LANDBANK

SUPPLEMENTAL/BID BULLETIN NO. 1

PROJECT	:	**Solar Photovoltaic for Forty (40) LANDBANK Branches (4 Lots) under Project Identification No. LBP-GIBAC-ITB-GS-20250609-01(2)**
IMPLEMENTOR	:	**Bids and Awards Committee for Goods and Infrastructure (GI-BAC)**
DATE	:	**04 September 2025**

This Supplemental/Bid Bulletin is issued to modify, amend and/or clarify specific items in the Bidding Documents. It shall form an integral part of the Bidding Documents.

Modification, amendment and/or clarification:

1. The Terms of Reference (Annex D-1 to D-26), Schedule of Requirements (Section VI), Technical Specifications (Section VII) and Checklist of Bidding Documents (Item Nos. 11 and 12 of Technical Documents and Item Nos. 18 and 23 of Other Documents to Support Compliance with Technical Specifications. Please see attached revised Annexes D-1 to D-26 and specific sections of the Bidding Documents.

2. Responses to Bidder's Queries/Clarifications per attached Annex H.

EMMANUEL G. HIO, JR.
Chairperson, GI-BAC

Schedule of Requirements

The delivery schedule/contract period expressed as weeks/months/years stipulates hereafter a delivery/performance period which is the period within which to deliver the goods or perform the services in the project site/s.

Lot No.	Description	Quantity	Delivered, Weeks/Months
1	Solar Photovoltaic System at LANDBANK NCR and North Luzon Offices	Refer to Bill of Quantities (Annexes E-1 to E-3)	Within Ninety (90) calendar days upon receipt of Notice to Proceed and advice from LANDBANK PMED.
2	Solar Photovoltaic System at LANDBANK South Luzon Offices	Refer to Bill of Quantities (Annexes E-4 to E-8)	Within Ninety (90) calendar days upon receipt of Notice to Proceed and advice from LANDBANK PMED.
3	Solar Photovoltaic System at LANDBANK Visayas Offices	Refer to Bill of Quantities (Annexes E-9 to E-13)	Within Ninety (90) calendar days upon receipt of Notice to Proceed and advice from LANDBANK PMED.
4	Solar Photovoltaic System at LANDBANK Mindanao Offices	Refer to Bill of Quantities (Annexes E-14 to E-20)	Within Ninety (90) calendar days upon receipt of Notice to Proceed and advice from LANDBANK PMED.

Delivery Sites:

Delivery Sites enumerated in **Revised Annexes D-11 to D-14** of the Terms of Reference.

Implementing Unit:
LANDBANK Project Management and Engineering Department (PMED)
c/o Mr. Enrico DJ. Samaniego, Head, PMED

Contact No.:
8-522-0000 local 2256

Conforme:

_____
Name of Bidder

_____
Signature Over Printed Name of
Authorized Representative

_____
Position

Technical Specifications

Specifications	Statement of Compliance **Bidders must signify their compliance with the Technical Specifications/Terms of Reference by stating below either "Comply" or "Not Comply** Statements of "Comply" or "Not Comply" must be supported by evidence in a Bidders Bid and cross-referenced to that evidence. Evidence shall be in the form of manufacturer's un-amended sales literature, unconditional statements of specification and compliance issued by the manufacturer, samples, independent test data etc., as appropriate. A statement that is not supported by evidence or is subsequently found to be contradicted by the evidence presented will render the Bid under evaluation liable for rejection. A statement either in the Bidders statement of compliance or the supporting evidence that is found to be false either during Bid evaluation, post-qualification or the execution of the Contract may be regarded as fraudulent and render the Bidder or supplier liable for prosecution subject to the applicable laws and issuances.
Lot 1 **Solar Photovoltaic System** **at LANDBANK NCR and North Luzon Offices** 1. Terms of Reference, lay-out, technical specifications, scope of works, and other requirements per attached Terms of Reference (**Revised Annexes D-1 to D-26)** and Bill of Quantities (Lot 1- Annexes E-1 to E-3). 2. Documentary requirements enumerated in Item C, No. 2 (**Revised Annexes D-4 and D-5**) of the Terms of Reference.	**Please state here either "Comply" or "Not Comply"**
Lot 2 **Solar Photovoltaic System** **at LANDBANK South Luzon Offices** 1. Terms of Reference, lay-out, technical specifications, scope of works, and other requirements per attached Terms of Reference (**Revised Annexes D-1 to D-26**) and Bill of Quantities (Lot 2- Annexes E-4 to E-8). 2. Documentary requirements enumerated in Item C, No. 2 (**Revised Annexes D-4 and D-5**) of the Terms of Reference.	**Please state here either "Comply" or "Not Comply"**

Lot 3 **Solar Photovoltaic System** **at LANDBANK Visayas Offices** 1. Terms of Reference, lay-out, technical specifications, scope of works, and other requirements per attached Terms of Reference (**Revised Annexes D-1 to D-26**) and Bill of Quantities (Lot 3- Annexes E-9 to E-13). 2. Documentary requirements enumerated in Item C, No. 2 (**Revised Annexes D-4 and D-5**) of the Terms of Reference.	**Please state here either "Comply" or "Not Comply"**
Lot 4 **Solar Photovoltaic System** **at LANDBANK Mindanao Offices** 1. Terms of Reference, lay-out, technical specifications, scope of works, and other requirements per attached Terms of Reference (**Revised Annexes D-1 to D-26**) and Bill of Quantities (Lot 4- Annexes E-14 to E-20). 2. Documentary requirements enumerated in Item C, No. 2 (**Revised Annexes D-4 and D-5**) of the Terms of Reference.	**Please state here either "Comply" or "Not Comply"**
Non-submission of the above documents/requirements may result in the post-disqualification of the bidder.	

Conforme:

_____
Name of Bidder

_____
Signature over Printed Name of
Authorized Representative

_____
Position

Checklist of Bidding Documents for Procurement of Goods and Services

The documents for each component should be arranged as per this Checklist. Kindly provide guides or dividers with appropriate labels.

Eligibility and Technical Components (PDF File)

- ***The Eligibility and Technical Component shall contain documents sequentially arranged as follows:***

  - **Eligibility Documents – Class "A"**

    Legal Eligibility Documents

    1. Valid PhilGEPS Registration Certificate (Platinum Membership) (all pages).

    Technical Eligibility Documents

    2. Duly notarized Secretary's Certificate attesting that the signatory is the duly authorized representative of the prospective bidder, and granted full power and authority to do, execute and perform any and all acts necessary and/or to represent the prospective bidder in the bidding, if the prospective bidder is a corporation, partnership, cooperative, or joint venture or Original Special Power of Attorney of all members of the joint venture giving full power and authority to its officer to sign the OSS and do acts to represent the Bidder. (sample form - Form No. 7).

    3. Statement of the prospective bidder of all its ongoing government and private contracts, including contracts awarded but not yet started, if any, whether similar or not similar in nature and complexity to the contract to be bid, within the last five (5) years from the date of submission and receipt of bids. The statement shall include all information required in the sample form (Form No. 3).

    4. Statement of the prospective bidder identifying its Single Largest Completed Contract (SLCC) similar to the contract to be bid within the relevant period as provided in the Bidding Documents. The statement shall include all information required in the sample form (Form No. 4).

    Financial Eligibility Documents

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

    6. The prospective bidder's computation for its Net Financial Contracting Capacity (NFCC) following the sample form (Form No. 5), or in the case of Procurement of Goods, a committed Line of Credit from a Universal or Commercial Bank in lieu of its NFCC computation.

- **Eligibility Documents – Class "B"**

7. Duly signed valid joint venture agreement (JVA), in case the joint venture is already in existence. In the absence of a JVA, duly notarized statements from all the potential joint venture partners stating that they will enter into and abide by the provisions of the JVA in the instance that the bid is successful shall be included in the bid. Failure to enter into a joint venture in the event of a contract award shall be ground for the forfeiture of the bid security. Each partner of the joint venture shall submit its legal eligibility documents. The submission of technical and financial eligibility documents by any of the joint venture partners constitutes compliance, provided, that the partner responsible to submit the NFCC shall likewise submit the statement of all its ongoing contracts and Audited Financial Statements.
8. For foreign bidders claiming by reason of their country's extension of reciprocal rights to Filipinos, Certification from the relevant government office of their country stating that Filipinos are allowed to participate in government procurement activities for the same item or product.
9. Certification from the DTI if the Bidder claims preference as a Domestic Bidder.

- **Technical Documents**

10. Bid Security (if in the form of a Surety Bond, submit also a certification issued by the Insurance Commission).
11. **Revised Section VI** – Schedule of Requirements with signature of bidder's authorized representative.
12. **Revised Section VII** – Specifications with response on compliance and signature of bidder's authorized representative.
13. Duly notarized Omnibus Sworn Statement (OSS) (sample form - Form No.6).

Note: During the opening of the first bid envelope (Eligibility and Technical Component) only the above mentioned documents will be checked by the BAC if they are all present using a non-discretionary "pass/fail" criterion to determine each bidder's compliance with the documents required to be submitted for eligibility and the technical requirements.

Other Documents to Support Compliance with Technical Specifications [must be submitted inside the first bid envelope (Eligibility and Technical Component)]

14. List of at least five (5) contract agreements (CA) or purchase orders (PO) or Build-Lease-Transfer (BLT) Agreement or Build-Own-Operate-Transfer (BOOT) Agreement or equivalent documents completed in the years 2020, 2021, 2022, 2023 and 2024, with at least one (1) copy of CA or PO or equivalent document for each year.
15. Copy of CA or PO or equivalent documents for each completed project as supporting documents for the above requirement.

16. List of at least five (5) latest completed from different large institutional clients/projects (e.g. fast foods, BPOs, hospitals, malls, banks and government offices) with addresses, contact persons and telephone numbers including Certificate of Satisfactory Performance for each projects.
    - The submitted list of five (5) latest completed different large institutional clients/projects shall be accompanied by a Performance Assessment Report (PAR) for each project with at least a "Satisfactory" adjectival rating duly signed by the Owner and/or representative. The standard format for PAR shown in Exhibit 1 (Annexes D-18 and D-19) shall be adopted.
17. Certified copy of Certificate of Registration from DOE as Official DOE Solar PV installer
18. Submission of the following documents for the personnel to be assigned/employed in the project:

For Electrical Engineer	For Highly Trained Technician
A. Bio-data B. Copy of PRC License C. Certificate of Employment issued by the Contractor	A. Bio-data **B.** Copy of NC II Certificate on Building and Wiring **or Electrical Installation and Maintenance (EIM)** C. Certificate of Employment issued by the Contractor

19. Authority Certificate direct from manufacturer proving that the contractor is an authorized representative, seller and installer of the solar products being offered.
20. Brochure or other official documents coming from the manufacturer showing the technical specifications of the offered products.
21. Print-out of the specifications of the offered products posted in the manufacturer's website showing the URL (web address).
22. Certification from the following, whichever is available:
    - Bureau of Product Standards (PS)
    - Underwriters Laboratories (UL)
    - Conformance European (CE)
    - ISO Certification.
23. **Valid Philippine Contractors Accreditation Board (PCAB) License Classification: "Specialty: Electrical Works (SP-EC) at least category "C" and size range of small B.**

- **Post-Qualification Documents/Requirements – <u>[The bidder may submit the following documents/requirements within five (5) calendar days after receipt of Notice of Post-Qualification]:</u>**

24. Business Tax Returns per Revenue Regulations 3-2005 (BIR No.2550 Q) VAT or Percentage Tax Returns for the last two (2) quarters filed manually or through EFPS.
25. Latest Income Tax Return filed manually or through EFPS.
26. Original copy of Bid Security (if in the form of a Surety Bond, submit also a certification issued by the Insurance Commission).

