MARSHALLS ENERGY COMPANY INC.

P.O. Box1439 - Majuro - Marshall Islands -MH 96960
Tel.(692)625-3827 -Fax(692)625-3397
Emailmeccorp@ntamar.net

INVITATION TO QUOTE (Advertisement)

REQUEST FOR QUOTATIONS (RFQ) WORKS

Date: Jan 22, 2021

Project Title:	**Sustainable Energy Development Project (SEDeP)**
Source of Funding (Grant no.):	**D261-MH**
Contract Name**:**	**Design, Construct and Install a solar sidewalk system in Ebeye Island, the Republic of the Marshall Islands.**
Contract Ref:	**MH-MEC-203886-GO-RFQ**

1. This project is financed by the World Bank through the above grant. The Marshalls Energy Company invites sealed quotations from eligible bidders for Design, Construct and Install a solar sidewalk system in Ebeye Island, the Republic of the Marshall Islands.

2. Eligible bidders should have experience in the construction of at least one *contract* of the nature and complexity equivalent to the Works described in this Invitation, in the last three years and should provide evidence of financial resources to successfully complete the Works.

3. A complete set of Request for Quotation (RFQ) documents in English will be provided to interested eligible bidders upon the submission of a written application to the address below. The bidding documents will be issued through e-mail only.

4. Each bidder shall submit only one quotation. All quotations submitted in violation of this rule shall be rejected.

5. Quotations must be submitted by hand delivery, post or electronically to the address below on or before **March 8, 2021 5.00 PM Majuro time.** Late quotations may be rejected.

6. The address referred to above is:

Jack Chong-Gum, CEO
Marshalls Energy Company (MEC)
P O Box 1439,
Majuro, Marshall Islands 96960
jack.chonggum@mecrmi.com
Phone no. (692) 625 3827/8

Fax: (692) 625-5886

Cc the following:

Kamalesh Doshi
SEDeP Project Manager
Phone no. +1 (802) 310 2682
E-mail: ***kamaleshdoshi@mecrmi.net***

Mylyn Caraig,
Procurement Advisor- CIU, DIDA
Email: proc_advice_rmi@yahoo.com

Takaaki Ito
SEDeP Project Implementation Officer
E-mail: takaaki.ito@mecrmi.com

Sincerely,

Kamalesh Doshi
Project Manager (SEDeP)

MARSHALLS ENERGY COMPANY INC.

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Tel.(692)625-3827 -Fax(692)625-3397
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REQUEST FOR QUOTATION (RFQ-WORKS)

Date of Issue of RFQ**: Jan 22, 2021**

Project Title:	**Sustainable Energy Development Project (SEDeP)**
Source of Funding (Grant no.):	**D261-MH**
Contract Name**:**	**Design, Construct and Install a Solar Sidewalk System in Ebeye Island, the Republic of the Marshall Islands.**
Contract Ref:	**MH-MEC-203886-GO-RFQ**

To: _____

Dear Bidder,

1. The Marshalls Energy Company (Employer) hereby invites you to submit a quotation for the following works: Design, Construct and Install a solar sidewalk system in Ebeye Island, the Republic of the Marshall Islands.

2. To assist you in the preparation of your price quotation we enclose the necessary Specifications, and Activity Schedule (AS), Drawings, and Form of Contract.

3. You may submit the signed Form of Quotation (including the priced AS) by hand delivery, post or electronically at the following address:

   Attn: **Jack Chong-Gum, CEO**
   Marshalls Energy Company (MEC)
   P O Box 1439,
   Majuro, Marshall Islands 96960
   jack.chonggum@mecrmi.com
   Phone no. (692) 625 3827/8
   Fax: (692) 625-5886

   Cc the following:

   Kamalesh Doshi
   SEDeP Project Manager

Phone no. +1 (802) 310 2682
E-mail: ***kamaleshdoshi@mecrmi.net***

Mylyn Caraig,
Procurement Advisor- CIU, DIDA
Email: proc_advice_rmi@yahoo.com

Takaaki Ito
SEDeP Project Implementation Officer
E-mail: takaaki.ito@mecrmi.com

4. You must have experience as a contractor in the construction of at least one contract of the nature and complexity equivalent to the works included in this RFQ in the last three years, and provide evidence of financial resources to successfully complete the works of this contract.

5. Each bidder shall submit only one quotation. All quotations submitted in violation of this rule shall be rejected.

6. In evaluating the quotations, the Employer will determine for each quotation the evaluated price by adjusting the price quotation by making any correction for any arithmetical errors as follows:

   (a) where there is a discrepancy between amounts in figures and in words, the amount in words will govern.

   (b) For Quotations with AS: where there is a discrepancy in the total and the sum of the line item amounts, the total shall be corrected;

   (c) if a Bidder refuses to accept the correction, his quotation will be rejected.

7. Your quotation shall be valid for a period of forty-five (45) days from Feb 15, 2021 (deadline for submission of the quotation).

8. Your quotation in English language shall be for the whole works and based on a fixed lumpsum for the entire works. Currency of quoted prices and payment shall be in US Dollars. The quotation shall include all duties, local taxes and other levies payable by the contractor in accordance with the local laws.

9. The Employer will award the contract to the Bidder whose quotation has been determined to be substantially responsive to this RFQ, has offered the lowest evaluated price quotation and is qualified to do the Works.

10. The terms and conditions of contract are attached to this RFQ.

11. Your quotation should be submitted by **March 8, 2021 5.00 PM Majuro time**.

12. Further information can be obtained from:

    Attn: **Jack Chong-Gum, CEO**
    Marshalls Energy Company (MEC)
    P O Box 1439,

Majuro, Marshall Islands 96960
jack.chonggum@mecrmi.com
Phone no. (692) 625 3827/8
Fax: (692) 625-5886

Cc the following:

Kamalesh Doshi
SEDeP Project Manager
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Procurement Advisor- CIU, DIDA
Email: proc_advice_rmi@yahoo.com

Takaaki Ito
SEDeP Project Implementation Officer
E-mail: takaaki.ito@mecrmi.com

13. Please confirm by fax/e-mail to the contact provided in paragraph 12 above, the receipt of this RFQ and whether or not you will submit the price quotation(s).

Sincerely,

Kamalesh Doshi
Project Manager (SEDeP)

NOTIFICATION OF AWARD

[date]

To: *[name and address of the Winning Bidder]*

Project Title: **Sustainable Energy Development Project (SEDeP)**

Source of Funding
(Grant no.): **D261-MH**
Contract Name**:** **Design, Construct and Install a Solar Sidewalk System in Ebeye Island, the Republic of the Marshall Islands.**
Contract Ref: **MH-MEC-203886-GO-RFQ**

Notification of Award

This is to notify you that your Quotation dated ……. ***[insert date]*** ……. for execution of the Design, Construct and Install a solar sidewalk system in Ebeye Island, the Republic of the Marshall Islands. (**MH-MEC-203886-GO-RFQ)** is hereby accepted for the Contract Amount of . . . . . ***[insert amount in numbers and words and name of currency]***, as corrected and modified in accordance with the Request for Quotation (RFQ).

You are requested to countersign the attached Contract Agreement, and return it to the Employer at the following address:

Attn: **Jack Chong-Gum, CEO**
Marshalls Energy Company (MEC)
P O Box 1439,
Majuro, Marshall Islands 96960
jack.chonggum@mecrmi.com
Phone no. (692) 625 3827/8
Fax: (692) 625-5886

Cc the following:

Kamalesh Doshi
SEDeP Project Manager
Phone no. +1 (802) 310 2682
E-mail: kamaleshdoshi@mecrmi.net

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Procurement Advisor- CIU, DIDA
Email:proc_advice_rmi@yahoo.com

Takaaki Ito
SEDeP Project Implementation Officer
E-mail: takaaki.ito@mecrmi.com

before ……. (date)……

Authorized Signature:
Name and Title of Signatory:
Name of Employer:

Attachment: Contract Agreement signed by the Employer, with accepted priced BOQ, Specifications and Drawings

FORM OF CONTRACT: RFQ FOR WORKS

Name of Country: The Republic of Marshall Islands

Project Title: **Sustainable Energy Development Project (SEDeP)**

Source of Funding
(Grant no.): **D261-MH**

Contract Name**:** **Design, Construct and Install a solar sidewalk system in Ebeye Island, the Republic of the Marshall Islands.**

Contract Ref: **MH-MEC-203886-GO-RFQ**

This Contract is made this _____ day of (insert month in words) _____(insert year) ____between **Marshalls Energy Company** on the one part (hereinafter called "the Employer") and _(insert the legal name of the bidder)_____ (hereinafter called "the Contractor") on the other part.

Whereas the Employer has called for quotations for the Design, Construct and Install a Solar Sidewalk System in Ebeye Island, the Republic of the Marshall Islands. (**MH-MEC-203886-GO-RFQ)** ("the Works") and the Contractor has submitted a quotation for the Works and the Employer has accepted the Contractor's Quotation dated (*Day/Month/ Year* _____) for the execution and completion of the Works and the remedying of any defects therein.

Now this Contract witnesses as follows:

1. The Contractor hereby covenants to execute the Works fully detailed in the drawings, technical specifications and Activity Schedule (AS) included in the Contractor's Quotation (Annex 1) which constitute an integral part of this Contract in a professional and workmanship like manner in accordance with the following Conditions of Contract:

   (a) Remedy all defects within 7 working days of notification by the Engineer in charge _____ (name), during the period of execution of the contract and thereafter for defects notified within the defect liability period.
   (b) The Employer reserves the right to terminate the contract due to unsatisfactory performance 10 days after giving a written notice.
   (c) All material and construction equipment on site, temporary works, and the Works shall be deemed to be the property of the Employer if the contract is terminated due to default by the Contractor.
   (d) The Contractor will in all cases abide by the directions of the Engineer in charge.
   (e) The Contractor shall submit to the Engineer in charge, a program within 7 days after signing the contract describing general methods and schedule to complete the Works.
   (f) The Contract completion period shall be [*Employer to insert period*] (calendar days) after signing of the Contract.
   (g) For AS based contracts: The Contract Price is fixed and no additional payments or deductions will be made for variations in quantities. New items of work performed under variation due to change of design as ordered by the Engineer in charge will be paid at mutually agreed prices and, in case of any disagreement between the Contractor and the Engineer in charge, the latter will fix the prices that will be binding on the Contractor.

   (h) The Law governing the contract shall be the applicable laws of The Republic of Marshall Islands.
   (i) The Contractor shall be responsible for the safety of all the activities on the Site.

(j) During execution of the Works the Engineer in charge will carry out inspection of the Works at site to verify that the Works are executed by the Contractor in accordance with the specifications and required quality as per specifications. The Engineer in charge will reject works not performed to the required specifications and the Contractor shall take immediate actions to rectify all defects in accordance with subparagraph (a) above.

(k) Either party may terminate the Contract by giving a 14 days' notice to the other for unforeseen events such as wars and acts of God such as earthquake, floods, fires etc. In such case the payments will be made for the completed works to the date of termination of contract.

(l) The Contractor is responsible for all taxes, duties, levies, customs duties, etc. in accordance with the laws of The Republic of Marshall Islands which are already included in the unit rates or prices in the BOQ, except VAT.

(m) Any disputes between the Employer and the Contractor arising under or in connection with the Contract shall be resolved amicably. In the event the dispute remains unresolved, either party may refer the dispute to arbitration in accordance with The Republic of Marshall Islands Laws or jurisdiction at the Courts at Majuro.

2. In consideration thereof the Employer covenants to pay the Contractor the Contract Price of _____ (in words and figures) in the following manner and instalments:

(A) An advance payment of 15 percent of the Contract Price will be paid upon the submission of an Advance Payment Bank Guarantee in the same amount and currency. As an alternative to the Bank Guarantee the payment of 15 percent of the Contract Price will be paid upon the Contractor bringing to the work site the following items and the Engineer in charge certifying it: 1/ at least one half of all materials to be incorporated in the Works or all materials to be consumed within three months whichever is less, and 2/ all equipment required for the construction.

