY
- DISTRIBUTION TRANSFORMER
- HOUSEHOLD

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 1.2/7.62kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MARBATE

LOCATION: SAN JOSE, MARBATE

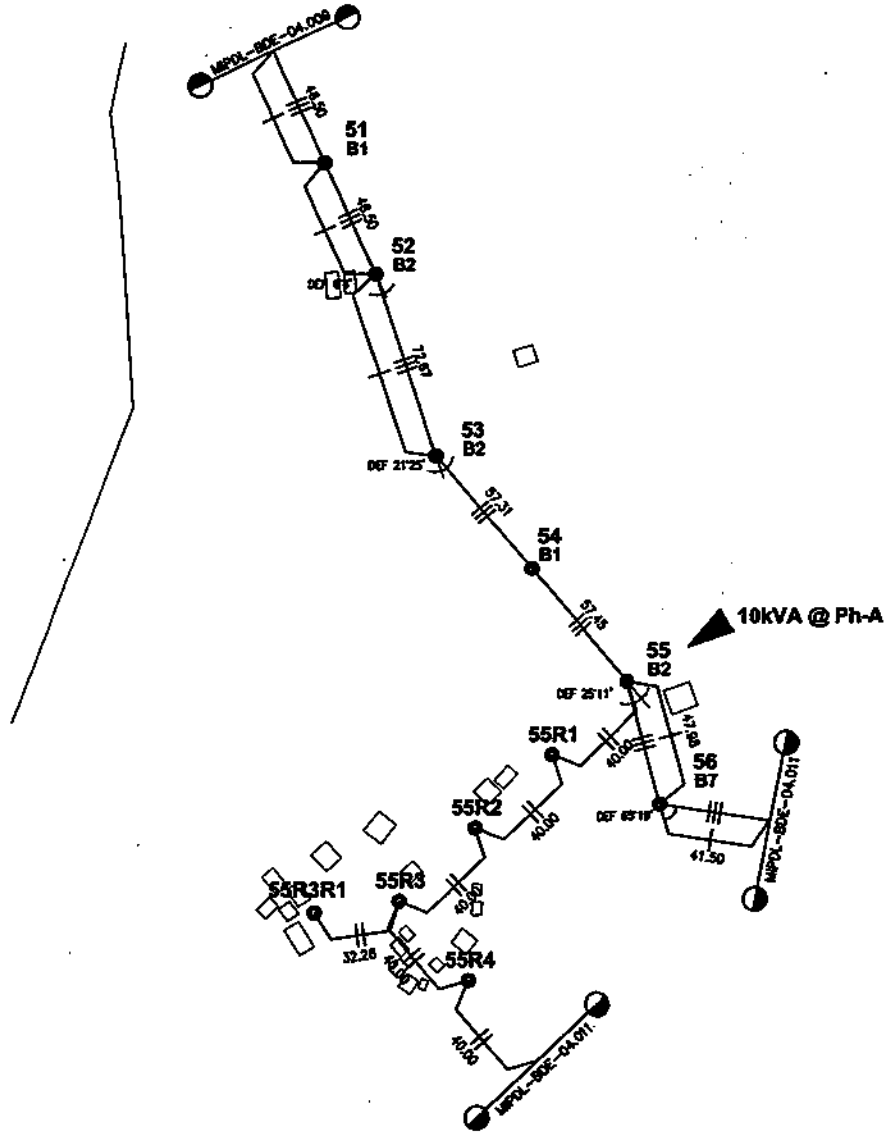
TITLE: **DISTRIBUTION LINE ROUTE & PLAN (3/17)**
(MALAKING-ILOG TO PARAL)

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

SUBMITTED: B. M. AGUILA
RECOMMENDED: C. Z. C. LUGOD, JR.
Manager, EBCD
APPROVED: G. B. MAGPOC, JR.
Manager, DOD

DWG. NO. MIPDL-BDE-04.009 | PR NO. LuzP23Z1619Sdg

SCALE: NTS | **BID DRAWING** | REV. 0



NOTES:

1. ALL DIMENSIONS/CLEARANCES AS SHOWN ARE IN METERS UNLESS OTHERWISE SPECIFIED
2. THE SUPPLIER SHALL BE REQUIRED TO CONDUCT AN ACTUAL SITE INSPECTION/SURVEY TO DETERMINE THE FULL EXTENT OF THE PROJECT
3. LOCATION OF DISTRIBUTION TRANSFORMERS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. ACTUAL LOCATIONS AND PHASE CONNECTION FOR LOAD BALANCING SHALL BE DETERMINED BY THE SUPPLIER OR AS PER INSTRUCTED/DIRECTED BY NPC'S FIELD REPRESENTATIVE TO SUIT ACTUAL SYSTEM REQUIREMENTS
4. NECESSARY CALCULATION SUCH AS LOAD BALANCING, VOLTAGE DROP, CONDUCTOR SAG, ETC. SHALL BE DONE BY THE SUPPLIER SUBJECT TO NPC'S REVIEW AND APPROVAL
5. POLE DESIGNATIONS/NUMBERINGS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. NEW POLE DESIGNATION/NUMBERING SHALL BE CONSISTENT WITH THE EXISTING POLE DESIGNATION/NUMBERING (IF ANY) OR AS PER DIRECTED/INSTRUCTED BY THE DISTRIBUTION LINE SYSTEM END-USER
6. ONLY THE SECTION OR SEGMENT OF THE LINE IDENTIFIED WITH UNDERBUILD AND OPEN-SECONDARY SHALL BE PROVIDED WITH 1-#2AWG INSULATED CABLE TO BE WRAPPED AROUND WITH THE PRIMARY NEUTRAL CONDUCTOR. ACTUAL LINE LENGTH OF THE SECONDARY CONDUCTOR SHALL BE DETERMINED AT SITE BASED ON THE ACTUAL SITE REQUIREMENTS. SEE ALSO "TYPICAL PRIMARY CONNECTION DRAWING FOR FURTHER REFERENCE"
7. SEE ALSO STAKING SHEET AND BILL OF QUANTITIES FOR FURTHER REFERENCE

LEGENDS:

- 1 — POLE / NUMBER
- 21° — DEFLECTION ANGLE
- — THREE PHASE DISTRIBUTION LINE
- — V-PHASE DISTRIBUTION LINE
- — SINGLE PHASE DISTRIBUTION LINE
- — UNDERBUILD
- — OPEN SECONDARY
- — DISTRIBUTION TRANSFORMER
- — HOUSEHOLD

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 1.3X13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MARBATE

LOCATION: SAN JOSE, MARBATE

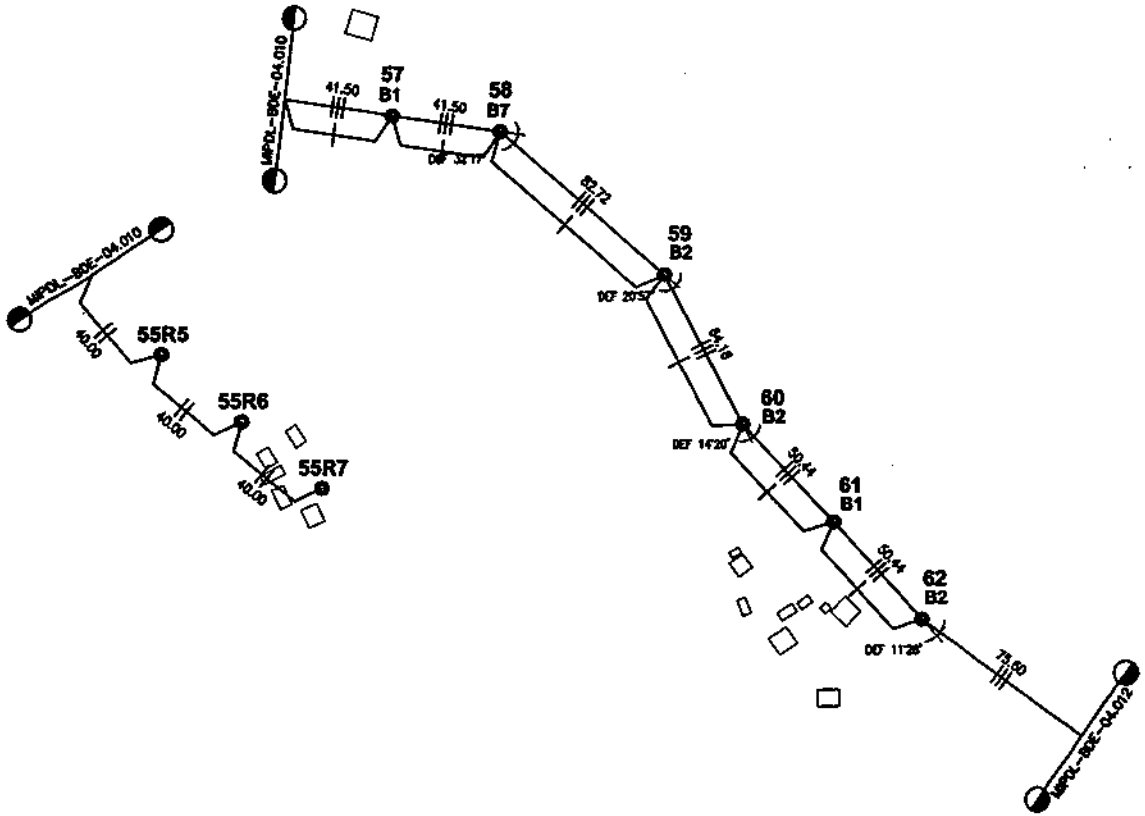
TITLE: **DISTRIBUTION LINE ROUTE & PLAN (10/17) (MALAKING-ILOG TO PARAL)**

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

SUBMITTED: B. M. AGUILA, Project Engineer A, EEDD
RECOMMENDED: C. C. CUDDO, JR., Manager, EEDD
APPROVED: G. B. MAGPOC, JR., Manager, EDD

DWG. NO. MIPDL-BDE-04.010 | PR NO. LuzP23Z1619Sdg

SCALE: NTS | **BID DRAWING** | REV. 0



NOTES:

1. ALL DIMENSIONS/CLEARANCES AS SHOWN ARE IN METERS UNLESS OTHERWISE SPECIFIED
2. THE SUPPLIER SHALL BE REQUIRED TO CONDUCT AN ACTUAL SITE INSPECTION/SURVEY TO DETERMINE THE FULL EXTENT OF THE PROJECT
3. LOCATION OF DISTRIBUTION TRANSFORMERS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. ACTUAL LOCATIONS AND PHASE CONNECTION FOR LOAD BALANCING SHALL BE DETERMINED BY THE SUPPLIER OR AS PER INSTRUCTED/DIRECTED BY NPC'S FIELD REPRESENTATIVE TO SUIT ACTUAL SYSTEM REQUIREMENTS
4. NECESSARY CALCULATION SUCH AS LOAD BALANCING, VOLTAGE DROP, CONDUCTOR SAG, ETC. SHALL BE DONE BY THE SUPPLIER SUBJECT TO NPC'S REVIEW AND APPROVAL
5. POLE DESIGNATIONS/NUMBERINGS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. NEW POLE DESIGNATION/NUMBERING SHALL BE CONSISTENT WITH THE EXISTING POLE DESIGNATION/NUMBERING (IF ANY) OR AS PER DIRECTED/INSTRUCTED BY THE DISTRIBUTION LINE SYSTEM END-USER
6. ONLY THE SECTION OR SEGMENT OF THE LINE IDENTIFIED WITH UNDERBUILD AND OPEN-SECONDARY SHALL BE PROVIDED WITH 1-#2AWG INSULATED CABLE TO BE WRAPPED AROUND WITH THE PRIMARY NEUTRAL CONDUCTOR. ACTUAL LINE LENGTH OF THE SECONDARY CONDUCTOR SHALL BE DETERMINED AT SITE BASED ON THE ACTUAL SITE REQUIREMENTS. SEE ALSO "TYPICAL PRIMARY CONNECTION DRAWING FOR FURTHER REFERENCE"
7. SEE ALSO STAKING SHEET AND BILL OF QUANTITIES FOR FURTHER REFERENCE

LEGENDS:

- POLE / NUMBER
- DEFLECTION ANGLE
- THREE PHASE DISTRIBUTION LINE
- V-PHASE DISTRIBUTION LINE
- SINGLE PHASE DISTRIBUTION LINE
- UNDERBUILD
- OPEN SECONDARY
- DISTRIBUTION TRANSFORMER
- HOUSEHOLD

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

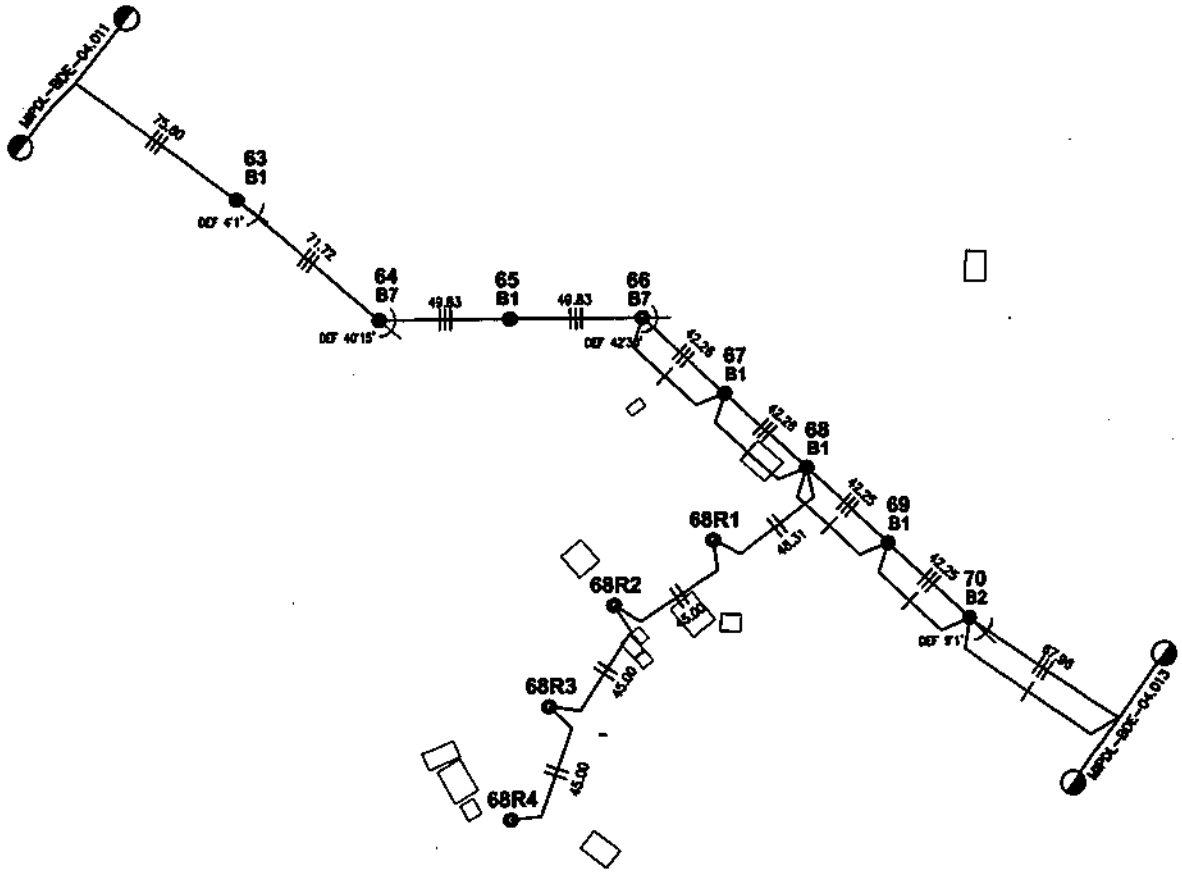
TITLE: DISTRIBUTION LINE ROUTE & PLAN (11/17)
(MALAKING-ILOG TO PARAL)

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

SUBMITTED: B. M. UNGURIA
RECOMMENDED: ENGR. C. C. LOGOD, JR.
APPROVED: G. B. MAGPOC, JR.

DWG. NO. MIPDL-BDE-04.011 PR NO. LuzP23Z1619Sdg

SCALE: NTS BID DRAWING REV. 0



NOTES:

1. ALL DIMENSIONS/CLEARANCES AS SHOWN ARE IN METERS UNLESS OTHERWISE SPECIFIED
2. THE SUPPLIER SHALL BE REQUIRED TO CONDUCT AN ACTUAL SITE INSPECTION/SURVEY TO DETERMINE THE FULL EXTENT OF THE PROJECT
3. LOCATION OF DISTRIBUTION TRANSFORMERS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. ACTUAL LOCATIONS AND PHASE CONNECTION FOR LOAD BALANCING SHALL BE DETERMINED BY THE SUPPLIER OR AS PER INSTRUCTED/DIRECTED BY NPC'S FIELD REPRESENTATIVE TO SUIT ACTUAL SYSTEM REQUIREMENTS
4. NECESSARY CALCULATION SUCH AS LOAD BALANCING, VOLTAGE DROP, CONDUCTOR SAG, ETC. SHALL BE DONE BY THE SUPPLIER SUBJECT TO NPC'S REVIEW AND APPROVAL
5. POLE DESIGNATIONS/NUMBERINGS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. NEW POLE DESIGNATION/NUMBERING SHALL BE CONSISTENT WITH THE EXISTING POLE DESIGNATION/NUMBERING (IF ANY) OR AS PER DIRECTED/INSTRUCTED BY THE DISTRIBUTION LINE SYSTEM END-USER
6. ONLY THE SECTION OR SEGMENT OF THE LINE IDENTIFIED WITH UNDERBUILD AND OPEN-SECONDARY SHALL BE PROVIDED WITH 1-ϕ 336MC INSULATED CABLE TO BE WRAPPED AROUND WITH THE PRIMARY NEUTRAL CONDUCTOR. ACTUAL LINE LENGTH OF THE SECONDARY CONDUCTOR SHALL BE DETERMINED AT SITE BASED ON THE ACTUAL SITE REQUIREMENTS. SEE ALSO "TYPICAL PRIMARY CONNECTION DRAWING FOR FURTHER REFERENCE"
7. SEE ALSO STAKING SHEET AND BILL OF QUANTITIES FOR FURTHER REFERENCE

LEGENDS:

- 1 — POLE / NUMBER
- 21° — DEFLECTION ANGLE
- THREE PHASE DISTRIBUTION LINE
- V-PHASE DISTRIBUTION LINE
- SINGLE PHASE DISTRIBUTION LINE
- UNDERBUILD
- OPEN SECONDARY
- DISTRIBUTION TRANSFORMER
- HOUSEHOLD

REV.	DATE	NATURE OF REVISION	BY	CHKD.	RECD.	APP'D.

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

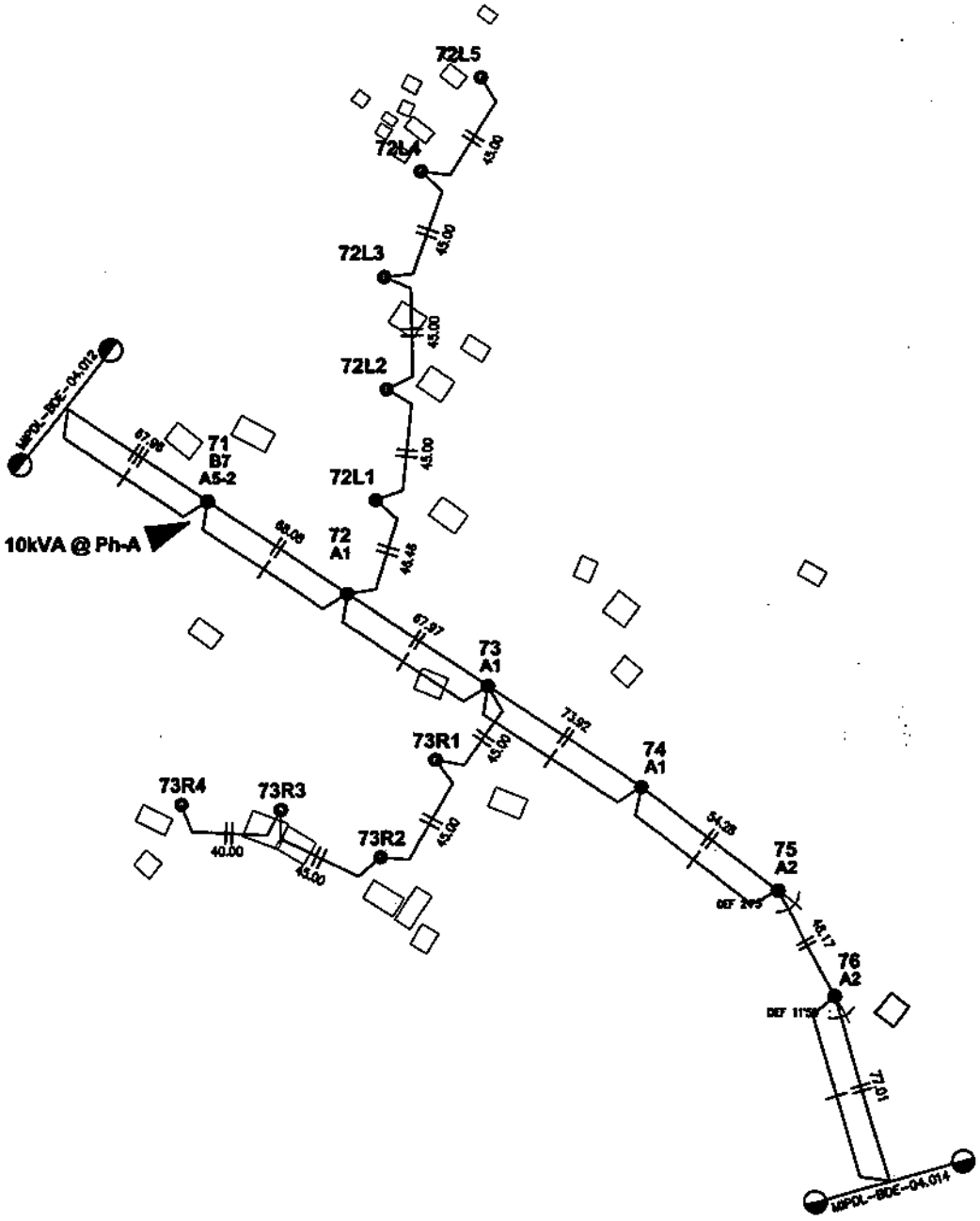
TITLE: **DISTRIBUTION LINE ROUTE & PLAN (12/17)**
(MALAKING-ILOG TO PARAL)

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

SUBMITTED: B. M. AGUILA
RECOMMENDED: C. Z. C. LUGOD, JR., Manager, ESCD
APPROVED: G. B. MAGPOC, JR., Manager, DDD

DWG NO. MIPDL-BDE-04.012 | PR NO. LuzP23Z1619Sdg

SCALE: NTS | **BID DRAWING** | REV. 0



NOTES:

1. ALL DIMENSIONS/CLEARANCES AS SHOWN ARE IN METERS UNLESS OTHERWISE SPECIFIED
2. THE SUPPLIER SHALL BE REQUIRED TO CONDUCT AN ACTUAL SITE INSPECTION/SURVEY TO DETERMINE THE FULL EXTENT OF THE PROJECT
3. LOCATION OF DISTRIBUTION TRANSFORMERS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. ACTUAL LOCATIONS AND PHASE CONNECTION FOR LOAD BALANCING SHALL BE DETERMINED BY THE SUPPLIER OR AS PER INSTRUCTED/DIRECTED BY NPC'S FIELD REPRESENTATIVE TO SUIT ACTUAL SYSTEM REQUIREMENTS
4. NECESSARY CALCULATION SUCH AS LOAD BALANCING, VOLTAGE DROP, CONDUCTOR SAG, ETC. SHALL BE DONE BY THE SUPPLIER SUBJECT TO NPC'S REVIEW AND APPROVAL
5. POLE DESIGNATIONS/NUMBERINGS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. NEW POLE DESIGNATION/NUMBERING SHALL BE CONSISTENT WITH THE EXISTING POLE DESIGNATION/NUMBERING (IF ANY) OR AS PER DIRECTED/INSTRUCTED BY THE DISTRIBUTION LINE SYSTEM END-USER
6. ONLY THE SECTION OR SEGMENT OF THE LINE IDENTIFIED WITH UNDERBUILD AND OPEN-SECONDARY SHALL BE PROVIDED WITH 1-#2AWG INSULATED CABLE TO BE WRAPPED AROUND WITH THE PRIMARY NEUTRAL CONDUCTOR. ACTUAL LINE LENGTH OF THE SECONDARY CONDUCTOR SHALL BE DETERMINED AT SITE BASED ON THE ACTUAL SITE REQUIREMENTS. SEE ALSO "TYPICAL PRIMARY CONNECTION DRAWING FOR FURTHER REFERENCE"
7. SEE ALSO STAKING SHEET AND BILL OF QUANTITIES FOR FURTHER REFERENCE

LEGENDS:

- POLE / NUMBER
- DEFLECTION ANGLE
- THREE PHASE DISTRIBUTION LINE
- V-PHASE DISTRIBUTION LINE
- SINGLE PHASE DISTRIBUTION LINE
- UNDERBUILD
- OPEN SECONDARY
- DISTRIBUTION TRANSFORMER
- HOUSEHOLD

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MARBATE

LOCATION: SAN JOSE, MARBATE

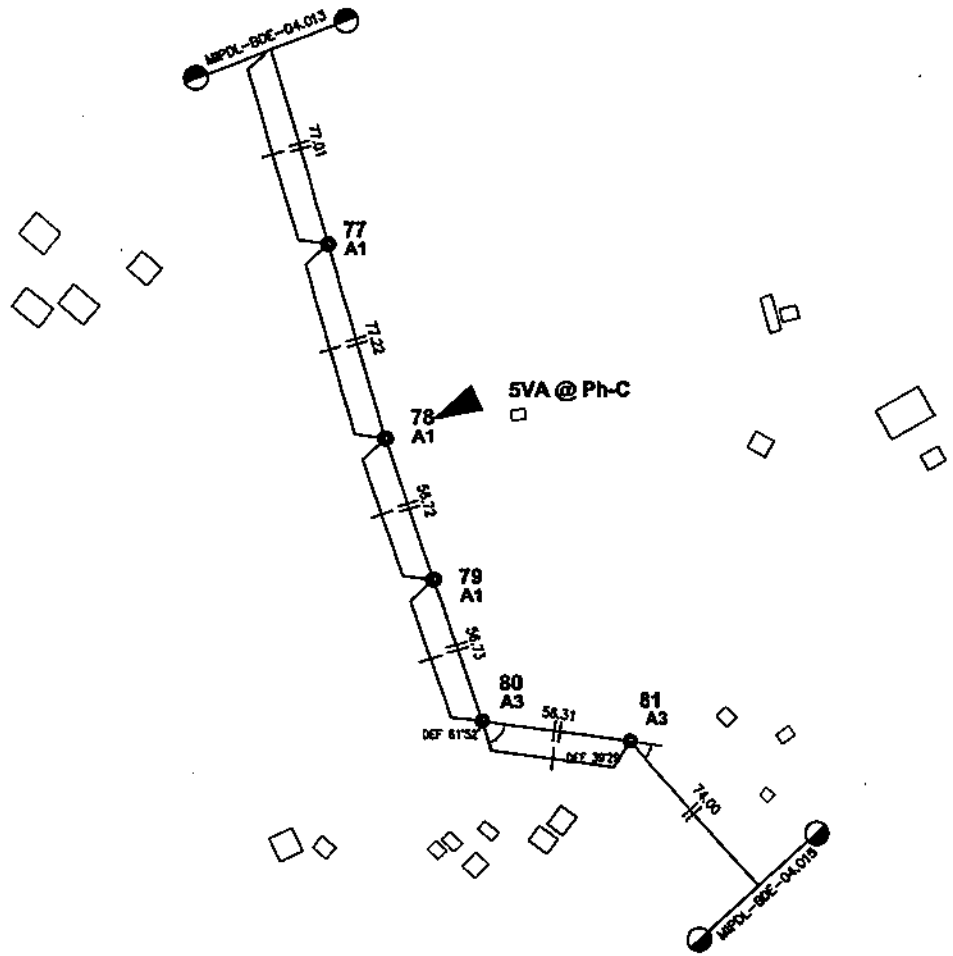
TITLE: DISTRIBUTION LINE ROUTE & PLAN (13/17) (MALAKING-ILOG TO PARAL)

	BY	CHKD	DATE
DESIGNED	[illegible]		
DRAWN	JRPD		
REVIEWED	PRINCIPAL ENGR. / ARCHT.		
CIVIL/ARCHT			
ELEC.			
MECH.			