27. Original copy of duly notarized Omnibus Sworn Statement (OSS) (sample form - Form No.6).
28. Duly notarized Secretary's Certificate designating the authorized signatory in the Contract Agreement if the same is other than the bidder's authorized signatory in the bidding (sample form – Form No. 7).

Financial Component (PDF File)

- ***The Financial Component shall contain documents sequentially arranged as follows:***
    1. Duly filled out Bid Form signed by the Bidder's authorized representative (sample form - Form No.1)
    2. Duly filled out Schedule of Prices signed by the Bidder's authorized representative (sample form - Form No.2).
    3. Dully filled out Bill of Quantities Form (Annexes E-1 to E-20) signed by the Bidder's authorized representative.

Note: The forms attached to the Bidding Documents may be reproduced or reformatted provided the information required in the original forms and other requirements like signatures, if applicable, are complied with in the submittal.

TERMS OF REFERENCE

A. Name and Description of Project

One (1) Lot – Design, supply of labor, materials, tools, equipment and technical expertise, testing and commissioning for the installation of Solar Photovoltaic System for forty (40) LANDBANK Branches and Corporate Centers (Annex A).

B. Objective

1. To support the call of the National Government in institutionalizing energy efficiency and conservation by formulating, developing and implementing energy efficiency and conservation plans and programs.

2. To support the Bank's program for a green building consistent with the Government's Program on the use of renewable energy and other regulatory laws of the Philippines.

3. To support the Bank's Environmental Management System (EMS) Program on electricity conservation and cost reduction in its operation.

C. Project/Services Requirement

1. Project Requirements

a. System Design and Engineering	➢ Conduct a detailed site assessment and feasibility study including but not limited to roofing layout/condition assessment, shading analysis and solar irradiance study based on the attached roofing plan, elevation plan and site development plan. ➢ Provision of necessary documents for Net Metering. (if solar irradiance study result indicate that it is beneficial and necessary to apply.) ➢ Ensure that the system is designed to operate in hybrid mode. (Installed inverted must be with battery backup capability). ➢ The energy storage system must be designed to provide back-up power to the priority load. (Server, ATM, CCTV and signage's). ➢ Detailed drawing must be submitted and approved by PMED not later than thirty (30)

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Annexes D-1

	calendar days after receipt of Notice of Advice (NOA) from PMED approval prior to installation/implementation. **Drawing Requirement**: ➢ Single-line diagram showing the integration of the solar hybrid system installed to the existing electrical system (Per site). ➢ Shop drawing per installation. ➢ Riser Diagram ➢ Wiring Diagram
b. Supply and Installation	➢ Supply all equipment, including but not limited to: solar panels, inverters, wiring, mounting structures, and monitoring equipment. ➢ Installation schedule must be Monday to Sunday or per coordination with the end-user. ➢ Regular banking operations must not be interrupted during implementation of the project activities. ➢ Supplied inverter and solar panels must be Original Equipment Manufacturer (OEM). ➢ Install and commission the system, ensuring proper integration with the existing electrical system. ➢ Ensure compliance with applicable electrical codes, standards, and regulations. ➢ Secure all necessary permits and clearances from local authorities. ➢ Clean-up works and demobilization must be conducted after installation. ➢ Operation and Maintenance Manual must be provided upon completion of installation.
c. Testing and Commissioning	➢ Conduct Ten (10) days performance tests to verify the functionality and efficiency of the system.

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	➢ Any testing or commissioning activities must be conducted after banking hours or during week end. ➢ Provide commissioning reports that include test results, performance metrics, and system readiness. ➢ Ensure all systems are properly configured and tested before operational use. ➢ Train designated LANDBANK personnel per site on the system operation, maintenance and basic troubleshooting of the installed system.
d. Warranty, After Sales Support and Training	➢ Provide a quarterly comprehensive maintenance plan/manual for a period of one (1) year for each site (Once per quarter). ➢ Conduct Preventive Maintenance service at least Two (2) times for the period of One (1) year after the final turnover and acceptance of the project. (See annex-2 for required PMS) ➢ Submit to PMED service reports indicating the actual activities conducted by the contractor duly noted by the Branch Head or its authorized representative. (Annex B) ➢ Warranty period shall commence upon the final acceptance of the project. The contractor is required to provide warranty certificate with inclusive dates. Warranty period shall be as follow: ➢ One (1) year against faulty workmanship. ➢ Against manufacturing/factory defects: • Solar Panel: Twenty-Five (25) years • Inverter: Five (5) years • Mounting Frame: Twenty-Five (25) years • Battery: Five (5) years ➢ During the warranty period, the contractor shall be responsible for any defects in materials or workmanship and shall repair or replace any faulty components at no additional cost. ➢ Post-warranty, the contractor shall offer support services.

2. Contractor Qualification and Documentary Requirements

Qualification Requirement	Documentary Requirement
a. The contractor must have at least five (5) years in the business of sales, design, installation and commissioning of photovoltaic/ solar panel system.	List of at least five (5) Contract Agreements (CA) or Purchase Orders (PO) or Build-Lease-Transfer (BLT) Agreement or Build-Operate-Transfer (BOT) or Build-Own-Operate-Transfer (BOOT) Agreement or equivalent documents completed in the years 2020, 2021, 2022, 2023 and 2024, with at least one (1) copy of CA or PO or BLT or BOT or BOOT or equivalent document for each year.
b. The contractor must be satisfactorily rated by at least five (5) different clients or customers for photovoltaic/solar panel system projects of the same capacity or higher.	• List of at least five (5) latest completed from different large institutional clients/projects (e.g. fast foods, BPOs, hospitals, malls, banks and government offices) with addresses, contact persons and telephone numbers including Certificate of Satisfactory Performance for each projects. • The submitted list of five (5) latest completed different large institutional clients/projects shall be accompanied by a *Performance Assessment Report (PAR)* for each project with at least a "Satisfactory" adjectival rating duly signed by the Owner and/or representative. The standard format for *PAR* shown in *Exhibit 1* shall be adopted.
c. The contractor must be Department of Energy (DOE) Registered Solar Photovoltaic (PV) Installer.	• Certified copy of Certificate of Registration from DOE as Official DOE Solar PV installer
d. The Contractor must have the Following regular employees/staff: ➢ One (1) licensed Electrical Engineer. ➢ One (1) highly trained technicians, for every project site during installation.	• For Electrical Engineer: a. Bio-data b. Copy of PRC License c. Certificate of Employment issued by the Contractor • For Technicians: a. Bio-data **b.** Copy of NC II Certificate on Building Wiring **or Electrical Installation and Maintenance (EIM)** c. Certificate of Employment issued by the Contractor
e. The contractor must be authorized representative, seller and installer of the	• Authority Certificate direct from manufacturer.

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manufacturer of solar products it will use.	
f.The offered product must have brochures showing the product complete specifications.	• Brochure or any other official documents coming from the manufacturer showing the technical specifications of the offered product.
g.The specifications of the offered Inverter & Solar Panels shall be verifiable from the website of the manufacturer.	• Print-out of the Homepage of manufacturer's/brand owner's website showing the URL (web address)
h.The offered product or its manufacturer must be authorized and certified by the approving/governing body.	• Bureau of Product Standards (PS), Underwriters Laboratories (UL), European Conformity (CE), or ISO certifications, whichever is available.
i.The contactor must have a valid Philippines Contractors Accreditation Board (PCAB) License Classification:"Specialty: Electrical Works (SP-EC) at least category "C" and size range of small B	• **Valid and Current PCAB License Certificate.**

D. Scope of Project/Services

The system shall meet the following minimum technical requirements:

1. **Solar Panels:**

Technical Specifications	
Cell Type	Mono-crystalline silicon
Peak Power Output (watts)	550 minimum
Certification	UL/CE
Cell Efficiency (%)	≥ 21.3
Temperature Coefficient of Pmax	-0.34%/°C

2. **Inverter:**

Technical Specification	**10KWP Hybrid Inverter (Single-Phase)**	**10KWP Hybrid Inverter (Three-Phase)**	**40KWP On-Grid Inverter (Three- Phase)**
Rated Power Output (AC)(W)	10000 min	10000 min	40000 min
DC PV Input Power (W)	12000 min	12000 min	44000 min
Number of MPPTs Tracker	2 minimum	2 minimum	3 minimum
BMS Communication	Self-adaptive to BMS	Self-adaptive to BMS	Not Applicable

Battery Voltage Range (VDC)	40~60	40~60	Not Applicable
Efficiency	97% min	97% min	97% min
Surge Protection Level	TYPE II(DC), TYPE II(AC)	TYPE II(DC), TYPE II(AC)	TYPE II(DC), TYPE II(AC)
Certification	UL/CE	UL/CE	UL/CE

3. **Battery Storage:**

Technical Specifications	
Battery Capacity (kWh)	10
Chemistry	LiFePO4 (Lithium-ion)
Nominal Voltage (V)	51.2
Max. Charge/discharge Current	50A
Battery Cycle Life: Minimum	6,000 cycles
Communication Protocol	RS 485, CAN
Certificate	UL,CE

4. **Mounting Structure:**

Technical Specifications	
Type	Roof Mount
Material	Extruded Aluminum (Framess & Rails), Anodized Treatment
Designed Wind Load Speed (KpH)	340 min

Note: Contractor to submit mounting structure details and structural analysis/calculation duly signed by registered Civil Engineer.

5. **Photovoltaic Wire:**

Technical Specifications	
Conductors	Stranded Copper
Insulation	XLPE
Rated Temperature	90°C for exposed or concealed wiring
Rated Voltage	600V Minimum
Protection	Sunlight resistance
Application	Direct Burial
Reference Standard	UL Subject 4703
Certification	UL/CE

E. Delivery Schedule

Within ninety (90) calendar days upon receipt of Notice to Proceed (NTP) and advice from LANDBANK PMED.