(B) Subsequent payments will be made for each activity completed based on the quoted price for the respective activity. For each payment, 20% of the value of payment will be deducted for repayment of any advance payment until the total of advance payment is paid off, and 10% of the value will be retained as retention money until the total of retention money reaches 5% of the accepted contract price. Each interim payment will be due for payment within 21 days of submission of invoice and supporting documents for the completed quantities.

(C) One-half of the 5% retention money will be paid to the Contractor on certification by the Engineer in charge of substantial completion of the Works, and the balance half of the retention money will be paid at the end of the defects liability period. The Advance Payment Bank Guarantee shall be released when the advance payment is paid back in total.

(D) The defects liability period will be 12 months after taking over of completed works by the Employer.

3. **Inspections and Audits**

3.1 The Contractor shall carry out all instructions of the Engineer in charge which comply with the applicable laws where the Site is located.

3.2 The Contractor shall permit, and shall cause its Sub-Contractors to permit, the World Bank ("the Bank") and/or persons or auditors appointed by the Bank to inspect and/or audit its accounts and records and other documents relating to the submission of the Quotation to carry out the Works and performance of the Contract. Any failure to

comply with this obligation may constitute a prohibited practice subject to contract termination and/or the imposition of sanctions by the Bank (including without limitations determination of ineligibility) in accordance with prevailing Bank's sanctions procedures.

4. **Termination**.

The Employer may terminate this Contract with at least ten (10) working days prior written notice to the Contractor after the occurrence of any of the events specified in paragraphs (a) through (d) of this Clause:

(a) If the Contractor does not remedy a failure in the performance of its obligations under the Contract within seven (7) working days after being notified, or within any further period as the Engineer in charge may have subsequently approved in writing;

(b) If the Contractor becomes insolvent or bankrupt;

(c) If the Contractor, in the judgment of the Employer or the Bank, has engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices (as defined in the prevailing Bank's sanctions procedures) in competing for or in performing the Contract.

(d) If the Employer, in its sole discretion and for any reason whatsoever, decides to terminate this Contract.

5. **Fraud and Corruption**

If the Employer determines that the Contractor and/or any of its personnel, or its agents, or its Subcontractors, consultants, service providers, suppliers and/or their employees has engaged in corrupt, fraudulent, collusive, coercive or obstructive practices (as defined in the prevailing Bank's sanctions procedures), in competing for or in executing the Contract, then the Employer may, after giving 14 days' notice to the Contractor, terminate the Contractor's employment under the Contract and cancel the contract, and the provisions of Clause 4 shall apply as if such expulsion had been made under Sub-Clause 4(a).

In witness whereof the parties thereto have caused this Contract to be executed the day and year first before written.

_____ Signature (on behalf of the Employer) In the presence of: _____ (Signature of Witness) Name and designation of Witness:	Name of the Contractor. _____ _____ Signature on behalf of Contractor In the presence of: _____ (Signature of Witness) Name and Address of Witness:

ANNEX 1: SPECIFICATIONS

Project Title:	**Sustainable Energy Development Project (SEDeP)**
Source of Funding (Grant no.):	**D261-MH**
Contract Name**:**	**Design, Construct and Install a solar sidewalk system in Ebeye Island, the Republic of the Marshall Islands.**
Contract Ref:	**MH-MEC-203886-GO-RFQ**

SCOPE OF SUPPLY AND INSTALLATION SERVICES BY THE CONTRACTOR

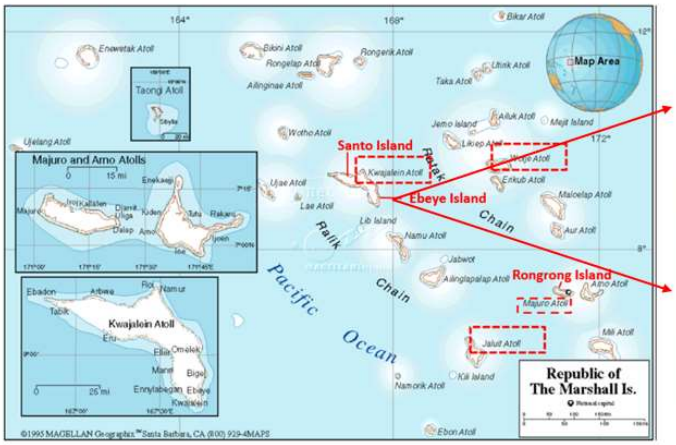
1. SCOPE OVERVIEW

Design, Construct and Install a Solar Sidewalk System in Ebeye Island, the Republic of the Marshall Islands.

2. SITE OVERVIEW

2.1 EBEYE ISLAND

Ebeye Island is the most populous island of the Kwajalein Atoll in the Marshall Islands (8.78°N 167.74°E). Covered entirely by buildings and infrastructure. 2011 census results showed that the total population of that year was of 11,408. However, due to the economic opportunities to work in Kwajalein American military base, it is estimated that around 14,000 people are living in Ebeye in 2019. With a very limited area and low-lying topographic elevation, Ebeye Island is prone to suffer from rising sea levels, as a consequence of global warming.



Ebeye Island

2.2 PROJECT SITE

The Project site corresponds to the road located in front of Kwajalein Atoll Joint Utilities Resources Inc. (KAJUR) office building. With a length of approx. 100m, sidewalks are required to cover both sides of the road after Ebeye's Dock and one side of the following road (lagoon side). Please refer to the drawings for more details.

Solar Sidewalk Project Site

2.3 UTILITY DATA

The electricity network is owned and operated by Kwajalein Atoll Joint Utilities Resources Inc. (KAJUR), the local utility service provider.

The operation parameters of the power supply system are:

a) The power station is located in the south end area of Ebeye Island.
b) The Power station has Diesel Generator (DG) sets and step up transformers and distribution boards
c) The generated electricity is supplied to Ebeye Island by two distribution undergrounded cable lines with 13.8kV AC, 3-phase 3 wire, 60Hz
d) Distribution lines have step- down transformers and distribute power supply to each customer by overhead lines with208V AC, 3-phase 4 wire, 60Hz
e) 120V AC, 1-phase, 2 wire 60Hz

3. ENVIRONMENTAL CONDITIONS

3.1 TEMPERATURE/RAINFALL

RMI has a marine tropical climate with high-temperature and humidity levels throughout the year. The temperature in Kwajalein Island (near Ebeye Island) and the rainfall in Ebeye Island are shown in

Table 1~~Table 1~~,2 and 3. Annual rainfall amount is about 3,338 mm.

Table 1 Temperature in Kwajalein Atoll in 2015

Month/Item Category	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Average*
Average daily maximum temperature (°C)	30.2	30.3	30.1	30.6	30.5	31.1	30.8	30.4	30.5	30.3	30.8	N/A	30.5
Average daily minimum temperature (°C)	26.0	25.8	25.3	25.3	25.7	26.4	25.8	26.0	26.2	25.3	26.0	N/A	25.8
Average temperature (°C)	28.1	28.1	27.7	28.0	28.1	28.8	28.3	28.2	28.4	27.8	28.5	N/A	28.2

Source: National Oceanic and Atmospheric Administration

Table 2 Humidity levels in Ebeye Island

Month/ Item Category	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*
Humidity levels	76.7%	76.1%	77.1%	79.7%	82.5%	82%	81.8%	80.9%	80.9%	80.8%	80.2%	78.8%

Source: weather-atlas.com

Table 3 Average Rainfall in Ebeye Island from 2000 through 2012

Month	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*June*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Average*
Mean rainfall (mm)	*219.4*	*184.1*	*185.1*	*270.4*	*279.3*	*270.8*	*285.6*	*307.7*	*318.1*	*362.2*	*357.1*	*298.8*	*278.2*

Source: World Weather Online

3.2 OCEAN WAVES

According to the National Oceanic and Atmospheric Administration (NOAA), for the next 50- and 100-years, waves of around 5.41 m and 6.55 m, respectively are expected. Ebeye has an average height of about 2 m above the mean sea level which makes it highly vulnerable to natural hazards and climate change.

3.3 WIND CONDITIONS

According to NOAA records, during the last 30 years the strongest wind registered was of 36.6 m/s(131.76 Kms/hr) . In general, the wind blows from the east.

Table 4 Wind Force (Data of the Last 30 Years)

Month	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*June*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*
Mean wind speed(m/s)	7.9	7.7	7.5	7.1	6.7	6.3	5.2	4.4	4.0	4.3	5.7	7.5
Maximum instantaneous wind velocity (m/s)	29.5	21.5	19.6	21.0	22.8	30.8	20.5	29.9	21.4	23.7	36.6	28.6
Wind direction	East	East	East	East	East	N-E	S-E	East	East	N-E	N-E	East
Year	1988	1997	1999	2002	2003	2002	1988	2000	1995	1985	1991	2000

Source: National Oceanic and Atmospheric Administration

3.4 SOLAR RADIATION

Solar radiation in RMI is suitable for solar PV generation (see table 5, below).

Table 5 Solar Radiation (Monthly averages from 1983 until 2005）

Month	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*June*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Average*
Solar radiation (kWh/m^2)	5.45	6.10	6.39	6.26	6.02	5.70	5.68	5.72	5.62	5.25	4.92	5.01	5.68

Source: NASA Surface Meteorology and Solar Energy

3.5 LIGHTNING

The lightning events in Ebeye Island is unlikely to happen.

3.6 SALT DAMAGE

Salt damage in infrastructure projects is very likely to happen in Ebeye Island. Special protection against corrosion has to be considered in this Project. The pictures below, show corrosion in Ebeye Island.

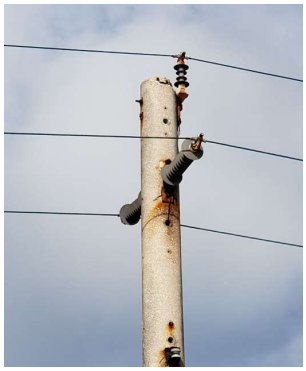


Figure 1 Corrosion in the overhead conductor pole in the causeway route between Ebeye and Lojjarok island

Figure 2 Decay of the basement of the old antenna tower

4. CONTRACTOR'S BASIC OBLIGATIONS IN THE WORK

4.1 SITE CONDITIONS

The Contractor is responsible for its own investigation to establish sufficient and accurate information for the design of the solar sidewalk. The information provided in this Documents must be used as reference only. The Contractor shall visit the proposed site and shall ascertain the nature and location thereof and all conditions which may affect design/layout of the system and project cost.

4.2 GENERAL COMUNICATION

The Contractor is responsible for keeping communication with the Marshall Energy Company (MEC), Kwajalein Atoll Joint Utilities Resources Inc. (KAJUR), and their consultants/advisers (hereinafter collectively referred to as "Employer").

4.3 MONTHLY REPORT

The Contractor shall submit a monthly report to describe the status of works to the Employer before the 10th day of each month. Submission shall be done via e-mail.

4.4 COMMUNICATION PROCEDURES BETWEEN PARTS

The Contractor shall keep communication with the Employer and submit the required documents, drawings and data via e-mail.

4.5 DRAWINGS, DOCUMENTS AND DATA

The Contractor shall prepare and submit to the Employer for approval or review, the main group of drawings and technical data/documents including but not limited to the following:

a) Schedule of Submission of Documents

The Contractor shall submit to the Employer for review, a schedule of submission of documents for approval and review within 30 working days from the date of Contract signing.

b) Codes and Standards

The Contractor shall, within 45 working days from the Effective Date of the Contract, submit to the Employer for the approval the Codes and Standards which shall govern the design, manufacture, construction, erection, test and commissioning of the Facilities.

c) Quality Assurance System and Procedure Manual

The Contractor shall develop and implement a quality assurance system in relation to the Facilities to demonstrate compliance with the requirements of the Contract. The quality assurance system shall be submitted to the Employer for approval within 45 working days from the Effective Date of the Contract. The quality assurance system shall encompass the design, procurement and manufacture, construction, erection, tests, pre-commissioning and commissioning of the Facilities.