SUBMITTED: E. M. AGUILA
RECOMMENDED: C. C. LUGOD, JR.
APPROVED: G. B. MAGPOC, JR.

DWG NO. MIPDL-BDE-04.013 PR NO. LuzP23Z1619Sdg

SCALE: NTS BID DRAWING REV. 0



NOTES:

1. ALL DIMENSIONS/CLEARANCES AS SHOWN ARE IN METERS UNLESS OTHERWISE SPECIFIED
2. THE SUPPLIER SHALL BE REQUIRED TO CONDUCT AN ACTUAL SITE INSPECTION/SURVEY TO DETERMINE THE FULL EXTENT OF THE PROJECT
3. LOCATION OF DISTRIBUTION TRANSFORMERS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. ACTUAL LOCATIONS AND PHASE CONNECTION FOR LOAD BALANCING SHALL BE DETERMINED BY THE SUPPLIER OR AS PER INSTRUCTED/DIRECTED BY NPC'S FIELD REPRESENTATIVE TO SUIT ACTUAL SYSTEM REQUIREMENTS
4. NECESSARY CALCULATION SUCH AS LOAD BALANCING, VOLTAGE DROP, CONDUCTOR SAG, ETC. SHALL BE DONE BY THE SUPPLIER SUBJECT TO NPC'S REVIEW AND APPROVAL
5. POLE DESIGNATORS/NUMBERINGS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. NEW POLE DESIGNATION/NUMBERING SHALL BE CONSISTENT WITH THE EXISTING POLE DESIGNATION/NUMBERING (IF ANY) OR AS PER DIRECTED/INSTRUCTED BY THE DISTRIBUTION LINE SYSTEM END-USER
6. ONLY THE SECTION OR SEGMENT OF THE LINE IDENTIFIED WITH UNDERBUILD AND OPEN-SECONDARY SHALL BE PROVIDED WITH 1-#2AWG INSULATED CABLE TO BE WRAPPED AROUND WITH THE PRIMARY NEUTRAL CONDUCTOR. ACTUAL LINE LENGTH OF THE SECONDARY CONDUCTOR SHALL BE DETERMINED AT SITE BASED ON THE ACTUAL SITE REQUIREMENTS. SEE ALSO "TYPICAL PRIMARY CONNECTION DRAWING FOR FURTHER REFERENCE"
7. SEE ALSO STAKING SHEET AND BILL OF QUANTITIES FOR FURTHER REFERENCE

LEGENDS:

- POLE / NUMBER
- DEFLECTION ANGLE
- THREE PHASE DISTRIBUTION LINE
- V-PHASE DISTRIBUTION LINE
- SINGLE PHASE DISTRIBUTION LINE
- UNDERBUILD
- OPEN SECONDARY
- DISTRIBUTION TRANSFORMER
- HOUSEHOLD

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MARBATE

LOCATION: SAN JOSE, MARBATE

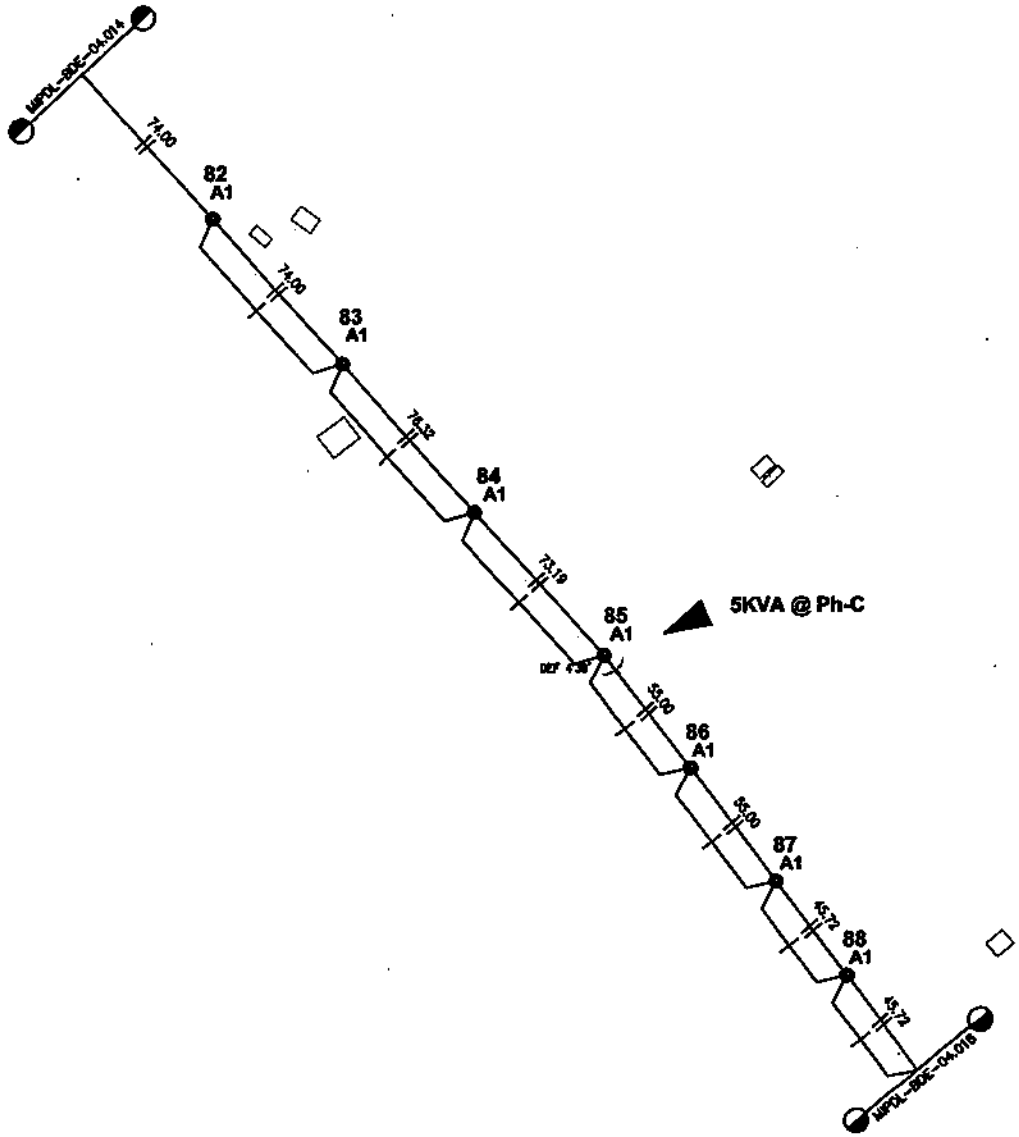
TITLE: **DISTRIBUTION LINE ROUTE & PLAN (14/17)**
(MALAKING-ILOG TO PARAL)

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

SUBMITTED: E. M. AGUILA, Technical Assistant A-EDCD
RECOMMENDED: C. Z. C. LUGOD, JR., Manager, EDCD
APPROVED: G. B. MAGPOC, JR., Manager, DOD

DWG NO. MIPDL-BDE-04.014 | PR NO. LuzP23Z1619Sdg

SCALE: NTS | **BID DRAWING** | REV. 0



NOTES:

1. ALL DIMENSIONS/CLEARANCES AS SHOWN ARE IN METERS UNLESS OTHERWISE SPECIFIED
2. THE SUPPLIER SHALL BE REQUIRED TO CONDUCT AN ACTUAL SITE INSPECTION/SURVEY TO DETERMINE THE FULL EXTENT OF THE PROJECT
3. LOCATION OF DISTRIBUTION TRANSFORMERS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. ACTUAL LOCATIONS AND PHASE CONNECTION FOR LOAD BALANCING SHALL BE DETERMINED BY THE SUPPLIER OR AS PER INSTRUCTED/DIRECTED BY NPC'S FIELD REPRESENTATIVE TO SUIT ACTUAL SYSTEM REQUIREMENTS
4. NECESSARY CALCULATION SUCH AS LOAD BALANCING, VOLTAGE DROP, CONDUCTOR SAG, ETC. SHALL BE DONE BY THE SUPPLIER SUBJECT TO NPC'S REVIEW AND APPROVAL
5. POLE DESIGNATIONS/NUMBERINGS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. NEW POLE DESIGNATION/NUMBERING SHALL BE CONSISTENT WITH THE EXISTING POLE DESIGNATION/NUMBERING (IF ANY) OR AS PER DIRECTED/INSTRUCTED BY THE DISTRIBUTION LINE SYSTEM END-USER
6. ONLY THE SECTION OR SEGMENT OF THE LINE IDENTIFIED WITH UNDERBUILD AND OPEN-SECONDARY SHALL BE PROVIDED WITH 1-#2AWG INSULATED CABLE TO BE WRAPPED AROUND WITH THE PRIMARY NEUTRAL CONDUCTOR. ACTUAL LINE LENGTH OF THE SECONDARY CONDUCTOR SHALL BE DETERMINED AT SITE BASED ON THE ACTUAL SITE REQUIREMENTS. SEE ALSO "TYPICAL PRIMARY CONNECTION DRAWING FOR FURTHER REFERENCE"
7. SEE ALSO STAKING SHEET AND BILL OF QUANTITIES FOR FURTHER REFERENCE

LEGENDS:

- 1 — POLE / NUMBER
- 21° — DEFLECTION ANGLE
- THREE PHASE DISTRIBUTION LINE
- V-PHASE DISTRIBUTION LINE
- SINGLE PHASE DISTRIBUTION LINE
- UNDERBUILD
- OPEN SECONDARY
- DISTRIBUTION TRANSFORMER
- HOUSEHOLD

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

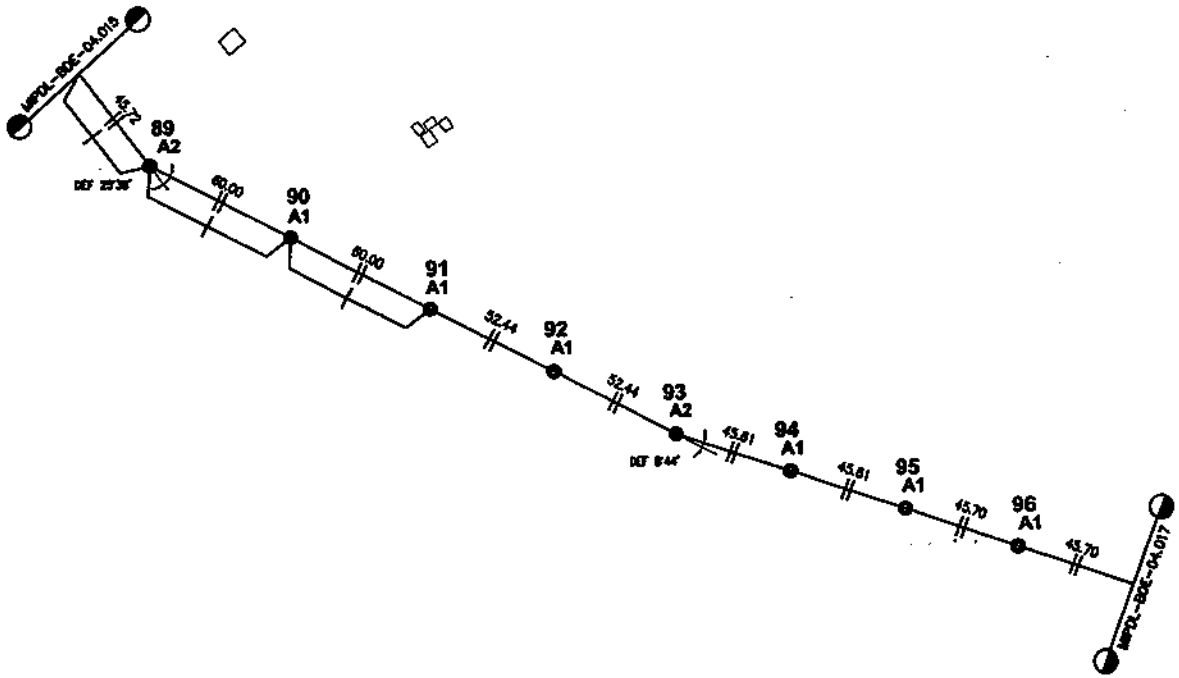
TITLE: DISTRIBUTION LINE ROUTE & PLAN (15/17)
(MALAKING-ILOG TO PARAL)

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

SUBMITTED: B. M. AGUILA
RECOMMENDED: C. C. LUGOD, JR.
APPROVED: G. B. MAGPOC, JR.

DWG. NO. MIPDL-BDE-04.015 PR NO. LuzP23Z1618Sdg

SCALE: NTS BID DRAWING REV. 0



NOTES:

1. ALL DIMENSIONS/CLEARANCES AS SHOWN ARE IN METERS UNLESS OTHERWISE SPECIFIED
2. THE SUPPLIER SHALL BE REQUIRED TO CONDUCT AN ACTUAL SITE INSPECTION/SURVEY TO DETERMINE THE FULL EXTENT OF THE PROJECT
3. LOCATION OF DISTRIBUTION TRANSFORMERS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. ACTUAL LOCATIONS AND PHASE CONNECTION FOR LOAD BALANCING SHALL BE DETERMINED BY THE SUPPLIER OR AS PER INSTRUCTED/DIRECTED BY NPC'S FIELD REPRESENTATIVE TO SUIT ACTUAL SYSTEM REQUIREMENTS
4. NECESSARY CALCULATION SUCH AS LOAD BALANCING, VOLTAGE DROP, CONDUCTOR SAG, ETC. SHALL BE DONE BY THE SUPPLIER SUBJECT TO NPC'S REVIEW AND APPROVAL
5. POLE DESIGNATIONS/NUMBERINGS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. NEW POLE DESIGNATION/NUMBERING SHALL BE CONSISTENT WITH THE EXISTING POLE DESIGNATION/NUMBERING (IF ANY) OR AS PER DIRECTED/INSTRUCTED BY THE DISTRIBUTION LINE SYSTEM END-USER
6. ONLY THE SECTION OR SEGMENT OF THE LINE IDENTIFIED WITH UNDERBUILD AND OPEN-SECONDARY SHALL BE PROVIDED WITH 1-#2AWG INSULATED CABLE TO BE WRAPPED AROUND WITH THE PRIMARY NEUTRAL CONDUCTOR. ACTUAL LINE LENGTH OF THE SECONDARY CONDUCTOR SHALL BE DETERMINED AT SITE BASED ON THE ACTUAL SITE REQUIREMENTS. SEE ALSO "TYPICAL PRIMARY CONNECTION DRAWING FOR FURTHER REFERENCE"
7. SEE ALSO STAKING SHEET AND BILL OF QUANTITIES FOR FURTHER REFERENCE

LEGENDS:

- 1 — POLE / NUMBER
- 21° — DEFLECTION ANGLE
- — THREE PHASE DISTRIBUTION LINE
- — V-PHASE DISTRIBUTION LINE
- — SINGLE PHASE DISTRIBUTION LINE
- — UNDERBUILD
- — OPEN SECONDARY
- — DISTRIBUTION TRANSFORMER
- — HOUSEHOLD

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MARBATE

LOCATION: SAN JOSE, MARBATE

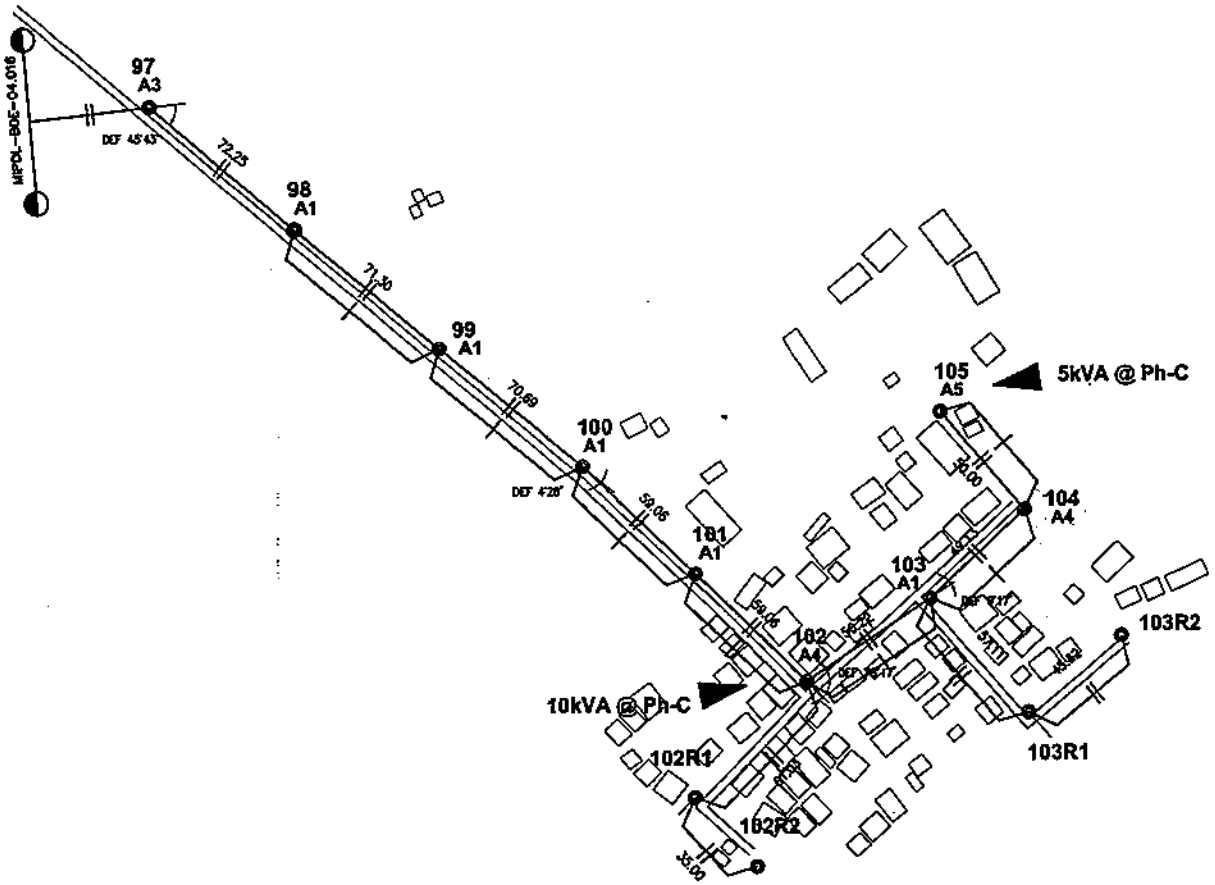
TITLE: **DISTRIBUTION LINE ROUTE & PLAN (16/17)**
(MALAKING-ILOG TO PARAL)

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

SUBMITTED: B. M. AGUILA, Project Engineer A, EBDP
RECOMMENDED: G. Z. C. LUGOD, JR., Manager, EBDP
APPROVED: G. B. MAGPOC, JR., Manager, DDO

DWG NO. MIPDL-BDE-04.016 | PR NO. LuzP23Z16193dg

SCALE: NTS | **BID DRAWING** | REV. 0



NOTES:

1. ALL DIMENSIONS/CLEARANCES AS SHOWN ARE IN METERS UNLESS OTHERWISE SPECIFIED
2. THE SUPPLIER SHALL BE REQUIRED TO CONDUCT AN ACTUAL SITE INSPECTION/SURVEY TO DETERMINE THE FULL EXTENT OF THE PROJECT
3. LOCATION OF DISTRIBUTION TRANSFORMERS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. ACTUAL LOCATIONS AND PHASE CONNECTION FOR LOAD BALANCING SHALL BE DETERMINED BY THE SUPPLIER OR AS PER INSTRUCTED/DIRECTED BY NPC'S FIELD REPRESENTATIVE TO SUIT ACTUAL SYSTEM REQUIREMENTS
4. NECESSARY CALCULATION SUCH AS LOAD BALANCING, VOLTAGE DROP, CONDUCTOR SAG, ETC. SHALL BE DONE BY THE SUPPLIER SUBJECT TO NPC'S REVIEW AND APPROVAL
5. POLE DESIGNATIONS/NUMBERINGS AS SHOWN ARE TENTATIVE AND FOR BIDDING PURPOSES ONLY. NEW POLE DESIGNATION/NUMBERING SHALL BE CONSISTENT WITH THE EXISTING POLE DESIGNATION/NUMBERING (IF ANY) OR AS PER DIRECTED/INSTRUCTED BY THE DISTRIBUTION LINE SYSTEM END-USER
6. ONLY THE SECTION OR SEGMENT OF THE LINE IDENTIFIED WITH UNDERBUILD AND OPEN-SECONDARY SHALL BE PROVIDED WITH 1-#2AWC INSULATED CABLE TO BE WRAPPED AROUND WITH THE PRIMARY NEUTRAL CONDUCTOR. ACTUAL LINE LENGTH OF THE SECONDARY CONDUCTOR SHALL BE DETERMINED AT SITE BASED ON THE ACTUAL SITE REQUIREMENTS. SEE ALSO "TYPICAL PRIMARY CONNECTION DRAWING FOR FURTHER REFERENCE"
7. SEE ALSO STAKING SHEET AND BILL OF QUANTITIES FOR FURTHER REFERENCE

LEGENDS:

- POLE / NUMBER
- DEFLECTION ANGLE
- THREE PHASE DISTRIBUTION LINE
- V-PHASE DISTRIBUTION LINE
- SINGLE PHASE DISTRIBUTION LINE
- UNDERBUILD
- OPEN SECONDARY
- DISTRIBUTION TRANSFORMER
- HOUSEHOLD

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.57/13.2KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

TITLE: DISTRIBUTION LINE ROUTE & PLAN (17/17)
(MALAKING-ILOG TO PARAL)

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

SUBMITTED: B. M. AGUILA, Principal Engineer A, EEGD
RECOMMENDED: C. Z. C. LUGOD, JR., Manager, EEGD
APPROVED: G. B. MAGPOC, JR., Manager, DDD

DWG. NO. MIPDL-BDE-04.017 PR NO. LuzP23Z1619Sdg

SCALE: NTS BID DRAWING REV. 0

GENERAL DESIGN DATA

SINGLE POLE

1. Nominal Voltage — 13.8 kV

2. Conductors and Wires

Conductors and Wires	PRIMARY CONDUCTOR		NEUTRAL CONDUCTOR		SECONDARY CONDUCTOR		GUY WIRE	
Type and Size	ACSR, 1/0 AWG		ACSR, 2 AWG		Poly AAC, 2 AWG		3/8" High Strength Grade Steel Galvanized	
Stranding	6/1		6/1		7		7-Strand	
Outside Diameter	10.11 mm	0.398 in	8.83 mm	0.348 in	8.79 mm	0.362 in	9.53 mm	0.375 in
Area	52.48 mm²	0.0807 in²	39.19 mm²	0.0607 in²	73.98 mm²	0.1146 in²	51.19 mm	0.0792 in
Weight	210.3 kg/km	0.1409 lb/ft	136.0 kg/km	0.0911 lb/ft	199.4 kg/km	0.0965 lb/ft	0.400 kg/m	0.273 lb/ft
Ultimate Strength	1,900 kg	4,200 lbs	1,295 kg	2,855 lbs	530 kg	1213 lbs	4,900 kg	10,800 lbs

3. Maximum Loading:

Temperature	7.22 °C (45 °F)
Wind Velocity	270 KPH

4. Tension Limits (Percentage of Ultimate Tensile Strength):

	Unloaded Final @ 7.22 °C (45 °F)	Loaded Final @ 7.22 °C (45 °F)
Conductor	20	40
Neutral Wire	20	40
Insulator Assembly		40 M and E

5. Span Limitations (Meters):

	Structure Type	Maximum Span		Deflection Angle
Single Pole, Secondary	NJ5 (J5)	50 m		0° ~ 5°
	NJ10 (J10)	50 m		5° ~ 30°
	NJ7 (J7)	50 m		30° ~ 60°
	NJ15 (J15)	50 m		
	NJ15A (J15A)	50 m		
Single Pole, Single Phase	NA1 (A1)	50 m	100 m	0° ~ 5°
	NA2 (A2)	50 m	100 m	5° ~ 30°
	NA3 (A3)	50 m	100 m	30° ~ 60°
	NA4 (A4)	50 m	100 m	60° ~ 90°
	NA5 (A5)	50 m	100 m	
	NA5-1 (A5-1)	50 m	100 m	
	NA5-2 (A5-2)	50 m	100 m	
	NA5-3 (A5-3)	50 m	100 m	
	NA5-4 (A5-4)	50 m	100 m	
	NA8 (A8)	50 m	100 m	
	NA14 (A14)	50 m	100 m	
	NA15 (A15)	50 m	100 m	
Single Pole, Two Phase	NB1 (B1)	50 m	100 m	0° ~ 5°
	NB2 (B2)	50 m	100 m	5° ~ 30°
	NB3 (B3)	50 m	100 m	30° ~ 60°
	NB4-1 (B4-1)	50 m	100 m	60° ~ 90°
	NB5-1 (B5-1)	50 m	100 m	
	NB7 (B7)	50 m	100 m	
	NB8 (B8)	50 m	100 m	
	NB14 (B14)	50 m	100 m	
	NB15 (B15)	50 m	100 m	
Single Pole, Three Phase	NC1 (C1)	50 m	100 m	0° ~ 5°
	NC2 (C2)	50 m	100 m	5° ~ 30°
	NC3 (C3)	50 m	100 m	30° ~ 60°
	NC4-1 (C4-1)	50 m	100 m	60° ~ 90°
	NC5-1 (C5-1)	50 m	100 m	
	NC7 (C7)	50 m	100 m	
	NC8 (C8)	50 m	100 m	
	NC14 (C14)	50 m	100 m	
	NC15 (C15)	50 m	100 m	

6. Clearances, Values Strictly Minimum:

Crossing Over @ 49.5 °C (120°F), No Wind, Final Sag	Clearance	
Track Rails of Railroads	10.00 m.	32.80 ft.
Public Street and Highways	7.60 m.	24.93 ft.
Rural Road	6.70 m.	21.98 ft.
Cultivated Fields, Area Accessible only to Pedestrians	5.85 m.	19.02 ft.
Conductor Clearance to Support	Refer to Drawing	
Conductor Clearance to Guy	Refer to Drawing	

7. Guy:

Maximum Working Load on 1.5 m. (5') Log Anchor	4,550 Kgs. (10,000 lbs.)
Guy Slope (L/H)	0.8 to 1.0
Maximum Design Tension in Guy Wire	3,300 Kgs. (7,250 lbs.)