F. Payment Terms

1. Partial payment is allowed for every completed project per site and all payment shall be subject to the LANDBANK's standard accounting and auditing rules and regulations.

2. The contractor is required to maintain a deposit account with LANBANK Cash Department or any of its Branches. This directive is pursuant to Malacañang Executive Order No. 170 – Adoption of Digital Payments for Government Disbursements and Collections, directing all government agencies to utilize safe and efficient digital disbursements in the payment of goods, services and other disbursements.

3. Payment shall be through direct credit to the contractor deposit account with LANDBANK.

4. The contractor shall be paid within sixty (60) calendar days after submission of billing or claim, and complete documentary requirements.

G. Updated Tax Clearance

Updated Tax Clearance shall be presented by the supplier/contractor in accordance with Executive Order No. 398, Series of 2005 and BIR Regulations No.17-2024 prior to final settlement of government contracts.

H. Liquidated Damages

If the winning bidder fails to deliver any or all of the goods and/or services within the period/s specified in this Contract, the Bank shall, without prejudice to its other remedies under this Contract and under the Applicable Law, deduct from the contract price, as liquidated damages, a sum equivalent to one-tenth of one percent (0.001) of the price of the unperformed portion of the goods and/or services for each day of delay based on the approved contract. LANDBANK need not prove that it has incurred actual damages to be entitled to liquidated damages. Such amount shall be deducted from any money due or which may become due to supplier/contractor. In case the total sum of liquidated damages reached ten percent (10%) of the total contract price, LANDBANK may rescind the contract and impose appropriate sanctions over and above the liquidated damages to be paid.

I. Pre-Termination/Termination of Contract

Pre-termination/Termination of Contract shall be governed by the guidelines on Termination of the Contract per Annex "I" of the 2016 Revised Implementing Rules and Regulations

In addition to the grounds under the said Guidelines for Contract Termination the following are also grounds for pre-termination/termination:

- Failure by the service provider to perform its obligation thereon;
- Unsatisfactory Performance by the service provider within the contract duration

J. Other Terms and Condition

1. The contractor should submit:

Documents	Description	Date of Submission
Single-line diagram & Riser Diagram	Per location detailed drawings showing the tapping of the solar to the existing electrical system and Design Analysis.	Prior start of installation.
Gantt Chart	Chart must outline the timeline spans from [start date] to [end date], with the activities categorized by location.	Prior start of installation.
Wiring diagram	Per location detailed drawings showing the wiring of the solar to the existing Electrical System and Design Analysis.	Prior start of installation.
Shop drawings	Per location detailed drawings showing the assembly of the DC & AC breaker and protections inside the combiner box.	Prior start of installation.
Projected computation/ calculation of the expected savings and payback period of the Solar System Panel being supplied during the bidding	The calculations should be based on estimated energy consumption, solar energy production, and the cost of electricity over time. The analysis assumes a commercial application of the system and provides an estimate for the return on investment.	Ten (10) days after the receipt of NTP.
Warranty Certificate	Manufacturer Warranty & Workmanship Warranty dated from the date of commissioning up to the duration date specified at the service requirements.	Upon Final Acceptance of the project.

2. The contractor should make available a provision for Central Control Monitoring System via website or software application that will allow the monitoring of Solar Panels System.

3. The contractor should coordinate with the local Electric Cooperative/power utility company on its Net Metering Program and assist the site/branch in its application.

4. In the event of Multi-Story Building, battery back-up power function shall be allocated to the LBP Branch's critical load (EP panel loads).

5. In line with the Bank's Environmental Management System (EMS) program and being an ISO 14001 certified institution, the contractor is required to use the appropriate equipment,

hand tools and personal protective gears and equipment during the implementation of the project.

6. The contractor should coordinate with PMED all works to be undertaken relative to the project.

    a. Mounting frames must be properly mounted on roof framing such as C-purlins, rafter, etc.

    b. The contractor must apply sealants on roof holes including existing roof holes present in the area where the solar panels will be installed.

    c. In the event that the solar panels will be installed on roof deck, the contractor shall apply structural sealant to all anchoring stone made on the concrete slab and re-apply water proofing.

    d. All areas applied with water proofing should be flood-tested for at least 24 hours in coordination with the branch/end-user.

    e. Conduct joint inspection for punch-list report prior to completion and acceptance of the project.

7. Prior initial inspection, contractor must inform PMED seven (7) days before actual inspection date, to ensure proper coordination to the branch.

8. The contractor should be responsible for the collection of all wastes, residues, empty containers, rugs, etc, resulting from the source emission sampling activities. The collected wastes/residues shall be placed and sealed plastic bags or containers, labelled property and shall be brought back to the contractor's warehouse for proper disposal.

9. The winning contractor should maintain cleanliness at all times. It shall clean the affected area immediately after each workday.

10. The contractor should be liable for any harm, damage or injury that may be sustained or suffered by its own crew/workers while in the performance of their duty/job under this project.

11. The contractor should be held directly responsible for any injury to person and/or damage to the Bank's property arising from acts whether partial, contributory, or due entirely to the fault, negligence and/or dishonesty of the contractor's personnel in the course of their duties.

12. The contractor should maintain cleanliness at all times. It shall clean the affected area immediately after each workday.

13. The contractor should secure a Comprehensive General Liability Insurance (CGLI) to be submitted to LANDBANK prior to the start of the project of issuance of Notice to Proceed (NTP).

CGLI coverage shall be the following:	
➢ Each person	PhP 50,000.00
➢ Each accident	PhP 50,000.00
➢ Each period of indemnity	PhP 50,000.00
Property damage liability	
➢ Each person	PhP 50,000.00
➢ Each accident	PhP 50,000.00
➢ Each period of indemnity	PhP 50,000.00
Maximum aggregate limit	
➢ Contract amount under this project per bid offered by the winning contractor.	

14. The contractor should strictly observe the Bank's existing rules and regulations and shall be subject to the Bank's standard security policies and procedures while in the premises.

Prepared by:

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Reviewed by:

JOHN ALBEN V. MISLANG
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Project Development Officer, PMED

Approved by:

ENRICO DJ. SAMANIEGO
Department Manager, PMED

ANNEX A

LUZON

Lot 1 – NCR and North Luzon

BRANCH		LOCATION	CAPACITY (KWP)	
			HYBRID	ON-GRID
1	Ilocos Sur Corporate Center	San Idelfonso, Bantay By-pass Road, Poblacion East, San Idelfonso, Ilocos Sur	10	40
2	Tuguegarao Capitol Branch	Regional Govt Center, Carig Sur, Tuguegarao City, Cagayan	10	-
3	Isabela Corporate Center	Santiago, Tuguegarao Road, Dela Cruz St., Brgy. Mabini, Santiago, Isabela	10	40
4	Bataan - National Highway Branch	LANDBANK Building, Roman National Highway, Alangan, Limay, Bataan 2103	10	-
5	Balanga Branch	Don Manuel Banzon Avenue, Doña Francisca Subdivision, Balanga City, Bataan	10	-
6	LANDBANK LLDC (Intramuros)	Cabildo St, intramuros Manila	-	40

Lot 2 – South Luzon

BRANCH		LOCATION	CAPACITY (KWP)	
			HYBRID	ON-GRID
1	Lipa Branch	0024 Pres. J.P. Laurel Highway, Barangay Marawoy, Lipa City, Batangas	10	-
2	Tres Martires Branch (Cavite)	Trece Martires indang road, Luciano,Trece martires,Cavite	10	-
3	Sablayan Branch	P. Urieta St., Barangay Buenavista, Sablayan, Occidental Mindoro 5104	10	-
4	Boac Branch	Deogracia St., Brgy. Malusac, Boac, Marinduque	10	-

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5	Lucena Corporate Center	LANDBANK Building, Quezon Avenue Ext., Brgy. Gulang-Gulang, Lucena City	10	40
6	Naga (Rotunda) Branch	Panganiban Drive corner Magsaysay Avenue, Concepcion Pequena, Naga City	10	40
7	Albay Corporate Center	LANDBANK Building, Rizal St. Cabañgan, Legazpi City, Albay 4500	10	40
8	Cataingan Masbate Branch	Quezon Street, Cataingan, Masbate	10	-
9	Daet Branch	LANDBANK Bldg., Vinzons Ave., Maharlika Highway, Daet, Camarines Norte	10	-
10	Sorsogon Corporate Center	Diversion Road, Camid-AM, Sorsogon City, Sorsogon	10	40

Lot 3 – Visayas

BRANCH		LOCATION	CAPACITY (KWP)	
			HYBRID	ON-GRID
1	Culasi Branch	Silverio Cadiao St.,Centro Poblacion, Culasi, Antique	10	-
2	Sara Branch	LANDBANK Building, Cecilio Tady St., Sara, Iloilo	10	-
3	Himamaylan Branch	Rizal Street, Barangay Talaban, Himamaylan City, Negros Occidental 6108	10	-
4	Sipalay Branch	Magtolis St., Barangay 2, Sipalay, Negros Occidental	10	-
5	Bacolod Lacson - Galo Branch	LANDBANK Building, corner Lacson and Galo Streets, Barangay 22, Bacolod City, Negros Occidental 6101	10	-
6	Negros Occidental - South Corporate Center (Kabancalan)	Justice Perez Highway, Brgy. Talubangi, Kabankalan City, Negros Occidental	10	40

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7	Bacolod Corporate Center	Ground Floor LANDBANK Building, Cottage Road cor. Gatuslao Street, Bacolod City, Negros Occidental	10	40
8	Jagna (Bohol) Branch	Poblacion, Jagna, Bohol	10	-
9	Hilongos Branch	West Poblacion, Hilongos, Leyte	10	-
10	Negros Oriental Corporate Center (Dumaguete)	EJ Blanco Drive, Brgy. Piapi, Dumaguete City, Negros Oriental	10	40

MINDANAO

Lot 4 – Mindanao

BRANCH		LOCATION	CAPACITY (KWP)	
			HYBRID	ON-GRID
1	Pagadian Branch	LANDBANK Building, Gov. Vicente M. Cerilles, Street, Santiago District, Pagadian City	-	40
2	Wao Branch	LANDBANK Building, Wao, Lanao del Sur	10	-
3	Don Carlos Branch	LANDBANK Building, Sayre Highway, Poblacion Sur, Don Carlos, Bukidnon	10	-
4	Manolo Fortich	Sayre National Highway, Barangay Tankulan, Poblacion, Manolo Fortich, Bukidnon 8703	10	-
5	Bukidnon Corporate Center	LANDBANK Building, Fortich St.,Barangay 2, Malaybalay City	10	40
6	Misamis Oriental Corporate Center/Masterson (CDO) Branch	Masterson Avenue, Brgy. Upper Balulang, Cagayan De Oro City	-	40
7	Kibawe Branch	Kibawe,Bukidnon. Municipal Compound,Garcia Street, Barangay. West Kibawe, Kibawe, Bukidnon	10	-