The Quality assurance system procedure manual shall be submitted to the Employer for approval within 45 working days following the issuance of the quality assurance system. This manual should describe in detail the implementation of the quality assurance system for the Contractor's scope.

d) General Arrangement Plans for Equipment

These plans and layouts should indicate the relative locations of each part of equipment or systems in the Equipment, including the outline dimensions and sizes of the same.

The Contractor shall, within 60 working days from the Effective Date of the Contract, submit to the Employer for approval the above plans and layouts which shall not substantially deviate from those included in the Contract Documents.

e) General and Detailed Drawings and Specifications for Electrical Equipment

Before proceeding with the manufacture of the Equipment, the Contractor shall submit to the Employer for approval the designs, design computations, detailed specifications, general assembly drawings, control and wiring diagrams and details to demonstrate fully that all parts will conform to the provisions and intent of the Specifications and with the requirements of their installation, operation and maintenance. The drawings shall show all necessary dimensions and tolerances, field joints, and sub-assemblies in which the equipment will be shipped, terminal boxes and wire sizes for electrical circuits and wiring diagram for power and control circuits.

The Contractor shall, after 60 working days from the Effective Date of the Contract, start submission for approval of the above requirements which shall not substantially deviate from those included in the Contract Documents.

f) General and Detailed Design and engineering Drawings for Civil and Architectural Works

These drawings shall indicate, besides relative calculations and instructions, all data necessary for the design of supporting structures such as dimensions, weights, loads and stresses under operating conditions, dimensions and weights for installation, assembly and maintenance.

In addition, these drawings shall indicate all necessary details such as foundations, anchor tie rods, trenches for cables and supports and any other data used in the design of the civil works.

The structures shall not substantially differ from those shown on the Specification Drawings enclosed in the Contract Documents.

The Contractor shall submit these drawings to the Employer for approval, in accordance with the construction sequence and schedule, within sufficient time prior to start of relevant construction.

g) Working Plan

The Contractor shall submit to the Employer for approval the Working Plan within 60 working days from the Effective Date of the Contract. The Working Plan shall include the organization, working system, temporary yard installation, construction method, overall construction schedule, a list of Contractor's Equipment and temporary facilities to be used, etc.

h) Test Procedures and Reports on Test Results

The Contractor shall submit to the Employer for approval comprehensive test procedures/programs three months prior to the conduct of the actual tests of the Plant. The procedures shall be completed in every details, including but not limited to descriptive sections on the test activities to be performed, preparatory works required, extent of test and instrumentation to be employed, location or measuring points, calibration method employed for each of the test instruments, time duration and manpower requirement, methods of calculation/analysis of test results including formulas used and format for presentation of data/results.

The Contractor shall submit reports or test results upon completion of the tests carried out in accordance with the Specifications.

i) Operation and Maintenance Manuals

Prior to the commencement of the Commissioning Test, the Contractor shall submit to the Employer and the Employer for approval Operation and Maintenance Manuals in accordance with the provisions stipulated in the Specifications and in sufficient detail for the Employer to operate, maintain, dismantle, resemble, adjust and repair the Facilities. The Facilities shall not be considered to be completed for the purpose of the Operational Acceptance until Operation and Maintenance Manuals have been submitted to the Employer.

j) Contractor's Working Area, Temporary Facilities and Contractor's Equipment

If necessary, The Contractor shall submit these plans and proposals to the Employer for approval or review.

The temporary site office shall be intended to accommodate the office space for the Employer, the Employer and their designated representatives as specified in the Contract. The exact location of the site office and the office space required by the Employer, the Employer and their designated representatives shall be confirmed before establishing the plan and proposal. The drawings and documents relating to the temporary site office shall be subject to approval by the Employer.

k) Any other documents required in the Specifications

The Contractor shall submit any other documents, drawings and information required by the Specifications or other part of the Contract Documents.

5. EMPLOYER'S REVIEW PROCEDURES FOR THE CONTRACTOR'S DESIGN

5.1 PROCESSING OF DRAWINGS

a) The specified number of A3 size copies and full-size prints with dark lines on a white background shall be furnished of each drawing submitted for approval.

One print will be returned to the Contractor marked "Approved" or "Approved with Corrections Indicated" or "Returned for Corrections" within 10 working days after receipt of each drawing.

b) Upon approval by the Employer, the Contractor shall furnish the Employer without delay, the specific number of A3 size copies and full size prints of each final (approved) drawing with dark lines on a white-background. If minor revisions are made after a drawing has been approved, the Contractor shall furnish the Employer the same number of A3 size copies and full size prints subsequent to each revision. No major revision affecting the design shall be made, after a drawing has been "Approved" without resubmitting the drawing for final approval.

c) When prints or drawings have indicated "Approved with Corrections Indicated", or "Returned for Corrections", the Contractor shall make the necessary corrections and resubmit the same number of copies and prints for approval. Every revision shall be shown by number, date and subject in a revision block. In addition, each revised drawing shall have its latest revision clearly indicated.

5.2 AS-BUILT DRAWINGS

a) The Contractor shall provide and keep an up-to-date set of "As-Built" drawings of all structures constructed, and all equipment and accessories and miscellaneous works erected or installed. These drawings shall show all changes and revisions from the original drawings and specifications, including the exact "as-built" locations, sizes and kinds of equipment and accessories, miscellaneous works, embedded piping and electrical systems and other concealed items of work.

b) These drawings shall be kept in the Contractor's field office but shall be made available at all times for review of the Employer. At the end of every item of work, all entries, changes or revisions made in the drawings by the Contractor shall be checked and approved by the Employer.

c) Prior to the Operational Acceptance of the Facilities or part thereof, the Contractor shall submit to the Employer all duly checked and approved "As-Built" drawings.

d) The Facilities shall not be considered to be completed for the purpose of Operational Acceptance until the above drawings have been submitted to the Employer.

6. SCHEDULE

The Contractor shall notify the Employer of any changes in the schedule as agreed in the Contract.

7. TECHNICAL SPECIFICATIONS

7.1 QUANTITIES AND PERFORMANCE

Please refer to Schedule 1 for the quantities and performance of the system.

7.2 SPECIFICATIONS

7.2.1 UNITS OF MEASUREMENT

In all correspondence, technical schedules, drawings and documents and in all scales of the measuring instruments, the international system of units (SI) shall be applied unless otherwise required. In case other units have been used in drawings and printed literatures, the equivalent metric measurement shall be written in addition.

7.2.2 LANGUAGE

All documents, correspondence, drawings, reports, schedules and instructions shall be written in English. Nameplates and rating plates, duty labels and instruction plates or labels and warning notices shall also be written in English. The Contractor shall propose the entries, sentences and wordings in English for the labels and plates to the Employer.

7.3. INSTALLATION

7.3.1 GENERAL

a) The Contractor shall provide the construction and installation services necessary for the completion of the Works in a safe and orderly manner. The scope of the Installation Work shall include, but not limited to, labour, supplies, materials, equipment, tools, transportation, and anything else required to perform the Installation Work.

b) The Contractor shall purchase, expedite, inspect, and pay for labour, materials, equipment, tools, machinery, temporary utilities, transportation, and other facilities and services necessary for the construction and installation of the Equipment.

c) The construction and installation site shall be maintained in a neat and clean condition at any time. The materials shall be protected from damage due to dirt, debris and corrosion. Upon completion of the Works, the Contractor shall dispose of all temporary constructions, rubbish, unused materials, and other equipment and materials belonging to and used in the performance of the Works. The Contractor shall be responsible for the disposition of any contamination caused by them.

d) Construction and installation shall begin with the acceptance of the equipment and materials at the Site and include all necessary site activities involving the transportation of items, unpacking, checking for damage, construction preparations, prefabrication as necessary, construction and installation as per drawings, specifications and instructions in all areas and at all levels in observance of the required quality. Construction and installation shall also include the required tests, examinations and inspections, and administrative and technical documentation, i.e., those are necessary for installation of the equipment or parts thereof without interruption up to operational status.

e) Construction shall include checking the dimensions of the structures in question such as foundations and elevations in good time before commencement of the Works, removal of transport safeguards. All preliminary, intermediate and final construction and the Installation Work shall include the construction of foundation for the sidewalk structure, the installation, alignment and anchoring of machines, equipment, the sealing of manholes, the laying and connection of pipe work and cables with all appurtenances, the performance of matching and repair work, and the touching up of paintwork, the fabrication and installation structures, attachment of the individual signs and all the necessary manual tasks such as filing, bolting, clamping, cutting, welding, measuring, testing, commissioning, etc.

f) Examinations such as alignment checks, dimensional checks, if required as well as the non-destructive material examinations shall be carried out during construction and installation.

g) Not listed small parts, metering devices and necessary minor additional constructions are eventually to be manufactured and constructed.

h) The cleanliness of the Equipment to be installed and those already installed, preservation work required for the interior of the Equipment, the removal of preservatives, flushing and blowing through, etc., cleanliness of the installation site (working area), including transport of packing materials, unused materials and other refuse accumulating during installation to the appropriate collection points shall be responsibility of the Contractor.

i) Documentation encompasses the compilation of a record of all measurement, test and other inspection results, the recording of installation sequences, the actual deadlines, construction progress and the deployment of staff and equipment, the preparation of routine reports, the administration of lists, the presentation of data on work performed as necessary, the preparation of drawings at the Site, etc.

j) Irregularities in construction and installation shall be reported to the Employer immediately.

k) Verification of construction and installation as per drawing and/or specification shall be made at the final step. This includes the successful completion of final inspections, the presentation of installation documentation including the drawing, maintaining the necessary cleanliness and simple component specific functional test.

l) Expendable material for the installation, e.g. Cleaning agents, paint brushes, metal brushes, steel grit, cleaning rags, testing media, material for protecting the components, fuel for installation equipment, etc., shall be supplied by the Contractor.

7.3.2 QUALITY ASSURANCE

The Contractor shall have inspection, testing and installation groups, employers and/or company(s) to fulfil contractual and regulatory requirements for inspection, testing and quality control specified.

The Contractor shall prepare and submit records of the quality of the Works by completing quality control forms prepared by the Contractor. The Contractor shall provide quality control of the following:

(1) General drawing
(2) Material certificates
(3) Inspection points program
(4) Procedures

7.3.3 INSTALLATION FACILITIES

If required, the Contractor shall furnish and maintain temporary construction and installation facilities and provide those services including, but not limited to, the following:

a) Temporary storage facilities
b) Temporary communication system and lighting system.
c) Site drainage, sedimentation control, and dewatering system.
d) Fire protection services until taking over
e) Sanitary facilities including construction office, if necessary
f) The Contractor shall furnish adequate parking facilities to accommodate all construction forces.
g) Installation testing services, e.g., insulation testing, earth testing, etc.
h) Construction materials
i) The Contractor shall supply all the equipment, tools, consumables, instruments, etc., necessary for the construction and installation of the Equipment. The supply of the construction and installation equipment shall include fuel, lubricants, spare parts, and any elements or services required for the Installation Work.