8. Crossarms and Braces

Material	Galvanized Steel
Galvanizing According to:	ASTM A123

9. Steel Pole Data — Refer to Civil Drawings

10. Pole Setting

Length of Pole		Depth of Pole Setting			
		In Earth		In Rock	
Meter	Feet	Meter	Feet	Meter	Feet
9.14	30	1.52	5.0	1.22	4.0
10.67	35	1.68	5.5	1.22	4.0
12.19	40	1.83	6.0	1.22	4.0
13.71	45	1.98	6.5	1.37	4.5
15.24	50	2.13	7.0	1.52	5.0

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PAYAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

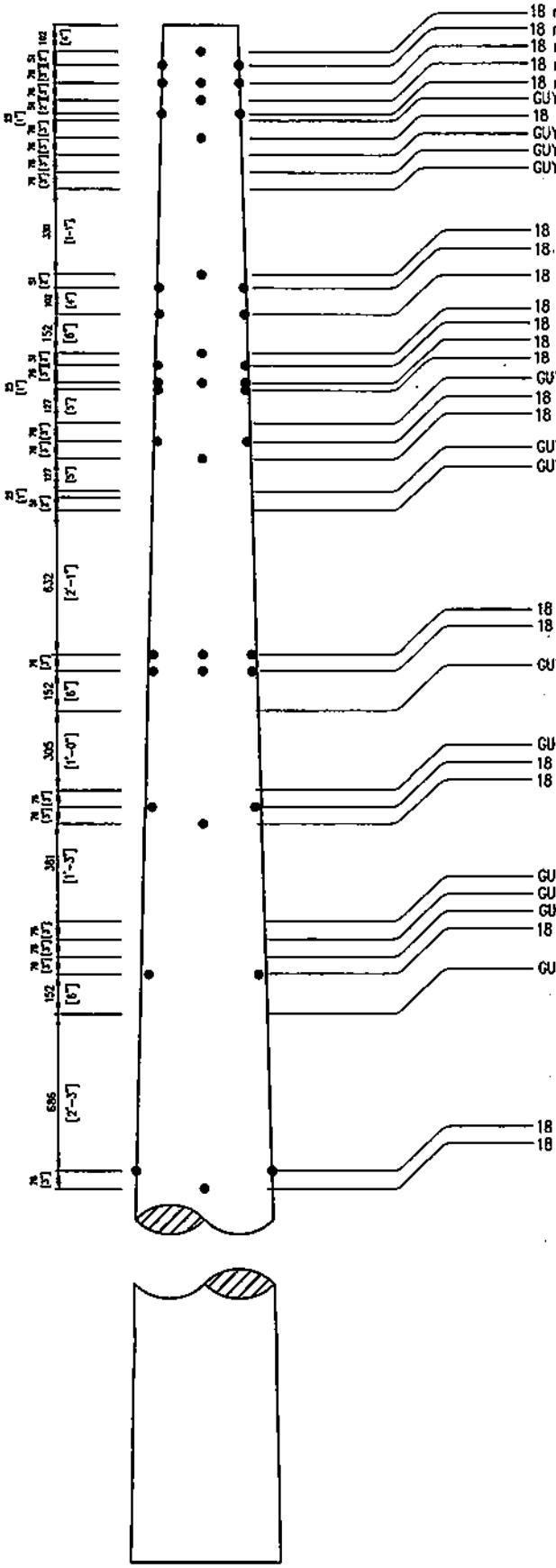
TITLE: 7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" GENERAL DESIGN DATA

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

SUBMITTED: B. M. AGUILA
RECOMMENDED: C.Z. C. LUGOD, JR.
APPROVED: G. B. MAGPOC, JR.

DWG. NO. MIPDL-BDE-04.018 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS BID DRAWING REV. 0



NOTES:

1. REFER TO CONSTRUCTION DRAWING OF EACH TYPE OF STRUCTURE.
2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

TITLE: **7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" STANDARD HOLE LOCATION**

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

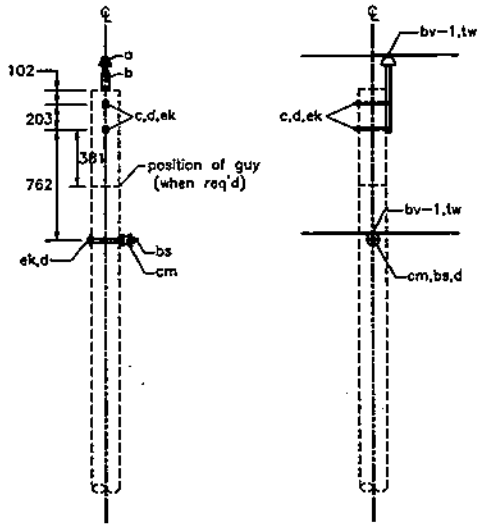
SUBMITTED: B. M. AGUILA, Project Engineer A, PMO
RECOMMENDED: E. C. LOGOD, JR., Manager, PMO
APPROVED: G. B. MAGPOC, JR., Manager, PMO

DWG. NO. MIPDL-BDE-04.019 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS **BID DRAWING** REV. 0

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

TOP VIEW PIN ASSEMBLY



ELEVATION SIDE VIEW

TYPE NA1 (A1)

("0 - 5° Angle)

SCALE NTS

BILL OF MATERIALS		
Single Primary Support Type NA1 (A1) - 0°-5° Angle		
ITEM	DESCRIPTION	QTY
a	Insulator, Pin Type, ANSI Class 55-4	1
b	Pin, Pole Top, 508 (20")	1
c	Bolt, Machine, 16 x 203 (5/8" x 8"), thread 5" from tip	2
d	Washer, 57 x 57 x 5 (2¼" x 2¼" x 3/16"), 21 (13/16") HD	3
bv-1	Rod, Armor (Single Support), primary	1
bv-1	Rod, Armor (Single Support), neutral	1
tw	Wire, Tire, Al. Alloy, Soft, #4 AWG	16'
ek	Locknut, 16 (5/8")	3
bs	Bolt, Single Upset, 16 x 203 (5/8" x 8"), thread 5" from tip	1
cm	Insulator, Spool, 44 (1-3/4") dia. Groove, ANSI Class 53 - 2	1

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. REFER TO BILL OF QUANTITIES FOR THE ACTUAL TYPE OF POLE STRUCTURE TO BE USED.
3. THIS DRAWING SHALL BE WORKED WITH CIVIL WORKS BID DRAWINGS.

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, NUEVA ECIJA

LOCATION: SAN JOSE, NUEVA ECIJA

TITLE: 7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" SINGLE PHASE (A1)

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

SUBMITTED: R. M. AGUILA, Manager, EESD

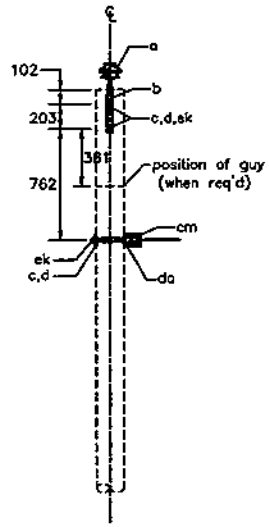
RECOMMENDED: J. C. LUGOD, JR., Manager, EESD

APPROVED: G. B. MAGPOC, JR., Manager, DDO

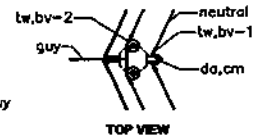
DWG. NO. MIPDL-BDE-04.020 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS BID DRAWING REV. 0

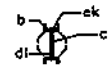
BILL OF MATERIALS		
Double Primary Support Type NA2 (A2) - 5°-30° Angle		
ITEM	DESCRIPTION	QTY
a	Insulator, Pin Type, ANSI Class 55-4	2
b	Pin, Pole Top, 508 (20")	2
c	Bolt, Machine, 16 x 254 (5/8" x 10"), thread 5" from tip	2
c	Bolt, Machine, 16 x 305 (5/8" x 12"), thread 5" from tip	1
d	Washer, 57 x 57 x 5 (2¼" x 2¼" x 3/16"), 21 (13/16") HD	3
cm	Insulator, Spool, 44 (1-3/4") dia. Groove, ANSI Class 53 - 2	1
da	Bracket, Rigid clevis	1
dl	Pipe, Spacer, 19 (3/4") dia. x 38 (1-1/2")	2
ek	Locknut, 16 (5/8")	3
bv-1	Rod, Armor (Single Support), neutral	1
bv-2	Rod, Armor (Double Support), primary	1
tw	Wire, Tire, Al. Alloy, Soft, #4 AWG	24'



ELEVATION



TOP VIEW



POLE TOP PIN ASSEMBLY

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. REFER TO BILL OF QUANTITIES FOR THE ACTUAL TYPE OF POLE STRUCTURE TO BE USED.
3. THIS DRAWING SHALL BE WORKED WITH CIVIL WORKS BID DRAWINGS.

TYPE NA2 (A2)

("5 - 30" Angle)

SCALE NTS

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MARBATE

LOCATION: SAN JOSE, MARBATE

TITLE: 7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" SINGLE PHASE (A2)

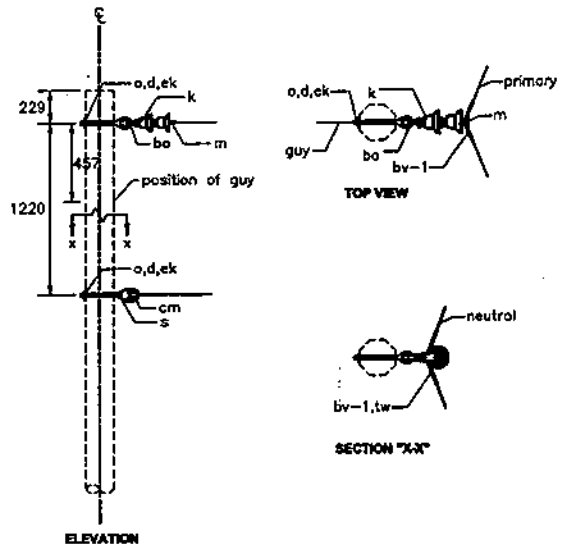
	BY	CHKD	DATE
DESIGNED			
DRAWN	RPD		
REVIEWED	PRINCIPAL ENGR. / ARCH'T.		
CIVIL/ARCH'T			
ELEC.			
MECH.			

SUBMITTED: B. M. AGUILA, Division Engineer A, EEDD
RECOMMENDED: C. C. LUGOD, JR., Manager, EEDD
APPROVED: G. B. MAGPOC, JR., Manager, DDD

DWG. NO. MLPDL-BDE-04.021 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS BID DRAWING REV. 0

BILL OF MATERIALS		
Single Phase Type NA3 (A3) - 30°-60° Angle		
ITEM	DESCRIPTION	QTY
d	Washer, 57 x 57 x 5 (2½" x 2¼" x 3/16"), 21 (13/16") HD	2
k	Insulator, Suspension, 152 (6") Clevis type, ANSI Class 52 - 1	2
o	Bolt, Eye, 16 x 229 (5/8" x 9"), thread 5" from tip	2
m	Suspension Clamp, Aluminum Alloy	1
tw	Wire, Tire, Al. Alloy, Soft, #4 AWG	8'
bv-1	Rod, Armor (Single Support), primary	1
bv-1	Rod, Armor (Single Support), neutral	1
s	Clevis, Secondary, Swinging	1
cm	Spool, Insulator, 44 (1-3/4") dia. Groove, Class 53-2	1
bo	Shackle, Anchor, Forged Steel, Galvanized	1
ek	Locknut, 16 (5/8")	2



TYPE NA3 (A3)

("30 - 60° Angle)

SCALE NTS

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. REFER TO BILL OF QUANTITIES FOR THE ACTUAL TYPE OF POLE STRUCTURE TO BE USED.
3. THIS DRAWING SHALL BE WORKED WITH CIVIL WORKS BID DRAWINGS.

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

TITLE: 7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" SINGLE PHASE (A3)

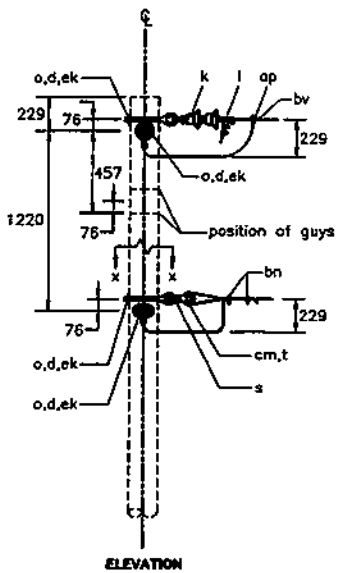
	BY	CHKD	DATE
DESIGNED			
DRAWN	JRPD		
REVIEWED	PRINCIPAL ENGR. / ARCHT.		
CIVIL/ARCHT			
ELEC.			
MECH.			

SUBMITTED: A. M. AGUILA
RECOMMENDED: G. C. LUNOD, JR.
APPROVED: G. B. MAGPOC, JR.

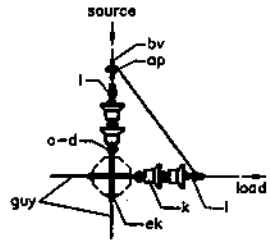
DWG. NO. MIPDL-BDE-04.022 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS BID DRAWING REV. 0

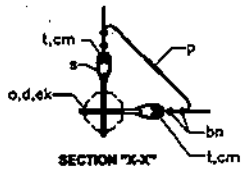
BILL OF MATERIALS		
Single Phase Type NA4 (A4) - 60°-90° Angle		
ITEM	DESCRIPTION	QTY
o	Bolt, Eye, 16 x 229 (5/8" x 9"), thread 5" from tip	4
l	Clamp, Deadend Strain	2
bn	Clamp, Loop Deadend	4
s	Clevis, Secondary, Swinging	2
p	Connector, Compression, Neutral	1
ap	Connector, Compression, Primary	1
k	Insulator, Suspension, 152 (6") Clevis type, ANSI Class 52 - 1	4
cm	Insulator, Spool, 44 (1-3/4") dia. Groove, ANSI Class 53 - 2	2
ek	Locknut, 16 (5/8")	4
bv	Preformed, Rod, Tapping	1
d	Washer, 57 x 57 x 5 (2¼" x 2¼" x 3/16"), 21 (13/16") HD	4
t	Wire, Tape, Armor, Al. Alloy, 13 x 8 (0.5" x 0.3")	2'



ELEVATION



TOP VIEW



SECTION "X-X"

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. REFER TO BILL OF QUANTITIES FOR THE ACTUAL TYPE OF POLE STRUCTURE TO BE USED.
3. FOR TYPE NA4 (A4), INSTALL HOTLINE CLAMP ON SOURCE SIDE.
4. FOR TYPE NA4 (A4), ALL END WIRES MUST BE PROPERLY WRAPPED 2" MINIMUM LENGTH.
5. THIS DRAWING SHALL BE WORKED WITH CIVIL WORKS BID DRAWINGS.

TYPE NA4 (A4)

("60 - 90" Angle)

SCALE NTS

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARIAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

TITLE: 7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" SINGLE PHASE (A4)

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

SUBMITTED: B. M. AGUILA, Project Engineer A, SEED

RECOMMENDED: ATTY. C. LUGOD, JR., Supervisor, SEED

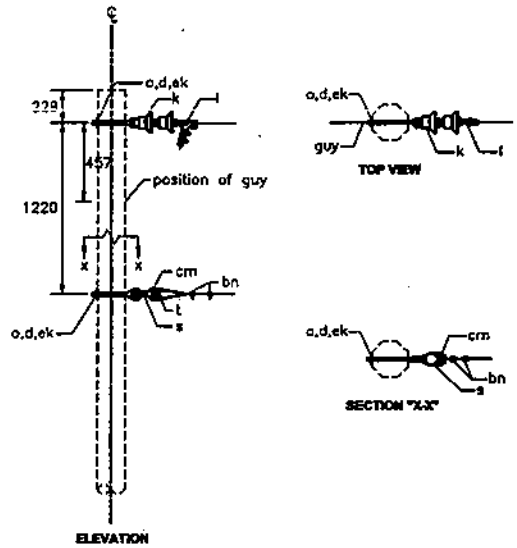
APPROVED: G. B. MAGPOC, JR., Manager, SEED

DWG. NO. MIPDL-BDE-04.023 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS BID DRAWING REV. 0

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

BILL OF MATERIALS		
Single Phase, Single Dead-End Type NA5 (A5)		
ITEM	DESCRIPTION	QTY
o	Bolt, Eye, 16 x 229 (5/8" x 9"), thread 5" from tip	2
l	Clamp, Deadend Strain	1
bn	Clamp, Loop Deadend	2
s	Clevis, Secondary, Swinging	1
cm	Insulator, Spool, 44 (1-3/4") dia. Groove, ANSI Class 53 - 2	1
k	Insulator, Suspension, 152 (6") Clevis type, ANSI Class 52 - 1	2
ek	Locknut, 16 (5/8")	2
d	Washer, 57 x 57 x 5 (2¼" x 2¼" x 3/16"), 21 (13/16") HD	2
t	Wire, Tape, Armor, Al. Alloy, 13 x 8 (0.5" x 0.3")	1'



TYPE NA5 (A5)

SCALE NTS

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. REFER TO BILL OF QUANTITIES FOR THE ACTUAL TYPE OF POLE STRUCTURE TO BE USED.
3. FOR TYPE NA5 (A5), ALL END WIRES MUST BE PROPERLY WRAPPED 2" MINIMUM LENGTH.
4. THIS DRAWING SHALL BE WORKED WITH CIVIL WORKS BID DRAWINGS.

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MARBATE

LOCATION: SAN JOSE, MARBATE

TITLE: 7.97/13.8KV DISTRIBUTION LINE "STEEL POLE" SINGLE PHASE (A5)

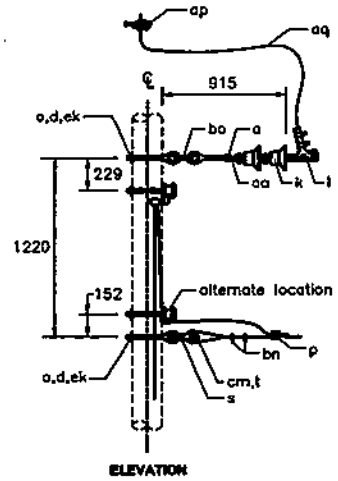
	BY	CHKD	DATE
DESIGNED			
DRAWN	JRPD		
REVIEWED	PRINCIPAL ENGR. / ARCHT.		
CIVIL/ARCHT			
ELEC.			
MECH.			

SUBMITTED: B. M. AGUILA, Principal Engineer A, EDCD
RECOMMENDED: C. Z. C. LUGOD, JR., Manager, EDCD
APPROVED: G. B. MAGPOC, JR., Manager, DSD

DWG. NO. MIPDL-BDE-04.024 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS BID DRAWING REV. 0

BILL OF MATERIALS		
Single Phase, Primary Tap Type NA5-2 (A5-2)		
ITEM	DESCRIPTION	QTY
d	Washer, 57 x 57 x 5 (2¼" x 2¼" x 3/16"), 21 (13/16") HD	2
k	Insulator, Suspension, 152 (6") Clevis type, ANSI Class 52 - 1	2
o	Bolt, Eye, 16 x 254 (5/8" x 10"), thread 5" from tip	2
p	Connector, Compression, Neutral	2
aa	Nut, Eye, 16 (5/8") Conventional	1
bo	Shackle, Anchor, Forged Steel, Galvanized	1
bv	Preformed, Rod, Tapping	1
ek	Locknut, 16 (5/8")	2
ap	Clamp, Hotline, #1/0 AWG ACSR to #1/0 AWG ACSR	1
l	Clamp, Deadend Strain	1
s	Clevis, Secondary, Swinging	1
cm	Insulator, Spool, 44 (1-3/4") dia. Groove, ANSI Class 53 - 2	1
bn	Clamp, Loop Deadend	2
t	Wire, Tape, Armor, Al. Alloy, 13 x 8 (0.5" x 0.3")	1'



TYPE NA5-2 (A5-2)

SCALE NTS

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. REFER TO BILL OF QUANTITIES FOR THE ACTUAL TYPE OF POLE STRUCTURE TO BE USED.
3. TYPE NA5-2 (A5-2) DRAWING MAY BE USED WITH DRAWINGS SUCH AS NB1, NB1-1, NB2, NC1, NC1-2, NC1-3, NC1-4, NC2-1, NC2-2.
4. THIS DRAWING SHALL BE WORKED WITH CIVIL WORKS BID DRAWINGS.

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOB TO PARAL, SAN JOSE, MARINATE

LOCATION: SAN JOSE, MARINATE

TITLE: 7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" SINGLE PHASE (A5-2)

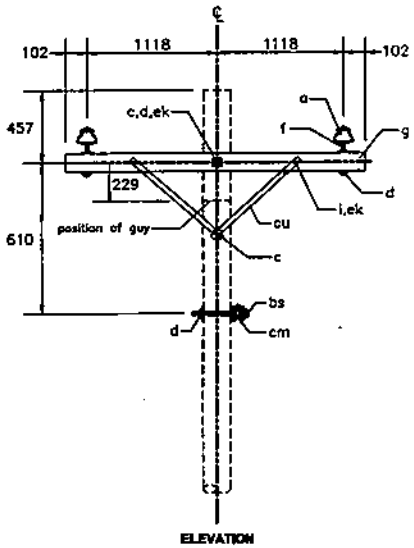
	BY	CHKD	DATE
DESIGNED	Ø		
DRAWN	JRPO		
REVIEWED	PRINCIPAL ENGR. / ARCHT.		
CIVIL/ARCHT			
ELEC.			
MECH.			

SUBMITTED: P. M. AGUILA
RECOMMENDED: ATTY. C. LUGOD, JR.
APPROVED: G. B. MAGPOC, JR.

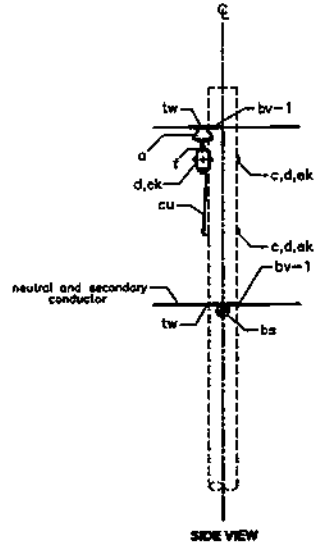
DWG. NO. MIPDL-BDE-04.025 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS BID DRAWING REV. 0

BILL OF MATERIALS		
Two Phase Crossarm Const Single Support Type NB1 (B1) - 0°-5° Angle		
ITEM	DESCRIPTION	QTY
i	Bolt, Carriage, 10 x 114 (3/8" x 4-1/2"), thread 3" from tip	2
c	Bolt, Machine, 16 x 254 (5/8" x 10"), thread 5" from tip	1
c	Bolt, Machine, 16 x 356 (5/8" x 14"), thread 8" from tip	1
bs	Bolt, Single Upset, 16 x 254 (5/8" x 10"), thread 5" from tip	1
cu	Brace, Steel Crossarm, Standard 711 (28")	2
g	Crossarm, 89 x 114 x 2440 (3-1/2" x 4-1/2" x 8'-0")	1
cm	Spool, Insulator, 44 (1-3/4") dia. Groove, Class 53-2	1
a	Insulator, Pin Type, ANSI Class 55-4	2
ek	Locknut, 10 (3/8")	2
ek	Locknut, 16 (5/8")	2
ek	Locknut, 13 (1/2")	1
f	Pin, Crossarm, Steel, 16 x 273 (5/8" x 10-3/4")	2
bv-1	Rod, Armor (Single Support), primary	2
bv-1	Rod, Armor (Single Support), neutral	1
d	Washer, 57 x 57 x 5 (2¼" x 2¼" x 3/16"), 21 (13/16") HD	3
tw	Wire, Tire, Al. Alloy, Soft, #4 AWG	24'
d	Washer, Round, 32 (1-1/4") OD, 11 (7/16") HD	2
d	Washer, 51 x 51 x 5 (2" x 2" x 1/8"), 11 (7/16") HD	1



ELEVATION



SIDE VIEW

TYPE NB1 (B1)

SCALE NTS

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. THIS DRAWING SHALL BE WORKED WITH CIVIL WORKS BID DRAWINGS.