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8	Bunawan Branch	Purok 4, Barangay San Teodoro, Bunawan, Agusan del Sur	10	-
9	Davao - R. Magsaysay Branch	LANDBANK Building, R. Magsaysay Avenue corner Sales Street, Davao City, Davao del Sur	10	-
10	Isulan Branch	LANDBANK Building, Gen. Siongco St. cor. National Highway, Isulan, Sultan Kudarat	10	-
11	Buluan Branch	Poblacion, National. Highway, Buluan,. Maguindanao.	10	-
12	Davao Corporate	3rd Floor, LBP Davao Corporate Center, #7 Palm Drive, corner Olive Road, Barangay Buhangin, Bajada, Davao City, Davao del Sur	10	40
13	Polomolok Branch	LANDBANK Building, French cor. Miranda Streets, Brgy. Poblacion, Polomolok, South Cotabato	10	-
14	Tacurong Branch	LANDBANK Building, Alunan Highway, Tacurong, Sultan Kudarat	10	-

PREPARED BY: **PMED**

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Required Preventive Maintenance checklist for the Solar Hybrid System

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A. Solar Panels:

- **Visual Inspection:**
  - Inspect for dirt, debris, bird droppings, leaves, and other foreign objects that may block sunlight.
  - Check for cracks, scratches, discoloration, or damage to the glass surface.
  - Ensure mounting structures are intact and corrosion-free.
  - Verify no shading from nearby objects or vegetation.
- **Cleaning:**
  - Clean panels with a soft brush or cloth and water if dirty. Avoid abrasive materials and harsh chemicals.
  - Check cleaning frequency depending on environmental conditions (e.g., dusty areas may need more frequent cleaning).
- **Electrical Connections:**
  - Inspect wiring and connectors for signs of corrosion, wear, or damage.
  - Ensure all electrical connections are secure and properly insulated.
- **Performance Check:**
  - Compare power output to expected values based on weather conditions. Any significant drop could indicate a problem.

B. Inverter:

- **Visual Inspection:**
  - Check the inverter for any visible damage, signs of overheating, or burnt components.
  - Ensure proper ventilation and that cooling fans (if any) are functioning.
- **Performance Monitoring:**
  - Check inverter display for fault codes, warning messages, or any abnormal readings.
  - Monitor output voltages and compare them with expected levels.
- **Firmware/Software Updates:**
  - Ensure the inverter has the latest firmware for optimal performance.
- **Cooling System:**
  - Clean any air filters and check fans to prevent overheating.

C. Battery (Lithium-Ion or Other Types):

- **Visual Inspection:**
  - Inspect the battery housing for any signs of swelling, corrosion, leaks, or physical damage.

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- Check cable connections and terminals for rust or corrosion.
- **Performance Check:**
  - Monitor battery charge and discharge cycles.
  - Check state of charge (SOC) and ensure it stays within recommended parameters.
  - Verify that battery temperature remains within safe operating limits.
- **Firmware/Software Updates:**
  - Ensure battery management system (BMS) firmware is up to date.

D. Charge Controllers:

- **Visual Inspection:**
  - Check for any signs of damage, overheating, or wear.
  - Inspect wiring and terminals for signs of corrosion or loose connections.
- **Performance Monitoring:**
  - Verify correct charge/discharge settings for the battery type.
  - Ensure proper operation and no error codes.

E. Electrical Wiring and Connections:

- **Inspection:**
  - Check for frayed, exposed, or damaged wiring.
  - Inspect junction boxes, conduit, and connectors for weatherproofing and security.
  - Ensure all grounding connections are secure and intact.
- **Thermal Scanning:**
  - Use thermal imaging to detect hotspots or areas of overheating in electrical connections.
- **Voltage and Current Testing:**
  - Check voltages at key points in the system (e.g., inverter input/output, battery terminals).
  - Ensure all wiring is carrying the correct current load.

F. Mounting Structures:

- **Inspection:**
  - Check for signs of rust or corrosion, especially if near coastal or humid environments.
  - Ensure that all bolts, nuts, and fasteners are secure and intact.
  - Inspect roof or ground mounts to ensure the structural integrity and alignment of panels.

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G. Surge Protection and Safety Devices:

- **Inspection:**
  - Check surge protection devices (SPD) and circuit breakers for any signs of wear or tripping.
  - Test residual current devices (RCDs) and ground-fault protection equipment.
- **Testing:**
  - Regularly test emergency shutdown systems to ensure they function properly.

H. System Performance Monitoring:

- **Data Logging:**
  - Review system logs from monitoring software for performance trends.
  - Check daily, monthly, and annual energy output.
- **Efficiency Analysis:**
  - Compare actual performance with the system design to detect any inefficiencies.

I. Documentation and Reporting:

- **Maintenance Logs:**
  - Keep detailed logs of all maintenance activities, inspections, and repairs.
- **Performance Reports:**
  - Regularly prepare reports on system performance, including energy production, outages, or any faults detected.

PREPARED BY: **PMED**

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EXHIBIT 1

PERFORMANCE ASSESSMENT REPORT			
Name		Contract Period	
Service Provider		Assessment Period	

Notes:
1. Under the REMARKS column, indicate results, observations and/or justifications as applicable.
2. General or additional remarks may be indicated in the REMARKS section at the last page, as deemed necessary, to state any issues, exceptions or recommendations.
3. An adjectival rating of "Needs Improvement" and "Poor" shall warrant further assessment by the implementing Unit noted by the Group Head concerned. This shall be clearly scored under the REMARKS section with corresponding recommendation subject to escalation to Management Committee

WEIGHT	EVALUATION CRITERIA	PERFORMANCE STANDARDS	RATING	WEIGHTED RATING	REMARKS
40%	Quality of the items and conformity to LANDBANK standard technical specifications	Able to meet the requirements of the bank as par as the technical specifications are concerned. 4 – 100% complied with the standard technical specifications. 3 – 80% to 99% complied with the standard technical specifications. 2 – 50% to 79% complied with the standard technical specifications. 1 – Below 50% complied with the standard technical specifications.			
25%	Response time in the delivery of service	Able to comply with the response time as stipulated in the contract service agreement. 4 – 100% of the total requests responded during the assessment period were responded within the agreed timeline. 3 –80% to 99% of the total requests responded during the assessment period were responded within the agreed timeline. 2 –50% to 79% of the total requests responded during the assessment period were responded within the agreed timeline. 1 –Below 50% of the total requests responded during the assessment period were responded within the agreed timeline; negative publicity was encountered by the Bank due to service delivery failure.			
15%	Aftersales Services Support	Able to provide warranty service, training and repair for a product 4 – 100% provided warranty service, training and repair for a product 3 – 80% to 99% able to provide warranty service, training and repair for a product 2 – 50% to 79% able to provide warranty service, training and repair for a product 1 – Below 50% able to provide warranty service, training and repair for a product			

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WEIGHT	EVALUATION CRITERIA	PERFORMANCE STANDARDS	RATING	WEIGHTED RATING	REMARKS
10%	Trained and Qualified Staff	Able to provide sufficient knowledgeable and skilled staff required in the maintenance of the assigned activity/service (Availability may be in various means such as email, on-site support, phone or video call, etc.) 4 –Provided sufficient highly skilled and knowledgeable staff support; staff always available when called. 3 –Provided sufficient highly skilled and knowledgeable staff support; Staff available on a schedule basis 2 – Provided sufficient highly skilled and knowledgeable staff support; Staff not readily available 1 – Lacks knowledgeable and skilled staff support; Staff cannot address the requests/inquiries/issues raised			
10%	Problem Resolution/Issue Management and Response to complaints	Able to address problems and response to complaints. 4 – 100% of the total problems reported were provided with solutions and the problem no longer recurred. 3 – 80% to 99% of the total problems reported were provided with solutions and the problem no longer recurred. 2 – 50% to 79% of the total problems reported were provided with solutions and the problem no longer recurred. 1 – Below 50% of the total problems reported were provided with assessment, work-around recommendation or permanent fixes and adequate information where the problem no longer recurred; negative publicity was encountered by the Bank due to service delivery failure.			

The total weight for the performance rating is equivalent to 100%
The service provider must attain at least a "Satisfactory" rating of 80%

TOTAL RATING	
AVERAGE RATING	
ADJECTIVAL RATING	

Numerical Rating	Adjectival Rating	Description
3.4 – 4.0	Excellent	Exceeds expectations/deliverables
2.3 – 3.3	Good	Meets Deliverables
1.7 – 2.2	Needs Improvement	Tighter Controls, Management Intervention required
1.0 – 1.6	Poor	Discontinue

REMARKS: (e.g. Rating result warranting further assessment and corresponding recommendation; Recommendation for amendment/renewal of the outsourcing agreement to bring them in line with current market standards and to cope with changes in their business strategies; Statement of TPSP materials problem; Reporting of issues/incidents/non-compliance that may adversely impact the delivery of product/service)

Prepared by:	Reviewed by:	Noted by:
Designated Personnel	Head, Implementing Unit	Group Head Concerned

