

Clause 40.1, and any and all additional costs or expenses incurred by the Implementing Partner as a result of such suspension or reduction shall be paid by the EESL to the Implementing Partner in addition to the Contract Price, except in the case of suspension order or reduction in the rate of progress by reason of the Implementing Partner's default or breach of the Contract.

41.4 During the period of suspension, the Implementing Partner shall not remove from the Site any Plant and Equipment, any part of the Facilities or any Implementing Partner's Equipment, without the prior written consent of the EESL.

42 Termination

42.1 Termination for EESL's Convenience

42.1.1 The EESL may at any time terminate the Contract for any reason by giving the Implementing Partner a notice of termination that refers to this GCC Sub-Clause 42.1.

42.1.2 Upon receipt of the notice of termination under GCC Sub-Clause 42.1.1, the Implementing Partner shall either immediately or upon the date specified in the notice of termination

- (a) cease all further work, except for such work as the EESL may specify in the notice of termination for the sole purpose of protecting that part of the Facilities already executed, or any work required to leave the Site in a clean and safe condition
- (b) terminate all subcontracts, except those to be assigned to the EESL pursuant to paragraph (d)(ii) below
- (c) remove all Implementing Partner's Equipment from the Site, repatriate the Implementing Partner's and its SubImplementing Partners' personnel from the Site, remove from the Site any wreckage, rubbish and debris of any kind, and leave the whole of the Site in a clean and safe condition.
- (d) In addition, the Implementing Partner, subject to the payment specified in GCC Sub-Clause 42.1.3, shall
 - (i) Deliver to the EESL the parts of the Facilities executed by the Implementing Partner up to the date of termination
 - (ii) to the extent legally possible, assign to the EESL all right, title and benefit of the Implementing Partner to the Facilities and to the Plant and Equipment as at the date of termination, and, as may be required by the EESL, in any subcontracts concluded between the Implementing Partner and its SubImplementing Partners
 - (iii) deliver to the EESL all non-proprietary drawings, specifications and other documents prepared by the Implementing Partner or its SubImplementing Partners as at the date of termination in connection with the Facilities.

42.1.3 In the event of termination of the Contract under GCC Sub-Clause 42.1.1, the EESL shall pay to the Implementing Partner the following amounts:

- (a) the Contract Price, properly attributable to the parts of the Facilities executed by the Implementing Partner as of the date of termination
- (b) the costs reasonably incurred by the Implementing Partner in the removal of the Implementing Partner's Equipment from the Site and in the repatriation of the Implementing Partner's and its SubImplementing Partners' personnel.
- (c) any amounts to be paid by the Implementing Partner to its SubImplementing Partners in connection with the termination of any subcontracts, including any cancellation charges.
- (d) costs incurred by the Implementing Partner in protecting the Facilities and leaving the Site in a clean and safe condition pursuant to paragraph (a) of GCC Sub-Clause 42.1.2



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- (e) the cost of satisfying all other obligations, commitments and claims that the Implementing Partner may in good faith have undertaken with third parties in connection with the Contract and that are not covered by paragraphs (a) through (d) above.

42.2 Termination for Contractor or Implementing Partner's Default

42.2.1 The EESL, without prejudice to any other rights or remedies it may possess, may terminate the Contract forthwith in the following circumstances by giving a notice of termination and its reasons therefor to the Implementing Partner, referring to this GCC Sub-Clause 42.2:

- (a) if the Implementing Partner becomes bankrupt or insolvent, has a receiving order issued against it, compounds with its creditors, or, if the Implementing Partner is a corporation, a resolution is passed or order is made for its winding up (other than a voluntary liquidation for the purposes of amalgamation or reconstruction), a receiver is appointed over any part of its undertaking or assets, or if the Implementing Partner takes or suffers any other analogous action in consequence of debt.
- (b) if the Implementing Partner assigns or transfers the Contract or any right or interest therein in violation of the provision of GCC Clause 43 (Assignment).
- (c) if the Implementing Partner, in the judgement of the EESL has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.

For the purpose of this Sub-Clause:

"corrupt practice" means the offering, giving, receiving or soliciting of any thing of value to influence the action of a public official in the procurement process or in contract execution.

"fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the EESL and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the EESL of the benefits of free and open competition.

42.2.2 If the Implementing Partner

- (a) has abandoned or repudiated the Contract
- (b) has without valid reason failed to commence work on the Facilities promptly or has suspended (other than pursuant to GCC Sub-Clause 41.2) the progress of Contract performance for more than twenty-eight (28) days after receiving a written instruction from the EESL to proceed
- (c) persistently fails to execute the Contract in accordance with the Contract or persistently neglects to carry out its obligations under the Contract without just cause
- (d) refuses or is unable to provide sufficient materials, services or labor to execute and complete the Facilities in the manner specified in the program furnished under GCC Clause 18 (Program of Performance) at rates of progress that give reasonable assurance to the EESL that the Implementing Partner can attain Completion of the Facilities by the Time for Completion as extended

then the EESL may, without prejudice to any other rights it may possess under the Contract, give a notice to the Implementing Partner stating the nature of the default and requiring the Implementing Partner to remedy the same. If the Implementing Partner fails to remedy or to take steps to remedy the same within fourteen (14) days of its receipt of such notice, then the EESL may terminate the Contract forthwith by giving a notice of termination to the Implementing Partner that refers to this GCC Sub-Clause 42.2.

42.2.3 Upon receipt of the notice of termination under GCC Sub-Clauses 42.2.1 or 42.2.2, the Implementing Partner shall, either immediately or upon such date as is specified in the notice of termination,



cease all further work, except for such work as the EESL may specify in the notice of termination for the sole purpose of protecting that part of the Facilities already executed, or any work required to leave the Site in a clean and safe condition

- (a) terminate all subcontracts, except those to be assigned to the EESL pursuant to paragraph (d) below
- (b) deliver to the EESL the parts of the Facilities executed by the Implementing Partner up to the date of termination.
- (c) to the extent legally possible, assign to the EESL all right, title and benefit of the Implementing Partner to the Works. and to the Plant and Equipment as at the date of termination, and, as may be required by the EESL, in any subcontracts concluded between the Implementing Partner and its SubImplementing Partners.
- (d) deliver to the EESL all drawings, specifications and other documents prepared by the Implementing Partner or its SubImplementing Partners as at the date of termination in connection with the Facilities.

42.2.4 The EESL may enter upon the Site, expel the Implementing Partner, and complete the Facilities itself or by employing any third party. The EESL may, to the exclusion of any right of the Implementing Partner over the same, take over and use with the payment of a fair rental rate to the Implementing Partner, with all the maintenance costs to the account of the EESL and with an indemnification by the EESL for all liability including damage or injury to persons arising out of the EESL's use of such equipment, any Implementing Partner's Equipment owned by the Implementing Partner and on the Site in connection with the Facilities for such reasonable period as the EESL considers expedient for the supply and installation of the Facilities.

Upon completion of the Facilities or at such earlier date as the EESL thinks appropriate, the EESL shall give notice to the Implementing Partner that such Implementing Partner's Equipment will be returned to the Implementing Partner at or near the Site and shall return such Implementing Partner's Equipment to the Implementing Partner in accordance with such notice. The Implementing Partner shall thereafter without delay and at its cost remove or arrange removal of the same from the Site.

42.2.5 Subject to GCC Sub-Clause 42.2.6, the Implementing Partner shall be entitled to be paid the Contract Price attributable to the Facilities executed as at the date of termination, the value of any unused or partially used Plant and Equipment on the Site, and the costs, if any, incurred in protecting the Facilities and in leaving the Site in a clean and safe condition pursuant to paragraph (a) of GCC Sub-Clause 42.2.3. Any sums due to the EESL from the Implementing Partner accruing prior to the date of termination shall be deducted from the amount to be paid to the Implementing Partner under this Contract.

42.2.6 If the EESL completes the Facilities, the cost of completing the Facilities by the EESL shall be determined.

If the sum that the Implementing Partner is entitled to be paid, pursuant to GCC Sub-Clause 42.2.5, plus the reasonable costs incurred by the EESL in completing the Facilities, exceeds the Contract Price, the Implementing Partner shall be liable for such excess.

If such excess is greater than the sums due to the Implementing Partner under GCC Sub-Clause 42.2.5, the Implementing Partner shall pay the balance to the EESL, and if such excess is less than the sums due to the Implementing Partner under GCC Sub-Clause 42.2.5, the EESL shall pay the balance to the Implementing Partner.

The EESL and the Implementing Partner shall agree, in writing, on the computation described above and the manner in which any sums shall be paid.

42.3 Termination by Contractor or Implementing Partner

42.3.1 If

(a) the EESL has failed to pay the Implementing Partner any sum due under the Contract within the specified period, has failed to approve any invoice or supporting documents without just cause pursuant to Appendix 1 (Terms and Procedures of Payment) of the Contract Agreement, or commits a substantial breach of the Contract, the Implementing Partner may give a notice to the EESL that requires payment of such sum, requires approval of



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such invoice or supporting documents, or specifies the breach and requires the EESL to remedy the same, as the case may be. If the EESL fails to pay such sum, fails to approve such invoice or supporting documents or give its reasons for withholding such approval, fails to remedy the breach or take steps to remedy the breach within fourteen (14) days after receipt of the Implementing Partner's notice, or

(b) the Implementing Partner is unable to carry out any of its obligations under the Contract for any reason attributable to the EESL, including but not limited to the EESL's failure to provide possession of or access to the Site or other areas or failure to obtain any governmental permit necessary for the execution and/or completion of the Facilities which the EESL is required to obtain as per provision of the Contract or as per relevant applicable laws of the country,

then the Implementing Partner may give a notice to the EESL thereof, and if the EESL has failed to pay the outstanding sum, to approve the invoice or supporting documents, to give its reasons for withholding such approval, or to remedy the breach within twenty-eight (28) days of such notice, or if the Implementing Partner is still unable to carry out any of its obligations under the Contract for any reason attributable to the EESL within twenty-eight (28) days of the said notice, the Implementing Partner may by a further notice to the EESL referring to this GCC Sub-Clause 42.3.1, forthwith terminate the Contract.

42.3.2 The Implementing Partner may terminate the Contract forthwith by giving a notice to the EESL to that effect, referring to this GCC Sub-Clause 42.3.2, if the EESL becomes bankrupt or insolvent, has a receiving order issued against it, compounds with its creditors, or, being a corporation, if a resolution is passed or order is made for its winding up (other than a voluntary liquidation for the purposes of amalgamation or reconstruction), a receiver is appointed over any part of its undertaking or assets, or if the EESL takes or suffers any other analogous action in consequence of debt.

42.3.3 If the Contract is terminated under GCC Sub-Clauses 42.3.1 or 42.3.2, then the Implementing Partner shall immediately

(a) cease all further work, except for such work as may be necessary for the purpose of protecting that part of the Facilities already executed, or any work required to leave the Site in a clean and safe condition

(b) terminate all subcontracts, except those to be assigned to the EESL pursuant to paragraph (d)(ii)

(c) remove all Implementing Partner's Equipment from the Site and repatriate the Implementing Partner's and its SubImplementing Partner's personnel from the Site

(d) In addition, the Implementing Partner, subject to the payment specified in GCC Sub-Clause 42.3.4, shall

(i) deliver to the EESL the parts of the Facilities executed by the Implementing Partner up to the date of termination

(ii) to the extent legally possible, assign to the EESL all right, title and benefit of the Implementing Partner to the Facilities and to the Plant and Equipment as of the date of termination, and, as may be required by the EESL, in any subcontracts concluded between the Implementing Partner and its SubImplementing Partners

(iii) deliver to the EESL all drawings, specifications and other documents prepared by the Implementing Partner or its SubImplementing Partners as of the date of termination in connection with the Facilities.

42.3.4 If the Contract is terminated under GCC Sub-Clauses 42.3.1 or 42.3.2, the EESL shall pay to the Implementing Partner all payments specified in GCC Sub-Clause 42.1.3, and reasonable compensation for all loss or damage sustained by the Implementing Partner arising out of, in connection with or in consequence of such termination.

42.3.5 Termination by the Implementing Partner pursuant to this GCC Sub-Clause 42.3 is without prejudice to any other rights or remedies of the Implementing Partner that may be exercised in lieu of or in addition to rights conferred by GCC Sub-Clause 42.3.

42.4 In this GCC Clause 42, the expression "Facilities executed" shall include all work executed, Installation Services provided, any or all Plant and Equipment acquired (or subject to a legally binding obligation to purchase by



the Implementing Partner and used or intended to be used for the purpose of the Facilities, up to and including the date of termination.

42.5 In this GCC Clause 42, in calculating any monies due from the EESL to the Implementing Partner, account shall be taken of any sum previously paid by the EESL to the Implementing Partner under the Contract, including any advance payment paid pursuant to Appendix 1 (Terms and Procedures of Payment) to the Contract Agreement.

43. Assignment

43.1 The Implementing Partner shall not, without the express prior written consent of the EESL, assign to any third party the Contract or any part thereof, or any right, benefit, obligation or interest therein or thereunder, except that the Implementing Partner shall be entitled to assign either absolutely or by way of charge any monies due and payable to it or that may become due and payable to it under the Contract.