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE EXTENSION PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MARBATE

LOCATION: SAN JOSE, MARBATE

TITLE: 7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" TWO PHASE (B1)

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

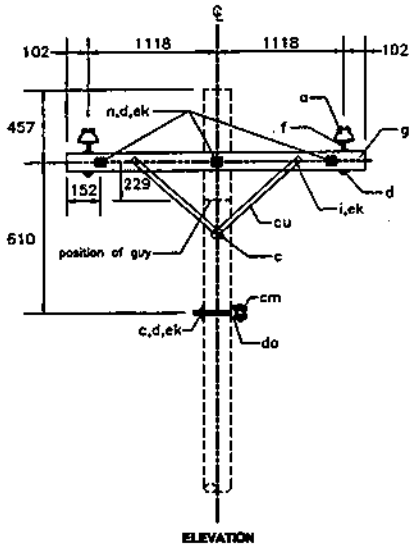
SUBMITTED: B. M. AGUILA, Project Engineer, LDEC

RECOMMENDED: Engr. C. LOGOD, JR., Manager, LDEC

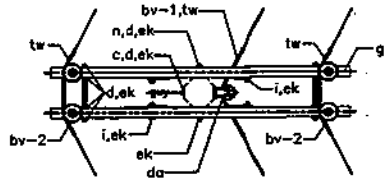
APPROVED: G. B. MAGPOC, JR., Manager, DDD

DWG. NO. MIPDL-BDE-04.026 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS BID DRAWING REV. 0



ELEVATION



TOP VIEW

BILL OF MATERIALS		
Two Phase Crossarm Const Double Support Type NB2 (B2) - 5°-30° Angle		
ITEM	DESCRIPTION	QTY
i	Bolt, Carriage, 10 x 114 (3/8" x 4-1/2"), thread 3" from tip	4
n	Bolt, Double Arming, 16 x 508 (5/8" x 20")	3
c	Bolt, Machine, 16 x 254 (5/8" x 10"), thread 5" from tip	1
c	Bolt, Machine, 13 x 254 (1/2" x 10"), thread 5" from tip	1
cu	Brace, Steel Crossarm, Standard 711 (28")	4
da	Bracket, Rigid clevis	1
g	Crossarm, 89 x 114 x 2440 (3-1/2" x 4-1/2" x 8'-0")	2
a	Insulator, Pin Type, ANSI Class 55-4	4
cm	Insulator, Spool, 44 (1-3/4") dia. Groove, ANSI Class 53 - 2	1
ek	Locknut, 10 (3/8")	4
ek	Locknut, 16 (5/8")	11
ek	Locknut, 13 (1/2")	1
f	Pin, Crossarm, Steel, 16 x 273 (5/8" x 10-3/4")	4
bv-1	Rod, Armor (Single Support), neutral	1
bv-2	Rod, Armor (Double Support), primary	2
d	Washer, 57 x 57 x 5 (2¼" x 2¼" x 3/16"), 21 (13/16") HD	11
tw	Wire, Tire, Al. Alloy, Soft, #4 AWG	40'
d	Washer, 51 x 51 x 5 (2" x 2" x 1/8"), 11 (7/16") HD	1
d	Washer, Round, 32 (1-1/4") OD, 11 (7/16") HD	1

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. THIS DRAWING SHALL BE WORKED WITH CIVIL WORKS BID DRAWINGS.

TYPE NB2 (B2)

SCALE NTS

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MAGBATE

LOCATION: SAN JOSE, MAGBATE

TITLE: 7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" TWO PHASE (B2)

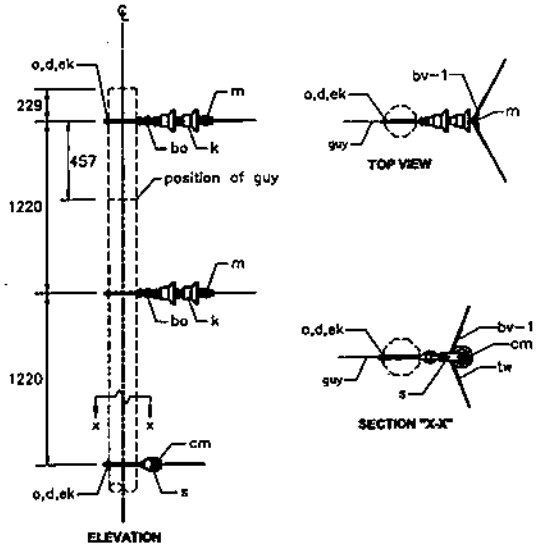
	BY	CHKD	DATE
DESIGNED			
DRAWN	JRPD		
REVIEWED	PRINCIPAL ENGR./ ARCHT.		
CIVIL/ARCHT			
ELEC.			
MECH.			

SUBMITTED: B. M. AGUILA, Supervising Engineer, DDD
RECOMMENDED: C. L. LUGOD, JR., Manager, DDD
APPROVED: G. B. MAGPOC, JR., Manager, DDD

DWG. NO. MIPDL-BDE-04.027 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS BID DRAWING REV. 0

BILL OF MATERIALS		
Two Phase, Vertical Cons's Type NB3 (B3) - 30°-60° Angle		
ITEM	DESCRIPTION	QTY
o	Bolt, Eye, 16 x 305 (5/8" x 12"), thread 5" from tip	3
m	Suspension Clamp, Aluminum Alloy	2
s	Clevis, Secondary, Swinging	1
cm	Insulator, Spool, 44 (1-3/4") dia. Groove, ANSI Class 53 - 2	1
k	Insulator, Suspension, 152 (6") Clevis type, ANSI Class 52 - 1	4
ek	Locknut, 16 (5/8")	3
bv-1	Rod, Armor (Single Support), primary	2
bv-1	Rod, Armor (Single Support), neutral	1
bo	Shackle, Anchor, Forged Steel, Galvanized	2
d	Washer, 57 x 57 x 5 (2¼" x 2¼" x 3/16"), 21 (13/16") HD	3
tw	Wire, Tire, Al. Alloy, Soft, #4 AWG	8'



TYPE NB3 (B3)

SCALE NTS

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. REFER TO BILL OF QUANTITIES FOR THE ACTUAL TYPE OF POLE STRUCTURE TO BE USED.
3. NEUTRAL WIRE MAY BE LOWERED TO C3 POSITION IF FUTURE CONVERSION IS LIKELY. DESIGNATE AS B3A FOR THIS CONSTRUCTION.
4. ALL END OF WIRES MUST BE PROPERLY WRAP 5 (2") MINIMUM LENGTH.
5. THIS DRAWING SHALL BE WORKED WITH CIVIL WORKS BID DRAWINGS.

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MARBATE

LOCATION: SAN JOSE, MARBATE

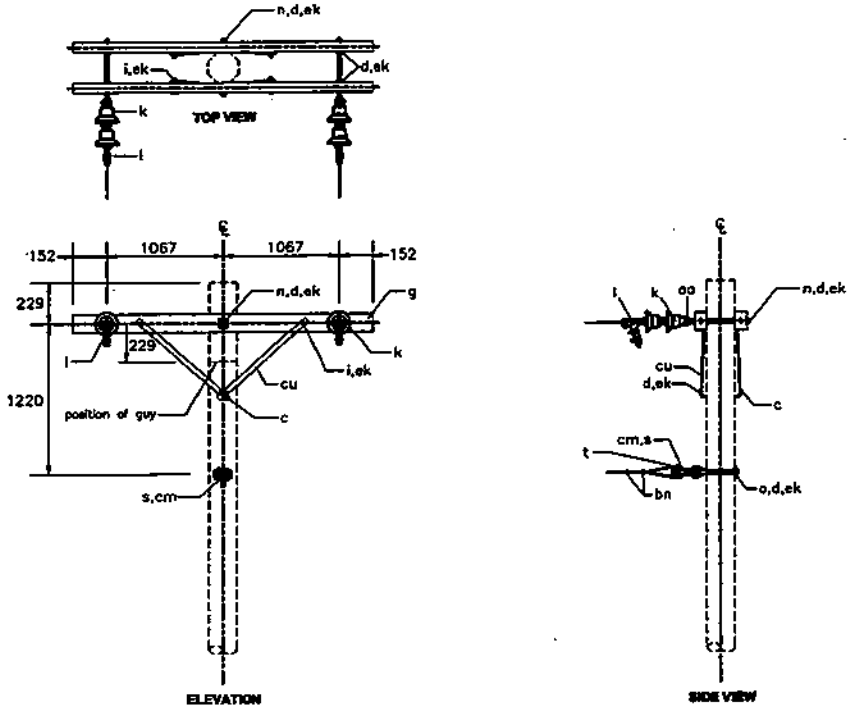
TITLE: 7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" TWO PHASE (B3)

	BY	CHKD	DATE
DESIGNED			
DRAWN	JRPD		
REVIEWED	PRINCIPAL ENGR. / ARCHT.		
ENG./ARCHT.			
S.E.			
MECH.			

SUBMITTED: B. M. AGUILA, Project Engineer A, EEDD
RECOMMEND: E. Z. CRUGOD, JR., Manager, EEDD
APPROVED: G. B. MAGPOC, JR., Manager, DDD

DWG. NO. MIPDL-BDE-04.028 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS BID DRAWING REV. 0



TYPE NB7 (B7)

SCALE NTS

BILL OF MATERIALS		
Two Phase Crossarm Const Single Dead End Type NB7 (B7)		
ITEM	DESCRIPTION	QTY
i	Bolt, Carriage, 10 x 114 (3/8" x 4-1/2"), thread 3" from tip	4
o	Bolt, Eye, 16 x 254 (5/8" x 10"), thread 5" from tip	1
n	Bolt, Double Arming, 16 x 508 (5/8" x 20")	3
c	Bolt, Machine, 13 x 254 (1/2" x 10"), thread 5" from tip	1
cu	Brace, Steel Crossarm, Standard 711 (28")	4
bn	Clamp, Loop Deadend	2
l	Clamp, Deadend Strain	2
s	Clevis, Secondary, Swinging	1
g	Crossarm, 89 x 114 x 2440 (3-1/2" x 4-1/2" x 8'-0")	2
k	Insulator, Suspension, 152 (6") Clevis type, ANSI Class 52 - 1	4
cm	Insulator, Spool, 44 (1-3/4") dia. Groove, ANSI Class 53 - 2	1
ek	Locknut, 13 (1/2")	1
ek	Locknut, 16 (5/8")	7
ek	Locknut, 10 (3/8")	4
aa	Nut, Eye, 16 (5/8") Conventional	2
d	Washer, Round 35 (1-3/8") OD, 14 (9/16") HD	4
d	Washer, 57 x 57 x 5 (2¼" x 2¼" x 3/16"), 21 (13/16") HD	12
d	Washer, 51 x 51 x 5 (2" x 2" x 1/8"), 11 (7/16") HD	1
t	Wire, Tape, Armor, Al. Alloy, 13 x 8 (0.5" x 0.3")	2'

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. REFER TO BILL OF QUANTITIES FOR THE ACTUAL TYPE OF POLE STRUCTURE TO BE USED.
3. ALL END OF WIRES MUST BE PROPERLY WRAP 5 (2") MINIMUM LENGTH.
4. THIS DRAWING SHALL BE WORKED WITH CIVIL WORKS BID DRAWINGS.

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PAMAL, SAN JOSE, MARINDUQUE

LOCATION: SAN JOSE, MARINDUQUE

TITLE: 7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" TWO PHASE (B7)

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

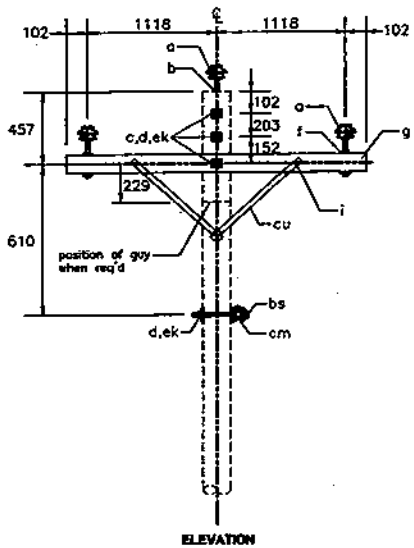
SUBMITTED: E. M. AGUILA, Project Manager, LDO

RECOMMENDED: O. C. LUGOD, JR., Manager, LDO

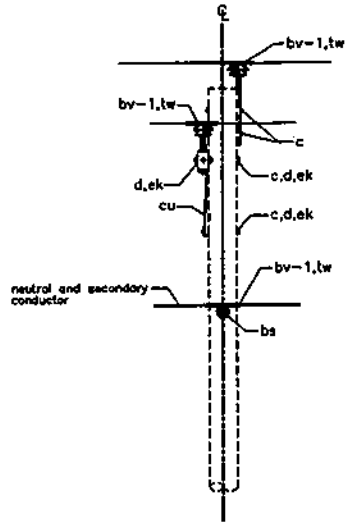
APPROVED: G. B. MAGPOC, JR., Manager, DDO

DWG. NO. MIPDL-BDE-04.029 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS BID DRAWING REV. 0



ELEVATION



SIDE VIEW

BILL OF MATERIALS		
Three Phase Crossarm Const Single Support Type NC1 (C1) - 0°-5°		
ITEM	DESCRIPTION	QTY
l	Bolt, Carriage, 10 x 114 (3/8" x 4-1/2"), thread 3" from tip	2
c	Bolt, Machine, 13 x 254 (1/2" x 10"), thread 5" from tip	1
c	Bolt, Machine, 16 x 254 (5/8" x 10"), thread 5" from tip	2
c	Bolt, Machine, 16 x 356 (5/8" x 14"), thread 8" from tip	1
bs	Bolt, Single Upset, 16 x 254 (5/8" x 10"), thread 5" from tip	1
cu	Brace, Steel Crossarm, Standard 711 (28")	2
g	Crossarm, 89 x 114 x 2440 (3-1/2" x 4-1/2" x 8'-0")	1
a	Insulator, Pin Type, ANSI Class 56-2	3
cm	Insulator, Spool, 44 (1-3/4") dia. Groove, ANSI Class 53 - 2	1
ek	Locknut, 10 (3/8")	2
ek	Locknut, 16 (5/8")	3
ek	Locknut, 13 (1/2")	1
f	Pin, Crossarm, Steel, 16 x 273 (5/8" x 10-3/4")	2
b	Pin, Pole Top, 508 (20")	1
bv-1	Rod, Armor (Single Support), primary	3
bv-1	Rod, Armor (Single Support), neutral	1
d	Washer, 57 x 57 x 5 (2¼" x 2¼" x 3/16"), 21 (13/16") HD	6
tw	Wire, Tire, Al. Alloy, Soft, #4 AWG	32'
d	Washer, 51 x 51 x 3 (2" x 2" x 1/8"), 14 (9/16") HD	1
d	Washer, Round, 32 (1-1/4") OD, 11 (7/16") HD	2

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. REFER TO BILL OF QUANTITIES FOR THE ACTUAL TYPE OF POLE STRUCTURE TO BE USED.
3. THIS DRAWING SHALL BE WORKED WITH CIVIL WORKS BID DRAWINGS.

TYPE NC1 (C1)

SCALE NTS

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PAJAL, SAN JOSE, BATANGAS

LOCATION: SAN JOSE, BATANGAS

TITLE: 7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" THREE PHASE (C1)

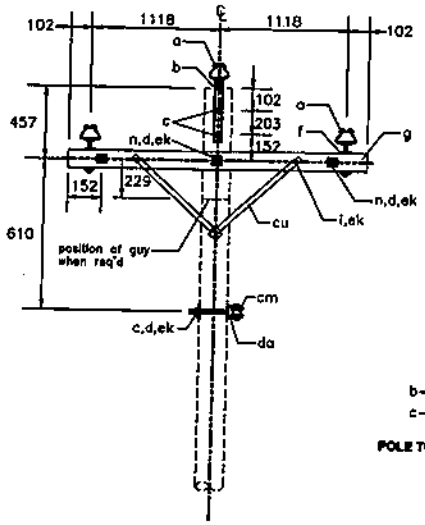
	BY	CHKD	DATE
DESIGNED	Ø		
DRAWN	JRPD		
REVIEWED	PRINCIPAL ENGR. / ARCHT.		
CHLD/ARCHT			
ELEC.			
MECH.			

SUBMITTED: E. M. AGUILA
RECOMMENDED: O. Z. C. LUGOD, JR.
APPROVED: G. B. MAGPOC, JR.

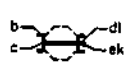
DWG. NO. MIPDL-BDE-04.030 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS BID DRAWING REV. 0

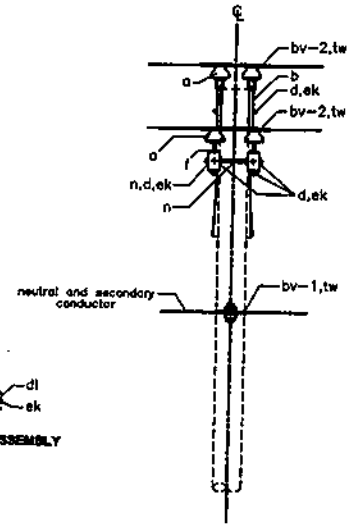
REV.	DATE	NATURE OF REVISION	BY	CHKD.	RECD.	APPD.



ELEVATION



POLE TOP PIN ASSEMBLY



SIDE VIEW

TYPE NC2 (C2)

SCALE NTS

BILL OF MATERIALS		
Three Phase Crossarm Const Double Support Type NC2 (C2) - 5°-30°		
ITEM	DESCRIPTION	QTY
i	Bolt, Carriage, 10 x 114 (3/8" x 4-1/2"), thread 3" from tip	4
n	Bolt, Double Arming, 16 x 559 (5/8" x 22")	3
c	Bolt, Machine, 16 x 305 (5/8" x 12"), thread 5" from tip	1
c	Bolt, Machine, 16 x 254 (5/8" x 10"), thread 5" from tip	2
c	Bolt, Machine, 13 x 254 (1/2" x 10"), thread 5" from tip	1
cu	Brace, Steel Crossarm, Standard 711 (28")	4
da	Bracket, Rigid clevis	1
g	Crossarm, 89 x 114 x 2440 (3-1/2" x 4-1/2" x 8'-0")	2
cm	Spool, Insulator, 76 (3") dia. Groove, Class 53 - 4	1
a	Insulator, Pin Type, ANSI Class 56-2	6
ek	Locknut, 16 (5/8")	13
ek	Locknut, 10 (3/8")	4
ek	Locknut, 13 (1/2")	1
dl	Pipe, Spacer, 19 (3/4") dia. x 38 (1-1/2")	2
b	Pin, Pole Top, 508 (20")	2
f	Pin, Crossarm, Steel, 16 x 273 (5/8" x 10-3/4")	4
bv-1	Rod, Armor (Single Support), neutral	1
bv-2	Rod, Armor (Double Support), primary	3
tw	Wire, Tire, Al. Alloy, Soft, #4 AWG	56'
d	Washer, 57 x 57 x 5 (2¼" x 2¼" x 3/16"), 21 (13/16") HD	13
d	Washer, 51 x 51 x 3 (2" x 2" x 1/8"), 14 (9/16") HD	1
d	Washer, Round, 32 (1-1/4") OD, 11 (7/16") HD	4

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. REFER TO BILL OF QUANTITIES FOR THE ACTUAL TYPE OF POLE STRUCTURE TO BE USED.
3. THIS DRAWING SHALL BE WORKED WITH CIVIL WORKS BID DRAWINGS.

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MARINATE

LOCATION: SAN JOSE, MARINATE

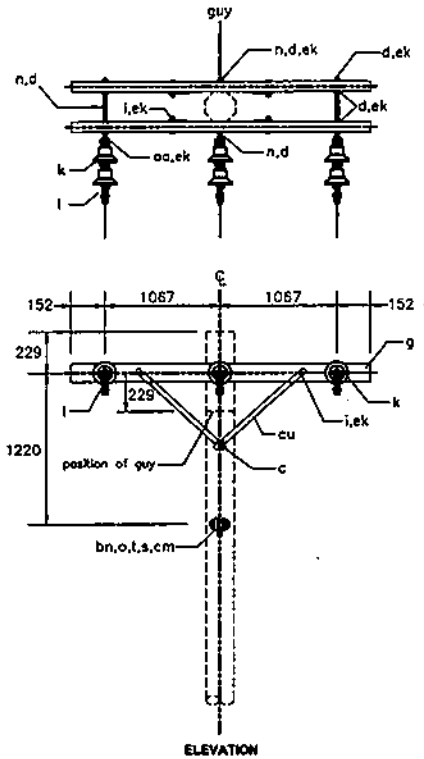
TITLE: 7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" THREE PHASE (C2)

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

SUBMITTED: E. M. AGUILA, Project Engineer, NPC
RECOMMENDED: E. Z. C. LUGOD, JR., Manager, NPC
APPROVED: G. B. MAGPOC, JR., Manager, NPC

DWG. NO. MIPDL-BDE-04.031 SPECS. NO. LuzP23Z1819Sdg

SCALE: NTS | BID DRAWING | REV. 0



ELEVATION

TYPE NC7 (C7)
SCALE NTS

BILL OF MATERIALS		
Three Phase Crossarm Const Single Dead-End Type NC7 (C7)		
ITEM	DESCRIPTION	QTY
cu	Brace, Steel Crossarm, Standard 711 (28")	4
i	Bolt, Carriage, 10 x 114 (3/8" x 4-1/2"), thread 3" from tip	4
n	Bolt, Double Arming, 16 x 559 (5/8" x 22")	3
o	Bolt, Eye, 16 x 305 (5/8" x 12"), thread 5" from tip	1
cu	Bolt, Machine, 16 x 254 (5/8" x 10"), thread 5" from tip	7
l	Clamp, Deadend Strain	3
bn	Clamp, Loop Deadend	2
s	Clevis, Secondary, Swinging	1
g	Crossarm, 89 x 114 x 2440 (3-1/2" x 4-1/2" x 8'-0")	2
cm	Spool, Insulator, 76 (3") dia. Groove, Class 53 - 4	1
k	Insulator, Suspension, 152 (6") Clevis type, ANSI Class 52 - 1	6
ek	Locknut, 10 (3/8")	4
ek	Locknut, 16 (5/8")	11
ek	Locknut, 13 (1/2")	1
aa	Nut, Eye, 16 (5/8") Conventional	3
t	Wire, Tape, Armor, Al. Alloy, 13 x 8 (0.5" x 0.3")	1'
d	Washer, 57 x 57 x 5 (2¼" x 2¼" x 3/16"), 21 (13/16") HD	11
d	Washer, 51 x 51 x 3 (2" x 2" x 1/8"), 14 (9/16") HD	1
d	Washer, Round, 32 (1-1/4") OD, 11 (7/16") HD	4

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. REFER TO BILL OF QUANTITIES FOR THE ACTUAL TYPE OF POLE STRUCTURE TO BE USED.
3. ALL END OF WIRES MUST BE PROPERLY WRAP 5 (2") MINIMUM LENGTH.
4. THIS DRAWING SHALL BE WORKED WITH CIVIL WORKS BID DRAWINGS.

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

TITLE: **7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" THREE PHASE (C7)**

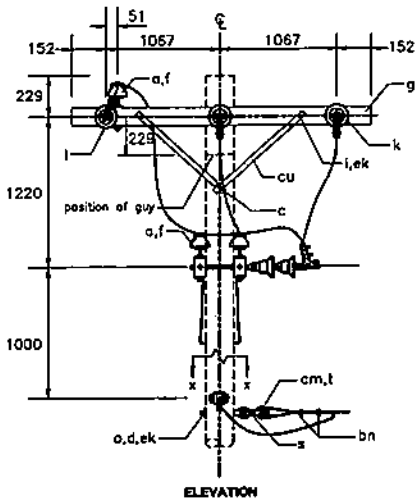
	BY	CHKD	DATE
DESIGNED			
DRAWN	JRPD		
REVIEWED	PRINCIPAL ENGR./ ARCHT.		
CIVIL/ARCHT			
ELEC.			
MECH.			

SUBMITTED: B. M. AGUILA
RECOMMENDED: C. C. LUGOD, JR.
APPROVED: G. B. MAGPOC, JR.

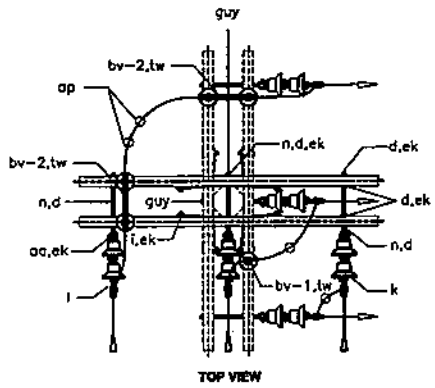
DWG. NO. MIPDL-BDE-04.032 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS | **BID DRAWING** | REV. 0

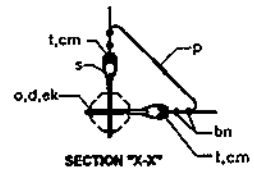
REV.	DATE	NATURE OF REVISION	BY	CHKD.	RECD.	APPD.