7.3.4 CIVIL WORKS

a) All the design of the Civil Work shall be prepared by the Contractor in conformity with the stipulations in the Specifications and shall processed on his own responsible for commencement of the respective works.

b) The Contractor shall be fully responsible for the structural stability, suitability, adequacy, integrity, and practicability of his proposed design.

c) In preparing the design, the Contractor shall consider the following:
   (1) The drawings provided in this RFQ/Bidding Documents shall be only for Bidding purpose. The outline design and/or typical arrangement of each structure/scope requirements, shapes and dimensions shown are provided for reference only.
   (2) The geological information and data contained in the RFQ/Bidding Documents are for reference only. The Contractor shall carry out all necessary surveys such as topographic survey and sub-soil investigations at his own cost to ascertain that his design will satisfy the requirement in the Specifications prior to commencing the preparation of design.

d) The Civil Work shall be designed and constructed by the Contractor in accordance with recognized authoritative International or National Standards and Code of Practice. The Contractor may propose to the standard other than that specified in the Specifications, which shall be in English translation of the proposed standard and all other information, and at the request of the Employer written proof that his proposed standard shall be in all respects equivalent or better than the standard specified in the Specifications.

e) In order, to ensure satisfactory work performance, a quality and safety control system shall be instituted by the Contractor before commencement of the Works. The Contractor shall submit the proposed schedule in this concern to the Employer for his consent to which compliance shall not relieve the Contractor of any his duty, obligation under the Contract.

8. SYSTEM REQUIREMENTS

8.1. GENERAL

a) PV arrays are proposed to be located on new structures over the sidewalk. Please refer to drawing EB-DS-PV-01
b) The total DC capacity of the PV system installed over the new structures shall be of 42 kWp or more DC at Standard Test Condition (STC).
c) The system shall have LED luminaires wall mounted and weatherproof, impact-resistant diffusers and heavy-duty salt-resistant type. The luminaires shall turn on/off automatically.
d) The PV systems shall be mounted over a cantilever canopy structure.
e) The orientation of the canopy shall be as shown in drawings EB-DS-ST-01, EB-DS-ST-02& EB-DS-ST-03.
f) Array supports, brackets, screws, electrical boards/panels and other metal parts shall be of heavy-duty salt corrosion resistance materials. Where necessary, insulation of dissimilar metals and anti-corrosive coatings for installation and final finishing shall be conducted.
g) The mounting structure, where the PV modules will be installed, must be able to resist wind gusts relevant for the island in accordance with SEI/ASCE 7-16. The strongest wind speed in Kwajalein Atoll was of 36.5m/s (in Nov. 1991). The design wind speed shall be of 45.0m/s. The Contractor shall supply an engineering certificate stating that the array frame is certified to this standard, as well as the mounting method required to achieve that rating.
h) Modules and mounting frames shall be installed following the manufacturer's standard instructions. (E.g. module clamping zone, rail fixing spacing, fixing screw type, etc.)
i) Fasteners shall be made of marine grade 316 stainless steel or 304 stainless steel, and coated in a water-resistant rust inhibitor (e.g. lanolin). Bolts are to be made of 316 stainless steel and nuts of 304 stainless steel, to prevent binding.
j) A suitable method of grounding the array frame shall be provided.
k) The PV system shall be connected to the 13.8kV grid via a new step up transformer and ring main unit (RMU) equipped with dedicated isolation devices, meter, protections and related monitoring devices.
l) A micro-inverter shall be provided per PV module, each inverter shall have the function to be monitored and controlled remotely.
m) Operating Condition: Ambient temperature: 0 to +50 ℃ // Relative Humidity : 10 to 99 %

8.2. COMPONENT 1 PV SYSTEM

1-1	Sidewalk PV system - Total PV modules rated capacity 42kWp or more - PV modules, Micro-inverters, Low Voltage (LV) switchgear, Step up transformer Control and monitoring equipment, and other electrical equipment	Set	1

8.2.1. PV MODULES

a) The acceptable types of PV modules for the PV system are: Mono crystalline cells, Poly crystalline cells, Hybrid cells with crystalline base of Bi-facial type.
b) The Wp capacity (at STC) of the PV system shall be 42 kWp or more for an installation area of approx.250m^2 as shown in the drawing SW-1-ST-1
c) The individual mechanical strength shall be 1,500N/m^2 or more
d) The maximum system DC voltage design and related PV module specifications shall be consistent with the selected micro inverter's input requirements. Bidders shall provide their specification conformity documents and expected maximum system output (kW) at step-up transformer and expected annual generations (kWh) based on section B.3. ENVIRONMENTAL CONDITIONS in their Bids.
e) The modules shall be warranted to produce at least 90% of their nominal output (at STC) after 10 years, 80% of their nominal output after 20 years, and have a defect warranty period of at least 10 years. Bidders shall provide copies of the manufacture's related documents in their Bids.
f) The PV modules shall be certified by the international standard IEC61215 or equivalent and shall been tested by an accredited testing institution (e.g. UL, ESTI, TÜV Rheinland, or a recognised equivalent). Test documents shall be supplied prior to construction.
g) The PV modules shall be tested to IEC standard 62804-1 or equivalent for Potential-Induced Degradation (PID) resistance. Test certificates and expected degradation information shall be supplied prior to construction
h) As the PV modules will be installed in a tropical environment, countermeasures against heavy duty salt corrosion shall be taken and certification to IEC61701:2011-Salt mist corrosion testing is required. Bidders shall provide copies of the testing certificates or related countermeasures document in their Bids.
i) The PV Module framing, if provided, shall be of marine-grade stainless steel or marine-grade anodized aluminium to prevent salt corrosion.
j) The PV modules shall have adequate seals to prevent sea water ingress into the active components.
k) A minimum of 3 bypass diodes are required on each panel.
l) Each module shall be fitted with a manufacturer's information sticker, providing at least the following information: Manufacturer's name - Panel model number - Panel serial number - Date of manufacture- Country of manufacture- Manufacture standard panel specifications such as VOC, ISC, VMP, IMP & PMP at STC.
m) The final design shall be submitted by the Contractor and will be approved by the Employer with assistance of the Employer.

8.2.2 MICRO- INVERTERS

a) The maximum continuous output of AC power shall be of 290VA or more and the peak output power of 295VA or more. Only micro-inverters with sine-wave outputs are acceptable.
b) Nominal AC voltage shall be phase to phase 208V and/or phase to ground 102 V of 60Hz.
c) The DC input of an individual micro-inverter shall match the characteristic of the PV module as below, but not limited to:
d) Maximum input DC voltage
e) Operation voltage range
f) Min/Max start voltage
g) Max DC short circuit current
h) The micro-inverter's CEC weighted efficiency shall be greater than 97%.
i) The micro-inverters and related electrical and monitoring equipment is preferred to be from one manufacturer and of the same series component to ensure the easy maintenance and simplification of the spare parts inventory.

j) The environmental category of the micro inverter shall be NEMA Type 6 or equivalent, and UV exposure rating for outdoor usage.

k) Micro-inverters are preferable to be certified to UL 1741 or equivalent, and grid support type of CAL Rule 21 or Hawaii Rule 14H. Supplemental information of this shall be provided in the Bid.

l) A warranty period of ten (10) years minimum is required. This warranty shall be provided by the manufacturer, not the Contractor. If an extended warranty is required to meet this specification, this is to be purchased by the Contractor.

m) Micro-inverters shall be installed in a way that the cables cannot be inadvertently unplugged.

n) Cooling shall be by natural convection without fans.

o) Each micro-inverter shall have the function to be monitored and controlled remotely. The communication method between the micro-inverters and the communication devices shall be done by Power Line Communication (PLC) or proven communication methods. In case of using local small area wireless communication, certificate or usage allowance evidences in the Employer's country shall be supplied prior to construction.

8.2.3. LV SWITCHGEAR AND ELECTRICAL BOARDS

a) The electrical connection of the PV module to the step up transformer, LV Switchgear and related electrical boards shall be designed and proposed by the Bidder. For Bidder's reference, sample of key drawings are attached in EB-DS-ST-01 and EB-DS-E-01, but each Bidder shall submit their own design.

b) The solar collecting board and junction boxes located close to each PV system block shall consider voltage drops (voltage rises) and be equipped with: Miniature Circuit Breaker (MCB), Molded Case Circuit Breaker (MCCB), Surge Protection Device (SPD), etc.

c) The equipment to be contained in the LV switchgear are: Molded Case Circuit Breaker (MCCB), Earth Leakage Circuit Breaker (ELCB), Surge Protection Device (SPD), current transformer, metering, protection devices, communication devices, etc.

d) Overcurrent protections and other protection function shall be provided as per NEC Article 690 except where explicitly stated.

e) Any outdoor board enclosures shall be rated to at least IP65 and consider the location to prevent temperature extreme rise in the boards. Cable entries shall be done from the bottom and seals, to prevent water ingress.

f) Any outdoor board enclosures shall be highly resistant to heavy-duty salt corrosion. If metallic parts are used as fasteners, or on the body, they shall be 316 stainless steel or anodized aluminium. Galvanized steel is not acceptable. Any mounting screws, nuts and bolts shall be made of 316 stainless steel, with insulation countermeasures of dissimilar metals and anti-corrosive coatings. As bottom of the boards tend to corrode due to the condensation of salty water, the countermeasures shall be considered beforehand.

g) Feeder isolation purpose MCBs and ELCBs contained in LV switchgear and electrical boards shall be equipped with at least 2 blank spares CB for each circuit breaker size.

8.2.4. STEP UP TRANSFORMER

a) For connecting to the 13.8kV grid, a step up transformer with a Ring Main Unit (RMU) shall be supplied and the Contractor shall conduct the related change over works of the existing 13.8kV cables connecting to the existing transformer. For the existing transformer's location please refer to the drawing EB-DS-ST-01 and EB-DS-E-01.

b) The transformer shall be UL listed or equivalent and the RMU unit shall be equipped with at least two 13.8kV lines terminals and dis-connectable power fuses.

c) Transformer capacity shall be of 75 kVA or more, and 208V-120V/13.8 KVA 3-phase 60Hz.

d) Transformers shall be DELTA connected on the high voltage side and WYE connected on the low voltage side. The neutral shall be brought out through a fully insulated bushing provided in the low voltage compartment and grounded externally. Basic Impulse Level (BIL) for high voltage side shall be 95kV or more and for low voltage side shall be 30kV or more.

e) The transformer shall be equipped with a tap changer switch with a 5-position, off-load tap changer switch. Transformer specifications shall match with the Employer's typical pad mount transformers.

f) Installation of transformers shall comply with the requirements of the NEC, NESC, ANSI/IEEE C57.12.00 and ANSI/IEEE C57.12.28 or equivalent.

g) Outdoor transformer's enclosures shall be IP65 or more and provided with 316 marine grade stainless steel housings in line with the Employer's transformer procurement policy.

h) Any insulating oil offered shall be 'UL Classified'or equivalent, and be proven to be noncorrosive by Method B of ASTM D1275-15 or IEC 62535 Ed. 1.0. Any and each oil offered shall be certified as Polychlorinated Biphenyl-Free (PCB-free).

i) The insulation rating of the high voltage equipment shall be de-rated to account for the high salt content of the air.

j) A factory test and site test plan shall be submitted before purchasing the transformer. The Employer may, at any reasonable time, be permitted to have a representative visit to the manufacture's factory for the purpose of witnessing the manufacture of the transformers to ascertain if the materials and process used conform the Employer's Specification; and to witness the factory test.

k) Bidders shall provide specifications and drawings in their Bid.

8.2.5 LED LUMINAIRES

a) Rated Voltage: 208VAC 50/60Hz supplied from each block's electrical boards

b) Luminous source: Light-emitting diode (LED) 3,500K

c) Light flux: 2,000lm or more

d) The lighting shall be an outdoor ceiling mounted type or a wall mounted type

e) Automatically on/off at night time functions shall be equipped.