44. Bankruptcy

If the Contractor shall become bankrupt or have a receiving order made against him or compound with his creditors, or being a corporation commence to be wound up, not being a voluntary winding up for the purpose only of amalgamation / reconstruction, or carry on its business under a receiver for the benefit of its creditors or any of them, the Owner will be at liberty :

to terminate the contract forthwith by notice in writing to the liquidator or receiver or to any person in whom the contract may become vested & to act in the manner provided in GCC clause 42 entitled "Termination" as though the last mentioned notice has been the notice referred to in such clause and the equipment and materials have been taken out of the contractor's hands.

to give such liquidator, receiver or other person, the option of carrying out the contract subject to his providing a guarantee, for the due and faithful performance of the contract up to an amount to be determined by the Owner.

45. Contractor Performance & Feedback and Evaluation System

The Employer has in place an established 'Contractor Performance & Feedback System' against which the contractor's performance during the execution of contract shall be evaluated on a continuous basis at regular intervals. In case the performance of the contractor is found unsatisfactory on any of the following four parameters, the contractor shall be considered ineligible for participating in future tenders for a period as may be decided by the Employer.

Financial Status

Project Execution & Project Management Capability

Engineering & QA Capability

Claims & Disputes.

46. Fraud Prevention Policy

The contractor along with their associate/collaborator/sub-contractors/sub-vendors/ consultants/service providers shall strictly adhere to the Fraud Prevention Policy of EESL displayed on its tender website www.eeslindia.org

The Contractor along with their associate/collaborator/sub-contractors/sub-vendors/ consultants/service providers shall observe the highest standard of ethics and shall not indulge or allow anybody else working in their organisation to indulge in fraudulent activities during execution of the contract. The contractor shall immediately apprise the Employer about any fraud or suspected fraud as soon as it comes to their notice.



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SECTION-4 TECHNICAL & SPECIAL CONDITIONS OF CONTRACT

NOTE: THE TERMS & CONDITIONS STIPULATED HEREIN (I.E., IN SECTION-4) WILL SUPERSEDE ANY CONTRADICTORY/ SIMILAR/ OVERLAPPING TERMS & CONDITIONS IN ANY OTHER SECTION/PART OF THE TENDER.

NOTE:

Bidders are requested to select the NON PARTICIPATING ITEMS and click on DELETE option and then PROCEED. Bidders has to mandatorily declare the participating ITEMS against this tender as per Attachment No.11 & 12 attached in Section-6 of tender documents. Only price-bid of the declared ITEMS in Attachment No.12 shall be opened subject to acceptance of technical bid.

Name of Work: - Design, Manufacture, Supply, Transport, Installation, Testing and Commissioning of Off Grid Solar Photovoltaic Water Pumping Systems of 1-10 HP in selected States on PAN India basis, including complete system warranty and its repair and maintenance for 5 Years under MNRE KUSUM scheme Component-B.

NIT/Bid Document No.: - EESL/ 06/ 2020-21/ KUSUM/ SWPS/ 1-10 HP/ Off Grid/202101032
Dated:- 14.01.2021

BIDS ARE TO BE SUBMITTED AS FOLLOWS: -

Envelope 1, 2 and 3 will appear online in dynamic form. No Manual/Hard Copy of documents need to be submitted for these envelopes apart from below mentioned documents.

Envelope 1 (Pre-Qualifying documents) should contain following:

- a. **Note:** Any party seeking exemption on grounds of MSE may not submit the bid document fees, as per applicable government orders. If bid document fees is submitted against the tender along with exemption certificate, the same will not be considered as exemption and bidder would be treated as a general Bidder. Bid document fee in the form of Banker's Cheque/ Demand Draft drawn in favor of "Energy Efficiency Services Limited" payable at New Delhi. **(To be submitted in hard copy/ manually in the tender-box on and before Technical E-Bid Opening Date & Time. Scanned Copy to be uploaded at E-tendering portal)**
- b. Letter of the bidder submitting the bid in the form as stipulated in the bid document i.e., as per Bid Form as **Attachment-1** of section - 6, Forms & Procedures. **(Scanned Copy to be uploaded at E- tendering portal)** Duly filled and Signed by authorized signatory.
- c. Bid Security Declaration as **Attachment-2** of section - 6, Forms & Procedures. **(To be submitted in hard copy/ manually in the tender-box on and before Technical E-Bid Opening Date & Time. Scanned Copy to be uploaded at E-tendering portal)**
- d. Power of attorney to sign the bid as **Attachment-3** of section 6, Forms & Procedure. Bidders to use their own format. **(Scanned Copy to be uploaded at E-tendering portal)**.
- e. Certificate regarding acceptance of important terms and conditions as per ITB clause 4.6 as **Attachment-4**. Format enclosed in section - 6, Forms & Procedures. **(Scanned Copy to be uploaded at E-tendering portal)** Duly filled and Signed by authorized signatory.
- f. Form of acceptance of EESL fraud prevention policy and declaration as per **Attachment- 7** of section 6, Forms & Procedure. **(Scanned Copy to be uploaded at E-tendering portal)** Duly filled and Signed by authorized signatory.

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- g. NEFT/RTGS Bank details as per **Attachment-10** of section-6, forms and procedure. (Scanned Copy to be uploaded at E-tendering portal) Duly filled and Signed by authorized signatory.
- h. Declaration form for quoted Clusters and Type of Pump as per format in **Attachment -11 and 12** of section - 6, Forms & Procedures duly filled and Signed on Company's Letter Head Pad with Company seal. (Scanned Copy to be uploaded at E-tendering portal).
- i. Certificate regarding Declaration of Local Content as per **Format in Attachment-14** of section - 6, Forms & Procedures. (Scanned Copy to be uploaded at E-tendering portal).
- j. Self-Declaration for regarding "Restrictions on procurement from a Bidder of a country which shares a land border with India" as per **Attachment-16** of section - 6, Forms & Procedures (Scanned Copy to be uploaded while submitting application online on E-tendering portal).
- k. Self-Declaration for not been blacklisted or debarred by Central/State/UT Government or any Public sector entities duly signed and stamped at company's Letter Head. (Scanned Copy to be uploaded at E-tendering portal as per attachment-18) of section - 6, Forms & Procedures
- l. Certificate Regarding Compliance of Meity Notification Vide File No. 1(10)/2017-Cles Dt. 02.07.18 as per **Attachment 20** of Section-6, Forms & procedures Duly filled Signed by authorized signatory (Scanned Copy to be uploaded at E-tendering portal).
- m. Self-Declaration duly signed and stamped at company's Letter Head for not being under debar list/undergoing debarment period on account of breach of the code of integrity under Rule 175(1)(i)(h) of the General Financial rules for giving false declarations of local content as per **Attachment 22** of Section-6, Forms & procedures. (Scanned Copy to be uploaded at E-tendering portal). Bidder shall clearly mention tender reference number and date of signing the self-declaration.
- n. Compliance Matrix/Checklist for Bidder as per Annexure-IX duly filled and signed on Company's Letter head pad with company seal. (Scanned Copy to be uploaded at E-tendering portal).
- o. Compliance Matrix/Checklist for Technical and Financial QR as per Annexure-X duly filled and signed on Company's Letter head pad with company seal. (Scanned Copy to be uploaded at E-tendering portal).
- p. JV Agreement (if applicable) on Rs. 100 stamp paper duly signed and notarized. Bidder to use their own format.

Envelope-II, i.e., Techno-Commercial Proposal of the Bid Should Contain (scanned copies of) the following:

- a) Deviation statement as per Attachment 5 of section - 6, Forms & Procedure.
NOTE: EESL reserves the right to consider or disregard deviations, and reject bids in case of non-compliance. Bids containing material deviations from or reservation to the terms and conditions and specifications mentioned in the Tender will be treated as non-responsive and will not be considered further.
- b) Compliance to Technical Specification Defined at **ANNEXURE-I** with supporting documents.
- c) Techno-commercial bid as indicated in bid document, i.e., **documentary evidences regarding bidder's qualifications to perform the Contract, as required per the Qualifying Requirements (Attached at Annexure-II)**.
- d) Specific Confirmation from the Bidder to be Filled and attached as provided in **ANNEXURE –IV**.
- e) **Attachment 15, Attachment 17, Attachment 21 duly signed by authorized signatory and stamped on company letter head.**
- f) One complete set of RfP documents and subsequent amendments (if any), duly signed and stamped on each page.
- g) **Duly Filled Format 1 and 2 as attached in the last of this section.** Please note that in absence of these formats, bid may not be evaluated.

Envelope-III should contain Price Bid (to be filled-up online)

Since the bids are to be submitted through E-tendering mode, the prices are to be filled on e-tender portal only and bidders are requested **not to submit the price bid in hard copy at EESL along with the documents. The same will not be entertained.**

1. Price Bid Sheet Format is prescribed at **ANNEXURE-V** in the Tender document – only for illustration purpose (*prices*

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are to be filled on E-tender portal only).

- i. Price Bid in the format prescribed in the tender document
2. Cost for Guarantee for period of 6-10 years as per Attachment-14 in Section-6 Forms and procedure (**Bidder has to fill up separate form (provided in Attachment-13 of Section-6) and upload it in the portal ONLY along with Price Bid (i.e Envelope-3)**)

Opening & Further Processing of the Bids

Initially, Envelope-1 containing documents as stated above will be opened electronically.

Envelope-2 will be opened electronically preferably on the same day of only those bidders who have submitted EMD and requisite documents in Envelope-1.

In Envelope-3, Price Bid shall be opened subject to acceptance of Techno-Commercial Bid.

Opening date will be intimated to all those bidders, who are found technically & commercially acceptable to EESL.

Price-Bid of the technically disqualified bidders will not be opened.

Note- *Unorganized/Un-labelled Bids are liable to be rejected. Bidder to enclose an index of pages with proper nomenclature for each document enclosed and inserted page no. on the documents to be submitted online at E-tendering portal*

On behalf of EESL

Engineer Tech (SCM)

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1. INTRODUCTION

Energy Efficiency Services Limited (EESL) is a joint venture of four National Public Sector Undertakings – NTPC Limited, Power Finance Corporation Limited, Rural Electrification Corporation Limited and POWERGRID Corporation of India Limited, set up under Ministry of Power, Government of India. EESL is a Super Energy Service Company (ESCO). It acts as the resource center for capacity building for State Distribution Companies (DISCOMs), Energy Regulatory Commissions (ERCs), State Development Authorities (SDAs), upcoming ESCOs, financial institutions, etc.

Objectives

- As a part of Implementation of "Off-grid and Decentralized Solar PV Applications Programme" during financial years 2019-20 and 2020-21 towards meeting the targets of the Jawaharlal Nehru National Solar Mission (JNNSM) main thrust was given on important applications especially relevant to rural development.
- Under the above said program, MNRE is going to implement approximate 3.17 lakh Solar Photovoltaic Water Pumping Systems (SPWPS) through centralized tendering process.

Process:

1. The tendering process will be done by EESL.
2. Letter of Empanelment will be issued by respective SIAs.
3. After issuance of Letter of Empanelment, the empaneled firm will take list of prospective beneficiaries from SIA and get the consent from beneficiaries in their favors. After submission of beneficiaries' consent, SIA will issue **Notice To Proceed** to the empaneled firm for the installation of Solar Photovoltaic Water Pumping Systems (SPWPS).
4. The empaneled firm shall co-ordinate with SIAs (Implementing Agency) for repair and maintenance of SPWPS for a period of five years from the date of award of LoE.

2. SCOPE OF WORK

The Scope of Work of a bidder shall include to Design, Manufacture, Supply, Erection, Testing and Commissioning of Stand-alone **Off Grid Solar Photovoltaic Water Pumping Systems of 1-10 HP** in selected states on PAN India basis including complete system warranty and its repair and maintenance for 5 Years under MNRE KUSUM scheme Component 'B': as per MNRE specifications and applicable BIS standards. This tender is for Component-B of PM-KUSUM Scheme, therefore, bidder shall follow all provisions of the Scheme Guidelines as amended from time to time.

The scope of work covers:

A. Supply and Manufacture

1. The selected vendor shall be responsible for design, supply, installation and commissioning of SPWPS along with 5 years of repair and maintenance. To ensure timely maintenance of SPWPS, apart from training a local person and making available necessary spare parts & tools in each district, the vendor shall have one authorized service center in each operational district and a help line(s) in English/Hindi or Regional language of the state where such SPWPS are installed.
2. Each pump should be marked with Toll Free No. of successful bidder (Toll free no. shall be affix on controllers and shall be readable for 5 years.) operating in English/Hindi and Regional language of respective state and

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specific pump numbers and the Pump No. must have been captured by SIA's Web based Application (as per instruction of SIA) at the time of installation at site. During the time of PDI of each component, test report of equipment's, warranty certificates and calibration certificates should be provided by the bidder. Also, bidder should submit module structure wind withstand capacity certificate from certified Architecture Engineer for wind speed of 150 Km/hour. Successful bidder has to submit the PDI request within one week from the date of clearance (site allocation) given by SIA's.