ELEVATION



TOP VIEW



SECTION "X-X"

BILL OF MATERIALS		
Three Phase Crossarm Const'd Double Dead-End Type NC7-2 (C7-2)		
ITEM	DESCRIPTION	QTY
cu	Brace, Steel Crossarm, Standard 711 (28")	8
i	Bolt, Carriage, 10 x 114 (3/8" x 4-1/2"), thread 3" from tip	8
n	Bolt, Double Arming, 16 x 559 (5/8" x 22")	6
o	Bolt, Eye, 16 x 305 (5/8" x 12"), thread 5" from tip	2
cu	Bolt, Machine, 16 x 254 (5/8" x 10"), thread 5" from tip	14
l	Clamp, Deadend Strain	6
bn	Clamp, Loop Deadend	4
s	Clevis, Secondary, Swinging	2
g	Crossarm, 89 x 114 x 2440 (3-1/2" x 4-1/2" x 8'-0")	4
cm	Spool, Insulator, 76 (3") dia. Groove, Class 53 - 4	2
k	Insulator, Suspension, 152 (6") Clevis type, ANSI Class 52 - 1	12
ek	Locknut, 10 (3/8")	8
ek	Locknut, 16 (5/8")	22
ek	Locknut, 13 (1/2")	2
aa	Nut, Eye, 16 (5/8") Conventional	6
t	Wire, Tape, Armor, Al. Alloy, 13 x 8 (0.5" x 0.3")	2'
tw	Wire, Tire, Al. Alloy, Soft, #4 AWG	5'
d	Washer, 57 x 57 x 5 (2¼" x 2¼" x 3/16"), 21 (13/16") HD	22
d	Washer, 51 x 51 x 3 (2" x 2" x 1/8"), 14 (9/16") HD	2
d	Washer, Round, 32 (1-1/4") OD, 11 (7/16") HD	8
a	Insulator, Pin Type, ANSI Class 55-4	5
f	Pin, Crossarm, Steel, 16 x 273 (5/8" x 10-3/4")	5
bv-1	Rod, Armor (Single Support), primary	1
bv-2	Rod, Armor (Double Support), primary	2
p	Connector, Compression, Neutral	1
ap	Connector, Compression, Primary	4

TYPE NC7-2 (C7-2)

SCALE NTS

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

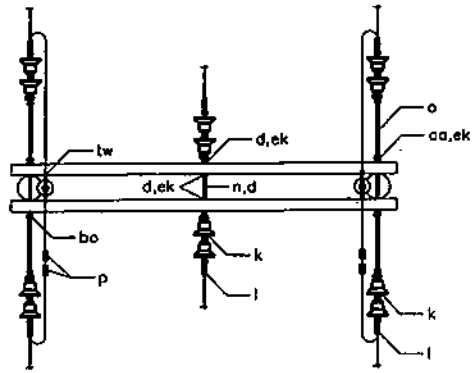
TITLE: 7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" THREE PHASE (C7-2)

	BY	CHKD	DATE
DESIGNED	[illegible]		
DRAWN	RPD		
REVIEWED	PRINCIPAL ENGR. / ARCHT.		
CIVIL/ARCHT			
ELEC.			
MECH.			

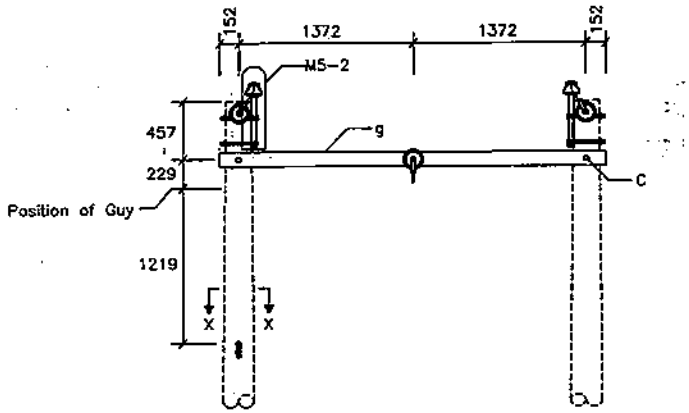
SUBMITTED: E. M. AGUILA, Project Engr. A, EDDD
RECOMMENDED: C. Z. C. LUGOD, JR., Manager, EDCD
APPROVED: G. B. MAGPOC, JR., Manager, DDD

DWG. NO. MIPDL-BDE-04.033 SPECS. NO. LuzP23Z1619Sdg

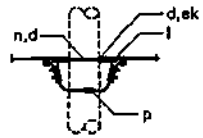
SCALE: NTS BID DRAWING REV. 0



TOP VIEW



ELEVATION



SECTION "X-X"

TYPE NC8X (C8X)

BILL OF MATERIALS		
Three Phase Crossarm Const Double Dead-End Type NC8X (C8X)		
ITEM	DESCRIPTION	QTY
n	Bolt, Double Arming, 16 x 610 (5/8" x 24")	3
o	Bolt, Eye, 16 x 457 (5/8" x 18"), thread 5" from tip	4
l	Clamp, Deadend Strain	8
p	Connector, Compression, Neutral (#2 AWG run to #2 AWG)	1
p	Connector, Compression, Primary (1/0 AWG run to 1/0 AWG)	4
g	Crossarm, 89 x 114 x 2440 (3-1/2" x 4-1/2" x 8'-0")	2
k	Insulator, Suspension, 152 (6") Clevis type, ANSI Class 52 - 1	12
ek	Locknut, 16 (5/8")	6
ek	Locknut, 10 (3/8")	1
aa	Nut, Eye, 16 (5/8") Conventional	6
bo	Shackle, Anchor, Forged Steel, Galvanized	10
d	Washer, 57 x 57 x 5 (2¼" x 2¼" x 3/16"), 21 (13/16") HD	4
tw	Wire, Tape, Armor, AL Alloy, 13 x 8 (0.5" x 0.3")	2'
d	Washer, Round 35 (1-3/8") OD, 14 (9/16") HD	4
M5-2		2
av	Jumper & leads	As req'd

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. REFER TO BILL OF QUANTITIES FOR THE ACTUAL TYPE OF POLE STRUCTURE TO BE USED.
3. THIS DRAWING SHALL BE WORKED WITH CIVIL WORKS BID DRAWINGS.

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MARBATE

LOCATION: SAN JOSE, MARBATE

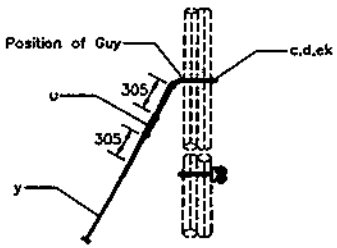
TITLE: 7.97/13.8kV DISTRIBUTION LINE "STEEL POLE" THREE PHASE (C8X)

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

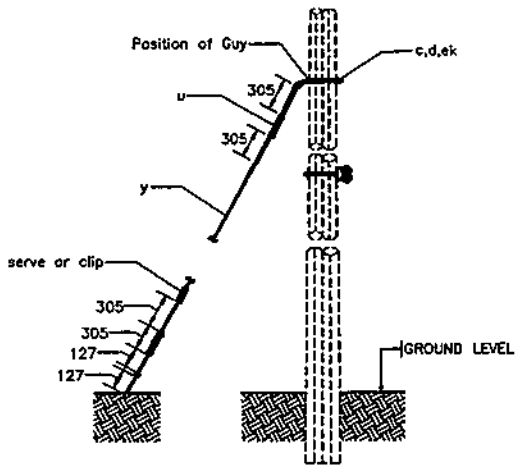
SUBMITTED: R. M. AGUILA, Principal Engineer A, DDD
RECOMMENDED: P. C. LUGOD, JR., Manager, DDD
APPROVED: G. B. MAGPOC, JR., Manager, DDD

DWG. NO. MIPDL-BDE-04.034 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS BID DRAWING REV. 0



POLE PIN ASSEMBLY

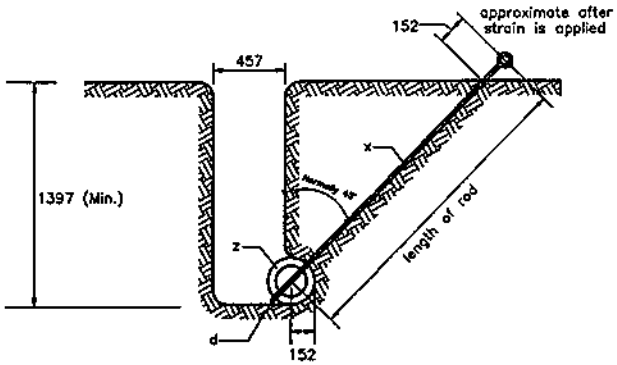


E1-2
SCALE NTS

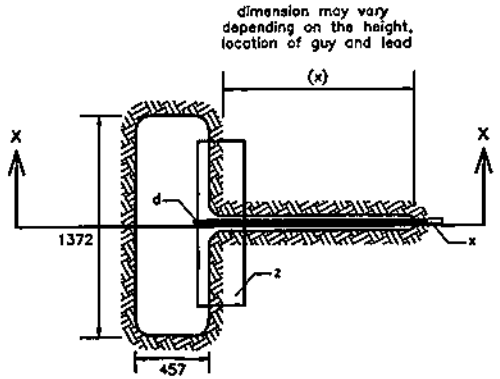
BILL OF MATERIALS		
ITEM	DESCRIPTION	QTY.
	E1-2 (Single Down Guy, Through Bolt Type)	
c	Bolt, Thimble Eye, Angle Type, 16 x 254 (5/8" x 10"), thread 5" from Ep	1
y	Guy Wire, Steel Galvanized, 3/8" dia., 7-strands	50'
u	Guy Clamp, 3 Bolt 6" long	2
ek	Locknut, 5/8"	1
d	Washer, 57 x 57 x 5 (2¼" x 2¼" x 3/16"), 21 (13/16") HD	1
	F2-2 (Anchor Log Assembly)	
z	Anchor Log, 9" dia. x 4' - 6"	1
x	Rod, Anchor, Threaded, Thimble Eye, 19 x 2440 (3/4" x 8') with locknut	1
d	Washer, 102 x 102 x 13 (4" x 4" x 1/2"), 21 (13/16") HD	1

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. (x) DIMENSIONS MAY VARY DEPENDING ON THE HEIGHT, LOCATION OF GUY, AND LENGTH OF GUY LEAD.
3. WORK THIS DRAWING WITH CIVIL WORKS BID DRAWINGS.



SECTION "X-X"



F2-2
SCALE NTS

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8kV DISTRIBUTION LINE (EXTENSION PROJECT FOR MALAKING-ILOG TO FARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

TITLE: 7.97/13.8kV DISTRIBUTION LINE
SINGLE DOWN GUY, THROUGH BOLT TYPE & ANCHOR LOG DETAIL
(E1-2 & F2-2)

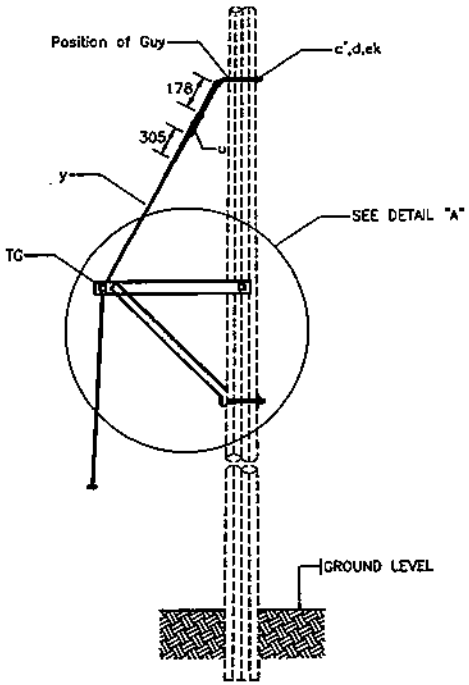
	BY	CHKD	DATE
DESIGNED			
DRAWN	JAPD		
REVIEWED	PRINCIPAL ENGR. / ARCHT.		
CHLM/ENT			
ELEC.			
MECH.			

SUBMITTED: E. M. AGUILA
RECOMMENDED: G. C. LUGOD, JR.
APPROVED: G. B. MAGPOC, JR.

DWG. NO. MIPDL-BDE-04.035 SPECS. NO. LuzP23Z1619Sdg

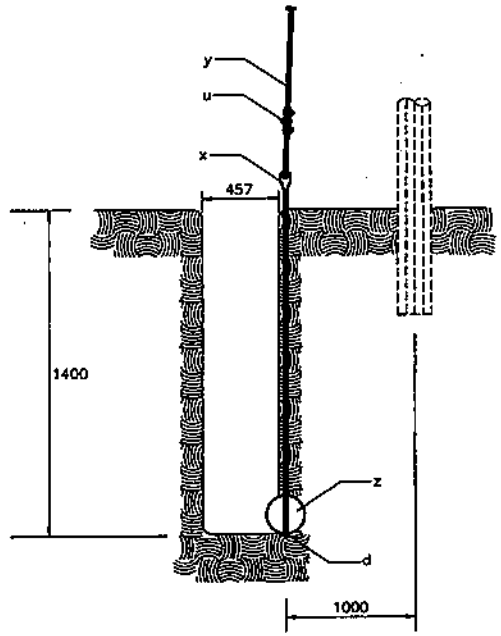
SCALE: NTS | BID DRAWING | REV. 0

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



E1-2A

SCALE NTS



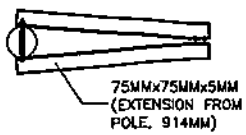
F2-2A

SCALE NTS

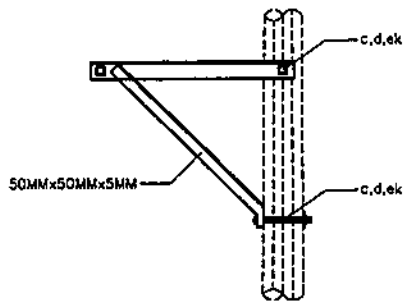
BILL OF MATERIALS		
ITEM	DESCRIPTION	QTY.
	E1-2A (Truss Guy Details)	
c'	Bolt, Thimble Eye, Angle Type, 16 x 254 (5/8" x 10"), thread 5" from tip	1
e	Clamp, Guy Straight, 3 Bolt Heavy Duty, Steel	2
ek	Locknut, 16 (5/8")	1
ek	Locknut, 19 (3/4")	1
ek	Locknut, 13 (1/2")	1
d	Washer, 57 x 57 x 5 (2½" x 2½" x 3/16"), 21 (13/16") HD	3
y	Guy Wire, Steel Galvanized, 3/8" dia., 7-strands	50'
TG	Truss guy	1
c	Bolt, Machine, 19 x 305 (3/4" x 12"), thread 5" from tip	1
c	Bolt, Machine, 13 x 305 (1/2" x 12"), thread 5" from tip	1
	F2-2A (Anchor Log Details)	
z	Anchor Log, 9" dia. x 4'-6"	1
x	Rod, Anchor, Threaded, Thimble Eye, 19 x 2440 (3/4" x 8') with locknut	1
d	Washer, 102 x 102 x 13 (4" x 4" x 1/2"), 21 (13/16") HD	1

NOTES:

1. ALL DIMENSIONS/CLERANCES ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. FOR BIDDING PURPOSES ONLY. NECESSARY ADJUSTMENT INCLUDING ALL NECESSARY MATERIALS TO FUNCTION AS INTENDED SHALL BE DETERMINED BY THE CONTRACTOR BASED ON THE ACTUAL REQUIREMENTS.
3. WORK THIS DRAWING CIVIL WORKS BID DRAWINGS.



PLAN



DETAIL "A"

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAYING-ILOG TO PARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

TITLE: **7.97/13.8kV DISTRIBUTION LINE**
TRUSS GUY & ANCHOR LOG DETAIL
(E1-2A & F2-2A)

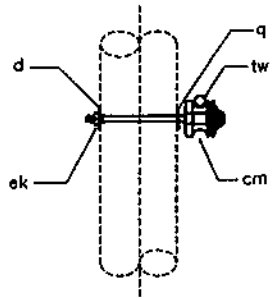
	BY	CHKD	DATE
DESIGNED			
DRAWN	JRPD		
REVIEWED	PRINCIPAL ENGR. / ARCHT.		
CIVIL/ARCHT			
ELEC.			
MECH.			

SUBMITTED: B. M. AGUILA, Project Engineer, ATEDD
RECOMMENDED: C. C. LUGOD, JR., Manager, EEDD
APPROVED: G. B. MAGPOC, JR., Manager, DDD

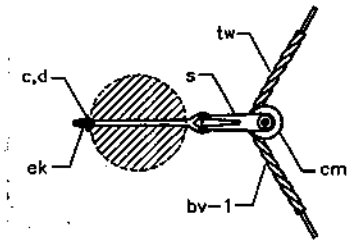
DWG. NO. MIPDL-BDE-04.036 | SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS | **BID DRAWING** | REV. 0

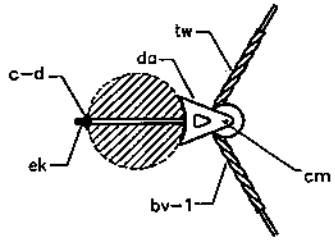
BILL OF MATERIALS		
ITEM	DESCRIPTION	QTY.
	J5	
d	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" Hole	1
ek	Locknut, 5/8"	1
q	Bolt, double upset, 5/8"x10"	1
cm	Insulator, Spool, 1 3/4" dia. Groove, Class 53 – 2	1
tw	Wire, Tie	8"
	J7	
c	Bolt, machine, 5/8" x 10"	1
d	Washer, 2 1/4" x 2 1/4" x 3/16", 13/15" Hole	1
ek	Locknut, 5/8"	1
cm	Insulator, Spool, 1-3/4" dia. Groove	1
s	Clevis, secondary, swinging insulated	1
bv-1	Rod, Armor, Single Support, Neutral	1
tw	Wire, Tie	8"
	J10	1
c	Bolt, machine, 5/8" x 10"	1
d	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" Hole	1
ek	Locknut, 5/8"	1
cm	Insulator, Spool, 3" dia. Groove	1
da	Bracket	1
bv-1	Rod, Armor, Single Support, Neutral	1
tw	Wire, Tie	8"
	J15	
bn	Clamp, Loop, Deadend	1
s	Clevis, Secondary, Swinging	1
t	Wire, Tape, Armor, Al. Alloy 0.5" x 0.3"	1
o	Bolt, eye 5/8" x 10"	1
cm	Insulator, Spool, 3" dia. Groove	1
d	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" Hole	1
ek	Locknut, 5/8"	1
	J15A	
bn	Clamp, Loop, Deadend	1
s	Clevis, Secondary, Swinging	1
t	Wire, Tape, Armor, Al. Alloy 0.5" x 0.3"	1
ca	Nut, eye 5/8"	1
cm	Insulator, Spool, 3" dia. Groove	1
ek	Locknut, 5/8"	1
o	Bolt, eye 5/8" x 10"	1



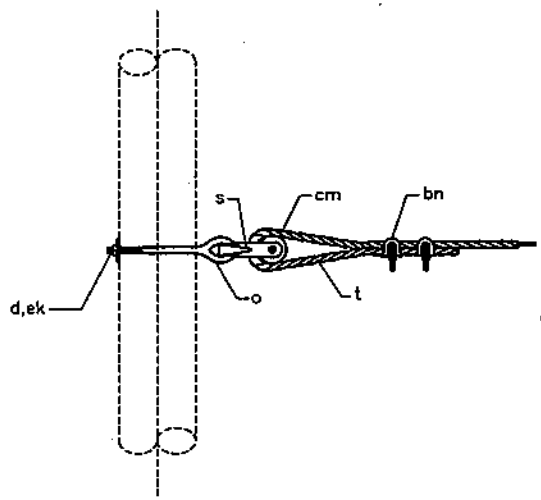
J5
(0°-5° Angle)



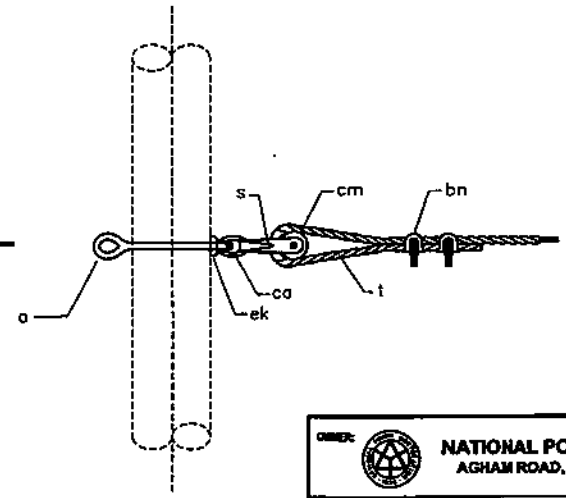
J7
(30°-60° Angle)



J10
(5°-30° Angle)



J15



J15A

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. ALL END OF WIRES MUST BE PROPERLY WRAPPED 50 (2") MINIMUM LENGTH.
3. WORK THIS DRAWING WITH CEAD DRAWINGS.

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

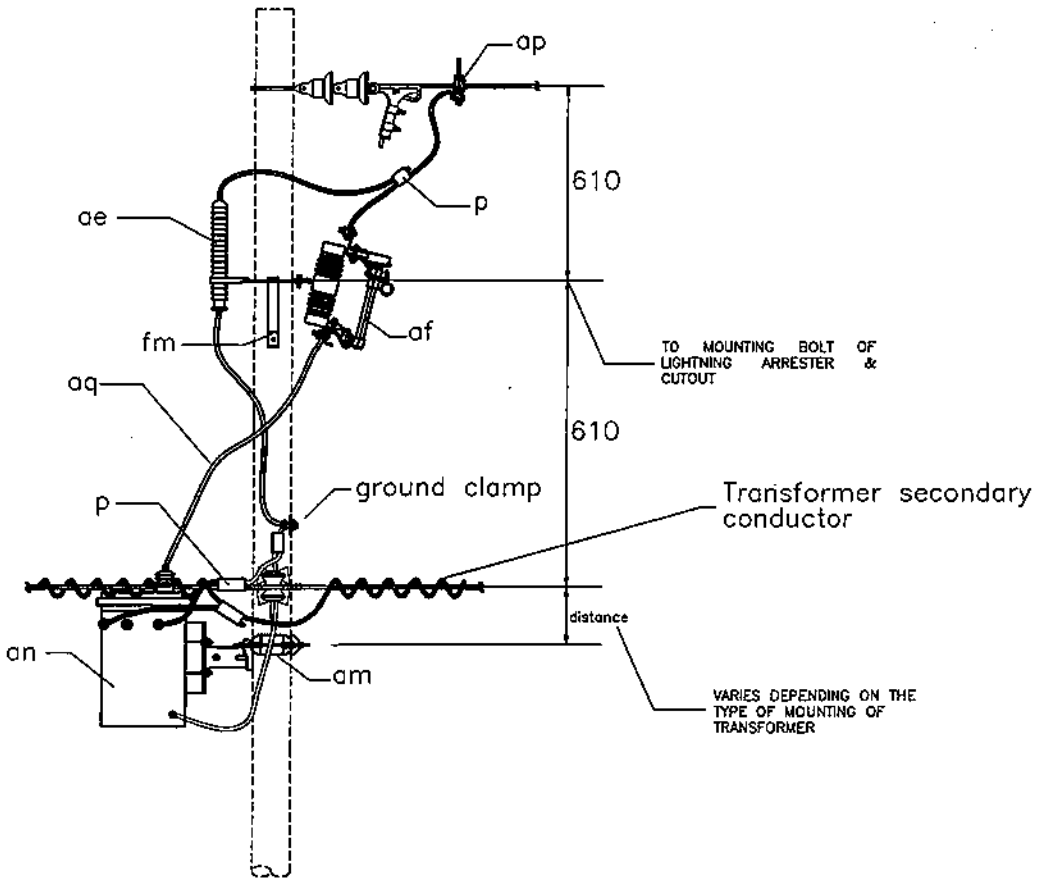
TITLE: **7.97/13.8kV DISTRIBUTION LINE SECONDARY ASSEMBLIES**
(J5, J7, J10, J15, J15A)

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

SUBMITTED: S. M. AGUILA
RECOMMENDED: C. C. LUGOD, JR.
APPROVED: G. B. MAGPOC, JR.

DWG. NO. MIPDL-BDE-04.037 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS **BID DRAWING** REV. 0



TRANSFORMER LAYOUT

SCALE NTS

BILL OF MATERIALS		
ITEM	DESCRIPTION	QTY
ae	Arrester, Lightning	1
fm	Bracket, Combination Cutout and Arrester	1
ap	Clamp, Hotline	1
p	Connector, Compression, Neutral	2
p	Connector, Compression, Transformer Primary	1
p	Connector, Compression, Transformer Secondary	1
af	Cutout, 15kV fuse, complete with mounting brackets	1
an	Transformer, Completely Self Protected, Pole type	1
aq	Wire, Jumper, #4 for (5 & 10kVA), #2 for (15kVA)	10'
am	Bracket, Standard 6" Cluster-segment type, Transformer Mount	1

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. TYPICAL CONNECTION TO SINGLE PHASE POLE STRUCTURE.
3. ARRESTER, FUSE CUTOUT, & TRANSFORMER CAPACITY RATING SHALL BE REFERRED TO THE TECHNICAL DATA SHEETS.
4. WORK THIS DRAWING WITH CIVIL WORKS BID DRAWINGS.

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO FARAL, SAN JOSE, NASSATE

LOCATION: SAN JOSE, NASSATE

TITLE: 7.97/13.8kV DISTRIBUTION LINE
SINGLE PHASE TRANSFORMER
(G12-1)

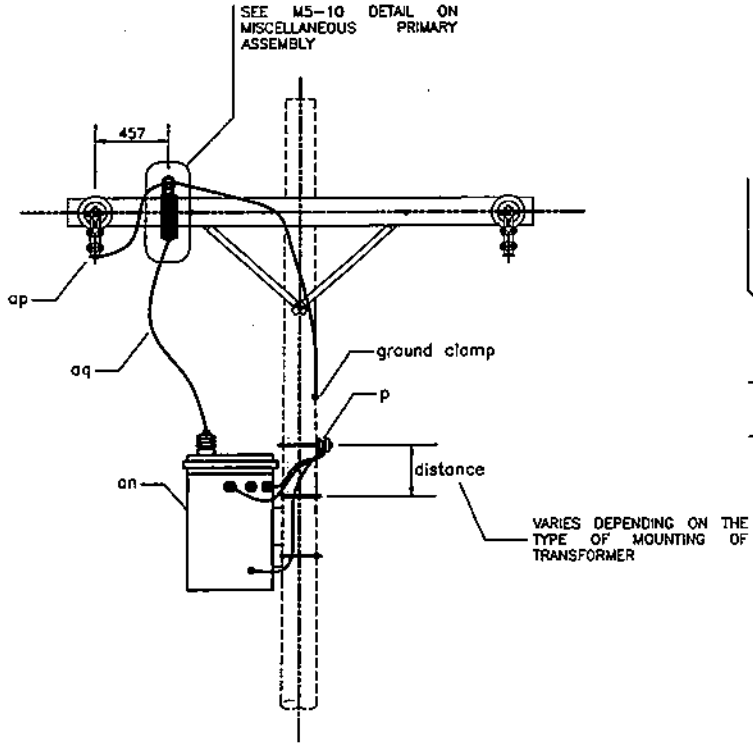
	BY	CHKD	DATE
DESIGNED			
DRAWN	JRPD		
REVIEWED	PRINCIPAL ENGR./ARCHT.		
CIVIL/ARCHT			
ELEC.			
MECH.			