8.2.6 COMMUNICATION, MONITORING AND CONTROL

8.2.6.1 COMMUNICATION

a) Communication devices shall be connected to the network and enable the monitoring of the PV system by collecting real-time data from the micro-inverters.

b) Communication devices shall employ bi-directional communication, meaning that these devices shall also deliver system updates from the Web to the micro-inverters.

c) In addition, the communication devices shall also be used to diagnose faults within the PV system.

d) A gateway (a communication device), is necessary to bridge the communication between micro-inverter and the monitoring software.

e) The gateway and the micro-inverters shall communicate via PLC (Power Line Career).

f) The gateway and the monitoring software located in the cloud shall communicate via wireless connection.

g) The gateway shall have the following features:

POWER REQUIREMENTS	
Cord connected	208Y/120 VAC three-phase

		Max 20 A over current protection required.
CAPACITY		
Distance from micro-inverter		Up to 75 m
ENVIRONMENTAL		
Ambient temperature range		-40° to 65° C , -40° to 46°C if installed in an enclosure
Environmental rating		IP30. For installation indoors or in an NRTL-certified, NEMA type 3R (or equivalent) enclosure.
INTERNET CONNECTION OPTIONS		
Integrated Wi-Fi		IEEE802.11b/g/n (2.4 GHz, 5 GHz)
Ethernet		IEEE802.3, Cat5E (or Cat 6) UTP
COMPLIANCE		
Compliance		Comply with each standard below or equivalent: UL 916 CAN/CSA C22.2 No. 61010-1 47 CFR, Part 15, Class B, ICES 003 IEC/EN 61010-1:2010 EN50065-1, EN61000-4-5, EN61000-6-1, EN61000-6-2

h) The gateway or wireless repeater(s) shall be located near KAJUR office in Ebeye Island so the Wi-Fi signal from the gateway can reach the Wi-Fi network in KAJUR office.

8.2.6.2 MONITORING

a) A web application shall be used for the monitoring of the PV system.
b) The web application shall enable tracking overall energy and per- PV module energy production data and enable monitoring the PV system's condition.
c) The application shall show the system's condition. If there is any issue with the PV system, the indicator shall find the source of the problem and offer troubleshooting tips.
d) Historical data of monthly, daily, and hourly power generation shall be shown in graph and tabular format.
e) Up to 5 (five) year historical data shall be monitored in online (e.g. cloud service) or offline (e.g. stored in an electronic media).
f) Up to 5 (five) year cloud service for monitoring shall be provided and the cost of the service shall be borne by the Contractor.
g) Mobile applications on iOS and Android shall be prepared for monitoring.
h) 2 laptop PCs with the following specification shall be installed at KAJUR office:

Integrated Wi-Fi	IEEE802.11b/g/n (2.4 GHz, 5 GHz)
Monitor size	13.3 inches or more
Monitor resolution	Full HD (1920 x 1080) or more
Keyboard layout	QWERTY U.S. keyboard
Operating system	Microsoft Windows (latest)
Pre-installed software	Microsoft Office (latest), Antivirus software, and necessary application software to enable the functions mentioned in the technical specification

8.2.6.3 CONTROL

The Micro-inverter's system updates shall be delivered from the Web to the micro-inverters.

8.2.7. CABLING

a) All wiring methods shall comply with National Electrical Code 2017.
b) AC Cabling shall be sized for a maximum voltage drop of 3% between each micro-inverter and the LV switchgear.
c) All cabling shall be designed with temperature derating suitable for the tropical conditions described in" Section B.3. ENVIRONMENTAL CONDITIONS".
d) Direct exposure of cables to sunlight is not acceptable (except between adjacent panels), even if the cable sheathing is marked as UV-stabilized. All cabling that would otherwise be exposed to direct sunlight shall be routed through heavy duty, UV-stabilized conduit.
e) The cabling is to be designed for marine applications, compliant with IEC 60331 and provided with mechanical protection.
f) Any underground cabling shall be enclosed in a heavy-duty conduit or used steel wire armoured cable. If cables are let into conduit, the cable size shall ensure adequate heat dissipation in accordance with NEC Article 310 or equivalent. Where conduit protrudes from the ground, it is to be heavy-duty and UV stabilized.
g) Before trenching of underground cabling, the contractor is responsible for identifying existing underground services.
h) Cables buried in trenches shall be installed as per NEC Article 300 or equivalent.
i) All cable terminations are to be crimped with the appropriate tool. DC solar cables shall terminate into a solar connector or the terminal of a disconnection device.
j) Cable ties used as primary cable support shall be of stainless steel. Plastic cable ties shall not be exposed to direct sunlight and can be used only for secondary support and cable marshalling.
k) PV cabling at the array shall be installed in a way so that inductive loops are minimized to reduce voltage surges.
l) Cabling laying on the structure shall be installed on a cable ladder highly resistant to corrosion.
m) MV cabling installation shall comply with the requirements of the NEC, NESC, and KAJUR.
n) The Contractor is responsible for terminating MV cables to the existing network. The Contractor is required to coordinate with the Employer and obtain permission before completing terminations.

8.2.8 GROUNDING AND SURGE PROTECTION

a) Lightning surge protection and arresters/ Surge Protection Devices (SPD) shall be equipped for protection of failure.
b) The PV system's grounding design shall not interfere with the grounding system of the transformer, monitoring and control systems. It shall be designed by a suitably qualified electrical engineer following the corresponding regulations.
c) The PV system grounding scheme (including the PV array and the transformer) shall be provided in the Bid.

8.2.9 SPARE PARTS & TOOLS

a) The following spare parts and tools for the solar sidewalk system including the PV system and the related component/equipment shall be provided by the Contractor, but not limited to the following:

i. PV module: 10% or more of total installed PV module quantity
ii. Micro inverter: 10% or more of total installed micro inverter quantity
iii. Moulded case circuit breaker (MCCB) :10% or more of total installed MCCB quantity, for each MCCB type
iv. Earth Leakage circuit breaker (ELCB): 10% or more of total installed ELCB quantity, for each ELCB type
v. Miniature circuit breaker (MCB): 10% or more of total installed MCB quantity, for each type.
vi. Surge protection device (SPD): 10% or more of total installed SPD quantity, for each type
vii. Lighting fixture: 10% or more of total installed lighting fixture
viii. Power fuse for transformer: at least 3 sets
ix. Solar PCS connectors: each 10% or more of total installed solar connectors
x. Solar PCS DC cables and AC cables: each 50m or more
xi. Connector open/crumping special tools (for PCS, Communication, etc): 2sets
xii. Touch up paint, Sealing materials for maintenance: for 2 years maintenance

b) If any additional spare parts and special tools, such as Electrical power testers, Handheld meters, Insulation Resistance Testers, Digital multimeter, Disconnection detector for DC current circuit, PV characterization testers, Commissioning safety testers, I-V curve tracers, PV power and thermal testers, Irradiance meters IR cameras, IR thermometers portable test equipment, portable data collecting device, etc. are necessary for the smooth and efficient operation of the system, the details shall be included in the bidding documents providing reasonable reasons, amount and price of such spare parts and consumables to be included in the contract.

8.3. COMPONENT 2 SOLAR SIDEWALK STRUCTURE

2-1	Solar sidewalk Structure - Sidewalk canopy structures - Raceway system	Set	1

a) The structure shall be a high steel cantilever canopy over sidewalk as shown the drawings EB-DS-ST-01, EB-DS-ST-02 & EB-DS-ST-03. The canopy will be used to install solar panels.
b) The structure material shall be hot dipped galvanized steel or equivalent.
c) The solar sidewalk structure shall be designed by the Contractor. This Technical Specifications provides a system to be used as reference. This system is composed of 6 units. 5 of them, shall be of approx. 3m width x 13.6m length x 3.5m height per block. The shorter one shall be of approx. 3m width x 11.9m length x 3.5 m height as shown in the drawings.
d) The foundations have been preliminarily designed as pad footings with either ties to the adjacent footings or ground anchors. The contractor may opt to install piled foundations following site visits and soil assessment.
e) The Contractor shall conduct the subsurface bearing capacity tests under the direction of the Employer at the site at his own costs and the subsurface bearing capacity of soil meets the requirement for the project.
f) Consideration of alternative reinforcing systems is encouraged.
g) The structure and cladding system shall be designed for the climatic conditions in Ebeye, including both the local wind speeds and high levels of wind-blown sea salt.
h) The strongest wind speed in Kwajalein Atoll was of 36.6m/s (in Nov. 1991). The ultimate wind speed for the design of the canopy shall be 45m/s.

i) The gravity design of the structures needs to account of appropriate combinations of dead load, live load, construction loads and imposed (wind) loads as defined by ISO 4354.

j) Wind load is the main lateral action load for the structural elements. Earthquakes are not considered significant loading in this region. The design for the structures should also account for the following in the design:

a. Appropriate lateral live loading.

b. 0.4G of structure in horizontal direction.

9. APPLICABLE STANDARDS

All equipment installed in the system shall be new and meet the relevant US or international standards. All system, components and equipment shall comply with – and be designed and installed in accordance, but not limited to the following standards.

- National Electrical Code (NEC) 2017 edition, Article 690 (United States)
- National Electrical Safety Code (NESC) 2017 edition (United States)
- International Electro technical Commission (IEC)
- IEC61215 - Crystalline silicon terrestrial PV modules Design qualification and type approval
- IEC 62804 – PID testing
- IEC 61701 – Salt mist corrosion testing
- IEC 62852 – locking connectors
- IEC 60060 - High-voltage test techniques
- IEC 60137 - Insulated bushings for alternating voltages above 1000V
- IEC 60270 - High-voltage test techniques - Partial discharge measurements
- IEC 60694 - Common specifications for high-voltage switchgear and control gear
- IEC 61869 - Instrument transformers
- IEC 60598 2-3 Luminaires - Part 2-3: Particular requirements - Luminaires for road and street lighting
- IEC 62109- Safety of power converters for use in PV power systems
- IEC 61000-4-2 - EMC testing and measurement techniques-electrostatic discharge and field immunity tests
- IEC 62271 - High voltage switchgear and control gear (all parts)
- IEC61646 Thin film PV modules-Design qualification and type approval
- IEC61730-1/2 PV module safety qualification and type approval
- Part 1: Requirements for construction/ Part 2: Requirements for testing
- UL Standards
- UL 6703– locking connectors
- UL 61730 – Photovoltaic module safety
- UL 508 - Standard for Industrial Control Equipment
- UL 508A - Standard for Industrial Control Panels
- UL 8750 - Standard for Light Emitting Diode (LED) Equipment for Use in Lighting Products
- UL 1598 – Luminaires
- UL 1741- Standard for Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources
- The American Society of Civil Engineers (ASCE)
- ASCE 7-10 - Minimum Design Loads for Buildings and Other Structures
- The American Concrete Institute (ACI)
- ACI 301-16 - Specification for Structural Concrete for Buildings