B. Installation & Commissioning

1. Installation and commissioning solar photovoltaic water pumping systems of 1-10 HP shall be done by the successful bidder (s) as per the details provided by respective SIA. The vendors shall co-ordinate with respective SIAs for repair and maintenance of SPWPS for 5 yrs.
2. Empaneled firm have to submit monthly consent of beneficiaries in their favors to SIA for which SIA's will give **Notice To Proceed** and for this, empaneled firm shall complete the installation and Commissioning of SPWPS within 90 days of issuance of NTP for General Category States .

However, for, **special category States/Hill States & UT's/ Island UT's**, empaneled firm shall complete the installation and Commissioning of SPWPS within 120 days of issuance of such NTP.

3. Bidder should conduct site survey and provide Progress Report (on fortnight basis) as per the requirement of SIA's.
4. Action plan should be submitting to SIA's including complete details of team, resources, service centers in each district within 30 days of acceptance of demand from SIA's.
5. Intimation to be given to SIA's before one week of Pre-Dispatch inspection call and should submit complete warranty certificates of each lot at the time of inspection.
6. Submission of installation reports as per the format given by SIA's on weekly basis.
7. Submission of completion reports of each district to SIA's within one week of 100 % completion of work as per allocation in each district.
8. Successful bidder should submit monthly and quarterly progress reports online to SIA's.
9. Bidder shall comply with all applicable regulatory and statutory norms. Bidder has to obtain approval/NOC (where ever required) from appropriate Govt. authority for implementing the project in each selected village.
10. Successful bidder should have finalized sub-bidders and purchase order (P.O.) on all materials such as Solar PV module, structures, Pump, Controller, etc. within 30 days from the date of notification of award of Contract and unpriced P. O. copies will be submitted to SIA's within 30days from date of issue of LOA. Successful bidder should commission minimum pumps/ quarter as defined in Scope of Work Clause B.2. Bidder has to obtain handing over certificates/ installation completion letters/certificates from respective village panchayats/ Local Govt. Bodies in parallel with installation (as per prescribed format and requirement of respective district administration else prescribed format of SIA's may be adopted).
11. Each SPWPS is to be provided with a colored metallic sticker duly riveted displaying required details as provided by SIA's.

12. Successful bidder should submit the Certificate (as per prescribed format-to be provided by SIA) and

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photographs of each SPWPS installed which must show complete installation setup with beneficiary, Pump number etc.

13. Successful bidder has to ensure working of minimum 95% of total installed SPWPS at any point of time.

C. Technical Requirements and Testing

1. Systems installed under this Programme should meet technical specification and construction standards as specified by BIS and MNRE from time to time as given in Annexure-I. Non-compliance will be taken seriously to the extent of blacklisting of the vendor.
2. Only indigenously manufactured PV modules and Pumps should be used in the Programme. **‘Made in India’** to be mentioned on solar panels and pumps.
3. Interpretation of the Guidelines: In case of any ambiguity in interpretation of any of the provisions of these guidelines, the decision of the Ministry shall be final.
4. Review of Guidelines: The Guidelines would be reviewed by an Internal Review Committee Chaired by Secretary in MNRE and modifications therein would be incorporated by the Ministry.
5. Systems installed under this Programme should also follow Office Memorandum - F. No. 283/22/2019-GRID SOLAR of Ministry of New & Renewable Energy, Government of India dated: 23-09-2020.

D. Operation & Maintenance (O&M), Training, Awareness and sensitization:

1. Successful bidder should keep necessary spare parts (min 2% of allotted quantity of each component of the complete system at the service center at each district and should ensure proper maintenance of SPWPS to 5 years from the date of installation of each SPWPS. Bidder should also ensure to provide local training to local persons regarding proper maintenance of the SPWPS. Bidder should submit bi-weekly installation progress report to SIA's as per prescribed format provided during the installation phase.
2. Any complaint registered/ service calls received should be attended at the earliest and the system should be repaired/ restored/ replaced within 3 days from the date of complaint received/informed to the bidder.
3. The installation data should be punched in the Web Application Platform to be developed by SIA's as per the terms and conditions provided by MNRE.
4. The Ministry officials or designated agency may inspect the ongoing installation or installed plants. In case the installed systems are not as per standards, non-functional on account of poor quality of installation, or non-compliance of maintenance, the Ministry reserves the right to blacklist the vendor.
5. Bidder has to submit an Operation, Instruction and Maintenance Manual, in English and the local language, should be provided with each solar photovoltaic water pumping system to the beneficiary. The following minimum details must be provided in the Manual:
 - Basic principles of Photovoltaic.
 - A small write-up (with a block diagram) on solar photovoltaic water pumping system - its components, PV module, electronics and expected performance.
 - A simple single line diagram (SLD) depicting the electrical circuits and control mechanism.
 - Type, Model number, Voltage & capacity of the motor, used in the system.
 - The make, model number, country of origin.
 - Significance of indicators.
 - Clear instructions on regular maintenance and trouble-shooting of the solar photovoltaic water pumping system

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- Preventive maintenance schedule
 - Detail information about warranty coverage
 - DO's and DONT's.
 - Name and address of the contact person for repair and maintenance, in case of non- functionality of the solar photovoltaic water pumping system.
 - Description of frequent faults of PV module and pump and its remedy.
 - Minimum 10 hard copies (to be printed in booklet form) kept at each service center. Also, to be provided to SIA as and when required.
6. The Operation & Maintenance (O&M) cost of the system is in-built in the system cost. The bidder shall provide repair and maintenance of the system for 5 years.
 7. Successful bidder shall do the preventive maintenance in line with PM-KUSUM guidelines and it's amendment (if any) and should submit the report in prescribed format to SIA's.
 8. If complaint is not rectified within 3 days from the date of complaint received/informed to the bidder, in that case after 3 days INR 100 per pump/day penalty will be imposed, for first 3 days and thereafter Rs. 500/ per pump/day shall be imposed till the SPWPS put back to satisfactory working condition. This amount shall be recovered from running bills or CPG of the bidder.
 9. Successful bidder shall submit the detailed report per district including local training, awareness and sensitization campaigns, Methodology for sustainable maintenance for further five years to the beneficiaries with relevant photographs.

3. TECHNICAL SPECIFICATIONS

Technical Specifications shall be as per Annexure-I

4. QUALIFYING REQUIREMENTS

Please refer Annexure-II for Qualifying Requirements

5. DECLARATION OF LOCAL CONTENT

Bidder shall submit a certificate stating the percentage of local content as per the format given in **Attachment-14 of Section-6 of Tender Document**. The certificate shall be from the statutory auditor or cost auditor of the company (in case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content. It is mandatory to mention UDIN No in the certificate.

NOTE : False declarations will be in breach of the code of integrity under Rule 175(1)(i)(h) of the General Financial rules for which a bidder or its successors can be debarred for up to 2 years as per Rule 151(iii) of the General Financial rules along with such other actions as may be permissible under law.

Only those bidders who comply with the minimum local content requirement as mentioned above shall be eligible to bid.

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SPECIAL CONDITIONS OF CONTRACT (SCC)

SPECIAL CONDITIONS WILL PREVAIL UPON THE INSTRUCTION TO BIDDERS AND OTHER TERMS AND CONDITIONS

1. TERMS OF PAYMENT:

Stage I: - 90% of the value of month-wise nos. of SPWPS installed at site based on:

- Submission of detailed work plan (Project Execution plan) with timeline for the lot supplied duly approved by SIA's representative;
- Submission of evidence in hard copy regarding completion of installation of SPWPS in good condition at site, duly verified and acknowledged by EIC, SIA and Farmer.
- All the relevant Warranty and quality (performance test reports) of the lot to be submitted.
- Signing of contract agreement between SIA and successful bidder.
- Submission of Contract Performance Guarantee (CPG) as per relevant CPG clause to SIA
- Submission of original supply Invoices/Bills duly verified/certified by EIC, SIA.
- Submission of report supported with labelled photograph on completion of village community training, awareness/sensitization, capacity building measures undertaken and development of entrepreneurship etc. in each village with relevant photographs
- Submission of Software Generated Installation report as per prescribed format by SNA which shall include following but not limited to Consumer Details, Site Survey Details, Asset Inspection and Mapping Details, Site Inspection Report with Photographs, Remote Monitoring System Parameters etc.
Bidder needs to operate and do required data entries into the State Level SWPS (Solar Water Pumping System) Platform provided by SIA to generate required Reports
- Operation and Maintenance manual to be provided to each beneficiary
- Submission of handing over certificates of solar photovoltaic water pumping system signed by Farmer and duly certified by SIA's representative;
- Performance report for 1 day after commissioning based on data received from remote monitoring system or data logger in cases, where internet services are not available
- An undertaking shall need to be submitted by the Contractor certifying that the civil work will withstand the wind speed of 150 km/hr in all weather conditions

Stage II: -

Balance 10% i.e. on completion of one month from the date of completion certificate

Note: -

- SIA has the right to seek any additional documents / information / certification it deems fit prior to the release of any payment relevant to the SPWPS.
- Payment will be made to the bidder within 30 Days after submission of Invoice complete in all respect i.e. with all the required documents and compliance of relevant terms & conditions of LOA duly accepted & certified by EIC, SIA
- If the invoice is incomplete in any respect or if there is any non-compliance with relevant Terms & Conditions of LOA, payment due date shall start from the date of submission of all necessary documents provided relevant terms & conditions of LOA have been fulfilled.

PROCESS FOR RAISING INVOICE/BILL: -

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- The successful Bidder's request(s) for release of payment shall be made to the Engineer-In-Charge in writing, upon fulfillment of required obligations stipulated in the contract.
 - The successful Bidder shall submit the invoice in triplicate showing description, quantity, Unit rate and total amount with all supporting documents as per terms of the Contract. After due verification by Engineer-In-Charge, SIA shall process the verified Bill (s)/Invoice (s) for release of payment. In case successful Bidder fails to submit the Invoice/Bill with all the required documents, SIA reserves the right to hold the payment against such Bills/Invoices.
 - The successful Bidder shall be responsible for submitting all the requisite documents for processing the Bill (s)/Invoice (s). The successful Bidder shall submit the Bills/Invoices for the work executed showing separately, GST and any other statutory levies in the Bill (s)/Invoice (s).
- Note: SIA has the right to seek any additional documents / information / certification it deems fit prior to be release of any installment.

2. Purchase Preference as per 'Public Procurement (Preference to Make in India), Order 2017' (Latest Amendment Dated:16-Sept-2020)

In accordance with order No: P-45021/2/2017-PP (BE-II) dated: 16-Sept-2020 of Department of Promotion of Industry and Internal Trade and Order No F. No. 283/22/2019-GRID SOLAR, Ministry of New & Renewable Energy dated: 23-09-2020, **only 'Class-I Local Suppliers' are eligible to bid in this tender.**

Bidder shall carefully go through the above mentioned orders in order to understand the whole process and definition of various terms (e.g. Class-I Local supplier, Local content etc) pertaining to the said order.

Declaration of local content in the specified format shall be submitted by the bidder as per Clause 5 "Declaration of Local Content".

3. EVALUATION CRITERIA AND SELECTION OF BIDDERS

3.1 The Tender Consists of 16 Clusters as indicated in Annexure-VI

3.2 Each Cluster has following types of pumps as mentioned below:

- 1-10 HP AC Submersible Water Filled Pump with normal controller
- 3-10 HP AC Submersible Water Filled Pump with USPC
- 1-10 HP DC Submersible Water Filled Pump with normal controller
- 3-10 HP DC Submersible Water Filled Pump with USPC
- 1-10 HP AC Submersible Oil Filled Pump with normal controller
- 3-10 HP AC Submersible Oil Filled Pump with USPC
- 1-10 HP DC Submersible Oil Filled Pump with normal controller
- 3-10 HP DC Submersible Oil Filled Pump with USPC
- 1-10 HP AC Surface Pump with normal controller
- 3-10 HP AC Surface Pump with USPC
- 1-10 HP DC Surface Pump with normal controller
- 3-10 HP DC Surface Pump with USPC

3.3 Bidder has an option to choose out of the 16 clusters for the ones he/she wishes to quote for. Bidder has to mandatorily submit declaration for Clusters it wishes to quote for (i.e. Attachment- 11 of Section-6) subject to fulfillment of cumulative qualifying requirements of quoted clusters.