SUBMITTED: B. M. AGUILA
RECOMMEND: C. Z. C. LUGOD, JR.
APPROVED: G. B. MAGPOC, JR.

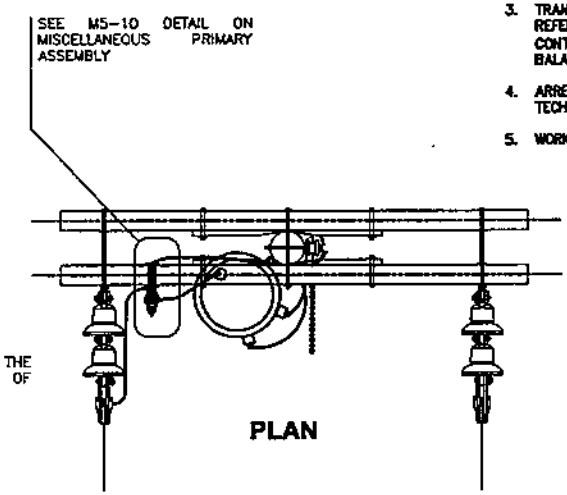
DWG. NO. MIPDL-BDE-04.038 SPEC. NO. LuzP23Z1619Sdg

SCALE: NTS BID DRAWING REV. 0

BILL OF MATERIALS		
ITEM	DESCRIPTION	QTY
ap	Clamp, Hotline	1
p	Connector, Compression, Neutral	2
p	Connector, Compression, Transformer Primary	1
p	Connector, Compression, Transformer Secondary	1
an	Transformer, Completely Self Protected, Pole type complete with the required mounting bracket	1
aq	Wire, Jumper, #4 for (5 & 10kVA), #2 for (15kVA)	10'
	M5-10	1 set



TRANSFORMER LAYOUT
SCALE NTS



PLAN

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. TYPICAL CONNECTION TO TWO PHASE POLE STRUCTURE.
3. TRANSFORMER PRIMARY TAPPING LOCATION AS SHOWN IS INDICATIVE AND FOR BIDDING REFERENCE ONLY. ACTUAL PRIMARY TAPPING LOCATION SHALL BE DETERMINED BY THE CONTRACTOR IN COORDINATION WITH NPC'S FIELD/OPERATION PERSONNEL FOR PROPER LOAD BALANCING.
4. ARRESTER, FUSE CUTOUT, & TRANSFORMER CAPACITY RATING SHALL BE REFERRED TO THE TECHNICAL DATA SHEETS.
5. WORK THIS DRAWING WITH CIVIL WORKS BID DRAWINGS.

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

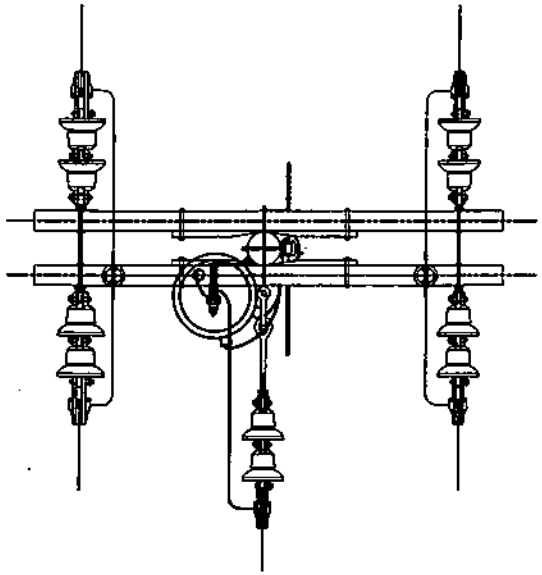
TITLE: **7.97/13.8kV DISTRIBUTION LINE SINGLE PHASE TRANSFORMER (G12-2)**

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

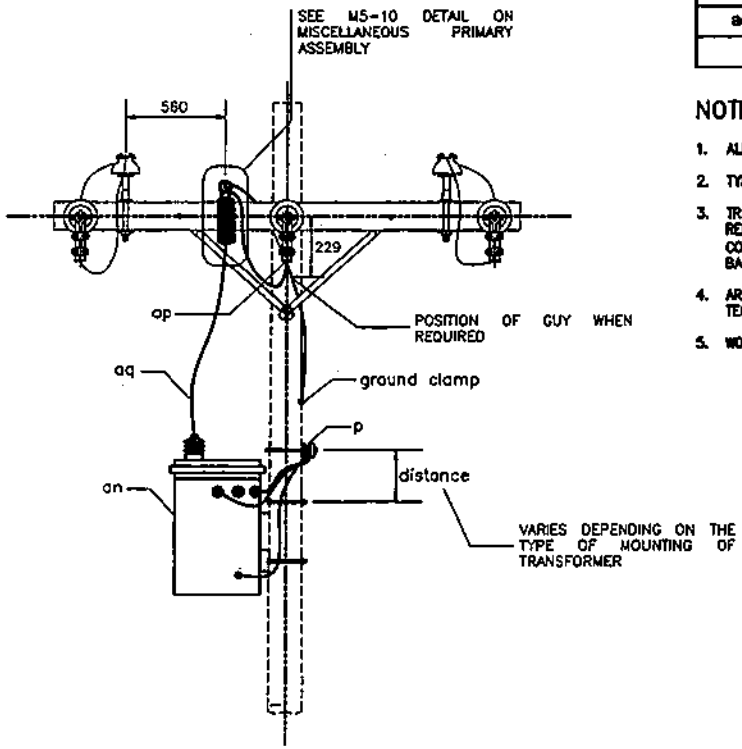
SUBMITTED: B. M. AGUILA, Project Engineer, A, DSD
RECOMMENDED: [illegible] LOGOD, JR., Manager, DSD
APPROVED: G. B. MAGPOC, JR., Manager, DSD

DWG. NO. MIPDL-BDE-04.039 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS **BID DRAWING** REV. 0



PLAN



TRANSFORMER LAYOUT

SCALE: NTS

BILL OF MATERIALS		
ITEM	DESCRIPTION	QTY
ap	Clamp, Hotline	1
p	Connector, Compression, Neutral	2
p	Connector, Compression, Transformer Primary	1
p	Connector, Compression, Transformer Secondary	1
an	Transformer, Completely Self Protected, Pole type complete with the required mounting bracket	1
aq	Wire, Jumper, #4 for (5 & 10kVA), #2 for (15kVA)	10'
	M5-10	1 set

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. TYPICAL CONNECTION TO THREE PHASE POLE STRUCTURE.
3. TRANSFORMER PRIMARY TAPPING LOCATION AS SHOWN IS INDICATIVE AND FOR BIDDING REFERENCE ONLY. ACTUAL PRIMARY TAPPING LOCATION SHALL BE DETERMINED BY THE CONTRACTOR IN COORDINATION WITH NPC'S FIELD/OPERATION PERSONNEL FOR PROPER LOAD BALANCING.
4. ARRESTER, FUSE CUTOUT, & TRANSFORMER CAPACITY RATING SHALL BE REFERRED TO THE TECHNICAL DATA SHEETS.
5. WORK THIS DRAWING WITH CIVIL WORKS BID DRAWINGS.

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAGING-LOG TO PARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

TITLE: **7.97/13.8kV DISTRIBUTION LINE SINGLE PHASE TRANSFORMER (Q12-3)**

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

SUBMITTED: D. M. AGUILA, Project Engineer, A-EEDD

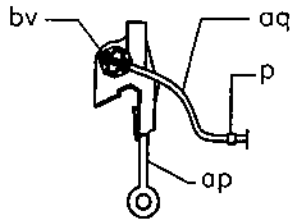
RECOMMENDED: Ir. C. LUGOD, JR., Manager, EEDD

APPROVED: G. B. MAGPOC, JR., Manager, DED

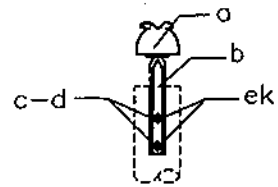
DWG. NO. MIPDL-BDE-04.040 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS **BID DRAWING** REV. 0

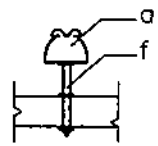
BILL OF MATERIALS		
ITEM	DECRIPTION	QTY.
	M5-1	
p	Connector, Compression	1
qp	Clamp, Hot Line	1
aq	Jumper	1
bv	Rod, Armor Topping	1
	M5-2	
c	Bolt, Machine, 5/8" x 10"	2
d	Insulator, Pin Type	1
ek	Locknut, 5/8"	2
b	Pin, Pole Top, 20"	1
d	Washer 2 1/2" x 2 1/2" x 3/16", 3/16" H.D.	2
	M5-5	
d	Insulator, Pin Type	1
f	Pin, Crossarm, Steel, 5/8" x 10 3/4" w/ nut, locknut and washers	1
	M5-8	
o	Bolt, Eye, 5/8" x 10" (Thread 5" from tip)	1
o	Bolt, Eye, 5/8" x 18", locknut 5/8" - 2, (thread 6" from tip)	1
k	Insulator, Suspension	2
ea	Nut, Eye, 5/8"	1
bo	Shackle, Anchor	1
d	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	1
ek	Locknut, 5/8"	2
	M5-9	
l	Clamp, Dead End Strain	1
k	Insulator, Suspension	2
ea	Nut, Eye, 5/8"	1
p	Compression Clamp	2
ek	Locknut, 5/8"	1



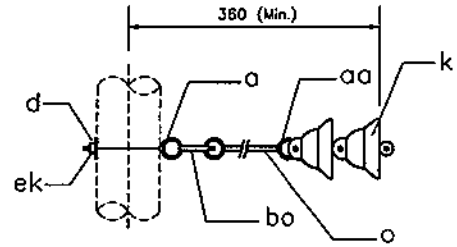
M5-1



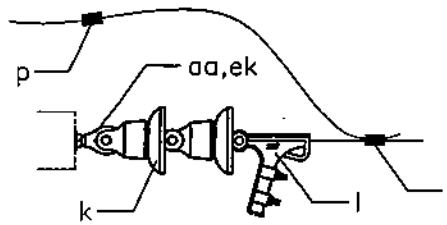
M5-2



M5-5



M5-8



M5-9

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

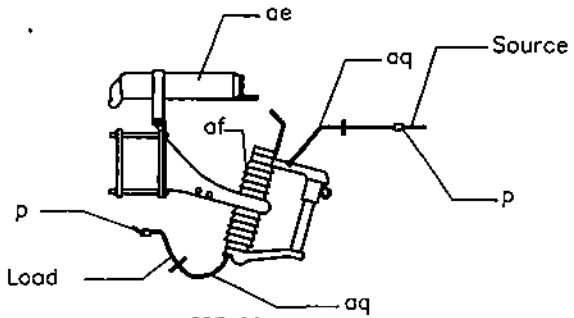
TITLE: 7.97/13.8kV DISTRIBUTION LINE
MISCELLANEOUS PRIMARY ASSEMBLIES
(M5-1, M5-2, M5-5, M5-8, M5-9)

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

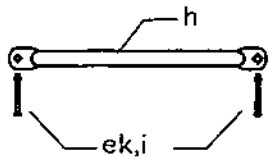
SUBMITTED: G. M. AGUILA
RECOMMENDED: C. C. LUGOD, JR.
APPROVED: G. B. MAGPOC, JR.

DWG. NO. MIPDL-BDE-04.041 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS BID DRAWING REV. 0

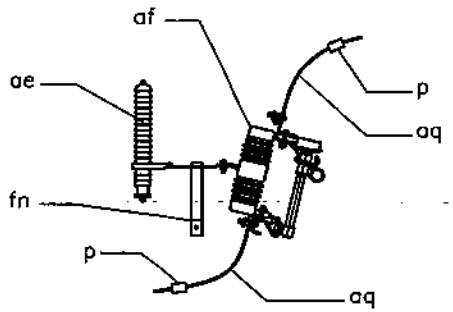


M5-10



M5-11

M5-23



M3-4

BILL OF MATERIALS		
ITEM	DESCRIPTION	QTY.
	M5-10	
p	Connector, Compression	2
aq	Jumper	As Req'd
ae	Arrester, Lightning	1
af	Cutout, 15kV Fuse, complete with mounting bracket	1
	M5-11	
ek	Lockout, 5/8"	4
h	Brace flat, 1-1/4" x 1-1/4" x 28	1
i	Bolt, carriage, 3/8" x 4-1/2"	1
	M5-23	
l	Clamp, Deadend Strain	1
	M3-4	
p	Connector, Compression	2
aq	Jumper	As Req'd
ae	Arrester, Lightning	1
af	Cutout, 15kV Fuse, complete with mounting bracket	1
fn	Mounting bracket, extension, L type, HDG	1

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALANING-ILOG TO PARAL, SAN JOSE, MASBATE

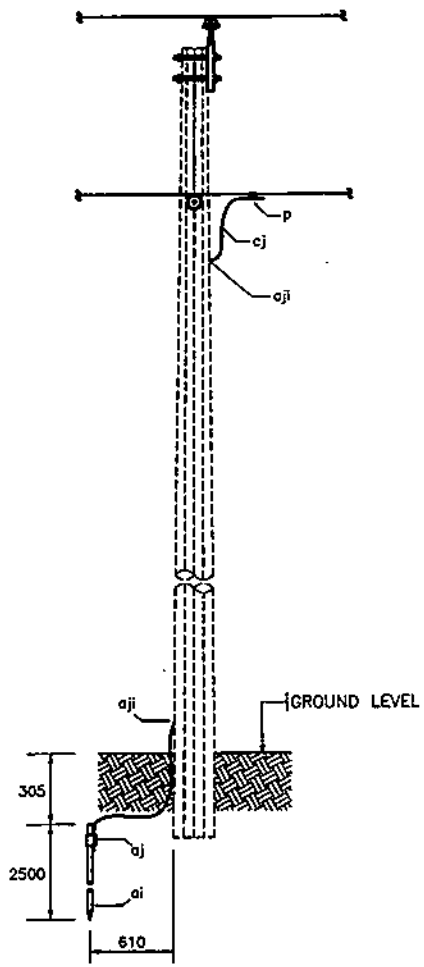
LOCATION: SAN JOSE, MASBATE

TITLE: 7.97/13.8kV DISTRIBUTION LINE
MISCELLANEOUS PRIMARY ASSEMBLIES
(M5-10, M5-11, M5-23, M3-4)

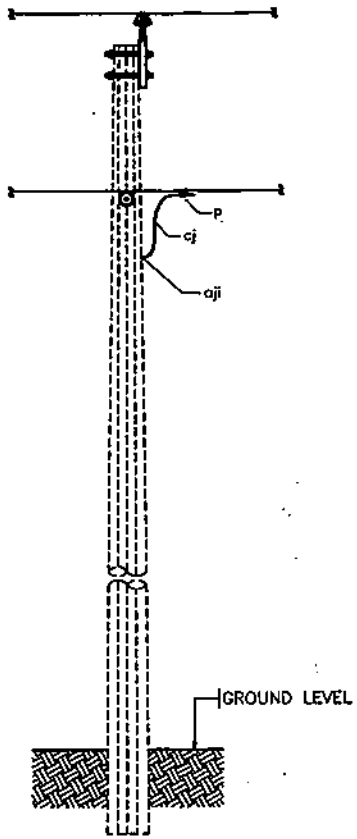
	BY	CHKD	DATE
DESIGNED			
DRAWN	JRPD		
REVIEWED	PRINCIPAL ENGR./ ARCHT.		
ENG./ARCHT			
ELEC.			
MECH.			

SUBMITTED: R. M. AGUILA, Supervising Engr. II, ESCD
RECOMMENDED: C. Z. C. LUGOD, JR., Manager, ESCD
APPROVED: G. B. MAGPOC, JR., Manager, SOD

DWG. NO. MIPDL-BDE-04.042 SPECS. NO. LuzP23Z1619Sdg
SCALE: NTS BID DRAWING REV. 0



M2-11



M2-11A

BILL OF MATERIALS		
ITEM	DESCRIPTION	QTY.
	M2-11	
aj	ground rod, clamp	1
ai	Rod, ground 5/8"ø x 8' steel	1
cj	Ground wire, ϕ 4AWG 3 strands al. alloy	3'
p	Connector, Compression	1
ajj	Ground, clamp	2
	M2-11A	
cj	Ground wire, ϕ 4AWG 3 strands al. alloy	3'
p	Connector, Compression	1
ajj	Ground, clamp	2

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. ALL END OF WIRES MUST BE PROPERLY WRAPPED 50 (2") MINIMUM LENGTH.
3. WORK THIS DRAWING WITH CIVIL WORKS BID DRAWINGS.

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

TITLE: 7.97/13.8kV DISTRIBUTION LINE GROUNDING ASSEMBLY (M2-11 & M2-11A)

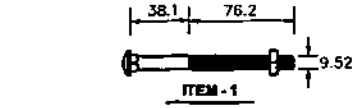
	BY	CHKD	DATE
DESIGNED			
DRAWN	JRPO		
REVIEWED	PRINCIPAL ENGR. / MGMT.		
CIVIL/ARCH'T			
ELEC.			
MECH.			

SUBMITTED: [illegible]
RECOMMENDED: C. C. LUGOD, JR.
APPROVED: G. B. MAGPOC, JR.

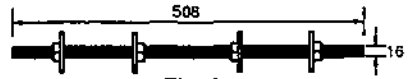
DWG. NO. MIPDL-BDE-04.043 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS BID DRAWING REV. 0

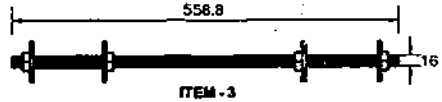
ITEM	MATERIALS DESCRIPTION/SPECIFICATIONS
1	BOLT, CARRIAGE 16 X 114 (5/8" X 4-1/2") THREADED AT LEAST 70 (3") FROM TIP WITH LOCKNUT AND WASHER. HOT DIP GALVANIZED AS PER ASTM A 153 MINIMUM COATING 381 G/M² OF SURFACE OR 0.054 MM THICK, STEEL AS PER ASTM A-307.
2	BOLT, DOUBLE ARMING 16 x 508 (5/8" x 20") FULL THREAD WITH AT LEAST 4 SETS OF NUT, LOCKNUT AND WASHER - 57 x 57 x 5 (2 1/4" x 2 1/4" x 3/16"), 21 (13/16") HOLE DIAMETER, STEEL PER ASTM A-307 CSR SHAFTING, HOT DIP GALVANIZED PER ASTM A-153 MINIMUM COATING 381 G/M² OF SURFACE OR 0.054MM THICK.
3	BOLT, DOUBLE ARMING 16 x 559 (5/8" x 22") FULL THREAD WITH AT LEAST 4 SETS OF NUT, LOCKNUT AND WASHER - 57 x 57 x 5 (2 1/4" x 2 1/4" x 3/16"), 21 (13/16") HOLE DIAMETER, STEEL PER ASTM A-307 CSR SHAFTING, HOT DIP GALVANIZED PER ASTM A-153 MINIMUM COATING 381 G/M² OF SURFACE OR 0.054MM THICK.
4	BOLT, OVAL EYE, 16 x 254 (5/8" x 10") FULL THREAD WITH AT LEAST 88 (3.5") FROM TOP WITH NUT, LOCKNUT AND WASHER - 57 x 57 x 5 (2 1/4" x 2 1/4" x 3/16"), 21 (13/16") HOLE DIAMETER, STEEL PER ASTM A-307, HOT DIP GALVANIZED PER ASTM A-153 MINIMUM COATING 381 G/M² OF SURFACE OR 0.054 MM THICK.
5	BOLT, OVAL EYE, 16 x 305 (5/8" x 12") FULL THREAD WITH AT LEAST 140 (5.5") FROM TOP WITH NUT, LOCKNUT AND WASHER 57 x 57 x 5 (2 1/4" x 2 1/4" x 3/16"), 21 (13/16") HOLE DIAMETER, STEEL PER ASTM A-307, HOT DIP GALVANIZED PER ASTM A-153 MINIMUM COATING 381 G/M² OF SURFACE OR 0.054 MM THICK.
6	BOLT, OVAL EYE, 16 x 457 (5/8" x 18") FULL THREAD WITH AT LEAST 203 (8") FROM TOP WITH NUT, LOCKNUT AND WASHER 57 x 57 x 5 (2 1/4" x 2 1/4" x 3/16"), 21 (13/16") HOLE DIAMETER, STEEL PER ASTM A-307, HOT DIP GALVANIZED PER ASTM A-153 MINIMUM COATING 381 G/M² OF SURFACE OR 0.054 MM THICK.
7	BOLT, THIMBLE EYE, 16 x 254 (5/8" x 10") FULL THREAD WITH AT LEAST 88 (3.5") FROM TOP WITH NUT, LOCKNUT AND WASHER 57 x 57 x 5 (2 1/4" x 2 1/4" x 3/16"), 21 (13/16") HOLE DIAMETER, STEEL PER ASTM A-307, HOT DIP GALVANIZED PER ASTM A-153 MINIMUM COATING 381 G/M² OF SURFACE OR 0.054 MM THICK.
8	BOLT, MACHINE, 13 x 254 (1/2" X 10") THREADED WITH AT LEAST 88 (3.5") FROM TOP WITH NUT, LOCKNUT AND WASHER 57 x 57 x 5 (2 1/4" x 2 1/4" x 3/16"), 21 (13/16") HOLE DIAMETER, STEEL PER ASTM A-307 CSR SHAFTING, HOT DIP GALVANIZED AS PER ASTM A-153 MINIMUM COATING 381 G/M² OF SURFACE OR 0.054 MM THICK, BOLTS STARTING FROM 150 (6") LENGTH MUST BE FURNISHED WITH BUFFER POINT (13 (1/2") OF BOLTS LENGTH), BOLTS LENGTH DOES NOT INCLUDE BUFFER POINT.
9	BOLT, MACHINE, 16 x 254 (5/8" X 10") THREADED WITH AT LEAST 88 (3.5") FROM TOP WITH NUT, LOCKNUT AND WASHER 57 x 57 x 5 (2 1/4" x 2 1/4" x 3/16"), 21 (13/16") HOLE DIAMETER, STEEL PER ASTM A-307 CSR SHAFTING, HOT DIP GALVANIZED AS PER ASTM A-153 MINIMUM COATING 381 G/M² OF SURFACE OR 0.054 MM THICK, BOLTS STARTING FROM 150 (6") LENGTH MUST BE FURNISHED WITH BUFFER POINT (13 (1/2") OF BOLTS LENGTH), BOLTS LENGTH DOES NOT INCLUDE BUFFER POINT.
10	BOLT, MACHINE, 16 x 254 (5/8" X 10") THREADED WITH AT LEAST 140 (5.5") FROM TOP WITH NUT, LOCKNUT AND WASHER 57 x 57 x 5 (2 1/4" x 2 1/4" x 3/16"), 21 (13/16") HOLE DIAMETER, STEEL PER ASTM A-307 CSR SHAFTING, HOT DIP GALVANIZED AS PER ASTM A-153 MINIMUM COATING 381 G/M² OF SURFACE OR 0.054 MM THICK, BOLTS STARTING FROM 150 (6") LENGTH MUST BE FURNISHED WITH BUFFER POINT (13 (1/2") OF BOLTS LENGTH), BOLTS LENGTH DOES NOT INCLUDE BUFFER POINT.
11	BOLT, MACHINE, 16 x 356 (5/8" X 14") THREADED WITH AT LEAST 152 (6") FROM TOP WITH NUT, LOCKNUT AND WASHER 57 x 57 x 5 (2 1/4" x 2 1/4" x 3/16"), 21 (13/16") HOLE DIAMETER, STEEL PER ASTM A-307 CSR SHAFTING, HOT DIP GALVANIZED AS PER ASTM A-153 MINIMUM COATING 381 G/M² OF SURFACE OR 0.054 MM THICK, BOLTS STARTING FROM 150 (6") LENGTH MUST BE FURNISHED WITH BUFFER POINT (13 (1/2") OF BOLTS LENGTH), BOLTS LENGTH DOES NOT INCLUDE BUFFER POINT.
12	BOLT, SINGLE UPSET, 16 x 254 (5/8" x 10") THREADED WITH AT LEAST 88 (3.5") FROM TOP WITH NUT, LOCKNUT AND WASHER 57 x 57 x 5 (2 1/4" x 2 1/4" x 3/16"), 21 (13/16") HOLE DIAMETER, STEEL PER ASTM A-307 CSR SHAFTING, HOT DIP GALVANIZED AS PER ASTM A-153 MINIMUM COATING 381 G/M² OF SURFACE OR 0.054 MM THICK.
13	BRACE, CROSSARM, 711 (28") STEEL, STEEL PER ASTM A36 - 77 A, HOT DIP GALVANIZED AS PER ASTM A123-78, MINIMUM COATING 702 G/M² OF SURFACE OR 0801 UM THICK
14	BRACKET, CLEVIS DEADEND WITHOUT SPOOL, FLAT STEEL PER ASTM A36, HOT DIP GALVANIZED PER ASTM A123
15	CLAMP, HOT LINE, 2/0 ACSR MIN TO 4 AWG.
16	CLAMP, HOT LINE, 2/0 ACSR MIN TO 4/0 AWG.
17	CLAMP, LOOP DEADEND STRAIN 4, HIGH STRENGTH ALUMINUM CASTING WITH GALVANIZED STEEL U-BOLT, EXTRA LONG SOFT ALUMINUM SPACER AND CAPS THAT CONFINE STRANDS. HOLDING STRENGTH USING TWO DEADEND CLAMPS EXCEEDS RATED BREAKING STRENGTH OF CONDUCTORS.
18	CLAMP, DEADEND, STRAIN 4 - 4/0 ACSR, CLAMP BODIES AND KEEPER PIECES ARE CAST IN HIGH STRENGTH ALUMINUM ALLOY THAT IS NON COPPER BEARING, U BOLTS, CLEVIS PIN AND ASSOCIATED COMPONENT ARE STEEL. COTTER STEEL ARE STAINLESS STEEL. BALL CLEVIS IS DROP FORGE STEEL SHANK DIAMETER OF ANSI CLASS 52-3 AND 52-5 PIN IS CONSISTENT WITH ANSI INSULATOR M & E STRENGTH RATING OF 15000 AND 25000 LBS RESPECTIVELY.
19	CLAMP, GUY STRAIGHT, THREE BOLT HEAVY DUTY STEEL. CLAMP STEEL AS PER ASTM A 36, BOLT AND NUT AS PER ASTM A 307. HOT DIP GALVANIZED AS PER ASTM A 153 MINIMUM COATING 381 G/M² OF SURFACE OR 0.054MM THICK