- The American Institute of Steel Construction (AISC)
- AISC 360-16 - Specification for Structural Steel Buildings
- ASTM Standards
- ASTM A240 - Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
- The American National Standards Institute (ANSI)
- ANSI C80.5 - Electrical Rigid Metal Conduit - Aluminium (ERMC-A)
- ANSI/IEC 60529 - Degrees of Protection Provided by Enclosures (IP Code)
- ASME Standards (United States)
- ASME B18.2.1 - Square, Hex, Heavy Hex, and Askew Head Bolts and Hex, Heavy Hex, Hex Flange, Lobed Head, and Lag Screws (Inch Series)
- ASME B18.2.2 - Nuts for General Applications: Machine Screw Nuts, Hex, Square, Hex Flange, and Coupling Nuts (Inch Series)
- ASME B31.1 - Power Piping
- ASME B31.3 - Pressure Testing
- ASME B31.9 - Building Services Piping
- ASTM International Standards
- ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
- ASTM A153ANSI/AISC 360 - Standard Specification for Structural Zinc Coating (Hot-Dip) on Iron and Steel Buildings Hardware
- American Welding Society (AWS) Standards
- AWS B2.1 - Specification for Welding Procedure and Performance Qualification
- AWS D1.1 - American Welding Society - Structural welding (steel)
- Environmental Protection Agency (EPA) United States
- EPA 40 CFR Part 112 - Spill Prevention, Control and Countermeasure (SPCC) Rules
- The Institute of Electrical and Electronics Engineers Standards (IEEE)
- IEEE 112 - IEEE Standard specification Test Procedure for Zinc Coating on Iron Polyphase Induction Motors and Steel Hardware Generators
- IEEE1187 - Conduits and fittings for electrical installations IEEE Recommended Practice for Installation Design and Installation of Valve-Regulated Lead-Acid Batteries for Stationary Applications
- IEEE 80 - IEEE Guide for Safety in AC Substation Grounding
- IEEE 81 - IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Grounding System
- IEEE C57.12.00 - USA Standard General Requirements for Distribution, Power and Regulating Transformers and Shunt Reactors
- IEEE C57.12.90 - IEEE Standard Test Code for Liquid-Immersed Distribution, Power, and Regulating Transformers
- The International Organization for Standardization (ISO)
- ISO 4618 - Paints and varnishes – Terms and definitions
- ISO 12944 - Corrosion protection of steel structures by protective paint systems
- ISO 31000 - Risk management – Principles and guidelines
- ISO 668 - Series 1 freight containers - Classification, dimensions and ratings
- ISO 8501-1 Preparation of steel substrates before application of paints and related products — Visual assessment of surface cleanliness
- ISO 9000 - Quality management systems – Fundamentals and vocabulary
- ISO 9001 - Quality management systems - Requirements

- ISO 9224 - Corrosion of metals and alloys –- Corrosive atmospheres –- Guiding values for the corrosive categories
- The National Electrical Manufacturers Association (NEMA) (United States)
- NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Conduit
- NEMA TC 3 - Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing
- NEMA TC 6 - Polyvinyl Chloride (PVC) Plastic Utilities Duct for Underground Installations
- NEMA TC 9 - Fittings for Polyvinyl Chloride (PVC) Plastic Utilities Duct for Underground Installation
- NEMA VE 1 - Metal Cable Tray Systems
- National Fire Protection Association (NFPA)
- NFPA 30 - Flammable and Combustible Liquids Code
- The Occupational Safety and Health Administration (OHSA) (United States)
- OHSA CFT 1910.212 - General requirements for all machines
- Japan Electrical Law
- Japan Building Code
- Japanese Industrial Standard (JIS)
- Japan Grid Interconnection Code (JAEC9701-2012)
- Standards of the Japan Electrical Manufacture's Association (JEM)
- Standards of the Japanese Electro-technical Committee (JEC)
- Japan Cable Maker's Association Standard (JCS)

10. LABELLING

10.1 GENERAL

All the items of equipment to be procured under the Contract shall be clearly identified by nameplates, and to avoid mal-operation in operation or maintenance. All labels, plates and tags shall be permanently legible, clearly worded, weather proof and corrosion proof where damp areas and outdoors, and shall not be deformed under any service conditions at the Sites. Engraving to black letter shall indelibly mark the entries on the plates and tags. All labels, plates and tags shall be securely mounted in conspicuous and logical locations.

10. 2 RATING PLATES

All the items of Equipment to be procured under the Contract shall be provided with rating plates containing the necessary information specified in the relevant standards.

10.3 WARNING NOTICES

The Contractor shall provide warning notices and signs associated with the equipment with a form and wording to suite the Employer's rules. Such notices and signs shall be written in English.

10.4 DEVICE NUMBERS AND LABELS

A device number shall be allocated for every electrical and mechanical control device, switch, relay, detector and other important components and shall be shown on the Contractor's comprehensive circuit and flow diagrams. The Contractor shall apply a label

of approved form to every device, showing the device number in a legible and permanent manner.

11. DOCUMENTATION

In addition to the documentation necessary explained in Section B. 4.5 the Contractor shall provide the manuals and catalogs of the equipment selected.

12. TRAINING

a) The Contractor shall provide the training to the Employer's staff/selected personal. The training shall include below point at minimum but not limited to:
b) Basic knowledge of overall system
c) Details of every command control system
d) Guidance on items of periodic inspection and measurement, and how to perform measurement
e) Troubleshooting
f) Details of the benefits of the system
g) How to of system command failure recovery
h) Main point for supervision for smooth and efficient system operation

13. COMMISSIONING TEST

a) The Contractor shall carry out the commissioning test in the presence of the Employer to demonstrate that the entire equipment is properly installed and to ensure the performance of the whole system after the completion of installation and connections.
b) The tests shall be conducted in accordance with the test procedures approved by the Employer.
c) Final results of all shall be subject to acceptance by the Employer, and shall satisfy the Technical Particulars, given in the Contract.
d) For the approval, the Contractor shall submit detail commissioning test procedure with time schedule at least XXXX (X) working days prior then the proposed commissioning test date. At the time of commissioning and test, the following approved documents shall be submitted.
e) **<u>Documents to be submitted:</u>**
- System description document
- Functional description document
- System configuration document
- Construction and installation drawings
- Equipment drawing and specification
- Wiring Diagrams
- O & M manual

14. HANDOVER

a) After completion of the commissioning test, the Employer shall verify the required efficiency/performance and functions. The Acceptance test shall be conducted by operating the actual equipment.
b) After the completion of the acceptance inspection, results of the test and data collected during the pre-commissioning and commissioning tests shall be confirmed among the Employer and the Contractor. After approval, the system will be ready for handover.

15. OPERATION AND MAINTENANCE

a) Prior to the commencement of the Commissioning Test, the Contractor shall submit to the Employer for approval Operation and Maintenance Manuals in sufficient detail for the Employer to operate, maintain, dismantle, resemble, adjust and repair the Facilities. The Facilities shall not be considered to be completed for the purpose of the Operational Acceptance until Operation and Maintenance Manuals have been submitted to the Employer.

16. WARRANTIES

a) Besides the system components warranties, the Contractor shall provide a Warranty period for the entire system of 1 year.

17. SUPPLEMENTARY INFORMATION

17.1 LOGISTICS

a) Ebeye Island has no airport. In order to visit this Island, visitors are required to arrive via United Airlines at Bucholz Army Airfield on Kwajalein (KWA). Flights depart from Guam and from Honolulu. After arrival in KWA visitors are required to take a 15 min ferry to Ebeye.

b) It is recommended to check your VISA requirements before arrival to the Bucholz Army Airfield on Kwajalein Atoll.

17.2 OTHER PROJECTS

a) There are several ongoing projects in Ebeye Island related to Power Generation. Bidders are encouraged to study the contents of those projects to create a proposal that will ensure a smooth implementation in parallel of the other projects.

ANNEX 2: PRICED ACTIVITY SCHEDULE

[To be completed, signed and submitted by the Bidder as an attachment to the signed Form of Quotation]

Project Title: **Sustainable Energy Development Project (SEDeP)**

Source of Funding (Grant no.): **D261-MH**
Contract Name**:** **Design, Construct and Install a solar sidewalk system in Ebeye Island, the Republic of the Marshall Islands.**
Contract Ref: **MH-MEC-203886-GO-RFQ**

SUMMARY BILL OF QUANTITIES					
No.	**Activity**	**Unit (m2, m3, kg, ton, piece, etc** (where appropriate)	**Quantity**		**Total Price** *(local currency)*
				(to be filled by bidder)	
Schedule 1	**PLANT AND MANDATORY SPARE PARTS SUPPLIED FROM ABROAD**				
1-1	**Component: 1- PV SYSTEM**				
1-1-1	Sidewalk PV system - Total PV modules rated capacity 42kWp or more - PV modules, Micro-inverters, Low Voltage (LV) switchgear, cables, Step up transformer, LED luminaires, Communication, Control and monitoring equipment, control cables, and other electrical protection and equipment (See 8.2 Component 1 PV System for details)	Set	1		
1-1-2	Special Tools (See 8.2.9 SPARE PARTS & TOOLS for details))	Set	1		
1-1-3	Mandatory Spare Parts (See 8.2.9 SPARE PARTS & TOOLS for details)	Set	1		
1-2	**Component 2- SIDEWALK FRAME STRUCTURE**				
1-2-1	Solar Sidewalk Frame Structure	Set	1		

	- Sidewalk canopy structures - Raceway system (See 8.3 Component 2 Solar Sidewalk Structure for details)				
Schedule 2	**DESIGN SERVICES**				
2-1	Design of PV system				
2-2	Design of Communication, monitoring and control system				
2-3	Design of sidewalk frame structure				
Schedule 3	**INSTALLATION AND OTHER SERVICES**				
3-1	**Component: 1- PV SYSTEM**				
3-1-1.	Electrical Works Including excavation and backfill for cabling and restoration of the existing pavement	Lot	1		
3-1-2.	Assembly and installation of equipment including commissioning test	Lot	1		
3-2	**Component: 2- SIDEWALK FRAME STRUCTURE**				
3-2-1.	Civil Works Including Foundation for the structure, excavation, backfill for the foundation and restoration of the existing pavement	Lot	1		
3-2-2.	Assembly and installation (Mechanical work) of sidewalk frame structure including commissioning test	Lot	1		
Total Price					
VAT (…. %)					
Grant Total including VAT					

Authorized Signature: _____
Name and Title of Signatory_____
_____

Name of Bidder: _____

ANNEX 3: DRAWINGS

Project Title: **Sustainable Energy Development Project (SEDeP)**

Source of Funding (Grant no.): **D261-MH**

Contract Name**:** **Design, Construct and Install a solar sidewalk system in Ebeye Island, the Republic of the Marshall Islands.**

Contract Ref: **MH-MEC-203886-GO-RFQ**

The Works are to be performed in accordance with the following Drawings:

Drawing List for the Pilot Sidewalk Solar Project in Ebeye Island	
PV System	EB-DS-PV-01
Structure	EB-DS-ST-01
	EB-DS-ST-02
	EB-DS-ST-03
Electric	EB-DS-E-01

ANNEX 4: FORM OF QUOTATION (RFQ- WORKS)

[To be completed, signed and submitted on Letterhead of Bidder]

Project Title: **Sustainable Energy Development Project (SEDeP)**

Source of Funding
(Grant no.): **D261-MH**
Contract Name**:** **Design, Construct and Install a solar sidewalk system in Ebeye Island, the Republic of the Marshall Islands.**
Contract Ref: **MH-MEC-203886-GO-RFQ**

_____(Date)

To:_____ (Employer's Name)

_____ (Employer's Address)

_____

We offer to execute the_____(name and number of Contract) in accordance with the Form of Contract and Specifications accompanying your Request for Quotation (RFQ) for the Contract Price of _____(amount in words and numbers) (_____) (name of currency)_____,excluding VAT. We propose to complete the Works described in the Contract within a period of [*Employer to insert period*] calendar days from the Date of Signing of the Contract.

This Quotation and your written acceptance will constitute a binding Contract between us. We understand that you are not bound to accept the lowest or any Quotation you receive.

We hereby confirm that this Quotation complies with the Validity of the Quotation required by the RFQ.

Authorized Signature: _____
Name and Title of Signatory_____
_____

Name of Bidder: _____
Address: _____
_____
Phone Number _____

Email address:

ATTACHMENT TO FORM OF QUOTATION

DETAILS OF BIDDER'S QUALIFICATIONS TO PERFORM THE CONTRACT

(refer paragraph 4 of the RFQ)

[To be completed, signed and submitted by the Bidder as an attachment to the signed Form of Quotation]

1. Experience as a works contractor (last three years):

Contract No. 1

Contract title:

Description of the Works (include the description, nature and complexity similar to the works of this RFQ):

Contract period:

Final Contract Value:

Any other details:

Contract No. 2

Contract title:

Description of the Works:

Contract period:

Final Contract Value:

Any other details:

Contract No. 3

Contract title:

Description of the Works:

Contract period:

Final Contract Value:

Any other details:

Contract No. …..