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- 3.4 In any quoted cluster, bidders may quote for any type of pump which shall be declared in Attachment-12 of Section-6.
- 3.5 A separate **Attachment -13** has been given in Section-6 Forms and procedures for filling up of prices for repair & maintenance cost for the period of 6-10 years. **Bidder has to quote these prices in Attachment-13 for quoted clusters and type of pumps which shall be uploaded ONLY along with the price bid. Quoting these rates is NOT mandatory and shall not be considered as part of price-bid evaluation.**
- 3.6 Price bids of all techno-commercially qualified bidders would be opened and L1 price would be decided for each line item separately. Selection of bidder will be done on techno-commercially acceptable and lowest cost basis for each line item (i.e type of pump for each cluster) **Price bid of only those items (Cluster and Type of Pump) declared in Attachment-11 and 12 of Section-6 by the bidder shall be Opened.** Price bid should be unconditional, failing which the bid shall be summarily rejected. The price to be quoted as per the prescribed format of price bid. Price will remain firm till **One Year** from the date of opening of price bid.
- 3.7 Bidders can select the NON-PARTICIPATING Item and click on DELETE option to remove the item. Bidder has to mandatorily declare the participating Clusters and Type of pump against this tender as per Attachment No.12 in Section-6 of tender documents.
- 3.8 Price Bids shall be opened for all the clusters simultaneously.
- 3.9 SIA reserves the right to divert the awarded quantity of successful bidder to another empaneled bidder if the bidder does not perform within one month as per the schedule on the risk and cost of the bidder.
- 3.10 SIA reserves the right for the variation of $\pm 20\%$ of awarded Quantity State wise.
- 3.11 Further, Option to match L1 Price will be initially extended to all bidders falling under L1+15% and in case number of bidders in this range is less than five the same may be further extended to other bidders in the ascending orders of price bid quoted by them till five bidders agreed for L1 matching or all bidders have been given option to match L1 price, whichever is earlier. In addition, during assessment of work progress of the empanelled vendors, if it is found that they are not able to complete the to complete the installation in given timelines, the Ministry reserves the right to empanel other vendors who re techno-commercially qualified for same cluster or other clusters subject to matching L1 price and fulfilment of other T&Cs of the tender.
- 3.12 Further, in case an empaneled party is not able to supply quantity allocated to them as per scheduled timelines, SIA reserves the right to shift the part/full quantity to another empaneled bidder, who has matched the price.
- 3.13 Please note that in all cases Matching of Prices will be on individual line items (for a particular cluster) within the price bid table on total landed cost (excluding GST) for complete scope of work.
- 3.14 For MSEs and startups purchase preference clause shall be valid as per the government guidelines. Refer to Section-2 of this tender document.
- 3.15 For MSEs maximum award quantity shall be capped to 25% of the total state quantity in respective States (in view of section-2 of the tender document).

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4. COMPLETION TIME:

- Successful bidder should ensure to complete the project as per Clause B.2 and instruction of SIA's.
- The implementation work on ground should start within 15 days from the date of **Notice To Proceed** from SIA's.
- Successful bidder shall submit the unpriced P. O. copies of solar pumpsets, controllers and Solar PV modules to SIA within 30 days from the date of notification of award of Contract. (Not applicable in case bidders itself manufacturing all the items.) In case unpriced PO copies within 30 days not submitted, SIA's may, cancel the contract and award the same quantity to another bidder.
- In order to achieve the target, suitable number of teams (one team with minimum of three members) must be deployed by the bidder.
- Time Schedule includes the time required for mobilization as well as testing, rectifications if any, retesting and completion in all respects to the entire satisfaction of Engineer-in-charge designated by SIA's.

5. Allocation:

Quantity equivalent to 10% of total quantity (rounded off to nearest whole number) under the particular category/type of pumps of a cluster shall be allocated to L1 bidder and balance will be kept on market mode for all selected bidders including L1 bidder.

The total allocation to a vendor for a particular cluster, shall not go beyond the ATO requirement for that particular cluster. However if there are no alternate vendors available in the corresponding package, who have agreed to match L1 prices and circumstances necessitates additional award of work, additional allocation may be done as per MNRE approvals.

6. ADJUDICATOR

Adjudicator under the contract shall be appointed by the Appointing Authority of SIA. If the bidder does not accept the Adjudicator proposed by SIA, it should so state in its bid form and make a counter proposal of an adjudicator. If on the day the contract agreement is signed, the SIA and contractor have not agreed on the appointment of adjudicator, the adjudicator shall be appointed, at the request of either party, by the MNRE.

7. ARBITRATION

Arbitration shall be carried out as per Arbitration Act 1996 and its subsequent amendment. The Contract shall be governed by and interpreted in accordance with the laws in force in India. The Courts of respective cluster where programme is to be implemented shall have exclusive jurisdiction in all matters arising under the contract.

8. CONTRACT PERFORMANCE GUARANTEE (CPG)

Bidder shall submit a bank guarantee (BG) of 3% of the amount equivalent to the 10% of the value of total state-wise allocation or 100 nos. of SPWPS, whichever is lower, to respective Implementing Agency's with the validity of 1 year to be rolled over every year for the first five years. However, if total number of SPWPS is more than 10% of the value of total state-wise allocation or 100 nos. in the first list of consent of beneficiaries in bidder's favor, bidder shall submit another CPG equivalent to differential value of order as per NTP. In case of non-performance or failure in fulfilment of contractual obligation under the contract, will be liable to submit 10% CPG apart from other penal provision of the tender.

CPG shall be submitted within 15 days of issuance of Letter of Empanelment by SIA.

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Illustration:

For Chhattisgarh bidder has submitted the CPG equivalent to the order value of 100 nos of SPWPS to Implementing Agency (as 10% of state allocation i.e, 20000 is equal to 2000 which is higher than 100). After getting a list of beneficiaries, bidder submits consent of 1500 beneficiaries in his favor. In this case, bidder shall also submit a CPG of 3% of the amount equivalent to the 1400 (1500-100) nos. of SPWPS in addition to the previously submitted CPG equivalent to the order value of 100 nos of SPWPS to respective Implementing Agency to get NTP.

In case, if consent of beneficiaries in bidder’s favor is less than the value of submitted CPG, Implementing Agency shall return the original CPG within 15 days of receiving the new CPG equivalent to total awarded quantity to the bidder. However, such request for return of the CPG equivalent to unawarded capacity shall be considered only after 12 months of issuance of LoA.

Illustration:

For any state, Bidder has submitted the CPG of 3% of the amount equivalent to the order value of 100 nos of SPWPS to Implementing Agency. However, in 12 months, bidder can only get 50 no.s of consent of beneficiaries in his favor. In this case, bidder can claim the return of CPG equivalent to the un-awarded capacity i.e, 50 (100-50) after submitting the CPG equivalent to the 3% of the amount of awarded capacity i.e, 50 no.s of SPWPS.

Any delay in submission of CPG shall be deemed as accruing of financial benefit to the supplier and SIA may take necessary interest penalty recovery action (interest @ SBI’s MCLR + 2 %) from the payments due to the supplier for the period of delay. However, this provision does not bind SIA in any way from proceeding against the supplier (including cancellation of the LOA, etc.) for non-compliance towards non-submission of the CPG.

Bank guarantee shall be from any Nationalized Banks/other scheduled private banks as per list given in Section 6. SIA shall at his discretion have recourse to the said Bank Guarantee for the recovery of any or all amount due from the bidder in connection with the contract including of guarantee obligations. This shall include the recovery, if any, against the Penalties applicable during Repair and maintenance period as brought out under Liquidated Damages.

- 9. In addition, during assessment of work progress of the empanelled vendors, if it is found that they are not able to complete the installations in given timelines, the Ministry reserves right to empanel other vendors who are techno commercially qualified for same cluster or other clusters subject to matching L1 price and fulfilment and TnC’s of this RfP document.
- 10. Successful bidder, on whom letter of award is placed, is to ensure all safety guidelines, rules and regulations, labor laws etc. Successful bidder indemnifies SIA for any accident, injury met by its labour, employee or any other person working for him. Any compensation sought by its labour, employee or any other person working for him shall be paid by successful bidder as per settlement solely. SIA has no role to play in this matter.
- 11. Successful bidder is to submit interchangeability certificate for its product supplied for replacement during warranty and maintenance period and even when it is purchased from open market. In case due to change in technology, the supplied product is not available during warranty/ maintenance period than the improved version of product can be used in warranty/ maintenance period with same or improved technical parameters or the combination thereof after written communication of Engineer in Charge of SIA at same Cost & terms and conditions. Successful Bidder, on whom letter of award has been placed, has also to confirm that the price of improved version of product is not lesser than the original product or its parts in comparison.
- 12. The Bidder shall be deemed to have examined the Bid document, to have obtained his own information in all matters whatsoever that might affect carrying out the Works in line with the Scope of Work specified in the

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document at the offered rates and to have satisfied himself to the sufficiency of his Bid. The bidder shall be deemed to know the scope, nature and magnitude of the work and requirement of materials, equipment, tools and labour involved, wage structures and as to what all works he has to complete in accordance with the Bid documents irrespective of any defects, omissions or errors that may be found in the Bid documents. In case of non-performance of any bidder, work will be awarded to third party at the risk and cost of the existing bidder.

13. INSURANCE

The Goods supplied under the Contract shall be fully insured in Indian Rupees against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery. For delivery of goods at site, the insurance shall be obtained by the Contractor, for an amount not less than the Contract Price of the goods from “warehouse to warehouse” (final destinations) on “All Risks” basis including War risks and strikes. The Comprehensive insurance of Solar Photo Voltaic Water Pumping System shall be provided for natural calamities, theft & burglary etc. during 5 years warranty period.

14. TRANSPORTATION, DEMURRAGE, WHARFAGE, ETC.:

Contractor is required under the Contract to transport the Goods to place of destination defined as Site. Transport to such place of destination in India including insurance, as shall be specified in the Contract, shall be arranged by the Contractor, and the related cost shall be included in the Contract Price.

Subsequent to an order being placed against bidder’s quotation, received in response to this ‘enquiry’, if it is found that the materials supplied are not of the right quality or not in accordance with our specifications (required by us) or received in damaged or broken conditions, not satisfactory owing to any reason of which we shall be the sole judge, EESL/SIA shall be entitled to reject the materials, cancel the contract and buy our requirement from the open market / other sources and recover the loss, if any, from the supplier reserving to ourselves the right to forfeit the security deposit, furnished by the supplier against the contract. The supplier will make his own arrangements to remove the rejected material within a fortnight of instruction to do so. Thereafter material will lie entirely at the supplier’s risk and responsibility and storage charges, along with any other charges applicable, will be recoverable from the supplier.

EESL/SIA reserve the right to accept or reject any quotation in full or in part without assigning any reason thereof. We also reserve the right to split and place order on more than one suppliers.

The bidder should not have been black-listed by any Central / State Government or Public Sector Undertakings. If at any stage of tendering process or during the currency of the contract, any suppression / falsification of such information is brought to the knowledge, SIA/EESL shall have the right to reject the proposal or terminate the contract, as the case may be, without any compensation to the bidder & forfeiture of bid security/EMD/CPG.

15. Subsequent to an order being placed against bidder’s quotation, received in response to this ‘enquiry’, if it is found that the materials supplied are not of the right quality or not in accordance with our specifications (required by this tender document) or received in damaged or broken conditions, not satisfactory owing to any reason of which we shall be the sole judge, we shall be entitled to reject the materials, cancel the contract and buy our requirement from the open market / other sources and recover the loss, if any, from the bidder reserving to ourselves the right to forfeit the security deposit, furnished by the bidder against the contract. The bidder will make his own arrangements to remove the rejected material within a fortnight of instruction to do so. Thereafter material will lie entirely at the bidder’s risk and responsibility and storage charges, along with any other charges applicable, will be recoverable from the bidder.

16. We reserve the right to accept or reject any quotation in full or in part without assigning any reason thereof. We also

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reserve the right to split and place order on more than one bidder.

17. The bidder should not have been black-listed by any Central / State Government or Public Sector Undertakings. If at any stage of tendering process or during the currency of the contract, any suppression/ falsification of such information is brought to the knowledge, EESL/SIA shall have the right to reject the proposal or terminate the contract, as the case may be, without any compensation to the tenderer & forfeiture of bid security/EMD/CPG.
18. Further SIA reserve the right to place a repeat order in case of urgency for equal to or more than ordered quantity in the Letter of Award for similar work. In case of poor performance/poor quality of material SIA reserves the right to short close / terminate the contract and award the work to third party at risk and cost of bidder.

19. LIQUIDATED DAMAGES

In case of any delay in the execution of the order or delay in maintenance beyond the stipulated time schedule decided including any extension permitted in writing, SIA's reserves the right to recover from the bidder a sum equivalent to 0.5 % of the value of the delayed SPWPS installation or on the unexecuted portion of the work for each week of the delay and part thereof subject to a maximum of 5 % of the total value of the contract.

Alternatively, SIA's reserves the right to purchase of the material and completion of the works including maintenance from elsewhere at the sole risk and cost of the successful bidder/ contractor and recover all such extra cost incurred by SIA in procuring the material from resources available including encashment of the bank guarantee or any other sources etc. Further, if any extra cost is incurred by SIA's due to delay in work completion by the party beyond the completion time as per PO/LOA, the same shall be recovered from the party's Invoice/BG etc.

Alternatively, SIA may cancel the order completely or partly without prejudice to his right under the alternatives mentioned above.

20. PERIOD OF BID VALIDITY

Bids shall remain valid for a period of 180 days after the closing date prescribed by the EESL for the receipt of bids. A bid valid for a shorter period may be rejected by the EESL as being non responsive. In exceptional circumstances, the EESL may solicit the bidder's consent to an extension of the bid validity period. The request and response thereto shall be made in writing thro' letters/ e-mails. If the bidder accepts to prolong the period of validity, the bid security/EMD shall also be suitably extended. A bidder may refuse the request for Bid Validity Extension without forfeiting its bid security. A bidder granting the request will not be required nor permitted to modify its bid.