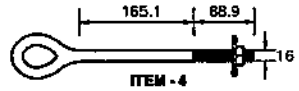
ITEM - 1



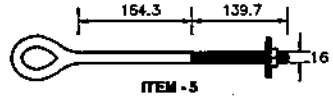
ITEM - 2



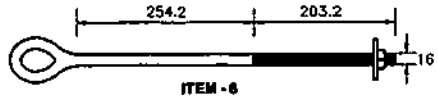
ITEM - 3



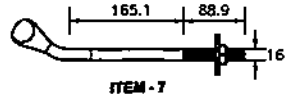
ITEM - 4



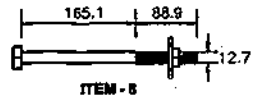
ITEM - 5



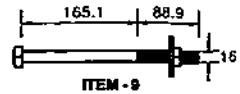
ITEM - 6



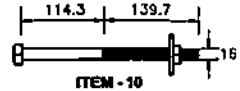
ITEM - 7



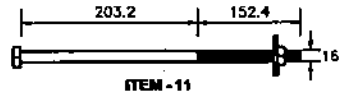
ITEM - 8



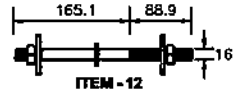
ITEM - 9



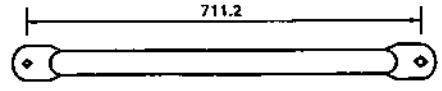
ITEM - 10



ITEM - 11



ITEM - 12



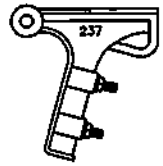
ITEM - 13

ITEM - 14

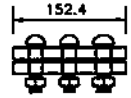

ITEM - 15


ITEM - 16


ITEM - 17



ITEM - 18



ITEM - 19

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO FARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

TITLE: **7.97/13.8KV DISTRIBUTION LINE MATERIAL SPECIFICATIONS AND DRAWINGS (1/2)**

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

SUBMITTED: G. M. AGUILA, Project Engineer V, PMED
RECOMMENDED: P. C. LUGOD JR., Manager, PMED
APPROVED: G. B. MAGPOC, JR., Manager, PMD

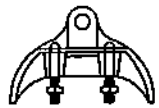
DWG. NO. MIPDL-BDE-04.044 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS **BID DRAWING** REV. 0

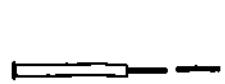
ITEM	MATERIALS DESCRIPTION/SPECIFICATIONS
20	CLAMP, SUSPENSION, ALUMINUM ALLOY CLEVIS, 2 BOLTS, ALL FERROUS TYPE ARE HOT-DIP GALVANIZED. ALL PARTS ARE FREE FROM CORONA INCLUDING SHARP EDGES AND SURFACE ROUGHNESS, KEEPER AND ADAPTER ARE DROP FORGED FROM C-1038 SEQ STEEL.
21	CLEVIS, SECONDARY SWINGING WITHOUT SPOOL.
22	SHACKLE, ANCHOR, DROP FORGE STEEL, HOT DIP GALVANIZED AS PER ASTM A-153 MINIMUM COATING 381 G/M² OF SURFACE OR 0.0546M THICK, STEEL AS PER ASTM A-307.
23	CONDUCTOR, BARE ACSR #2, AWG. 6/1 (MDS)
24	CONDUCTOR, BARE ACSR #4, AWG. 6/1 (MDS)
25	CONDUCTOR, BARE ACSR #2/0, AWG. 6/1 (MDS)
26	CONDUCTOR, DUPLEX #2, AWG. (MDS)
27	CONNECTOR, COMPRESSION, #2/0 AWG RUN TO #2/0 ACSR.
28	CONNECTOR, COMPRESSION, #2 AWG RUN TO #2 AWG, ACSR.
29	CONNECTOR, COMPRESSION, #4 AWG ACSR RUN TO #4 AWG, ACSR.
30	CONNECTOR, COMPRESSION, 10 (3/16"), (GROUND WIRE) RUN TO #4 AWG, ACSR.
31	CONNECTOR, COMPRESSION, 10 (3/16"), (GROUND WIRE) RUN TO #2 AWG, ACSR.
32	PIN, CROSS ARM, STEEL, 16 x 273 (5/8" x 10-3/4"), WITH NUT, LOCK NUT AND WASHER,STEEL PER ASTM A-307, HOT DIP GALVANIZED PER ASTM 1-153 MINIMUM COATING 381 G/M² OF SURFACE OR 0.054 MM THICK.
33	FUSE, CUT-OUT, 15 KV (FOR UNIVERSAL, BOTTOM HEAD, TYPE K, FUSE LINK) AND ARRESTER, COMBINATION (WITH MOUNTING BRACKET), STRUCTURAL STEEL AS PER ASTM A-36 77A, HOT DIP GALVANIZED AS PER ASTM A-123 78 MINIMUM COATING 0.6102 KG/M² OF SURFACE OR 0.08699 MM.
34	INSULATOR, PIN TYPE, PORCELAIN, ANSI CLASS 55-4
35	INSULATOR, SPOOL, 44 (1-3/4"), ANSI CLASS 53-2
36	INSULATOR, SPOOL, 76 (3"), ANSI CLASS 53-4
37	INSULATOR, SUSPENSION, CLEVIS 152 (6"), CLEVIS TYPE, ANSI OR NEMA CLASS 52-1
38	LINK, FUSE, UNIVERSAL, BOTTOM HEAD, TYPE K, 6 AMP.
39	NUT, EYE, 16 (5/8"), CONVENTIONAL, HOT DIP GALVANIZED BOLTS MADE TO ED-NEMA SPECIFICATIONS.
40	PIN, POLE TOP, CHANNEL, 25 (1"), THREAD, 508 (20") LONG.
41	ROD, ANCHOR, THREADED, SINGLE EYE, 19 x 2440 (3/4" x 8') WITH NUT LOCKNUT AND WASHER – 57 x 57 x 5 (6" x 4" x 1/2"), 21 (13/16")POLE DIAMETER STEEL AS PER ASTM A-307 GSR SHAPING, HOT DIP GALVANIZED AS PER ASTM A-153 MINIMUM COATING 381 G/M² OF SURFACE OR 0.054 MM THICK.
42	ROD, ARMOR, PREFORMED, FOR #2 ACSR, SINGLE SUPPORT.
43	ROD, ARMOR, PREFORMED, FOR #2/0 ACSR, SINGLE SUPPORT.
44	ROD, ARMOR, PREFORMED, FOR #2/0 ACSR, DOUBLE SUPPORT.
45	SPACER, PIPE, 19 x 38 (3/4" x 1-1/2")

NOTES:

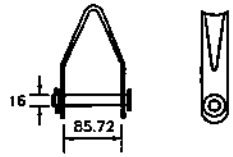
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.


ITEM - 20

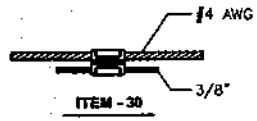
ITEM - 29


ITEM - 38

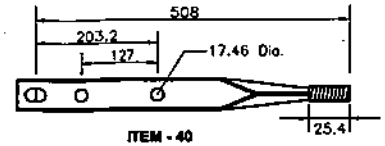

ITEM - 39



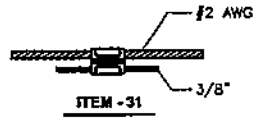
ITEM - 21



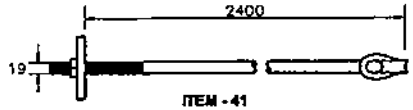
ITEM - 30



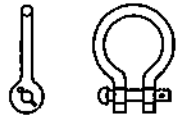
ITEM - 40

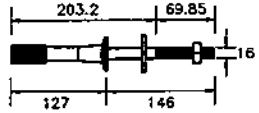


ITEM - 31

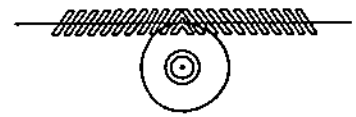


ITEM - 41

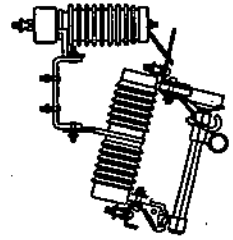

ITEM - 22



ITEM - 32


ITEM - 42


ITEM - 23


ITEM - 33


ITEM - 43

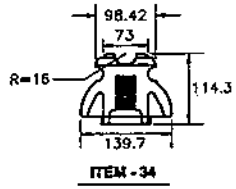

ITEM - 44


ITEM - 24

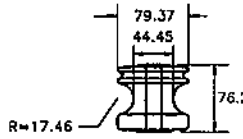

ITEM - 25


ITEM - 45


ITEM - 26

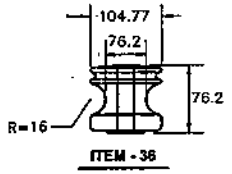


ITEM - 34

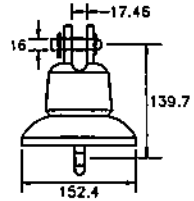


ITEM - 35

ITEM - 27



ITEM - 36



ITEM - 37

ITEM - 28

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

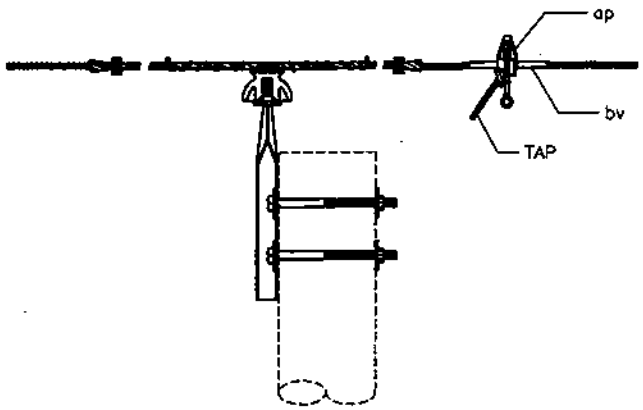
TITLE: 7.97/13.8kV DISTRIBUTION LINE
MATERIAL SPECIFICATIONS AND DRAWINGS (2/2)

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

SUBMITTED: B. M. AGUILA, Project Engineer, EBCD
RECOMMENDED: C. Z. C. LUGOD, JR., Manager, EBCD
APPROVED: G. B. MAGPOC, JR., Manager, DDD

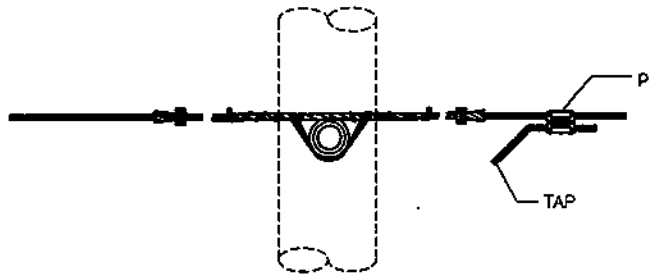
DRG. NO. MIPDL-BDE-04.045 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS BID DRAWING REV. 0



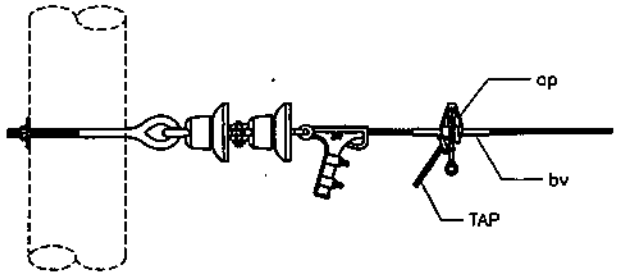
TAP FROM PRIMARY LINE WITH HOT LINE CLAMP

SCALE NTS



TAP FROM NEUTRAL OR SECONDARY LINE WITH CONNECTOR

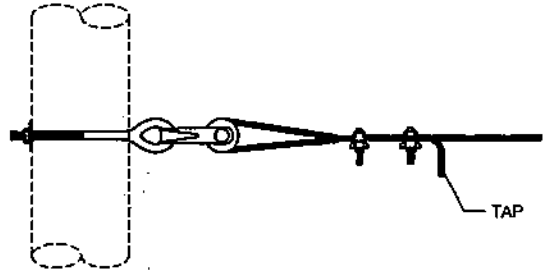
SCALE NTS



TAP FROM PRIMARY DEAD-END WITH HOT LINE CLAMP

(FOR TAP WITHOUT HOT LINE CLAMP, OMIT TAP SADDLE & EXTEND PIGTAIL)

SCALE NTS



TAP FROM NEUTRAL OR SECONDARY DEAD-END

SCALE NTS

BILL OF MATERIALS	
QTY.	DESCRIPTION
P	Connector
ap	Hot line clamp, Tap assembly
bv	Armor Rod, Tapping

NOTES:

1. WIRE BRUSH CONDUCTOR THOROUGHLY BEFORE APPLYING TAP SADDLE.
2. ON NEW CONSTRUCTION, TAP MAY BE MADE DIRECTLY OVER ARMOR RODS PROVIDED CONDUCTOR IS THOROUGHLY CLEANED AND INHIBITOR USED BEFORE INSTALLING RODS.
3. TAP ARMOR RODS MAY BE SUBSTITUTED FOR TAP SADDLE PROVIDED CONDUCTOR IS WIRE BRUSHED THOROUGHLY AND INHIBITOR IS USED BEFORE INSTALLING.

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR NALAKING-8.001 TO PANAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

TITLE: 7.97/13.8kV DISTRIBUTION LINE
TAP ASSEMBLY GUIDE FOR ACSR CONDUCTOR

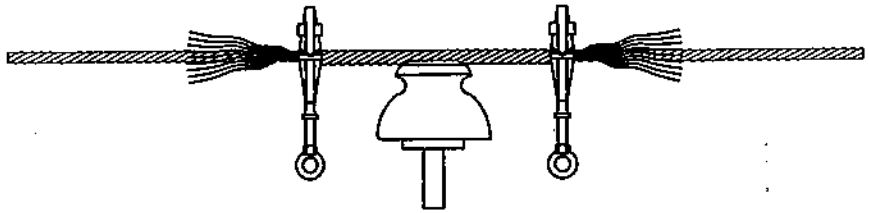
	BY	CHKD	DATE
DESIGNED			
DRAWN	JRPD		
REVIEWED	PRINCIPAL ENGR. / ARCH'T.		
CIVIL/ARCH'T			
ELEC.			
MECH.			

SUBMITTED: R. M. AGUILA, Project Engineer A, DEOD
RECOMMENDED: C. L. LUBOD, JR., Manager, DEOD
APPROVED: G. B. MAGPOC JR., Manager, DDD

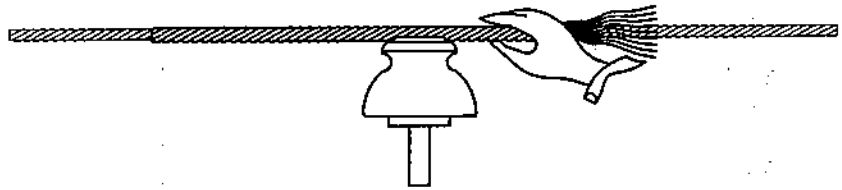
DWG. NO. MIPDL-BDE-04.046 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS BID DRAWING REV. 0

PRETORMED ALUMINUM ALLOY ARMOR RODS					
ACSR	LENGTH SINGLE SUPPORT mm (in.)	LENGTH DOUBLE SUPPORT mm (in.)	NO. PER SET	WIRE DIAMETER mm (in.)	DIAMETER PLUS RODS mm (in.)
4/0 (6 x 1)	1524 (60")	72"	11	4.6 (0.182)	23.5 (0.927)
3/0 (6 x 1)	1422 (56")	68"	11	4.2 (0.167)	21.2 (0.836)
2/0 (6 x 1)	1732 (54")	66"	10	4.2 (0.167)	19.8 (0.781)
1/0 (6 x 1)	1321 (52")	64"	9	4.2 (0.167)	18.6 (0.732)
1 (6 x 1)	1219 (48")	60"	9	3.7 (0.146)	16.3 (0.643)
2 (7 x 1)	1118 (44")	56"	9	3.7 (0.146)	15.6 (0.613)
2 (6 x 1)	1118 (44")	56"	9	3.7 (0.146)	15.3 (0.604)
4 (7 x 1)	1016 (40")	52"	7	3.7 (0.146)	13.8 (0.545)
4 (6 x 1)	1016 (40")	52"	7	3.7 (0.146)	13.6 (0.538)



FOR TOOL APPLICATION, INSERT HALF OF THE REINFORCEMENTS IN ONE CAVITY AND ENTER THE OTHER HALF IN THE OTHER CAVITY OF THE OPEN WRENCHES, KEEPING THE ENDS EVEN. HOOK WRENCHES OVER THE CONDUCTOR AND CLOSE JAWS. SPACE WRENCHES APPROXIMATELY ONE REINFORCEMENT PITCH APART AND TWIST THEM IN THE SAME DIRECTION AS THE LAY OF THE CONDUCTOR. WIND EACH WRENCH TO THE END OF THE REINFORCEMENT AND REMOVE.



FOR HAND APPLICATION, HOLD ONE OR MORE REINFORCEMENTS AGAINST THE CONDUCTOR WITH MIDPOINT AT THE INSULATOR, AND ROTATE IN SAME DIRECTION AS THE LAY OF THE CONDUCTOR, FOR THREE OR FOUR INCHES EACH SIDE OF CENTER. IN LIKE MANNER APPLY REMAINING REINFORCEMENTS TO CENTER SECTION. AFTER ALL HAVE BEEN STARTED, COMPLETE THE APPLICATION BY A ROTARY OUTWARD WIPING MOTION OF THE HAND. MAKE CERTAIN THAT THE ENDS SNAP INTO PLACE IN PROPER ORDER.

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAJONG-ILOG TO PASCAL, SAN JOSE, MARBATE

LOCATION: SAN JOSE, MARBATE

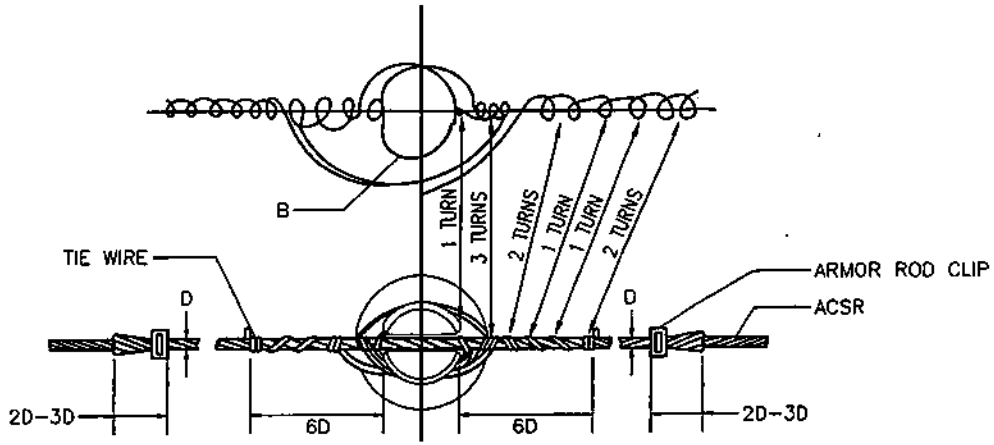
TITLE: **7.97/13.8kV DISTRIBUTION LINE**
PREFORMED ARMOR RODS ACSR CONDUCTORS

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

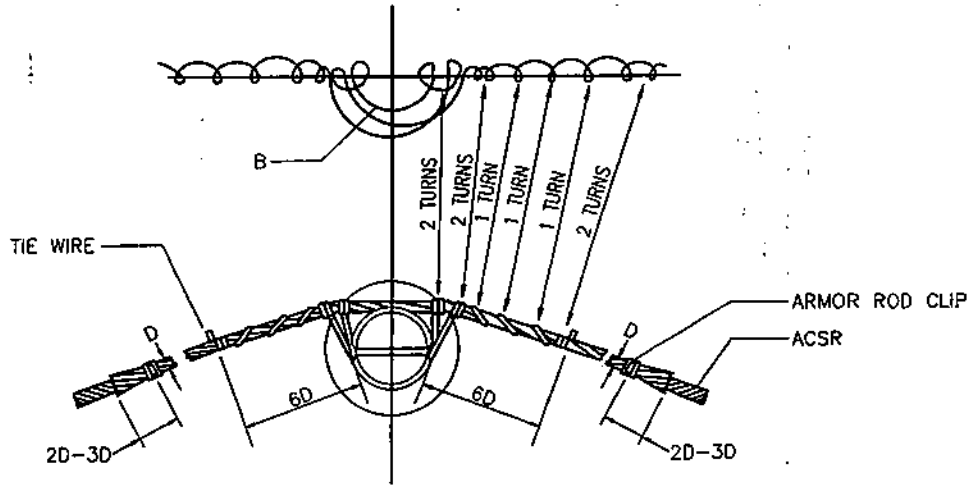
SUBMITTED: E. M. AGUILA, Project Engineer I, ESD
RECOMMENDED: C. Z. C. LUGOD, JR., Manager, ESCD
APPROVED: G. B. MAGPOC, JR., Manager, OSD

DWG. NO. MIPDL-BDE-04.047 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS **BID DRAWING** REV. 0



TOP GROOVE DOUBLE TIE



SIDE GROOVE DOUBLE TIE

A. C. S. R.		ARMOR RODS	TIE WIRE ALUMINUM	
SIZE	DIAMETER mm (in.)	"D" DIAMETER mm (in.)	SIZE	LENGTH meter (feet)
4/0	14.3 (0.563)	23.9 (0.939)	4	2.8194 (9' 3")
3/0	12.8 (0.502)	21.2 (0.836)	4	2.667 (8' 9")
2/0	11.4 (0.447)	18.9 (0.745)	4	2.5146 (8' 3")
1/0	10.1 (0.398)	18.9 (0.744)	4	2.5146 (8' 3")
2	8.3 (0.325)	15.1 (0.595)	4	2.2606 (7' 5")
4	6.5 (0.257)	14.1 (0.555)	4	2.1844 (7' 3")

NOTES:

1. IN MAKING TIES, START WITH MIDDLE OF LENGTH OF TIE WIRE AT POSITION MARKED "B". TO COMPLETE TIE, CINCH UP LAST TWO TURNS AT EACH END WITH PLIERS UNTIL TIE WIRE IS SNUG AND TIGHT. USE THE FLAT FACE OF THE PLIERS AGAINST THE ARMOR RODS.