2. Availability of Financial Resources:

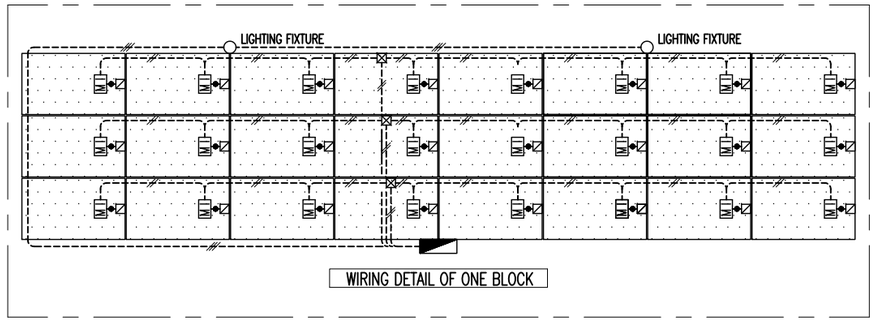
The winning bidder should have adequate sources of finance to meet the cash flow requirements for at least 30% of the value of the works, in addition to requirements for works currently in progress.

Source of financing	Currency and Amount
1.	
2.	
3.	
4.	

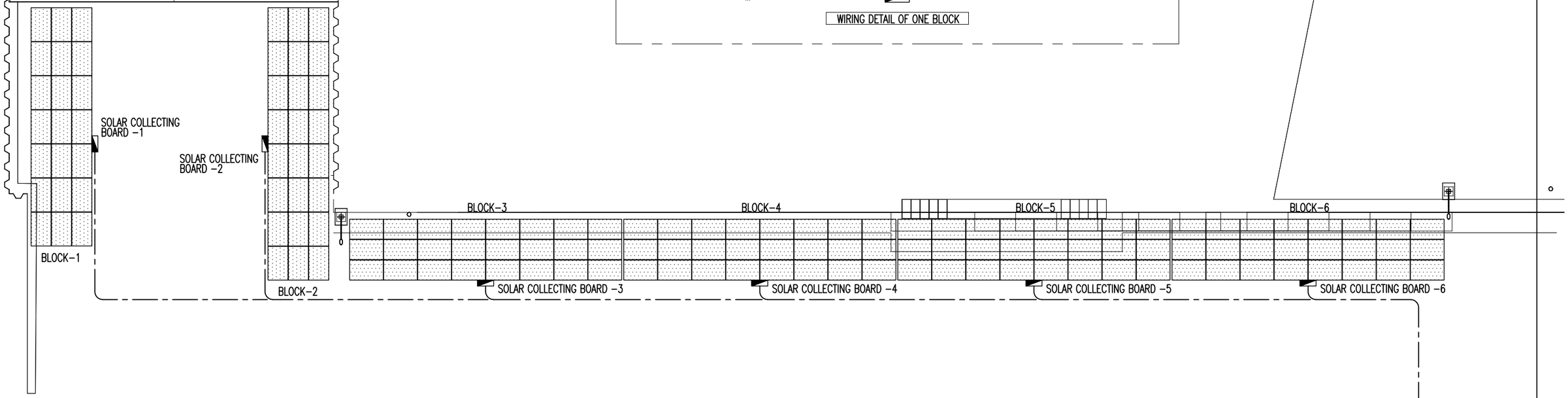
Authorized Signature: _____
Name and Title of Signatory_____
_____

Name of Bidder: _____

FOR REFERENCE

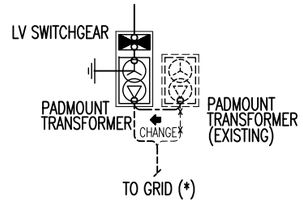


WIRING DETAIL OF ONE BLOCK



SYMBOLS	DESCRIPTIONS	NOTES
	PV MODULE	REQUIRED MODULE EFFICIENCY: 19.4% or MORE
MI	MICRO INVERTER	AC OUTPUT VOLTAGE: 208V (1-PHASE 60Hz)
	JUNCTION BOX FIXED PV MODULE	IP 65 or MORE
	JUNCTION BOX	WATERPROOF TYPE
	SOLAR COLLECTING BOARD	WALL MOUNTED TYPE IP 65 or MORE
	LV SWITCHGEAR	SELF-STANDING TYPE IP 65 or MORE
	PADMOUNT TRASFORMER	
	PADMOUNT TRANSFORMER	EXISTING
	GROUNDING	LESS THAN 5.0 OHM
	LIGHTING FIXTURE (LED LUMP)	OUTDOOR WATERPROOF TYPE
	CABLE (SUPPLIED CABLE WITH MODULE)	
	CABLE (EXPOSURE WIRING)	ON STRUCTURE
	CABLE (EXPOSURE WIRING)	FOR STRUCTURE ON STRUCTURE
	CABLE (BURRY IN THE GROUND)	

NOTE:
THE MV CABLE CONNECTED TO EXISTING TRANSFORMER SHOULD BE CHANGED ITS CONNECTION TO NEW TRANSFORMER



PROJECT TITLE
DESIGN OF POTENTIAL RENEWABLE ENERGY PROJECTS
IN EBEYE AND THE OUTER ISLANDS
OF
THE MARSHALL ISLANDS

GENERAL NOTE

NO	DATE	DESCRIPTIONS	BY	APP'D
REVISIONS				

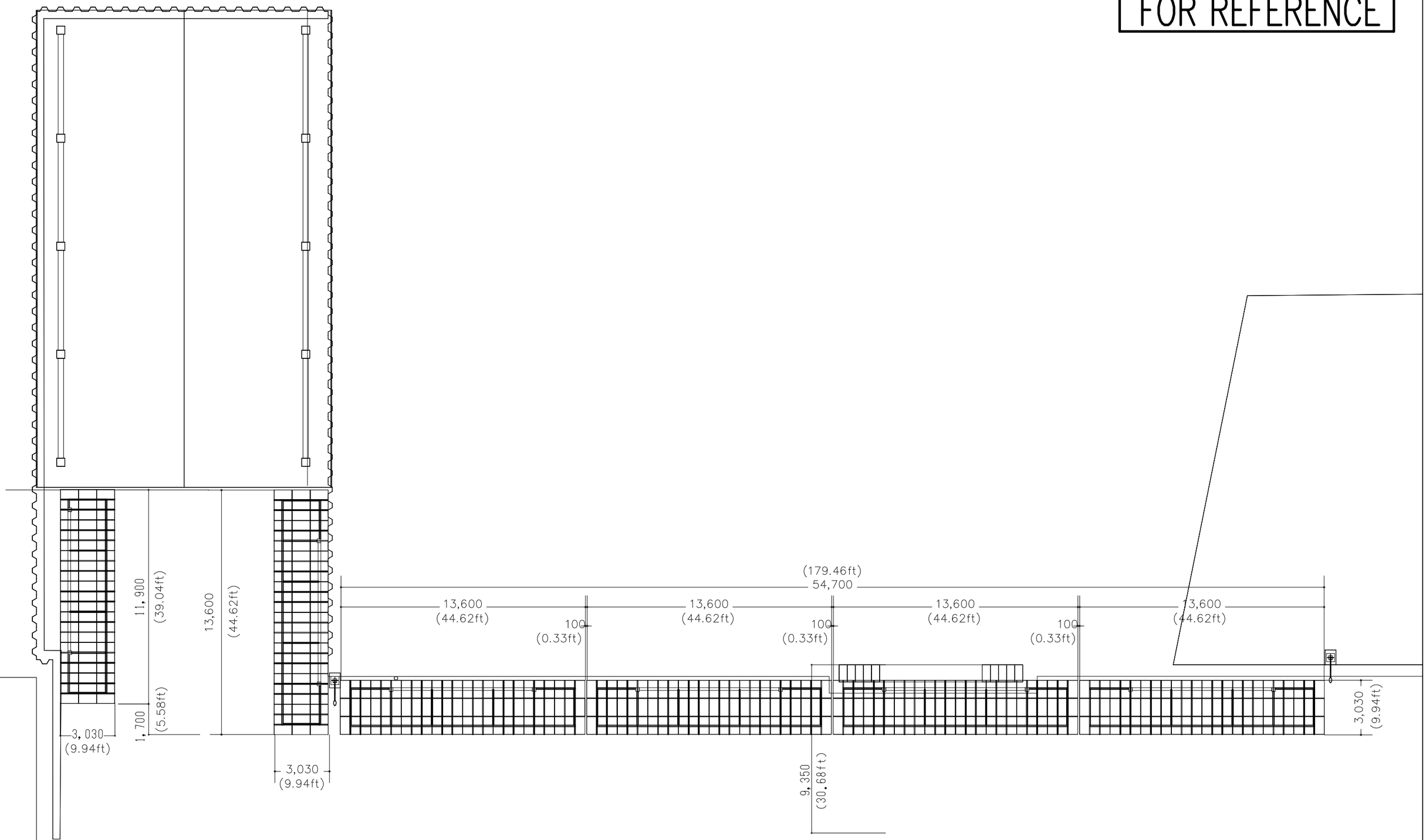
SCALE 1/200
DATE AUG, 2020
DRAWING BY
CHECKED BY

DWG TITLE
PV SYSTEM PLAN
(DOCK SIDE)

DWG NO
EB-DS-PV-01

DESIGNED BY
ORIENTAL CONSULTANTS GLOBAL CO., LTD.
WEST JAPAN ENGINEERING CONSULTANTS, INC.

FOR REFERENCE



PROJECT TITLE

DESIGN OF POTENTIAL RENEWABLE ENERGY PROJECTS
IN EBEYE AND THE OUTER ISLANDS
OF
THE MARSHALL ISLANDS

GENERAL NOTE

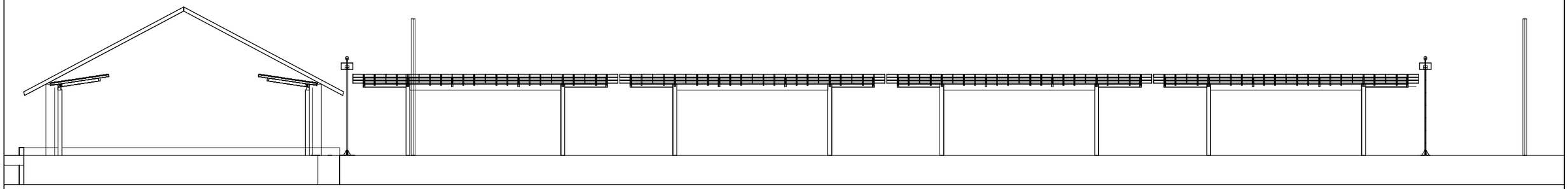
NO	DATE	DESCRIPTIONS	BY	APP'D
REVISIONS				

SCALE 1:200
DATE AUG, 2020
DRAWING BY
CHECKED BY

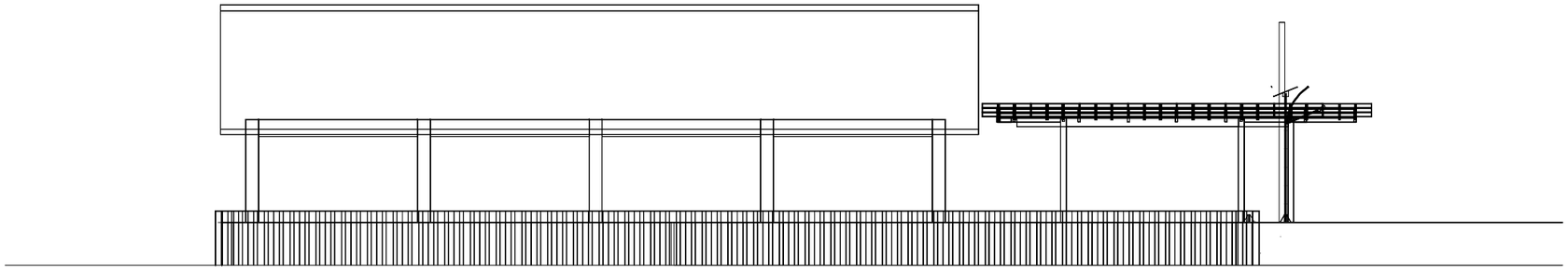
DWG TITLE FRAME STRUCTURE LAYOUT (DOCK SIDE)
DWG NO EB-DC-ST-01

DESIGNED BY
ORIENTAL CONSULTANTS GLOBAL CO., LTD.
WEST JAPAN ENGINEERING CONSULTANTS, INC.