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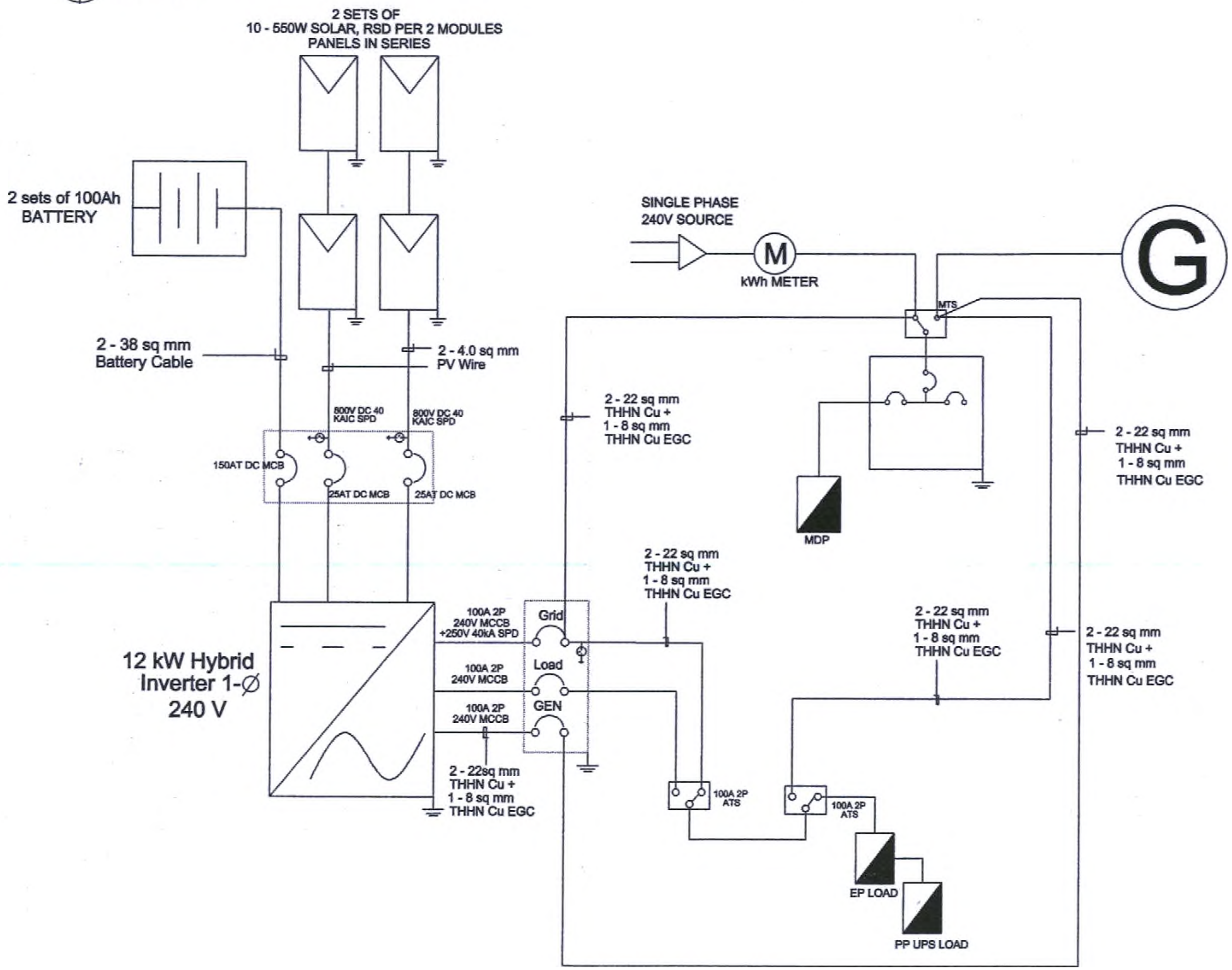
SINGLE LINE DIAGRAM (1-Ø)

SCALE: NTS



DESIGN ANALYSIS

SCALE: NTS

STRING LOAD COMPUTATION (PER STRING)

TOTAL PV VOLTAGE (VOC) = 49.8V x 10 = 449V
TOTAL PV VOLTAGE (VMP) = 41.6V x 10 = 416V
TOTAL CURRENT= 14.02A
TOTAL INSTALLED CAPACITY = 550W x 20 = 11kWp

IT = Iisc x 1.25
IT = 14.02 x 1.25
IT = 17.525A

USE: 2 - 25AT 2P 1000V DC MCB
2 -800V DC 2P SPD
2 - 4.0 sq mm PV wire

BATTERY COMPUTATION

$$IT = \frac{\text{INPUT POWER}}{\text{BATTERY VOLTAGE}} \times \text{C RATE} \times 1.25$$

$$IT = \frac{\text{10 000 WATTS}}{\text{51.2 VOLTS}} \times 1 \times 1.25 = 244.14A$$

USE: 1 - 250AT 2P DC MCB
2 - 38 sq mm BATTERY CABLE

INVERTER COMPUTATION (LOAD)

$$IT = \frac{\text{RATED POWER}}{\text{VOLTAGE}} \times 1.25$$

$$IT = \frac{\text{12 000 WATTS}}{\text{240V}} \times 1.25 = 57.292A$$

USE: 1 - 100AT 2P 240V AC MCCB
2 - 22 sq mm THHN cu + 1 - 8.0 sq mm THHN cu EGC

INVERTER COMPUTATION (GENERATOR INPUT)

$$IT = \frac{\text{RATED POWER}}{\text{VOLTAGE}} \times 1.25$$

$$IT = \frac{\text{12 000 WATTS}}{\text{240V}} \times 1.25 = 59.8A$$

USE: 1 - 100AT 2P 240V AC MCCB
2 - 22 sq mm THHN cu + 1 - 8.0 sq mm THHN cu EGC

INVERTER COMPUTATION (AC INPUT)

$$IT = \frac{\text{RATED POWER}}{\text{VOLTAGE}} \times 1.25$$

$$IT = \frac{\text{12 000 WATTS}}{\text{240V}} \times 1.25 = 59.8A$$

USE: 1 - 100AT 2P 240V AC MCCB
1 - 400V AC 25 KAIC SPD
2 - 22sq mm THHN cu + 1 - 8.0 sq mm THHN cu EGC

Revised 9.3.25
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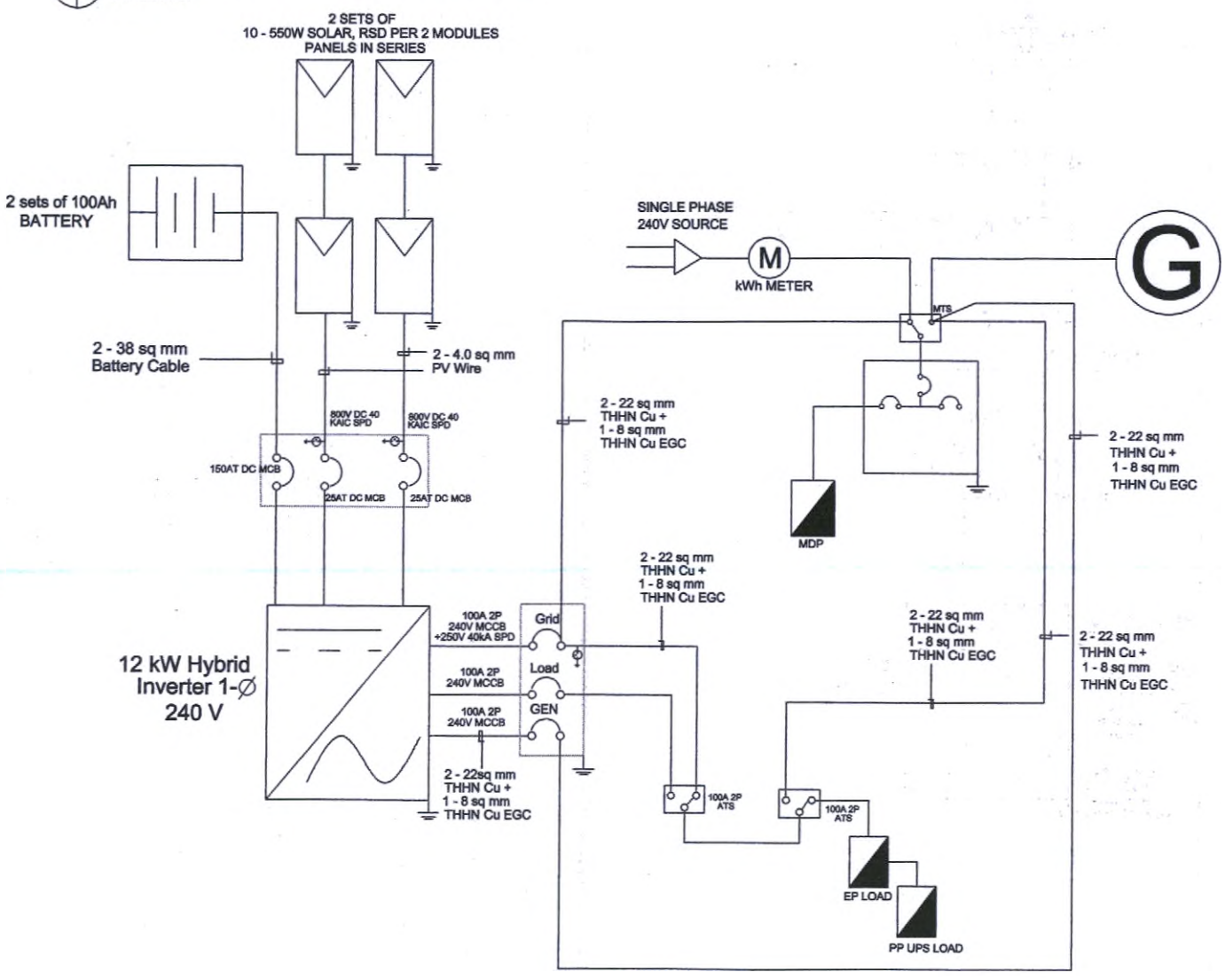
LANDBANK OF THE PHILIPPINES PROJECT MANAGEMENT & ENGINEERING DEPT. 1598 M.H. DEL PILAR ST., CORNER DR. QUINTOS ST., MALATE, MANILA	ELECTRICAL ENGINEER: KENEL M. MEDIAVILLO REG. NO.: 8910 PTR NO.: / ISSUED ON: ISSUED AT: / TIN NO.:	PROJECT TITLE: SINGLE PHASE 10KWP SOLAR HYBRID SYSTEM LOCATION:	APPROVED FOR LBP: FOR THE OWNER LBP ENRICO DJ. SAMANIEGO HEAD, PMED	SHEET CONTENT: SINGLE-LINE DIAGRAM 10KWP SOLAR HYBRID	REVISIONS:	DESIGN: K.M.M DRAWN: K.M.M DATE: MARCH 2025 CHECKED: DATE:	SHEET NO. E 1

SINGLE LINE DIAGRAM (1-∅)
SCALE: NTS



DESIGN ANALYSIS
SCALE: NTS

STRING LOAD COMPUTATION (PER STRING)

TOTAL PV VOLTAGE (VOC) = 49.8V x 10 = 449V
TOTAL PV VOLTAGE (VMP) = 41.6V x 10 = 416V
TOTAL CURRENT= 14.02A
TOTAL INSTALLED CAPACITY = 550W x 20 = 11kWp

IT = Iisc x 1.25
IT = 14.02 x 1.25
IT = 17.525A

USE: 2 - 25AT 2P 1000V DC MCB
2 -800V DC 2P SPD
2 - 4.0 sq mm PV wire

BATTERY COMPUTATION

$$IT = \frac{\text{INPUT POWER}}{\text{BATTERY VOLTAGE}} \times \text{C RATE} \times 1.25$$

$$IT = \frac{10\,000 \text{ WATTS}}{51.2 \text{ VOLTS}} \times 1 \times 1.25 = 244.14A$$