21. PRE-BID MEETING

- The official representative of the Bidders may attend the pre-bid conference/meetings as per date, time and venue mentioned in Section-1.
- The purpose of the meeting will be to clarify any issues regarding the bid process.
- Record notes of the meeting including the text of the questions raised and responses given will be transmitted to all the bidders who were present at the meeting and will also be put on the web-site. The clarifications that could not be furnished during pre-bid conference will be separately communicated to all the purchasers of the RFP.
- Non-attendance at the pre-bid meeting will not be a cause for rejection of a Bidder.
- Based on the discussion in pre bid meeting, EESL/SIA reserved the right for modification in RFP.
- Bidder(s) are requested to send the queries 3 days in advance from the date of pre bid to the contact points mentioned in Section 1 as per the following format **in excel file only:**

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User ID: nikhil.bhandari
Serial No: 131B3FB

Name of Tender				
Tender No.				
Tender ID				
Bid Opening Date				
Bidder's Name				
Contact person from Bidder with address, e-mail and				
Sr. No.	Section No.	Description as Per RFP	Queries/ Clarification of the bidder	Remarks
	Page No.			
	Para No/ Clause No.			
1.	Section No.			
	Page No.			
	Para No/ Clause No.			
2.	Section No.			
	Page No.			
	Para No/ Clause No.			
3.	Section No.			
	Page No.			
	Para No/ Clause No.			

22. Bid Security Declaration

Bidder participating in the tender need to submit "Bid Security Declaration" wherein as per Attachment 2 of the envelope-1 failing which bid shall be considered non-responsive and out rightly rejected.

23. Statutory Compliance/ Certification regarding Cyber Security Products:

A certificate (in the format at *Attachment-20 of Section-6) is to be submitted by the bidders that the items offered meet the definition of domestically manufactured/produced Cyber Security Products as per MeitY notification vide File no. 1(10)/2017-CLES dt. 02.07.18. The above certificate shall be on Company's letterhead and signed by Statutory Auditor or Cost Auditor of the Company.

'Cyber Security Products means a product or appliance or software manufactured/ produced for the purpose of protecting, information, equipment, devices computer, computer resource, communication device, and information stored therein from unauthorized access, use, disclosure, disruption, modification or destruction'.

24. PRICE BASIS

To be quoted as Firm at FOR Destination Basis.

Signature :-
Subject : CN=NIKHIL BHANDARI, ST=DELHI, OID.2.5.4.17=110003, OU=SUPPLY CHAIN MANAGEMENT, O=ENERGY EFFICIENCY SERVICES LIMITED, C=IN
User ID : nikhil.bhandari
Serial No : 13183FB

25. WARRANTY AND MAINTENANCE:

- a. The complete Solar Photovoltaic Water Pumping System and display board / Name Plate (SIA's will provide the details) shall be warranted and maintained for 5 years from the date of installation.
- b. The maintenance service provided shall ensure proper functioning of the system as a whole. All preventive/routine maintenance and breakdown/corrective maintenance required for ensuring maximum uptime shall have to be provided by the Contractor.
- c. Successful bidder, on whom letter of award is placed, is to ensure all safety guidelines, rules and regulations, labour laws etc. Successful bidder indemnifies SIA for any accident, injury met by its labour, employee or any other person working for him. Any compensation sought by its labour, employee or any other person working for him shall be paid by successful bidder as per settlement solely. SIA/EESL has no role to play in this matter.
- d. Local representative of bidder should meet governing authorities of each block and should submit the minutes of meeting to SIA's on quarterly basis.

26. COST OF TENDER DOCUMENTS

Interested bidders may view the tender documents at <https://eesl.eproc.in> or could be viewed after following the link of 'e-Tendering' on EESL home page, i.e. <http://eeslindia.org> from where the registered bidders [registration process is explained at EESL home page in "E-tendering" section] with EESL will be able to download the tender documents and submit their bids online.

The cost of tender documents is Rs. 25,000/- (Rupees Twenty-Five Thousand Only-Nonrefundable and Non Adjustable) which shall be payable in the form of DD/Pay order or Banker's Cheque in favour of "Energy Efficiency Services Limited" issued by any scheduled/nationalized bank payable in Noida/New Delhi (under this option the details of DD No. & Date, amount, bankers name etc. has to be submitted in relevant field/column of online module). Tenders without this cost are liable to be rejected. It should be ensured by the bidder that the original DD is received by EESL before opening time of techno-commercial bids for verification of the details of DD given online by the bidders.

The tender submission, tender closing and opening will be done electronically and online.

EESL will not be responsible for any delay, loss or non-receipt of Tender Document Cost sent by post/courier. The instrument should reach in original to EESL office before the Bid Opening date. Bids not accompanied with the requisite tender document cost may not be opened.

Signature :-
Subject : CN=NIKHIL BHANDARI, ST=DELHI, O=D.2.5.4.17=110003, OU=SUPPLY CHAIN MANAGEMENT, O=ENERGY EFFICIENCY SERVICES LIMITED, C=IN
User ID : nikhil.bhandari
Serial No : 131B3FB

A. TECHNICAL SPECIFICATIONS OF SOLAR WATER PUMPING SYSTEM

General Specifications of SPV Pumping Systems shall be in accordance with prevailing guidelines of MNRE; however the specifications of some components are also mentioned as follows –

1. SCOPE

These specification covers design qualifications and performance specifications for Centrifugal Solar Photo Voltaic (SPV) Water Pumping Systems to be installed on a suitable bore-well, open well, water reservoir, water stream, etc., and specifies the minimum standards to be followed under New Scheme for Farmers launched by Government of India on 8.3.2019.

2. TERMINOLOGY

In addition to the terminology specified in 3 of IS 5120 and IEC 62253, the following shall also apply.

2.1 Static Water Depth — It is the depth of water level below the ground level when the pump is not in operation.

2.2 Draw-Down — It is the elevation difference between the depth of static water level and the consistent standing water level in tube well during operation of pump set.

2.3 Submergence — It is the minimum height of water level after drawdown above the pump suction casing.

2.4 Manometric Suction Lift — Manometric suction lift is the vacuum gauge/suction manometer reading in meter of water column when pump operates at suction lift.

2.5 Static Suction Lift — Static suction lift/head is the vertical distance between sump water level and center of pump inlet.

2.6 Daily Water Output — It is the total water output on a clear sunny day with three times tracking SPV panel, under the “Average Daily Solar Radiation” condition of 7.15 KWh / m² on the surface of SPV array (i.e. coplanar with the SPV Modules).

2.7 Wire to Water Efficiency — It is the combined system efficiency of SPV Converter/Controller with Inbuilt MPPT mechanism, Pump set and piping.

2.8 Pump Controller— Pump Controller converts the DC voltage of the SPV array into a suitable DC or AC, single or multi-phase power and may also include equipment for MPPT,

remote monitoring, and protection devices.

2.9 Maximum Power Point Tracker (MPPT) — MPPT is an algorithm that is included in the pump controller used for extracting maximum available power from SPV array under a given condition. The voltage at which SPV array can produce maximum power is called 'maximum power point' voltage (or peak power voltage).

3. CONSTRUCTIONAL FEATURES

3.1 General

3.1.1 SPV Water Pumping System set uses the irradiance available through SPV array. The SPV array produces DC power, which can be utilized to drive a DC or an AC pump set using pump controller.

3.2 A SPV Water Pumping system typically consists of:

3.2.1 *Pump Set*

Pump set may be of any one of the following types:

- i) Mono-set pump;
- ii) Open well submersible pump;
- iii) Submersible pump;

3.2.2 **Motor**

The motor of the pump set may be of the following types:

- i) AC Induction Motor.
- ii) DC Motor [PMSM/BLDC/SRM (with brush or brushless)].

3.2.3 *SPV Controller See 2.8*

Note: Some controllers are inbuilt in the motors

Specifications of Controller/Drive for Solar Water Pumping Systems

Sl. No.	Requirement	Specifications
1.	<i>Controller Power Capacity to drive the Pump</i>	Controller Power Capacity should match to Solar Panels Power Capacity, not Pump Capacity. Example: For 5HP Project, As per MNRE Specs, Panels should be minimum 4800W , Controller capacity also should be minimum 4800W only.
2.	<i>Point Tracking (MMPT)</i>	Should track power only and not Voltage at Maximum power point
3.	<i>Enclosure</i>	The Controller must have IP65 protection or must be housed in a cabinet having at least IP65 protection.
4.	<i>Isolator Switch</i>	Should be between Solar panels and controller
5.	<i>GSM/GPRS</i>	Controller shall be integrated with GSM/GPRS gateway with Geo tagging. GSM/ GPRS Charges to be included in the Costing till the end of Warranty period of the Pump set

3.2.4 Provision for remote monitoring for the pumps must be made in the pump controller through an integral arrangement having following basic functions:

- Controller must be assigned with a unique serial number and its live status must be observed remotely on online portal through login credentials.
- Live status must indicate whether controller is ON/ OFF
- The parameter i.e. the water output, water flow rate, in fault condition, array input voltage/ current, power and motor frequency should at logged at an interval of 10 minutes
- Controller must have a back up to store the data locally (at least for 1 year)

Requirements of Remote Monitoring System

1. State Implementing Agency (SIA) will have a common **SWPS** (Solar Water Pumping System) Management platform for monitoring of operation and performance of SWPS installed under PM KUSUM Scheme.
2. Remote Monitoring System (RMS) of SWPS should have following minimum features or modules:
 - a. Solar System Performance: DC Voltage, DC current, AC output Current, Power, Drive frequency, Energy, etc.
 - b. Pump Performance: Running Hours, Water Discharge (Output), etc.
 - c. RMS Performance: %Device Connectivity, %Data Availability, etc.
 - d. Geo Location: Real time latitude and longitude should be captured with an accuracy of less than 10m horizontal.

This is required to ensure that system is not moved from its original location.

- e. Events and Notifications: Faults related to Pump Operation, Solar generation, Controller/Drive faults like overload, dry run, short circuit, etc.
 - f. Consumer Management: Name, Agriculture details, Service No. Contact Details, etc.
 - g. Asset Management: Ratings, Serial Number, Make, Model Number of Pump, Panel and Controller, Geo Location, IMEI number (of communication module) and ICCID (of SIM).
 - h. Complaint and Ticket Management
Complaint management system is a part of centralized monitoring software platform – State Level Solar Energy Management Platform to be operated and maintained by the **State implementing agency (SIA)**.
 - i. Consumer Mobile Application: Generation, Running Hours, Water Discharge, Complaint logging, etc.
3. RMS provided by all bidder's should connect to State Level Solar Energy Data Management platform, which will have interface with National Level Solar Energy Data Management platform.

As mentioned in above point, SIA will provide software as well as server infrastructure which can be SIA's own data center or NIC cloud platform or MEITY approved Tier-3 or higher Cloud platform owned by SIA. SIA will maintain the same. Access of the platform will be shared with Bidders as well as other State and National Level Stake holders. Bidder's needs to provide one-time Application processing and Connectivity charges of Rs.800-1000 for each system.

All vendors should provide SIM card of suitable ISP having maximum Signal Strength in the respective location of SWPS and ensure connectivity as well as pushing of data to centralized platform as mentioned in specifications.

4. Communication Architecture should be as per Annexure VII and as mentioned below.
- a. **Communication Connectivity:**
 - i. **Pump Controller Connectivity:** Communication between RMS and Pump Controller should be on UART/RS485 MODBUS RTU protocol to ensure interoperability irrespective of make and manufacturer
 - ii. **Remote Connectivity:** RMS of SWPS should be using GSM/GPRS/2G/3G/4G cellular connectivity
 - iii. **Local Connectivity:** Ethernet/Bluetooth/Wi-Fi connectivity to configure parameters, notifications, communication interval, set points etc. or to retrieve locally stored data
 - iv. **Sensor Connectivity:** RMS should have provision for at least two Analog and Digital inputs with 0.1% accuracy to address the requirement of local sensors connectivity if required by SIA/Consumer for applications such as irradiation, flow meter for water discharge, moisture sensor for micro irrigation, etc.

As mentioned in specifications, Analog and digital sensor inputs will be required for integration of flow meter for water discharge, moisture sensor for micro irrigation, level sensor for overhead tank water storage etc. Only provision for Analog and digital inputs with 0.1% accuracy of Full Scale Range is required. Sensors will not be in scope of bidder

- v. RMS should have provision to give remote On/Off command to pump through farmer mobile app. In case, farmer do not have a smart phone, farmer shall be able to on-off pump thru SMS/missed call.
To save ground water, provision for remote operation is required so that farmer can switch on and off remotely.

b. Communication Modes:



- i. Push Data on Event/Notification: such as pump on, pump off, protection operated, etc.
 - ii. Push Data Periodically: important parameters of solar pump (as mentioned above) should be pushed to central server on configurable interval. Interval should be configurable for 60 sec or less.
Default interval should be of 15 minutes. However, if required, it should be possible to configure the periodic interval in multiple of 1 minute starting from 1 minute and up to 15 minutes. Further, in case of any abnormalities or event, RMS should push on event immediately.
 - iii. Command On Demand : It should be possible to send commands via GSM or GPRS to RMS either to control pump operations or to update configuration
- c. Communication Protocol:** RMS should provide data on MQTT protocol to establish communication with thousands of systems.
- d. Security:**
- i. Communication between RMS and Server should be secured and encrypted using TLS/SSL/X.509 certificate etc.
 - ii. As a part of IoT protocol, Authentication and Authorization should be implemented using token/password mechanism
- e. Message Format:** RMS should provide data in a JSON message format as required by respective SNA
- f. Data Storage:** In case of unavailability of cellular network, RMS should store data locally and on availability of network it should push data to central Server. Local data storage should be possible for **one year** in case of unavailability of cellular network.
- g. RMUs should have configuration update over the Air of multiple parameters such as IP, APN, Data logging Interval, Set Points etc. is essential. Software updating should be possible with 2G and even without the presence of SD card. Software updating process and/or failure to update software shouldn't disrupt pumping operations**

3.3 Solar Photo Voltaic (SPV) Array

3.3.1 SPV arrays contains specified number of same capacity, type and specification modules connected in series or parallel to obtain the required voltage or current output. The SPV water pumping system should be operated with a PV array minimum capacity in the range of **900 Watts peak to 9000 Watts peak**, measured under Standard Test Conditions (STC). Sufficient number of modules in series and parallel could be used to obtain the required voltage or current output. The power output of individual PV modules used in the PV array, under STC, should be a minimum of **300 Watts peak**, with adequate provision for measurement tolerances. Use of PV modules with higher power output is preferred.