FOR REFERENCE



ELEVATION (FRONT VIEW)



ELEVATION (LAGOONSIDE VIEW)

PROJECT TITLE

DESIGN OF POTENTIAL RENEWABLE ENERGY PROJECTS
IN EBEYE AND THE OUTER ISLANDS
OF
THE MARSHALL ISLANDS

GENERAL NOTE

NO.	DATE	DESCRIPTIONS	BY	APP'D
		REVISIONS		

SCALE: 1:200

DATE: AUG. 2020

DRAWING BY

CHECKED BY

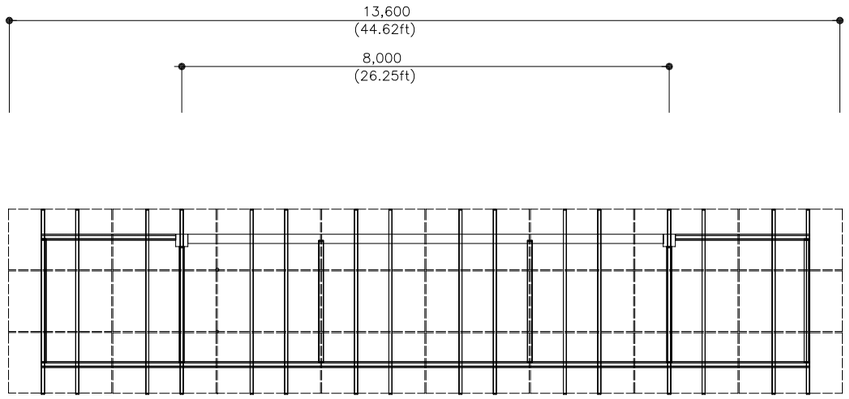
DWG TITLE: FRAME STRUCTURE ELEVATION (DOCK SIDE)

DWG NO: EB-DC-ST-02

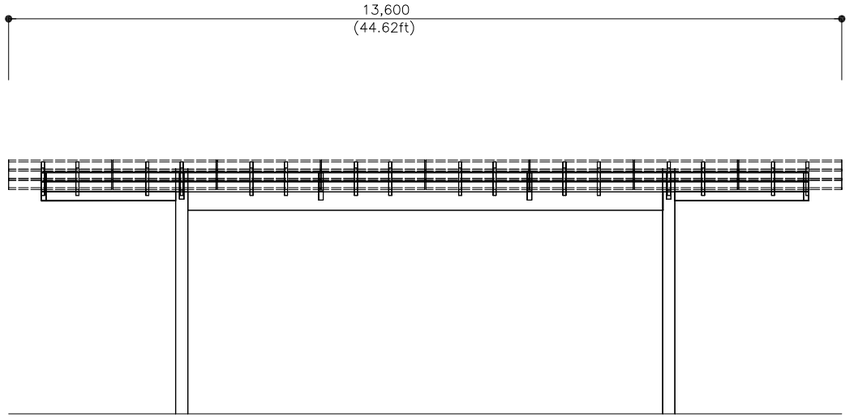
DESIGNED BY

ORIENTAL CONSULTANTS GLOBAL CO., LTD.
WEST JAPAN ENGINEERING CONSULTANTS, INC.

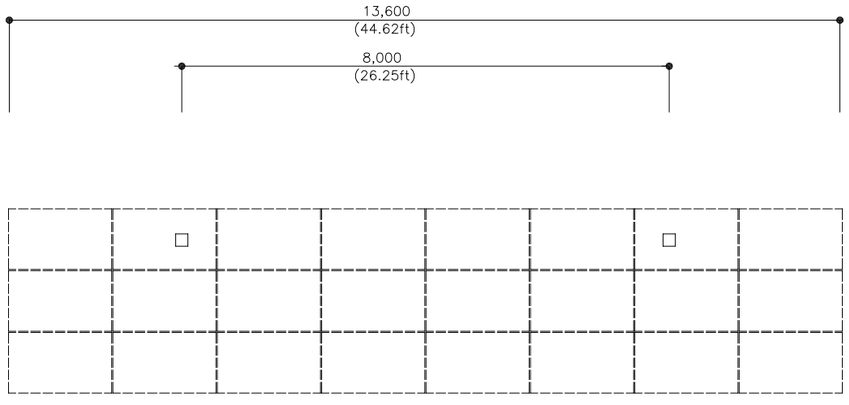
FOR REFERENCE



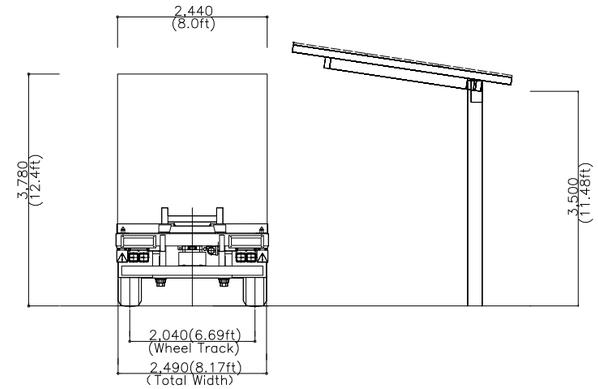
ROOF PLAN



ELEVATION



PLAN



SECTION

PROJECT TITLE

DESIGN OF POTENTIAL RENEWABLE ENERGY PROJECTS
IN EBEYE AND THE OUTER ISLANDS
OF
THE MARSHALL ISLANDS

GENERAL NOTE

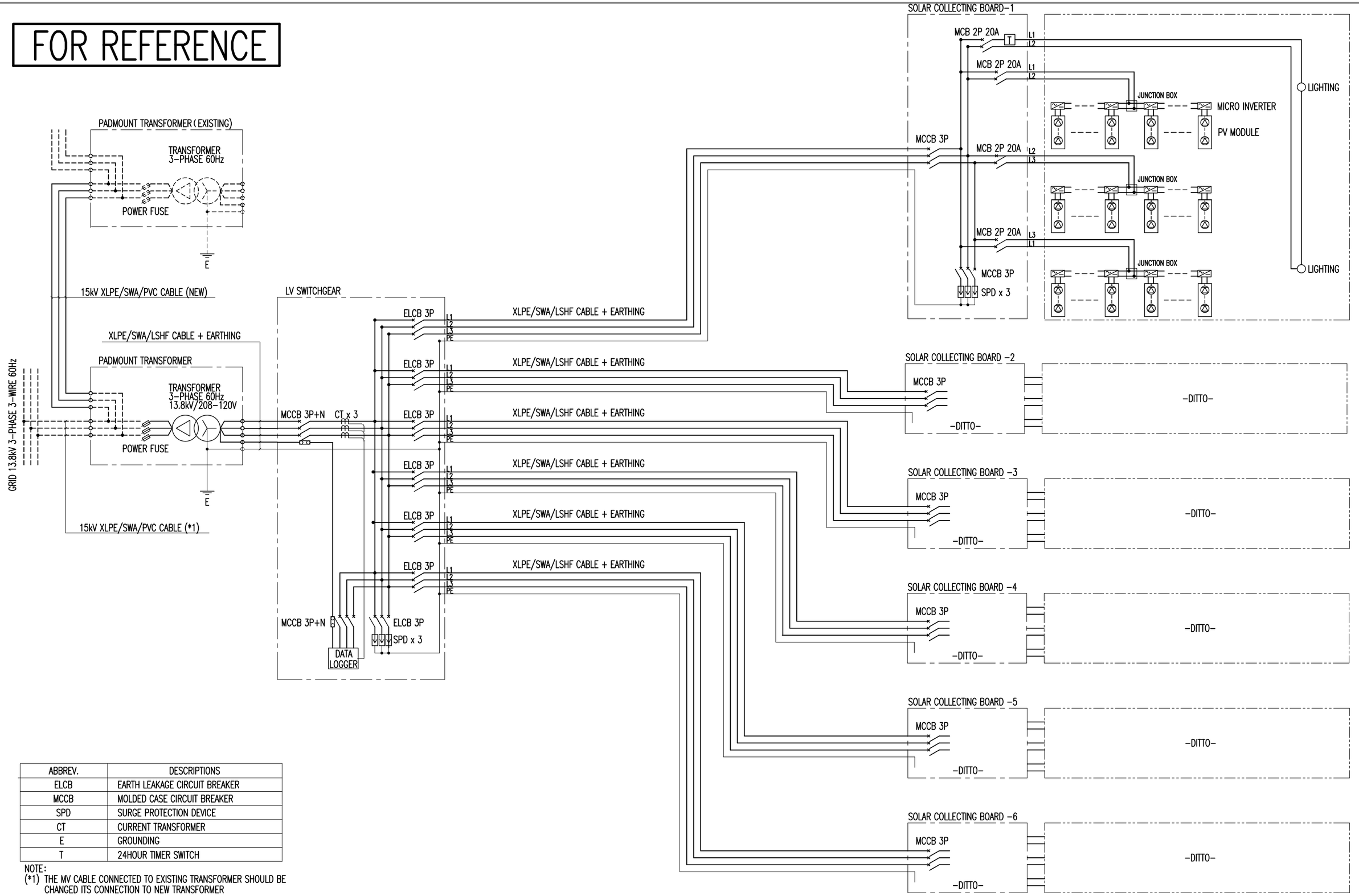
NO	DATE	DESCRIPTIONS	BY	APP'D
REVISIONS				

SCALE: 1:100
DATE: AUG, 2020
DRAWING BY:
CHECKED BY:

DWG TITLE: FRAME STRUCTURE DETAIL (DOCK SIDE)
DWG NO: EB-DS-ST-03

DESIGNED BY
ORIENTAL CONSULTANTS GLOBAL CO., LTD.
WEST JAPAN ENGINEERING CONSULTANTS, INC.

FOR REFERENCE



ABBREV.	DESCRIPTIONS
ELCB	EARTH LEAKAGE CIRCUIT BREAKER
MCCB	MOLDED CASE CIRCUIT BREAKER
SPD	SURGE PROTECTION DEVICE
CT	CURRENT TRANSFORMER
E	GROUNDING
T	24HOUR TIMER SWITCH

NOTE:
(*1) THE MV CABLE CONNECTED TO EXISTING TRANSFORMER SHOULD BE CHANGED ITS CONNECTION TO NEW TRANSFORMER

PROJECT TITLE
DESIGN OF POTENTIAL RENEWABLE ENERGY PROJECTS
IN EBEYE AND THE OUTER ISLANDS
OF
THE MARSHALL ISLANDS

GENERAL NOTE

NO	DATE	DESCRIPTIONS	BY	APP'D
REVISIONS				

SCALE: NONE
DATE: AUG, 2020
DRAWING BY
CHECKED BY

DWG TITLE: SIMPLE KEY LINE DIAGRAM (DOCK SIDE)
DWG NO: EB-DS-E-01
DESIGNED BY
ORIENTAL CONSULTANTS GLOBAL CO., LTD.
WEST JAPAN ENGINEERING CONSULTANTS, INC.