USE: 1 - 250AT 2P DC MCB
2 - 38 sq mm BATTERY CABLE

INVERTER COMPUTATION (LOAD)

$$IT = \frac{\text{RATED POWER}}{\text{VOLTAGE}} \times 1.25$$

$$IT = \frac{12\,000 \text{ WATTS}}{240V} \times 1.25 = 57.292A$$

USE: 1 - 100AT 2P 240V AC MCCB
2 - 22 sq mm THHN cu + 1 - 8.0 sq mm THHN cu EGC

INVERTER COMPUTATION (GENERATOR INPUT)

$$IT = \frac{\text{RATED POWER}}{\text{VOLTAGE}} \times 1.25$$

$$IT = \frac{12\,000 \text{ WATTS}}{240V} \times 1.25 = 59.8A$$

USE: 1 - 100AT 2P 240V AC MCCB
2 - 22 sq mm THHN cu + 1 - 8.0 sq mm THHN cu EGC

INVERTER COMPUTATION (AC INPUT)

$$IT = \frac{\text{RATED POWER}}{\text{VOLTAGE}} \times 1.25$$

$$IT = \frac{12\,000 \text{ WATTS}}{240V} \times 1.25 = 59.8A$$

USE: 1 - 100AT 2P 240V AC MCCB
1 - 400V AC 25 KAIC SPD
2 - 22sq mm THHN cu + 1 - 8.0 sq mm THHN cu EGC

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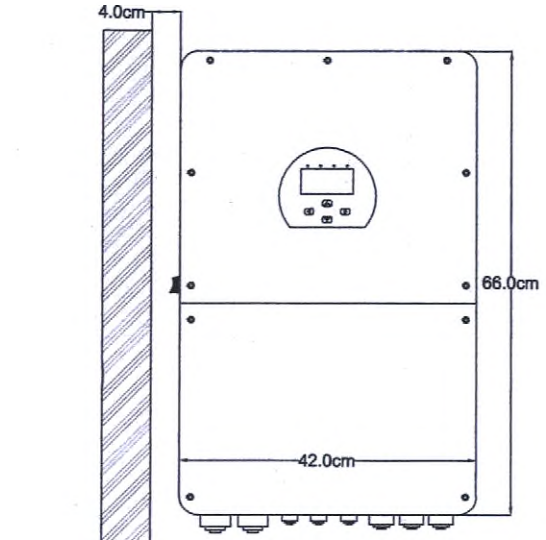
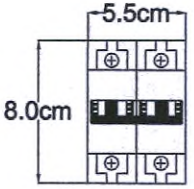
LANDBANK OF THE PHILIPPINES PROJECT MANAGEMENT & ENGINEERING DEPT. 1598 M.H. DEL PILAR ST., CORNER DR. QUINTOS ST., MALATE, MANILA	ELECTRICAL ENGINEER: KENNEL M. MEDALLO REG. NO.: 59106 PTR NO.: / ISSUED ON: ISSUED AT: / TIN NO.:	PROJECT TITLE: SINGLE PHASE 10KWP SOLAR HYBRID SYSTEM LOCATION:	APPROVED FOR LBP / FOR THE OWNER LBP ENRICO DJ. SAMANIEGO HEAD, PMED	SHEET CONTENT: SINGLE-LINE DIAGRAM 10KWP SOLAR HYBRID	REVISIONS:	DESIGN: K.M.M DRAWN: K.M.M DATE: MARCH 2025 CHECKED: DATE:	SHEET NO. E 1





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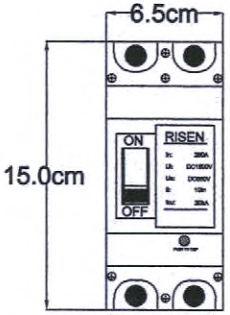

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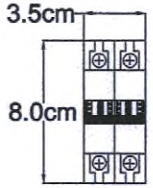

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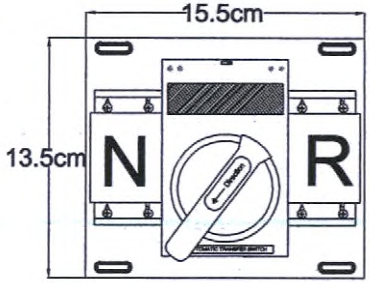
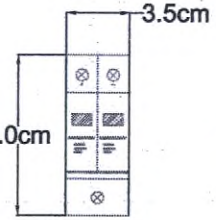
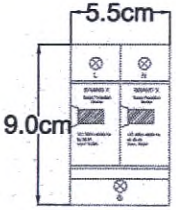


AUTOMATIC TRANSFER SWITCH



DC SPD



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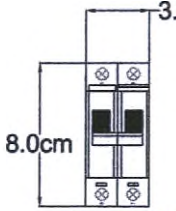

PV BREAKER

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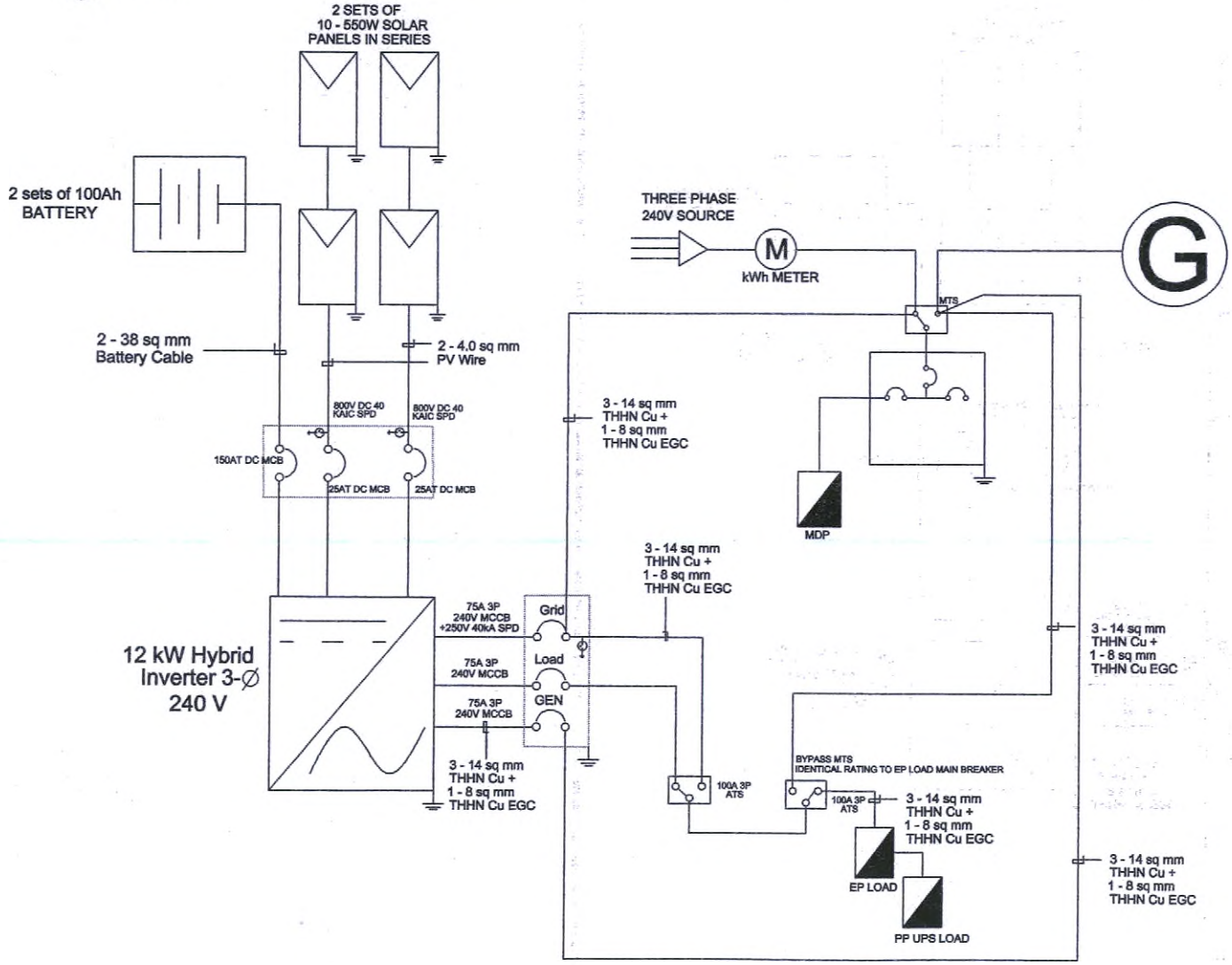
LANDBANK OF THE PHILIPPINES PROJECT MANAGEMENT & ENGINEERING DEPT. 1598 M.H. DEL PILAR ST., CORNER DR. QUINTOS ST., MALATE, MANILA	ELECTRICAL ENGINEER: KENEEL M. [illegible]AVILLO REG. NO.: 89106 PTR NO.: ISSUED ON: ISSUED AT: TIN NO.:	PROJECT TITLE: 10KWP SOLAR HYBRID SYSTEM COMBINER BOX SHOP DRAWINGS (SINGLE PHASE) LOCATION:	APPROVED FOR LBP: FOR THE OWNER LBP ENRICO DJ. SAMANIEGO HEAD, PMED	SHEET CONTENT: COMBINER BOX SHOP DRAWINGS FOR SINGLE-PHASE	REVISIONS:	DESIGN: K.M.M DRAWN: K.M.M DATE: MARCH 2025 CHECKED: DATE:	SHEET NO. E 1

SINGLE LINE DIAGRAM (3-∅)

SCALE: NTS



DESIGN COMPUTATION

SCALE: NTS

STRING LOAD COMPUTATION (PER STRING)

TOTAL PV VOLTAGE (VOC) = 49.8V x 10 = 449V
TOTAL PV VOLTAGE (VMP) = 41.6V x 10 = 416V
TOTAL CURRENT= 13.8A
TOTAL INSTALLED CAPACITY = 550W x 20 = 11kWp

IT = IMP x 1.25
IT = 13.21A x 1.25
IT = 16.51A

USE: 2 - 25AT 2P 1000V DC MCB
2 -800V DC 2P SPD
2 - 4.0 sq mm PV wire

BATTERY COMPUTATION

$$IT = \frac{\text{INPUT POWER}}{\text{BATTERY VOLTAGE}} \times \text{C RATE} \times 1.25$$

$$IT = \frac{10000 \text{ WATTS}}{51.2 \text{ VOLTS}} \times 1 \times 1.25 = 244.14A$$