3.3.2 Modules supplied with the SPV water pumping systems shall have certificate as per IS14286/IEC 61215 specifications or equivalent National or International/ Standards. STC

performance data supplied with the modules shall not be more than one year old.

3.3.3 Modules must qualify to IS/IEC 61730 Part I and II for safety qualification testing.

3.3.4 The minimum module efficiency should be minimum 15 percent and fill factor shall be more than 70 percent.

3.3.5 Modules must qualify to IEC TS 62804-1:2015 for the detection of potential-induced degradation - Part 1: Crystalline silicon (Mandatory in case the SPV array voltage is more than 600 V DC)

3.3.6 In case the SPV water pumping systems are intended for use in coastal areas the solar modules must qualify to IEC TS 61701:2011 for salt mist corrosion test.

3.3.7 The name plate shall conform the IS 14286/IEC 61215

3.3.8 Module to Module wattage mismatch in the SPV array mismatch shall be within ± 3 percent.

3.3.9 Variation in overall SPV array wattage from the specified wattages shall be within zero percent to +10 percent.

3.3.10 The PV Modules must be warranted for output wattage, which should not be less than 90% of the rated wattage at the end of 10 years and 80% of the rated wattage at the end of 25 years.

3.3.11 The RFID must be inside of module lamination. The module laminate, but must be able to withstand harsh environmental conditions.



3.4 Motor-Pump Set

3.4.1 The SPV water pumping systems may use any of the following types of motor pump sets:

- a) Surface mounted motor-pump set
- b) Submersible motor-pump set

3.4.2 The “Motor-Pump Set” should have a capacity in the range of 1 HP to 10 HP and should have the following features:

- a) The mono block DC/ AC centrifugal motor pump set with the impeller mounted directly on the motor shaft and with appropriate mechanical seals which ensures zero leakage.
- b) The motor of the capacity ranging from 1 HP to 10 HP should be AC/DC. The suction and delivery head will depend on the site specific condition of the field.
- c) Submersible pumps could also be used according to the dynamic head of the site at which the pump is to be used.

3.4.3 The pump and all external parts of motor used in submersible pump which are in contact with water, should be of stainless steel of grade 304 or higher as required. The motor-pump set should have a 5 years warranty and therefore, it is essential that the construction of the motor and pump should be made using parts which have a much higher durability and do not need replacement or corrode for at least 5 years of operation after installation.

3.4.5 The suction/ delivery pipe shall be of HDPE or uPVC column pipes of appropriate size, electric cables, floating assembly, civil work and other fittings required to install the Motor Pump set. In case of HDPE pipes the minimum pressure rating of 8 kg/sqcm-PE100 grade for pumps up to 3 HP, 10 kg/sqcm-PE100 grade for 5 HP pumps and further higher minimum pressure rating for above 5 HP as appropriate shall be used.

3.5 Module Mounting Structures and Tracking System

3.5.1 The PV modules should be mounted on metallic structures of adequate strength and appropriate design, which can withstand load of modules and high wind velocities up to 150 km per hour. The raw material used and process for manufacturing of module mounting structure including welding of joints should conform to applicable IS. The module mounting structure should be hot dip galvanized according to IS 4759. Zinc content in working area of the hot dip galvanizing bath should not be less than 99.5% by mass.

3.5.2 To enhance the performance of SPV water pumping systems arrangement for seasonal tilt angle adjustment and three times manual tracking in a day should be provided. In order to make structure rigid, the gap between Telescopic pattern supports should be minimal, further,



for bearing of center load of whole structure only pins should be used instead of threaded bolts.

3.5.3 The general hardware for structure fitment should be either SS 304 or 8.8 grade. Modules should be locked with antitheft bolts of SS 304 Grade. Foundation should be as per the site condition, based on the properties of Soil. Foundation can be done either with the help of ‘J Bolt’ (refer IS 5624 for foundation hardware) or direct piling, it should be decided as per the site and relevant IS i.e. IS 6403 / 456 / 4091 / 875 should be referred for foundation design.

3.5.4 Details of Module Mounting Structure for different capacity of SPV pumps are attached at Annexure-A. These are indicative of minimum standards and an Implementing Agency may specify higher standards.

3.5.5 The MMS design specified by the MNRE in the Technical Specification issued in 2019 shall be followed. However, in case of any change in MMS design having improved design features than MNRE specified design, the vendor shall submit a certificate to this effect from recognized structural engineering institutions like IIT Roorkee, IIT Madras, etc.

3.6 SPV Controller

3.6.1 Maximum Power Point Tracker (MPPT) shall be included to optimally use the power available from the SPV array and maximize the water discharge.

3.6.2 The SPV Controller must have IP (65) protection or shall be housed in a cabinet having at least IP (65) protection.

3.6.3 Adequate protections shall be provided in the SPV Controller to protect the solar powered pump set against the following:

- a) Dry running;
- b) Open circuit;
- c) Accidental output short circuit;
- d) Under voltage;
- e) Reverse polarity;
- f) SPD to arrest high current surge

3.6.4 A good reliable DC Circuit Breaker as per IS/IEC 60947-2 suitable for switching DC power ON and OFF shall be provided in the SPV Controller.

3.6.5 All cables used shall be as per IS 694. Suitable size of cable shall be used in sufficient length for inter-connection between the SPV array to SPV Controller and the SPV Controller to solar powered pump set. Selection of the cable shall be as per IS 14536.



3.6.6 Controller shall be integrated with GSM/GPRS Gateway with Geo tagging. GSM/GPRS Charges to be included in the Costing till the end of Warranty period of the Pump set.

3.7 Earthing Arrangement

3.7.1 Earthing of the motor shall be done as per IS 9283 in accordance with the relevant provisions of IS 3043. Separate earthing shall be provided for Controller, pump and SPV array.

3.7.2 For safety purpose, it shall be ensured during installation that the earthing is capable of taking care of leakage current.

3.7.3 In case of uPVC/HDPE pipes used as discharge pipe, a separate non-corrosive, low resistance conductor from motor earth terminal to control panel earth terminal shall be provided for earthing.

3.7.4 A lightning arrestor shall be provided with every SPV Water Pumping System.

3.8 Use of indigenous components

It will be mandatory to use indigenously manufactured solar modules with indigenous mono/multi crystalline silicon solar cells. Further, the motor-pump-set, controller and balance of system should also be manufactured indigenously. The vendor has to declare the list of imported components used in the solar water pumping system.

4. PERFORMANCE REQUIREMENTS

4.1 Under the “Average Daily Solar Radiation” condition of 7.15 KWh / sq.m. on the surface of PV array (i.e. coplanar with the PV Modules), the minimum water output from a Solar PV Water Pumping System at different “Total Dynamic Heads” should be as specified below :

For D.C. Motor Pump Set:

- i) 110 liters of water per watt peak of PV array, from a Total Dynamic Head of 10 meter (Suction head, if applicable, maximum of 7 meter) and with the shut off head being at least 12 meter.
- ii) 55 liters of water per watt peak of PV array, from a Total Dynamic Head of 20 meter (Suction head, if applicable, up to a maximum of 7 meters) and with the shut off head being at least 25 meter.
- iii) 38 liters of water per watt peak of PV array, from a Total Dynamic Head of 30 meters and the shut off head being at least 45 meter.



- iv) 23 liters of water per watt peak of PV array, from a Total Dynamic Head of 50 meter and the shut off head being at least 70 meter.
- v) 15 liters of water per watt peak of PV array, from a Total Dynamic Head of 70 meters and the shut off head being at least 100 meter.
- vi) 10.5 liters of water per watt peak of PV array, from a Total Dynamic Head of 100 meters and the shut off head being at least 150 meter.

The actual duration of pumping of water on a particular day and the quantity of water pumped could vary depending on the solar intensity, location, season, etc.

Indicative performance specifications for the Shallow and Deep well SPV Water Pumping Systems are given in the Annexure B.

For A.C. Induction Motor Pump Set:

- i) 99 liters of water per watt peak of PV array, from a Total Dynamic Head of 10 meter (Suction head, if applicable, maximum of 7 meters) and with the shut off head being at least 12 meter.
- ii) 49 liters of water per watt peak of PV array, from a Total Dynamic Head of 20 meter (Suction head, if applicable, up to a maximum of 7 meters) and with the shut off head being at least 25 meter.
- iii) 35 liters of water per watt peak of PV array, from a Total Dynamic Head of 30 meter and the shut off head being at least 45 meter.
- iv) 21 liters of water per watt peak of PV array, from a Total Dynamic Head of 50 meter and the shut off head being at least 70 meter.
- v) 14 liters of water per watt peak of PV array, from a Total Dynamic Head of 70 meter and the shut off head being at least 100 meter.
- vi) 9 liters of water per watt peak of PV array, from a Total Dynamic Head of 100 meter and the shut off head being at least 150 meter.

The actual duration of pumping of water on a particular day and the quantity of water pumped could vary depending on the solar intensity, location, season, etc.

Indicative performance specifications for the Shallow and Deep well SPV Water Pumping Systems are given in the Annexure C.

5. TESTS FOR HYDRAULIC AND ELECTRICAL PERFORMANCE OF PUMPSET

5.1 The motor-pump set shall be tested independently for hydraulic and electrical performance as per the relevant IS specification including following test

- a) Constructional requirements/features
- b) General requirements



- c) Design features
- d) Insulation resistance test
- e) High voltage test
- f) Leakage current test



5.2 Testing of SPV Water Pumping Systems shall be done as per procedure specified by the MNRE.

6. GUARANTEE OF PERFORMANCE

6.1 The SPV Water Pumping Systems shall be guaranteed for their performance of the nominal volume rate of flow and the nominal head at the guaranteed duty point as specified in 7.1 under the “Average Daily Solar Radiation” condition of 7.15 KWh/m² on the surface of SPV array (i.e. coplanar with the Photo Voltaic (PV) Modules). The actual duration of pumping of water on a particular day and the quantity of water pumped could vary depending on the solar intensity, location, season, etc.

6.2 Solar Photo Voltaic Water Pumping Systems shall be guaranteed by the manufacturer against the defects in material and workmanship under normal use and service for a period of at least 60 months from the date of commissioning.

6.3 Sufficient spares for trouble free operation during the Warrantee period should be made available as and when required

7. MARKING AND PARAMETERS TO BE DECLARED BY THE MANUFACTURER

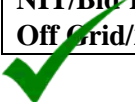
7.1 The motor pump-set and Controller used in SPV Water Pumping Systems shall be securely marked with the following parameters declared by the manufacturer:

7.1.1 Motor Pump-set

- a) Manufacturer's name, logo or trade-mark;
- b) Model, size and SI No of pump-set;
- c) Motor Rating (kW / HP);
- d) Total head, m, at the guaranteed duty point;
- e) Capacity (LPD) at guaranteed head;
- f) Operating head range, m;
- g) Maximum Current (A);
- j) Voltage Range (V) and;
- k) Type - AC or DC Pump set; &
- l) Photo Voltaic (PV) Array Rating in Watts peak (W_p)

7.1.2 Controller

- a) Manufacturer's name, logo or trade-mark;
- b) Model Number;
- c) Serial Number;
- d) Voltage Range;
- e) Power Range in kW for Controller; and
- f) Current rating (A)



8. OPERATION AND MAINTENANCE MANUAL

8.1 An Operation and Maintenance Manual, in English and the local language, should be provided with the solar PV pumping system. The Manual should have information about solar energy, photovoltaic, modules, DC/AC motor pump set, tracking system, mounting structures, electronics and switches. It should also have clear instructions about mounting of PV module, DO's and DONT's and on regular maintenance and Trouble Shooting of the pumping system. Helpline number and Name and address of the Service Centre and contact number of authorized representative to be contacted in case of failure or complaint should also be provided. A warranty card for the modules and the motor pump set should also be provided to the beneficiary.