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALASIMLOG TO PAYAL, SAN JOSE, NUEVA ECIJA

LOCATION: SAN JOSE, NUEVA ECIJA

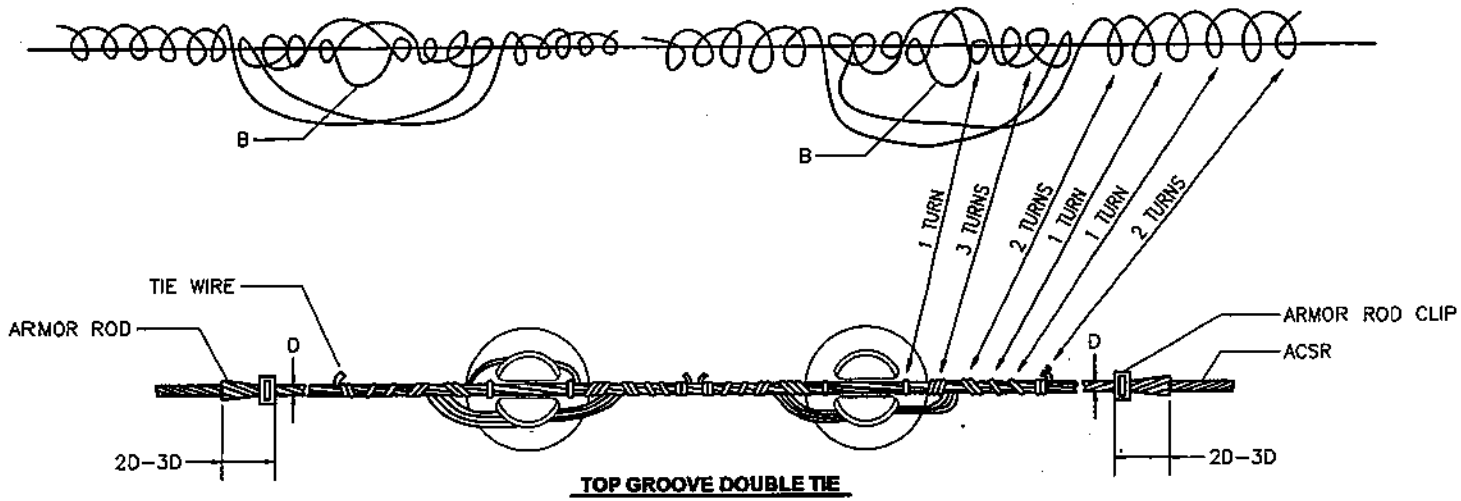
TITLE: 7.97/13.8KV DISTRIBUTION LINE
TYING GUIDE, SINGLE INSULATOR, ALUMINUM ALLOY OR ALUMINUM TIE WIRE, ACSR CONDUCTOR ALUMINUM ALLOY, STRAIGHT OR PREFORMED ARMOR RODS

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

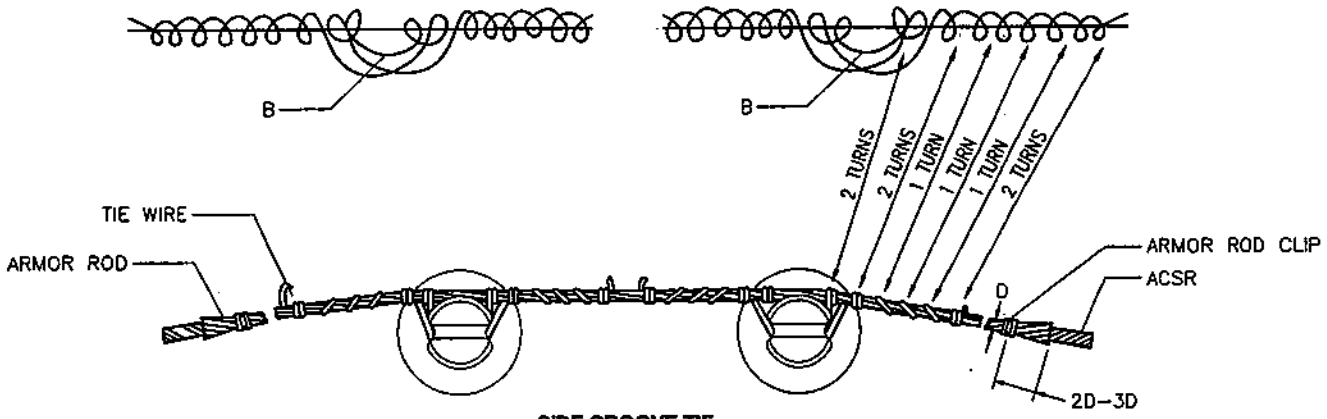
SUBMITTED: B. M. AGUILA
RECOMMENDED: C. Z. C. LUGOD, JR. Manager, MDCO
APPROVED: G. B. MAGPOC, JR. Manager, DDD

DWG. NO. MIPDL-BDE-04.048 | SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS | BID DRAWING | REV. 0



TOP GROOVE DOUBLE TIE



SIDE GROOVE TIE

A. C. S. R.		ARMOR RODS	TIE WIRE ALUMINUM	
SIZE	DIAMETER mm (in.)	"D" DIAMETER mm (in.)	SIZE	LENGTH meter (feet)
4/0	14.3 (0.563)	23.9 (0.939)	4	2.8194 (9' 3")
3/0	12.8 (0.502)	21.2 (0.836)	4	2.667 (8' 9")
2/0	11.4 (0.447)	18.9 (0.745)	4	2.5146 (8' 3")
1/0	10.1 (0.398)	18.9 (0.744)	4	2.5146 (8' 3")
2	8.3 (0.325)	15.1 (0.595)	4	2.2606 (7' 5")
4	6.5 (0.257)	14.1 (0.555)	4	2.1844 (7' 3")

NOTES:

1. IN MAKING TIES, START WITH MIDDLE OF LENGTH OF TIE WIRE AT POSITION MARKED "B". TO COMPLETE TIE, CINCH UP LAST TWO TURNS AT EACH END WITH PLIERS UNTIL TIE WIRE IS SNUG AND TIGHT. USE THE FLAT FACE OF THE PLIERS AGAINST THE ARMOR RODS.

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

TITLE: 7.97/13.8kV DISTRIBUTION LINE
TYING GUIDE, DOUBLE INSULATOR, ALUMINUM ALLOY OR ALUMINUM TIE WIRE, ACSR CONDUCTOR ALUMINUM ALLOY, STRAIGHT OR PREFORMED ARMOR RODS

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

SUBMITTED: B. M. AGUILA, Engineer III, PDD
RECOMMENDED: C. C. LUCERO, JR., Manager, PDD
APPROVED: G. B. MAGPOC, JR., Manager, DDD

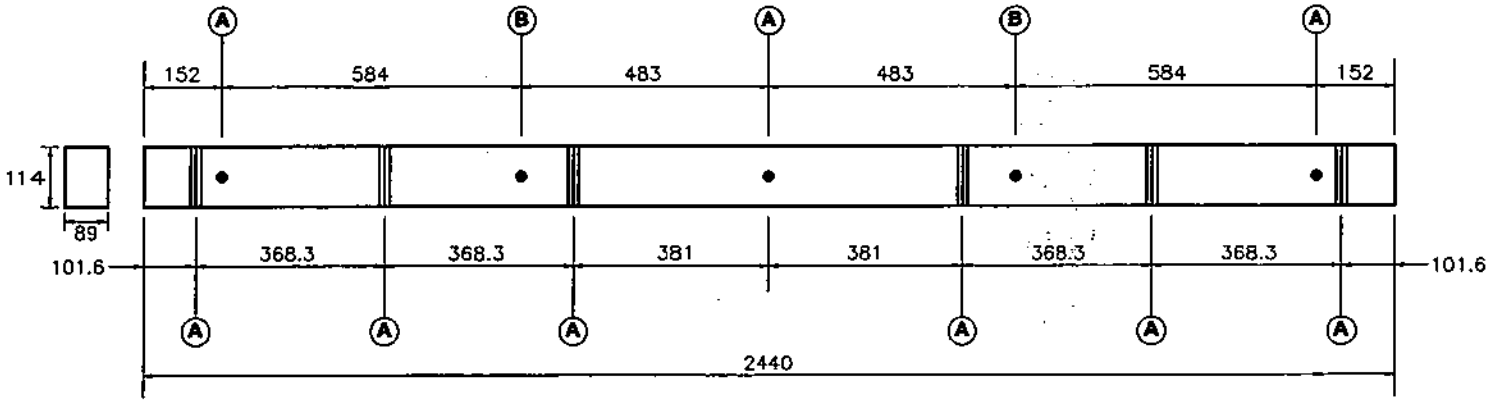
DWG. NO. MIPDL-BDE-04.049 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS **BID DRAWING** REV. 0

TOLERANCE SIZE OF HOLE		
CODE	NOMINAL HOLE DIAMETER	SIZE OF BOLT
(A)	18 (11/16")	16 (5/8")
(B)	12 (7/16")	10 (3/8")

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. DRILL HOLES ON CENTERLINES OF CROSS ARM FACES.
3. REMOVE ANY BURRS THAT REMAIN.
4. ALL THREADS MUST BE HAND–TAPPED AFTER GALVANIZING.
5. ALL STEEL MEETS OR EXCEEDS ASTM A572M GRADE 50 SPECIFICATIONS, YIELD STRENGTH (YS) => 50 ksi OR 345 MPa.
6. CROSS ARMS SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM A123M WITH MINIMUM COATING THICKNESS OF 85 MICRONS.
7. CROSS ARM SPECIFICATION CONSIDERATIONS INCLUDE THE CONDUCTOR, LINE HARDWARES, SPAN DISTANCES, LINE ANGLE, WIND LOAD ON CROSS ARMS AND CONDUCTORS.
8. CROSS ARM OR SIDEARM CONSTRUCTION FOR SINGLE PHASE TO THREE–PHASE CIRCUIT APPLICATION.



CROSSARM DRILLING GUIDE

SCALE NTS

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALASIKO-LOG TO PARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

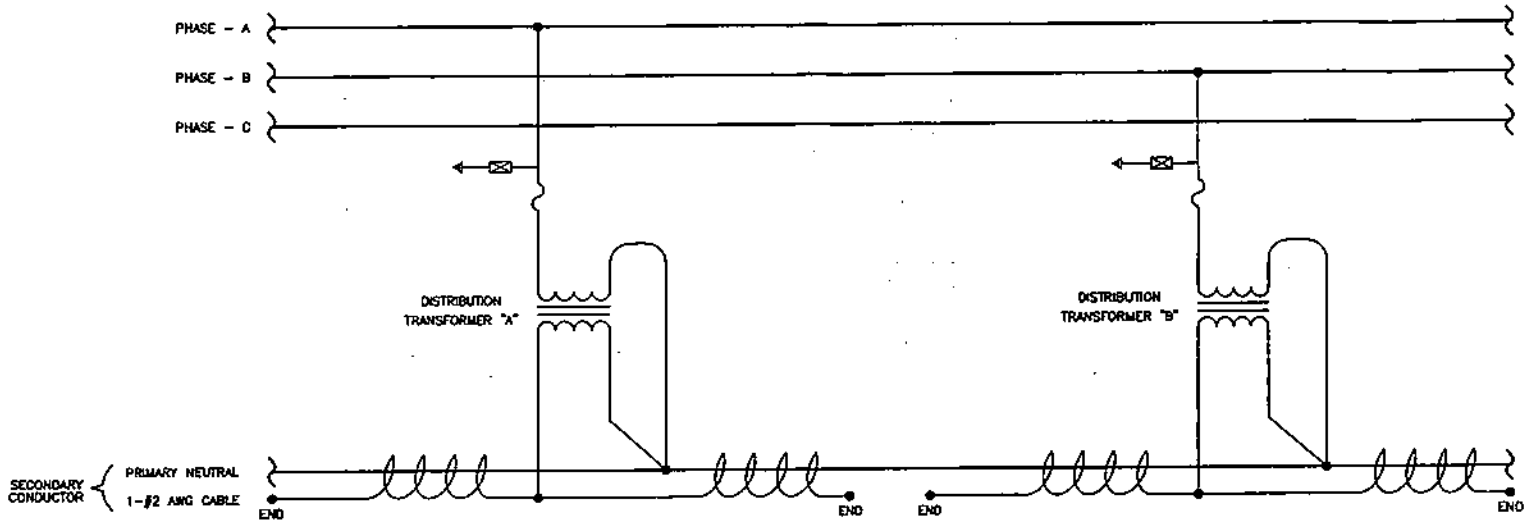
TITLE: **7.97/13.8kV DISTRIBUTION LINE CROSSARM DRILLING GUIDE**

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

SUBMITTED: E. M. AGUILA, Project Engineer A, ECCD
RECOMMENDED: ATTY. C. LUGOD, JR., Manager, ECCD
APPROVED: G. B. MAGPOC, JR., Manager, ODO

DWG. NO. MIPDL-BDE-04.050 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS **BID DRAWING** REV. 0



TYPICAL CONNECTION DIAGRAM

NOTES:

1. EACH DISTRIBUTION TRANSFORMERS SHALL HAVE THEIR OWN DEDICATED RUN OF SECONDARY CONDUCTOR. PARALLELING OF TWO OR MORE DISTRIBUTION TRANSFORMERS IN A SINGLE RUN OF SECONDARY CONDUCTOR IS NOT ALLOWED.
2. ONLY THE SECTION OR SEGMENT OF THE LINE IDENTIFIED WITH UNDERBUILD AND OPEN-SECONDARY SHALL BE PROVIDED WITH 1–#2AWG INSULATED CABLE TO BE WRAPPED AROUND WITH THE PRIMARY NEUTRAL CONDUCTOR. ACTUAL LINE LENGTH OF THE SECONDARY CONDUCTOR SHALL BE DETERMINED AT SITE BASED ON THE ACTUAL SITE REQUIREMENTS.
3. TOTAL CONNECTED LOAD FOR SECONDARY CONDUCTOR SHALL BE LIMITED TO 80% OF THE CONDUCTOR AMPACITY.

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAXING-ILOG TO PARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

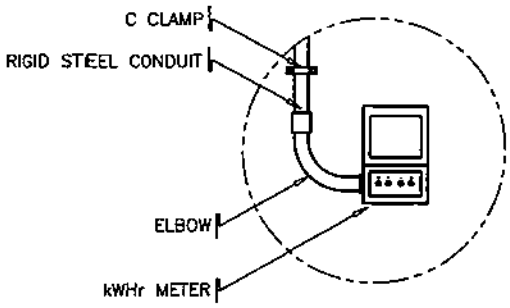
TITLE: 7.97/13.8kV DISTRIBUTION LINE TYPICAL CONNECTION DIAGRAM

	BY	CHKD	DATE
DESIGNED			
DRAWN	SRPD		
REVIEWED	PRINCIPAL ENG'R. / ARCH'T.		
CIVIL/ARCH'T			
ELEC.			
MECH.			

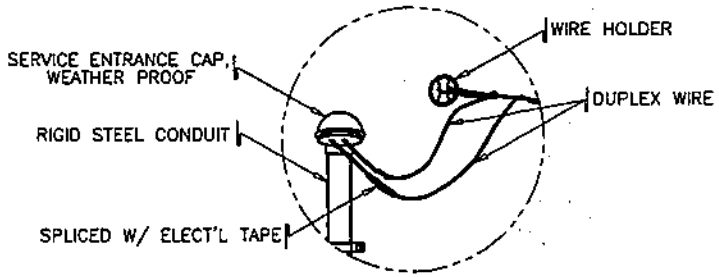
SUBMITTED: E. M. AGUILAR, Project Manager, EDCD
RECOMMENDING: C. Z. C. LUGOD, JR., Manager, EDCD
APPROVED: G. B. MAGPOC, JR., Manager, EDD

DWG. NO. MIPDL-BDE-04.051 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS | BID DRAWING | REV. 0



DETAIL "A"

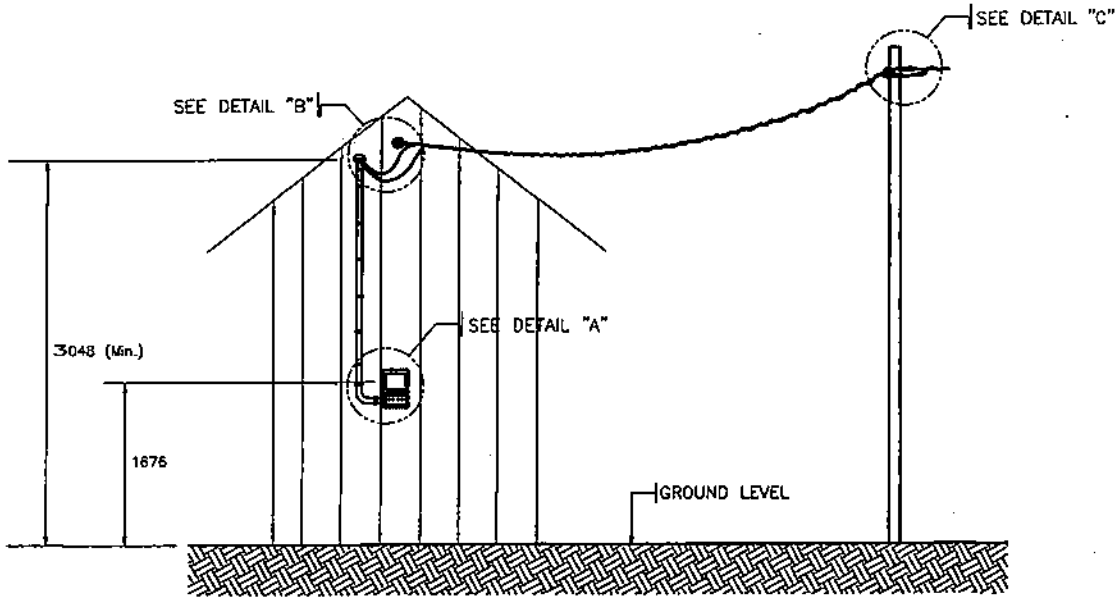


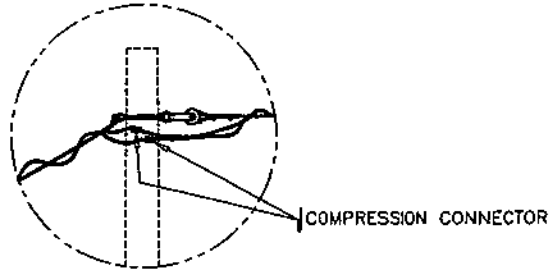
DETAIL "B"

BILL OF MATERIALS	
QTY.	DESCRIPTION
1	Digital Kilowatt-Hour Meter, 230V, 2wires, 10(30)A
25m	Duplex Cable #6 AWG, 6/1 stranding for service drop wire
1	Service Entrance Cap, weather proof type, 19 (3/4") dia.
1	Rigid Steel Conduit, 19 (3/4")dia x 254 (10'), w/ locknut, elbow & bushing
1	Wire Holder, universal service type no. 22
1	Tape, electrical, SMALL
2	Tapping Connector, compression type for (#2 – #8)
10m	Wire, 8.0 sq. mm THHN/THWN-2, 600V

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.





DETAIL "C"

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8KV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAIGNO-ILOG TO PARAL, SAN JOSE, NUEVA ECIJA

LOCATION: SAN JOSE, NUEVA ECIJA

TITLE: **7.97/13.8KV DISTRIBUTION LINE TYPICAL SERVICE DROP ELEVATION AND DETAILS**

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

SUBMITTED: B. M. AGUIN JR.
RECOMMENDED: P. C. LUGOD, JR.
APPROVED: O. B. MAGPOC, JR.

DWG. NO. MIPDL-BDE-04.052 | SPECS. NO. LuzP23Z1619Sdg

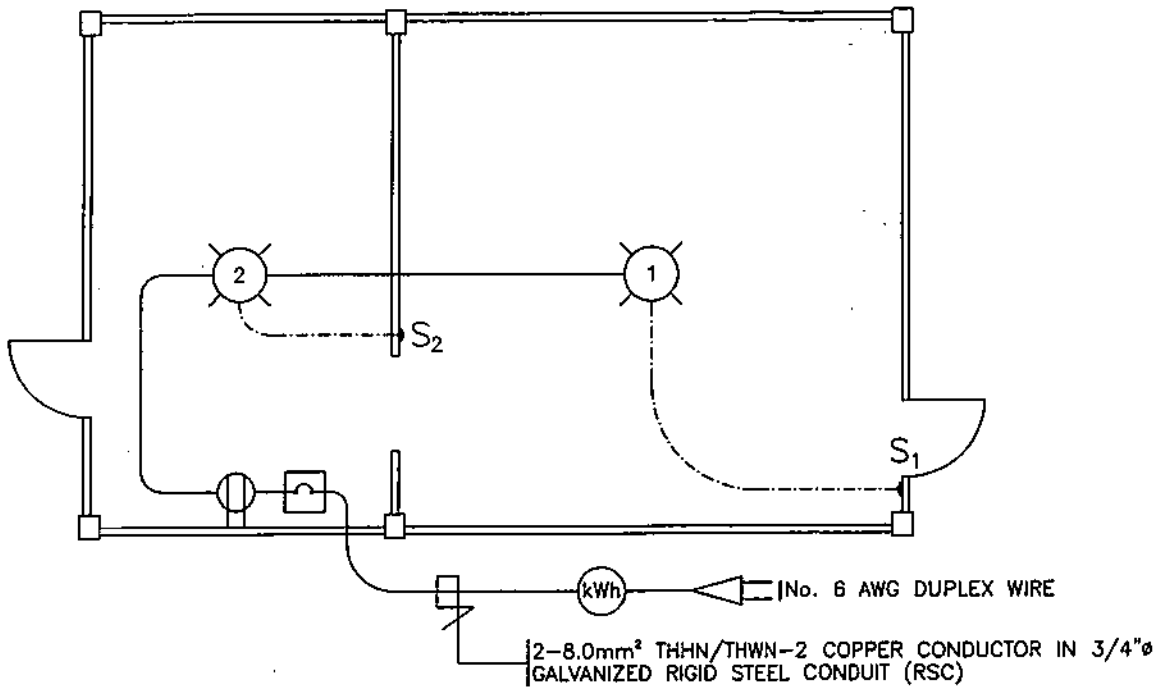
SCALE: NTS | **BID DRAWING** | REV. 0

NOTES:

1. DRAWING AS SHOWN IS TENTATIVE AND FOR BIDDING PURPOSES ONLY. FINAL ELECTRICAL LAYOUT AND LOCATION OF LUMINAIRES, SWITCHES AND RECEPTACLES SHALL BE DETERMINED DURING ACTUAL INSTALLATION OR AS PER END-USER DIRECTIONS.
2. WORK THIS DRAWING WITH THE TYPICAL HOUSEHOLD WIRING INSTALLATION DETAILS.

LEGEND:

- ——— — CIRCUIT RUNNING ABOVE GROUND
- —·—·— — CONTROL SWITCH WIRING
- — 9WATTS COMPACT LED LAMP
- — CONVENIENCE OUTLET, DUPLEX
- S_1 — SWITCH, 1-GANG (No. denotes fixtures to be controlled)
- — 20AT, 10kA, 240V ENCLOSED CIRCUIT BREAKER
- (kWh) — 240V, 1-PH, 2-WIRE KILOWATT-HOUR METER



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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

TITLE: **7.97/13.8kV DISTRIBUTION LINE TYPICAL HOUSEHOLD WIRING**

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

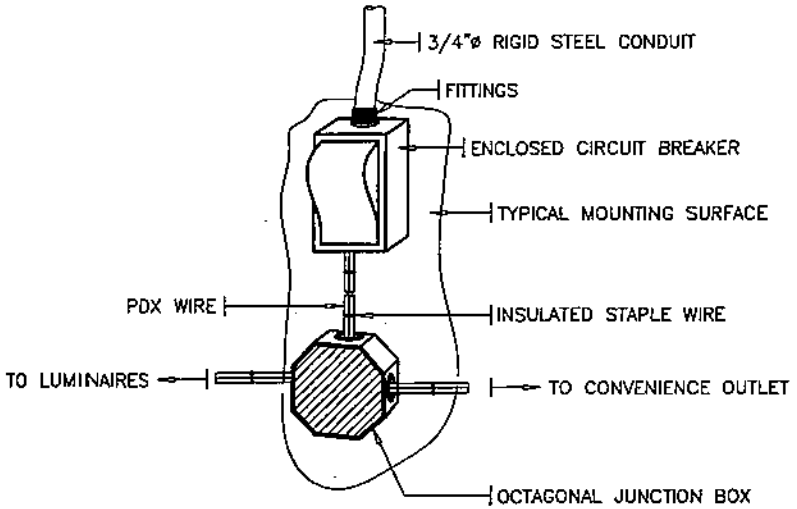
SUBMITTED: B. M. AGUILA, Project Engineer, EDD
RECOMMENDED: ENGR. C. LUGOD, JR., Manager, EDCV
APPROVED: G. B. MAGPOC, JR., Manager, EDD

DWG. NO. MIPDL-BDE-04.053 SPECS. NO. LuzP23Z1619Sdg

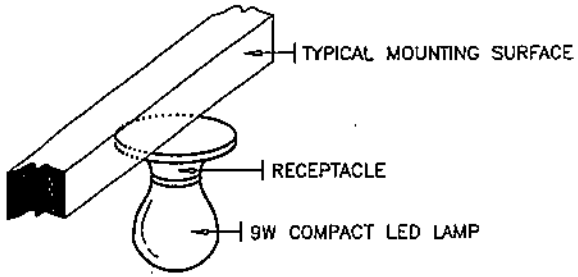
SCALE: NTS | **BID DRAWING** | REV. 0

NOTES:

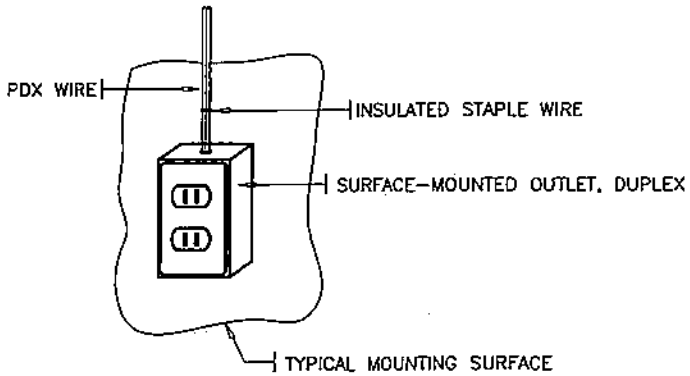
1. DRAWING AS SHOWN IS TENTATIVE AND FOR BIDDING PURPOSES ONLY. ACTUAL DETAILS OF INSTALLATION SHALL BE DETERMINED AT SITE.



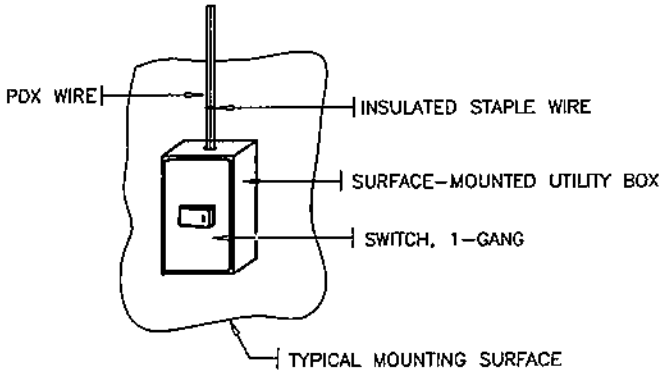
TYPICAL SERVICE ENTRANCE INSTALLATION



TYPICAL LIGHTING FIXTURE INSTALLATION



TYPICAL CONVENIENCE OUTLET INSTALLATION



TYPICAL LIGHTING SWITCH INSTALLATION

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

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

PROJECT: SUPPLY, DELIVERY, ERECTION/INSTALLATION, TESTING AND COMMISSIONING OF 7.97/13.8kV DISTRIBUTION LINE (EXTENSION) PROJECT FOR MALAKING-ILOG TO PARAL, SAN JOSE, MASBATE

LOCATION: SAN JOSE, MASBATE

TITLE: **7.97/13.8kV DISTRIBUTION LINE**
TYPICAL HOUSEHOLD WIRING INSTALLATION DETAILS

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

SUBMITTED: B. M. AGUILA, Project Engineer I, EDCD
RECOMMENDED: C. C. LOBOD, JR., Manager, EDCD
APPROVED: G. B. MAGPOC, JR., Manager, DDD

DWG. NO. MIPDL-BDE-04.054 SPECS. NO. LuzP23Z1619Sdg

SCALE: NTS **BID DRAWING** REV. 0