USE: 1 - 250AT 2P DC MCB
2 - 38 sq mm BATTERY CABLE

INVERTER COMPUTATION (LOAD)

$$IT = \frac{\text{RATED POWER}}{\sqrt{3} \times \text{POWER FACTOR} \times \text{VOLTAGE}} \times 1.25$$

$$IT = \frac{10\,000 \text{ WATTS}}{\sqrt{3} \times 0.8 \times 240V} \times 1.25 = 37.59A$$

USE: 1 - 75AT 3P 240V AC MCCB
2 - 14 sq mm THHN cu + 1 - 8.0 sq mm THHN cu EGC

INVERTER COMPUTATION (GENERATOR INPUT)

$$IT = \frac{\text{RATED POWER}}{\sqrt{3} \times \text{POWER FACTOR} \times \text{VOLTAGE}} \times 1.25$$

$$IT = \frac{10\,000 \text{ WATTS}}{\sqrt{3} \times 0.8 \times 240V} \times 1.25 = 37.59A$$

USE: 1 - 75 AT 3P 240V AC MCCB
2 - 14 sq mm THHN cu + 1 - 8.0 sq mm THHN cu EGC

INVERTER COMPUTATION (AC INPUT)

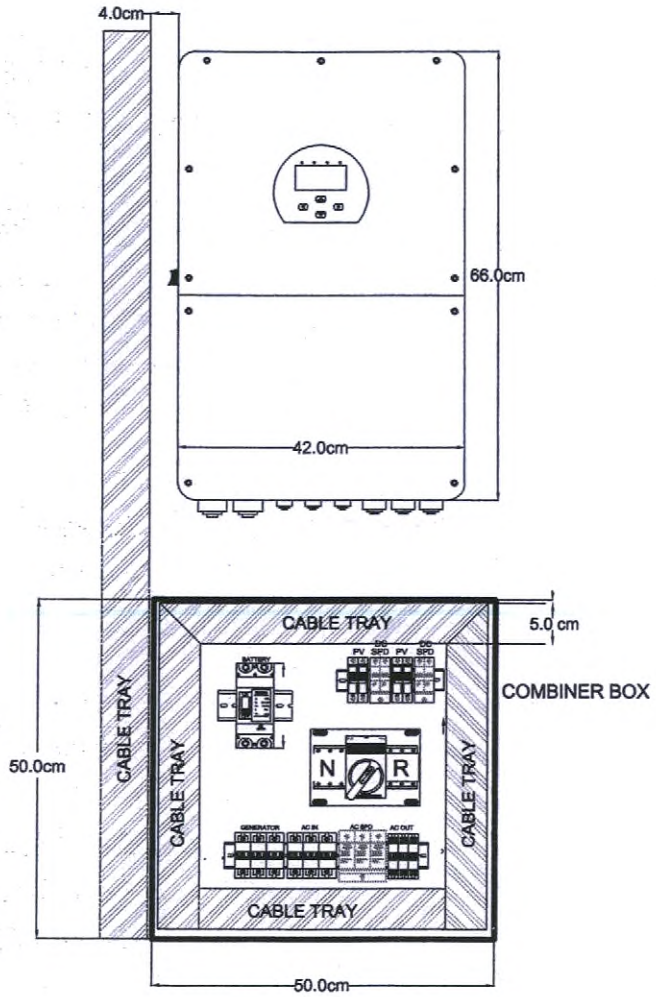
$$IT = \frac{\text{RATED POWER}}{\sqrt{3} \times \text{POWER FACTOR} \times \text{VOLTAGE}} \times 1.25$$

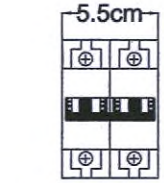
$$IT = \frac{10\,000 \text{ WATTS}}{\sqrt{3} \times 0.8 \times 240V} \times 1.25 = 37.59 \text{ A}$$

USE: 1 - 75AT 3P 240V AC MCCB
1 - 400V AC 25 KAIC SPD
2 - 14 sq mm THHN cu + 1 - 8.0 sq mm THHN cu EGC

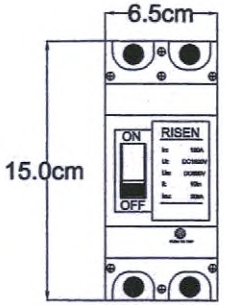
Revised 9.3.21
D-23

LANDBANK OF THE PHILIPPINES PROJECT MANAGEMENT & ENGINEERING DEPT. 1598 M.H. DEL PILAR ST., CORNER DR. QUINTOS ST., MALATE, MANILA	ELECTRICAL ENGINEER: KENEL M. MEDIAVILLO REG. NO.: 0[illegible] PTR NO.: ISSUED ON: ISSUED AT: TIN NO.:	PROJECT TITLE: 10KWP SOLAR HYBRID SYSTEM LOCATION:	APPROVED FOR LBP: FOR THE OWNER LBP ENRICO DJ. SAMANIEGO HEAD, PMED	SHEET CONTENT: SINGLE-LINE DIAGRAM 10KWP SOLAR HYBRID	REVISIONS:	DESIGN: K.M.M DRAWN: K.M.M DATE: MARCH 2020 CHECKED: DATE:	SHEET NO. E 1

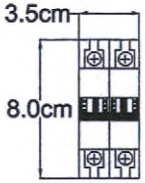




AC IN & GENERATOR



BATTERY



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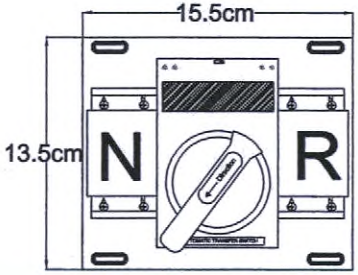
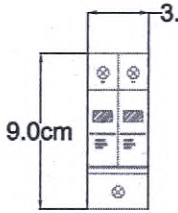
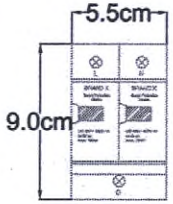


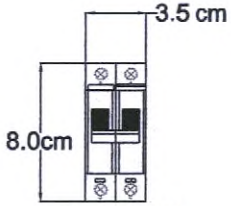
AUTOMATIC TRANSFER SWITCH



DC SPD



AC SPD



PV BREAKER

Revised 9.3.25
D-24

LANDBANK OF THE PHILIPPINES PROJECT MANAGEMENT & ENGINEERING DEPT. 1598 M.H. DEL PILAR ST., CORNER DR. QUINTOS ST., MALATE, MANILA	ELECTRICAL ENGINEER: KENEL S. MEDIAVILLO REG. NO.: [illegible] PTR NO.: ISSUED ON: ISSUED AT: TIN NO.:	PROJECT TITLE: 10KWP SOLAR HYBRID SYSTEM COMBINER BOX SHOP DRAWINGS (THREE PHASE) LOCATION:	APPROVED FOR LBP: FOR THE OWNER LBP ENRICO DJ. SAMANIEGO HEAD, PMED	SHEET CONTENT: COMBINER BOX SHOP DRAWINGS FOR THREE-PHASE	REVISIONS:	DESIGN: K.M.M DRAWN: K.M.M DATE: MARCH 2025 CHECKED: DATE:	SHEET NO. E 1

SINGLE LINE DIAGRAM

SCALE: NTS

GENERAL NOTES FOR SOLAR PANEL SINGLE LINE DIAGRAM

1. Standards and Compliance:
   * All installations shall comply with the latest editions of the Philippine Electrical Code (PEC), National Electrical Code (NEC), and applicable local regulations.
   * Equipment and materials must meet IEC, UL, or other relevant international standards.

2. System Configuration:
   * The system shall be a photovoltaic (PV) solar hybrid parallel with grid-tied system as indicated in the diagram.
   * The inverter, charge controller, battery , and distribution panels shall be coordinated as per the design requirements.

3. Equipment Ratings:
   * Solar PV modules, inverters, and other components shall have voltage, current, and power ratings suitable for the systemcapacity.
   * Protection devices such as fuses, breakers, and disconnects shall be rated appropriately for their applications.

4. Wiring and Conduits:
   * All electrical wiring shall be in accordance with PEC/NEC standards.
   * PV source and output circuit conductors shall be sized to minimize voltage drop and ensure efficiency.
   * Conduits and cable trays shall be used where required for mechanical protection.

5. Grounding and Bonding:
   * Proper grounding of the PV array, inverter, and related components shall be ensured.
   * Equipment grounding conductors and lightning protection shall be installed as per standard requirements.

6. AC and DC Protection and Safety:
   * Overcurrent protection devices (OCPD) shall be installed at appropriate locations.
   * Surge protection devices (SPD) shall be provided to safeguard against transient voltages.

7. Monitoring and Control:
   * The system shall be equipped with monitoring devices for tracking power generation and consumption.
   * Remote monitoring capability may be provided based on project specifications.

8. Labeling and Identification:
   * All PV system components shall have appropriate warning and identification labels.
   * Labeling shall comply with PEC/NEC requirements for safety and easy troubleshooting.

9. Testing and Commissioning:
   * The system shall undergo insulation resistance testing, polarity checks, and performance verification before commissioning.
   * A final inspection shall be conducted to ensure all components function as per design.

DESIGN ANALYSIS

SCALE: NTS

STRING LOAD COMPUTATION (PER STRING)

TOTAL PV VOLTAGE (VOC) = 49.8V x 10 = 449V
TOTAL PV VOLTAGE (VMP) = 41.8V x 10 = 418V
TOTAL CURRENT= 14.02A
TOTAL INSTALLED CAPACITY = 550W x 20 = 11kWp

IT = Isc x 1.25
IT = 14.02 x 1.25
IT = 17.526A

USE: 2 - 25AT 2P 1000V DC MCB
2 - 600V DC 2P SPD
2 - 4.0 sq mm PV wire

BATTERY COMPUTATION

$$IT = \frac{\text{INPUT POWER}}{\text{BATTERY VOLTAGE}} \times \text{C RATE} \times 1.25$$

$$IT = \frac{\text{10 000 WATTS}}{\text{51.2 VOLTS}} \times 1 \times 1.25 = 244.14A$$

USE: 1 - 250 AT 2P DC MCB
2 - 38 sq mm BATTERY CABLE

AC PROTECTION DEVICE INVERTER COMPUTATION (40KWP ON-GRID)

$$IT = \frac{\text{RATED POWER}}{\sqrt{3} \times \text{POWER FACTOR} \times \text{VOLTAGE}} \times 1.25$$

$$IT = \frac{\text{44 000 WATTS}}{\sqrt{3} \times 0.8 \times 240V} \times 1.25 = 165.39A$$