9. OTHER ACCESSORIES: DELETED

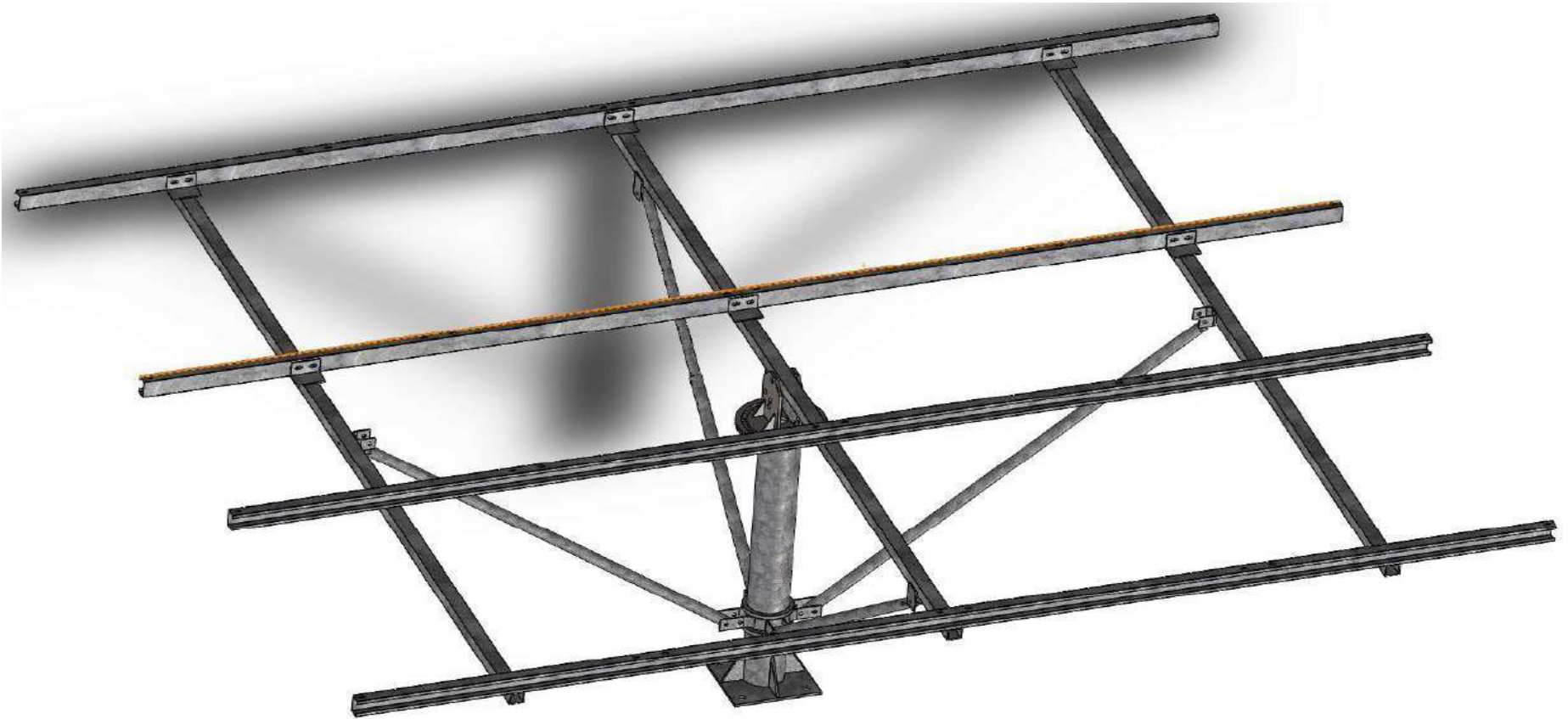
10. COMPREHENSIVE OPERATION AND MAINTENANCE

- i. The Contractor should provide 5 years comprehensive maintenance of the Solar Photovoltaic Water pumping system set, which shall include corrective maintenance as well as routine service visits during guarantee period.
- ii. AMC shall be in line with KUSUM guidelines and it's amendment (if any). The report has to be maintained. Apart from the monitoring, regular periodical maintenance of system has to be done. The report has to be maintained in a prescribed table format in a register maintained at the site which should contain Month, Inspection Date, Action taken against the Defects found in the System and Remarks of the representative of households along with signatures of both service Engineer and the farmer/ beneficiary.
- iii. The deputed personnel shall be in a position to check and test all the equipments regularly, so that preventive actions, if any, could be taken well in advance to save any equipment from damage.
- iv. Normal and preventive maintenance of the Solar Photovoltaic Water pumping systems such as cleaning of module surface, tightening of all electrical connections, changing of tilt angle of module mounting structure, cleaning & greasing of motor pump sets, changing filters etc. are also the duties of the deputed personnel during maintenance visits.
- v. During operation and maintenance period of the Solar Photovoltaic Water Pumping Systems, if there is any loss or damage of any component due to **miss management or miss handling** or due to any other reasons pertaining to the **deputed personnel by empaneled vendor**, what-so-ever, the supplier shall be responsible for **immediate replacement or rectification**.

The damaged component may be repaired or replaced by new component.

- vi. The maintenance shall include replacement of any component irrespective of whether the defect was a **manufacturing defect or due to wear and tear.**

**Specifications for Dual Axis Manual Tracking Type
Module Mounting Structure (MMS) for Solar Water Pumping System**



Signature :-
Subject : CN=NIKHIL BHANDARI, ST=DELHI, OID.2.5.4.17=110003, OU=SUPPLY CHAIN MANAGEMENT, O=ENERGY EFFICIENCY SERVICES LIMITED, C=IN
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Serial No : 13183FB

Standard MMS for 4, 6 and 8 solar modules have been specified. These standard MMS may be used in combinations for different capacities of solar water pumping systems as follows:

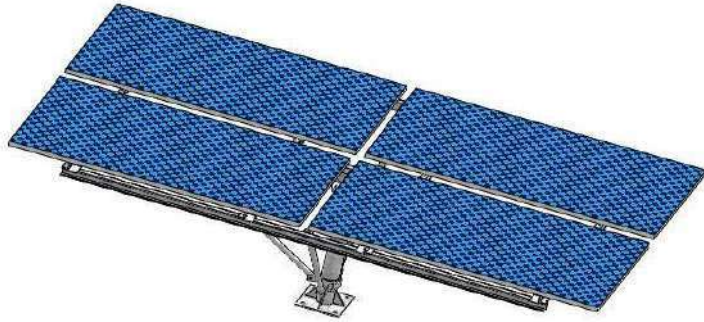
1. Standard MMS of 4 Modules for 1 HP
 2. Standard MMS of 6 Modules for 2 HP
 3. Combination of standard MMS of 4 Modules and 6 Modules for 3 HP
 4. Combination of two standard MMS of 8 Modules for 5 HP
 5. Combination of three standard MMS of 8 Modules for 7.5 HP
- and so on....

Specifications of main parts used in MMS are given below:

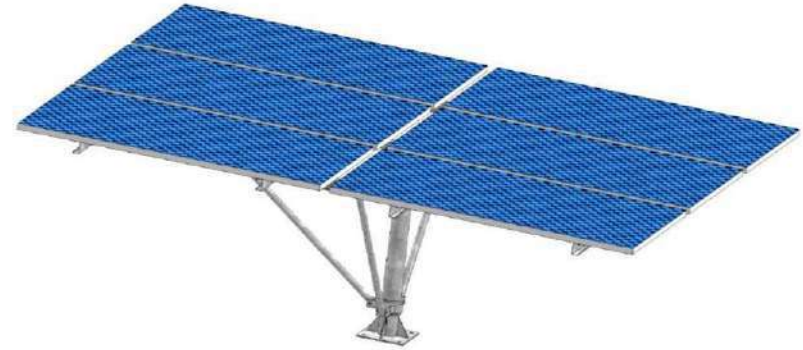
1. Centre Shaft: - Centre shaft used in structure should be of minimum 139 OD with minimum thickness of 4 mm with base plate minimum 10 mm thickness if used and foundation hardware should be as per IS 5624. For system without base plate i.e. direct piling is should be as per the site condition based on the properties of Soil and refer (IS 6403 / 456 / 4091 / 875) for foundation design.
2. Rafters: - The Main and secondary rafter used in structure should be of either SHS & RHS pipe sections.
3. Purlin: - Mounting Purlins used in the structure should be made of Cold form steel section as per IS 1079 with minimum thickness of 2mm.

4. Provision for Seasonal Tilt: - In one structure at least four telescopic supports (three may be used in MMS for 4 modules) either round hollow sections or square hollow section to be provided to support the mounting structure.
5. Provision for Daily Tracking: - Provision for Daily tracking should be provided by the way of providing min. 8 mm thick metal sheet with precision cut grooves.
6. Module Locking System: - Modules should be locked with antitheft bolts of SS 304 Grade.
7. General Hardware for Structure Fitment: - Either SS 304 or 8.8 grade hardware should be used for fitment.
8. Hot Dip Galvanizing: - All structure parts should be hot dip galvanized according to IS 4759.
9. Tolerance for fabrication: - Tolerance for fabrication of steel structure should as per IS 7215.
10. Welding: - Welding should be done as per IS: - 822 & grade of welding wire should be (ER70S-6).

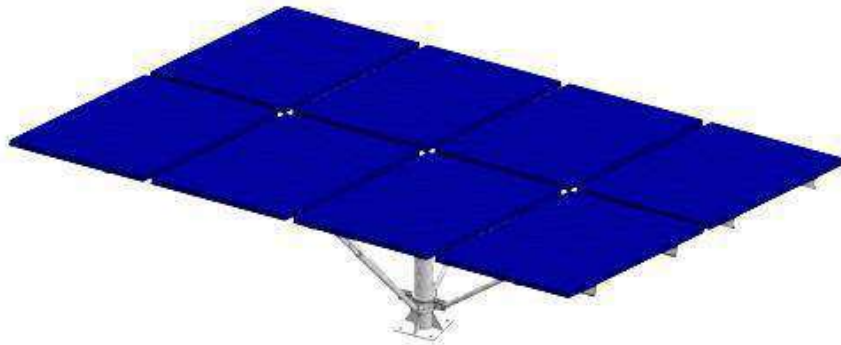
The MMS design specified by the MNRE in the Technical Specification issued in 2019 shall be followed. However, in case of any change in MMS design having improved design features than MNRE specified design, the vendor shall submit a certificate to this effect from recognized structural engineering institutions like IIT Roorkee, IIT Madras, etc.



4 Module MMS



6 Module MMS



8 Module MMS



Side view



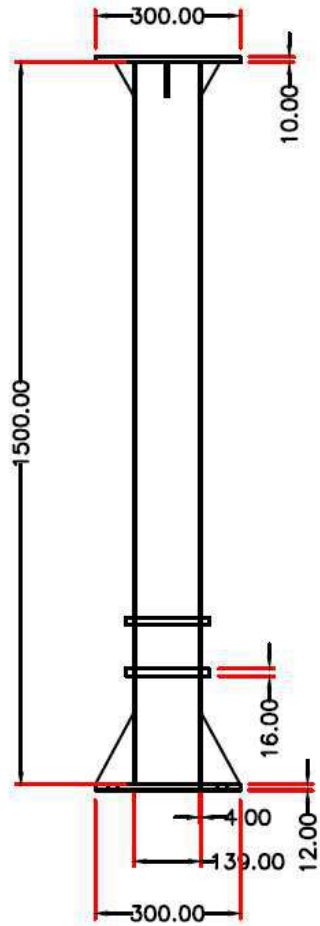
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Subject : CN=NIKHIL BHANDARI, ST=DELHI, OID.2.5.4.17=110003, OU=SUPPLY CHAIN MANAGEMENT, O=ENERGY EFFICIENCY SERVICES LIMITED, C=IN
User ID : nikhil.bhandari
Serial No : 131B3FB

Raw material test certificates (MTC) of all types of raw material used in dual axis manual tracking type MMS as per appropriate IS code should be submitted along with dispatch documents.

Tests to be performed on Dual Axis Manual Tracking Type MMS for Solar Water Pumping System: -

1. For ascertaining proper welding of structure part following should be referred.
 - a. Weld wire grade should be of grade **(ER 70 S - 6)**
 - b. D.P. Test (Pin Hole / Crack) **(IS 822)**
2. For ascertaining hot dip galvanizing of fabricated structure following should be referred: -
 - a. Min coating required should be as per IS 4759.
 - b. Testing of galvanized material.
 - i. Preece Test (CuSO₄ Dip Test) **(IS 2633)**
 - ii. Mass of Zinc **(IS 6745)**
 - iii. Adhesion Test **(IS 2629)**

Part1 – Mail Column

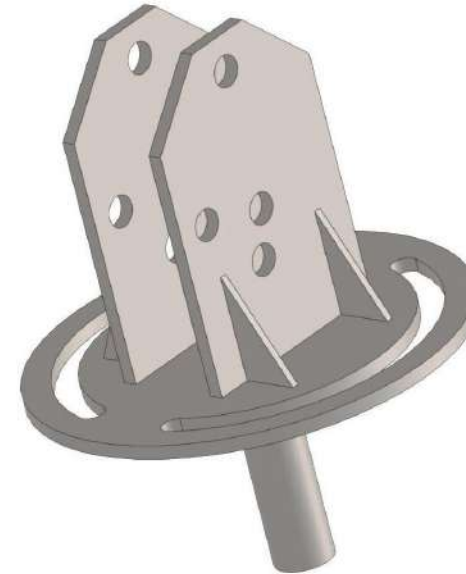
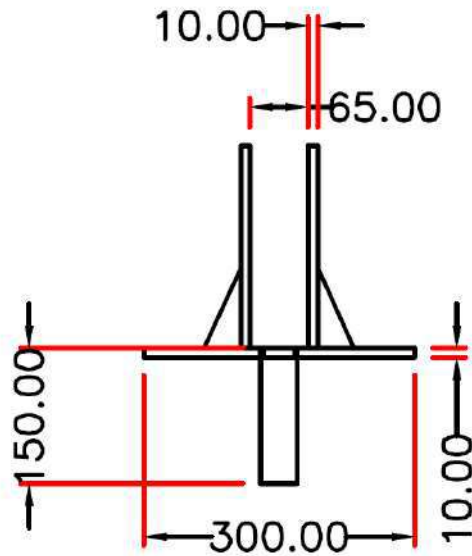


Notes: -

1. All Dimensions are in mm.
2. Main Column material grade should be YST - 240 as per: -IS: 1161 / 1239 & E250 as per: - IS: 1079 / 2062.