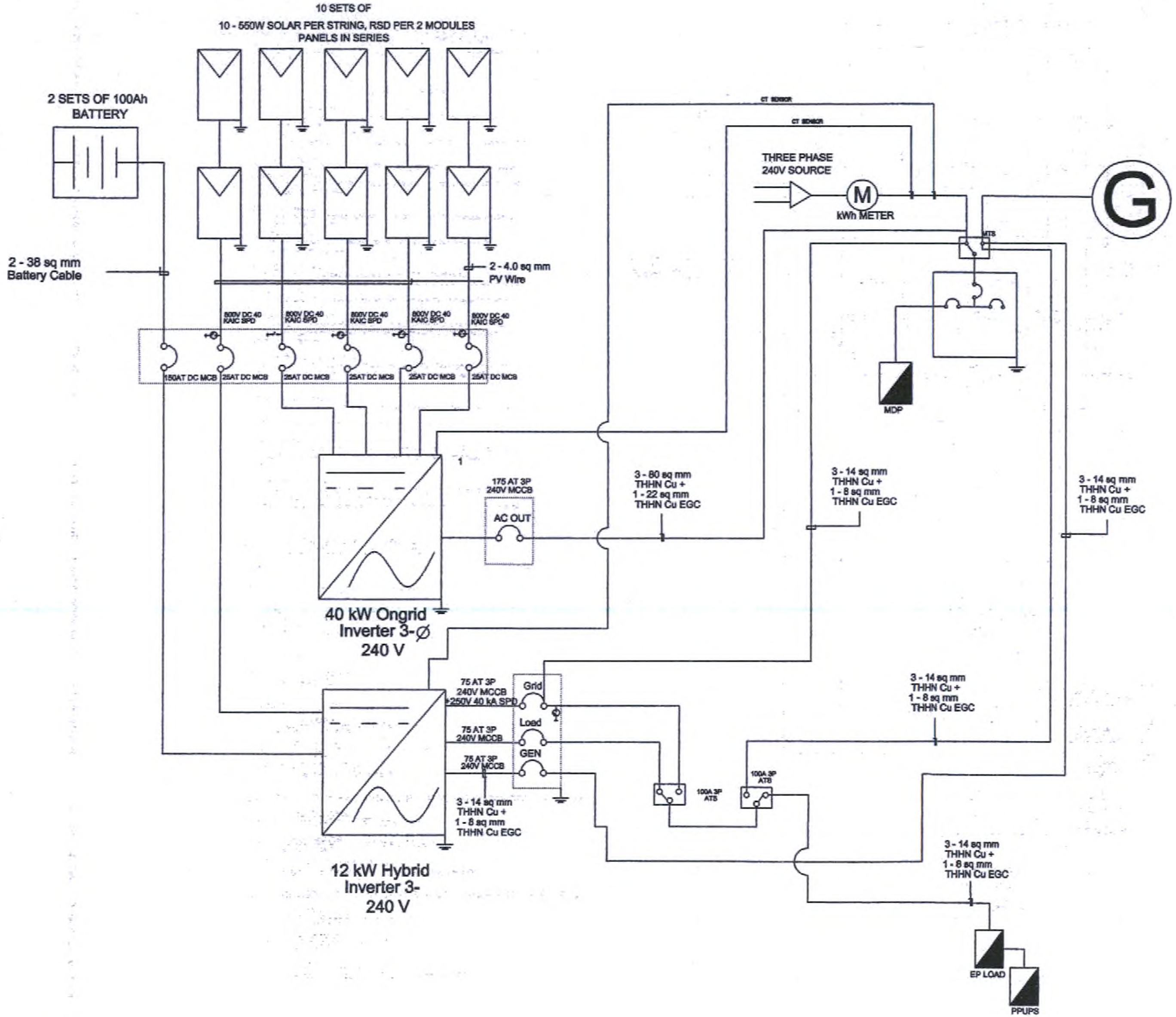
USE: 1 - 175 AT 3P 240V AC MCCB
2 - 80 sq mm THHN cu + 1 - 22.0 sq mm THHN cu EGC

AC PROTECTION DEVICE INVERTER COMPUTATION (10KWP HYBRID)

$$IT = \frac{\text{RATED POWER}}{\sqrt{3} \times \text{POWER FACTOR} \times \text{VOLTAGE}} \times 1.25$$

$$IT = \frac{\text{12 000 WATTS}}{\sqrt{3} \times 0.8 \times 240V} \times 1.25 = 41.35\ A$$

USE: 1 - 75AT 3P 240V AC MCCB
2 - 14 sq mm THHN cu + 1 - 8.0 sq mm THHN cu EGC



Revised 9.3.25
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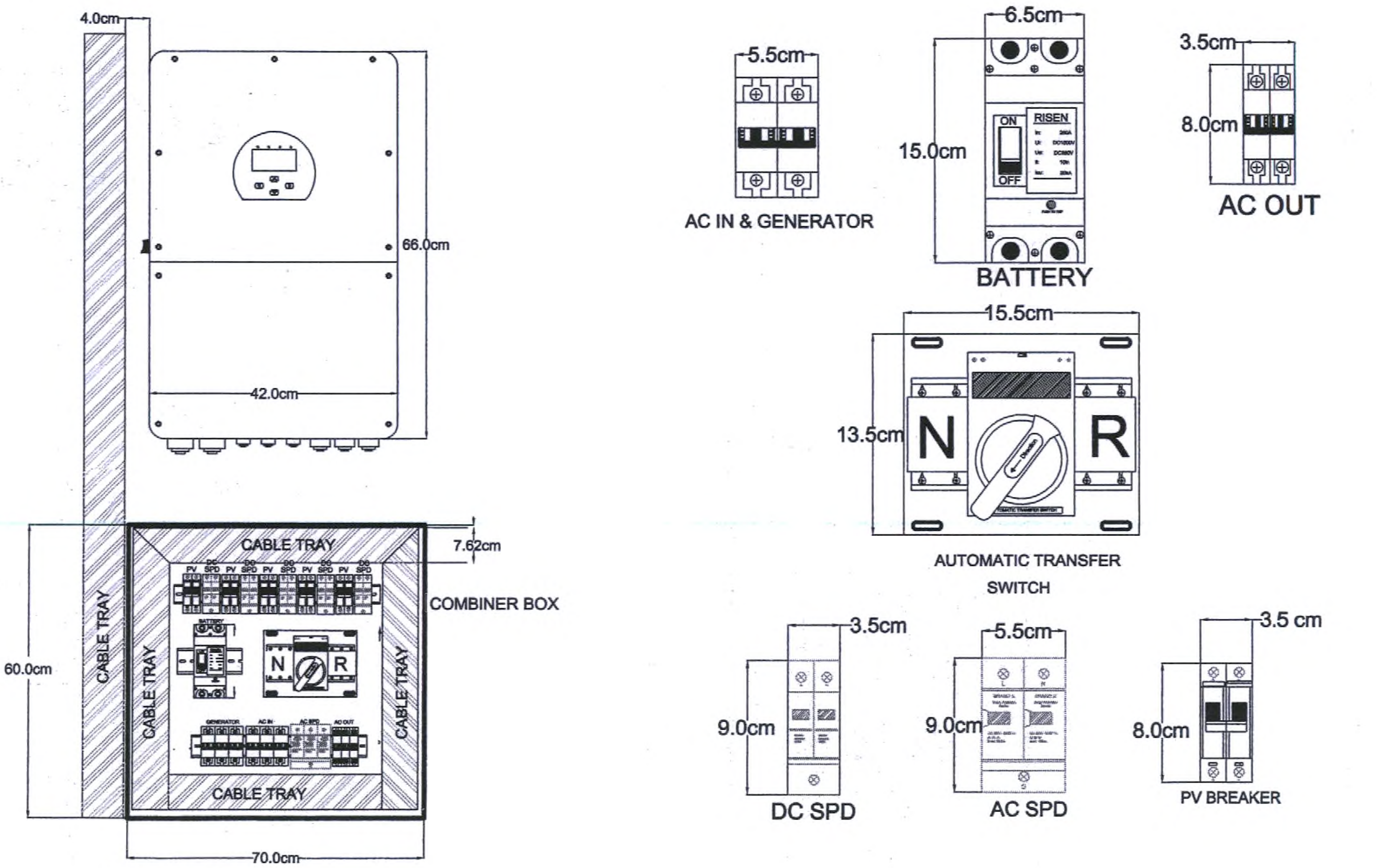
LANDBANK OF THE PHILIPPINES PROJECT MANAGEMENT & ENGINEERING DEPT. 1598 M.H. DEL PILAR ST., CORNER DR. QUINTOS ST., MALATE, MANILA	KENEL M. MEDIAVILLO REG. NO.: 69106 PTR NO.: ISSUED ON:	PROJECT TITLE: 50KWP SOLAR ENERGY SYSTEM WITH 10KW BACK-UP CAPACITY (THREE PHASE)	APPROVED FOR LBP: FOR THE OWNER LBP ENRICO DJ. SAMANIEGO HEAD, PMED	COMBINER BOX SHOP DRAWINGS FOR THREE PHASE	K.M.M DRAWN: K.M.M DATE: MARCH 2025 CHECKED:	E 1



Revised 9.3.25
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LANDBANK OF THE PHILIPPINES PROJECT MANAGEMENT & ENGINEERING DEPT. 1598 M.H. DEL PILAR ST., CORNER DR. QUINTOS ST., MALATE, MANILA	[illegible] REG. NO.: [illegible] PTR NO.: ISSUED ON:	PROJECT TITLE: SHOP DRAWING FOR 50KWP SOLAR ENERGY COMBINER BOX	APPROVED FOR LBP: FOR THE OWNER LBP ENRICO DJ. SAMANIEGO HEAD, PMED	K.M.M DRAWN: K.M.M DATE: MARCH 2025 CHECKED:

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RESPONSES TO BIDDER'S QUERIES AND/OR SUGGESTIONS

DATE	September 3, 2025
PROEJECT INDENTIFICATION NO.	LBP-GIBAC-ITB-GS-20250609-01
PROJECT NAME	Solar Photovoltaic System at Forty (40) LANDBANK Offices (4 Lots)
PROPONENT UNIT/TECHNICAL WORKING GROUP	Project Management and Engineering Department

ITEM NO.	PORTION OF BIDDING DOCUMENTS	QUERIES AND/OR SUGGESTIONS	LANDBANK's RESPONSES
1	**Technical Eligibility Document**	Motion to allow PCAB License with ISO 9001 certification in lieu of DOE registration.	No, PCAB and ISO certifications is not allowed in lieu of Department of Energy (DOE) certificate as an accredited Solar Photovoltaic (PV) Installer. Moreover, PMED shall require submission of PCAB license as additional requirement.

Prepared by:

KENEL M. MEDIAVILLO
Electrical Engineer, PMED

Approved by:

ENRICO DJ. SAMANIEGO
Department Manager, PMED

ANNEX H