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 Serial No : 13183FB

Part 2 – Top Plate

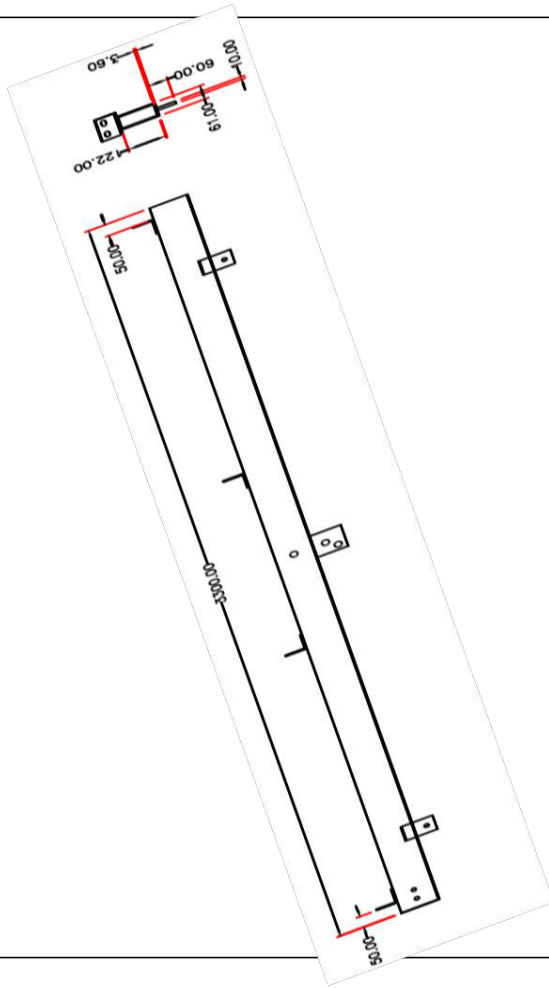


Notes: -

1. All Dimensions are in mm.
2. Top Plate material grade should be YST - 240 as per: -IS: 1161 / 1239 & E250 as per: - IS: 1079 / 2062.

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 Serial No : 13183FB

Part 3 – Main Tube

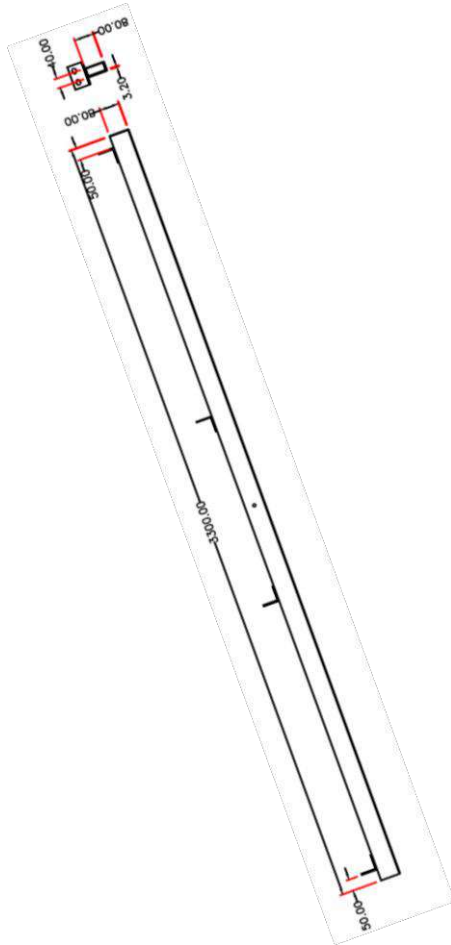


Notes: -

1. All Dimensions are in mm.
2. Main Tube material grade should be YST - 240 as per: -IS: 1161 / 1239 & E250 as per: - IS: 1079 / 2062.

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 User ID : nikhil.bhandari
 Serial No : 13183FB

Part 4 – Side Tube

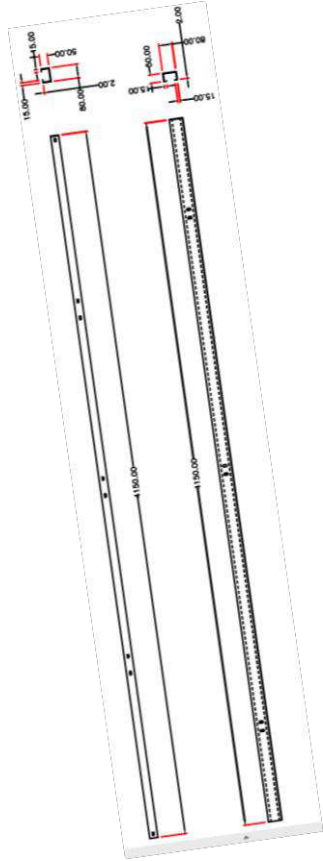


Notes: -

1. All Dimensions are in mm.
2. Side Tube material grade should be YST - 240 as per: -IS: 1161 / 1239 & E250 as per: - IS: 1079 / 2062.

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 Serial No : 13183FB

Part 5 – Purlin

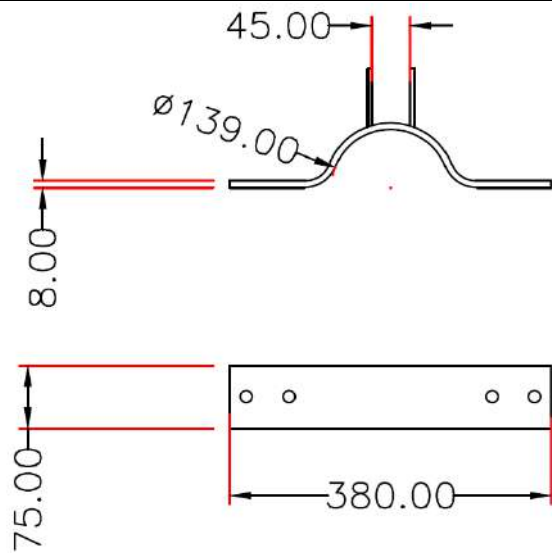


Notes: -

1. All Dimensions are in mm.
2. Mounting Purlin material grade should be E250 as per: - IS: 1079 / 2062 & IS: 811.

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 Serial No : 13183FB

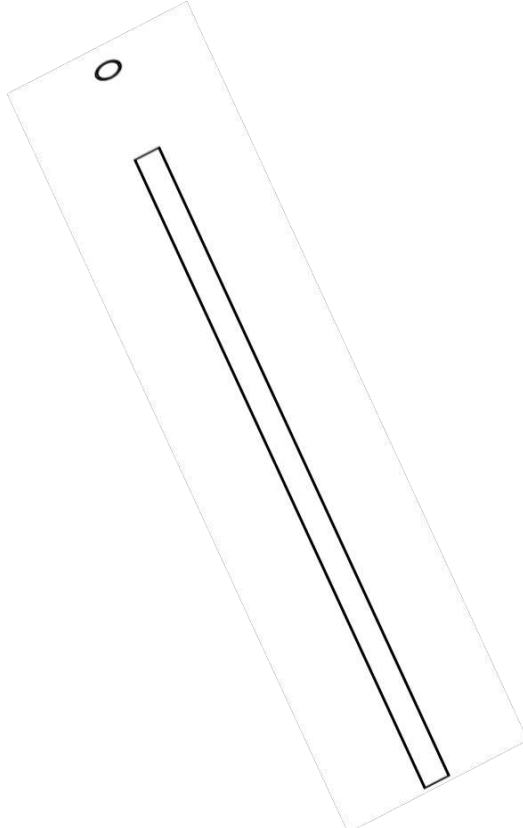
Part 6 – Clamp with Blade



Notes: -

1. All Dimensions are in mm.
2. Clamp with Blade material grade should be as per: - IS: 1079 & E250 as per: - IS: 2062.

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 Serial No : 13183FB

Part 7 – Supporting Pipes

Notes: -

1. All Dimensions are in mm.
2. Supporting Pipes material grade should be YST - 240 as per: -IS: 1161 / 1239 & E250 as per: - IS: 1079 / 2062.

Bill of Quantity for main parts of MMS for Solar Water Pumping System

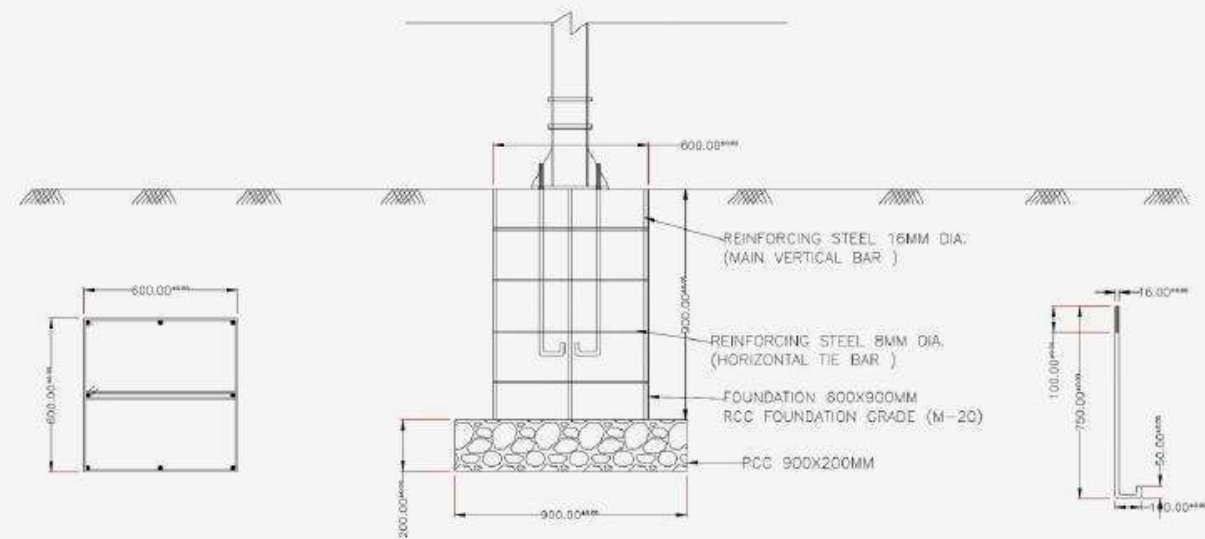
SR. NO.	PART NAME	CROSS SECTION DETAIL	LENGTH (MM)	QUANTITY PER SET
A	Common for MMS for 4, 6 and 8 Modules			
1.	MAIN POLE	139 OD	1500	1
2.	TOP PLATE	300 OD	--	1
3.	CLAMP WITH BLADE	75X8	380	2
4.	SUPPORTING PIPES	41 OD & 33 OD	--	6
B	Different for MMS for 4, 6 and 8 Modules			
5.	MAIN TUBE			
	4 and 6 Module	60X60X3.6	3300	1
	8 Modules	122X61X3.6	3300	1
6.	SIDE TUBE			
	4 and 6 Module	50X50X3.6	3300	2
	8 Modules	80X40X3.2	3300	2
7.	MOUNTING PURLIN			
	4 Module	80X50X15X2	2050	4
	6 Module	80X50X15X2	3100	4
	8 Modules	80X50X15X2	4150	4

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 User ID: nikhil.bhandari

FOUNDATION DESIGN FOR 4/6 MMS

BOM				
TMT BAR	LENGTH	WEIGHT	QUANTITY	TOTAL WEIGHT
16 MM	1000 MM	1.578 KG	8 PCS	12.6 KG
8 MM	2400 MM	0.950 KG	4 PCS	3.8 KG
8 MM	1250 MM	0.500 KG	4 PCS	2.0 KG

BOM				
BLOCK	WIDTH	LENGTH	HEIGHT	VOLUME
RCC COLUMN	0.600 M	0.600 M	0.900 M	0.324 CU.M
PCC	0.900 M	0.900 M	0.200 M	0.162 CU.M



Note-All dimensions are critical & in mm. Please maintain the dimensions. Welding dimension should be maintained 5 mm.





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Organization: EESL, C=IN
Serial No: 1318378

