Tender for

Design, Fabrication, Supply, Erection, Installation, Testing, Commissioning with remote monitoring system (RMS) including Insurance and Warranty with five-year Comprehensive Maintenance Contract (CMC) of 900 KW capacity of grid connected Solar PV Power Plant under Net Metering Arrangement At Auric Hall, Shendra Industrial Area, Aurangabad, Maharashtra, India.

Tender No: MITL/SOLAR/AURIC HALL/2022-23/005

Issued by

Maharashtra Industrial Township Limited (MITL)(Formerly known as Aurangabad Industrial Township Ltd.)

(A State Govt. Company)

Udyog Sarathi, MIDC Office Marol Industrial Area,
Andheri (East) Mumbai,
Mumbai City,
Maharashtra 400093, INDIA
Website: https://www.auric.city/

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SECTION - 1: BRIEF INFORMATION OF PROJECT AND ACTIVITIES

1.1 Introduction:

Maharashtra Industrial Township Limited (MITL)(Formerly known as Aurangabad Industrial Township Ltd.)is 'Special Planning Authority' for the Shendra Industrial Area (SIA) and Bidkin Industrial Area (BIA) of Aurangabad Industrial City (AURIC) having its registered office at 'Udyog Sarthi, MIDC Office, Marol Industrial Area, Andheri (E), Mumbai-400093.

The Maharashtra Electricity Regulatory Commission (MERC) vide its notification dated 2 September 2022, has granted exemption to Shendra Industrial Area and Bidkin Industrial Area of MITL under Section 13 of the Electricity Act 2003 from availing a Distribution Licence for its notified area.

MITL, as a Special Planning Authority, has its establishments in MITL area which includes AURIC hall building. MITL wishes to promote the use of green energy in AURIC Hall for its own consumption and planning to reduce its electricity expenses by harnessing available Solar Rooftop potential in its premises.

Accordingly, MITL as a Special Planning Authority, invites sealed Bids for Design, fabrication, Supply, Erection, Installation, Testing, Commissioning with remote monitoring system (RMS) including insurance and warranty with 5 years comprehensive maintenance contract (CMC) of 0.9MWp capacity of grid connected solar PV power plant under net metering arrangement at Auric hall, Shendra area, Aurangabad, in Maharashtra State.

The bid shall comprise of technical bid and commercial Bid. The detailed scope of work, terms and conditions etc. are available with the Bid Form.

The bid must also be accompanied by Earnest Money of Rs. 2.5 Lakh only (Rupees Two lakhs Fifty Thousand only) in form of crossed Demand Draft or Bank Guarantee in favour of "Maharashtra Industrial Township Limited (MITL), "Aurangabad". The Bank Guarantee should be issued by any nationalized /scheduled Bank, approved by RBI, located in Mumbai and valid for 120 days. EMD will be refunded after allotment of the work to successful bidder.

1.2 About the Project:

MITL is a special purpose vehicle (SPV) created between Maharashtra Industrial Development Corporation (MIDC) and Delhi-Mumbai Industrial Corridor Development Corporation (DMICDC) responsible for development and implementation of AURIC smart industrial city. MITL wishes to promote the use of green energy in AURIC hall for its consumption and has carried out initial study for Installation of Solar PV plant at AURIC Hall in AURIC city, Aurangabad. As per the initial assessment of MITL, the AURIC Hall has potential of 0.9MWdc Solar rooftop PV plant and MITL wishes to install the Solar ground mounted power plant of 0.9MWdc at AURIC hall through its own Capital investment for meeting power consumption of AURIC Hall.

Based on initial study MITL is planning to develop the Solar ground mounted project at AURIC Hall and wishing to engage developer for Design, fabrication, Supply, installation, testing, commissioning with remote monitoring system (RMS) including insurance and warranty with 5 years comprehensive maintenance contract (CMC) of 0.9MW capacity of grid connected solar PV plant under net metering arrangement At Auric Hall, Shendra Industrial Area, Aurangabad.

SECTION – 2: INSTRUCTIONS TO BIDDERS

2.1. Notice Inviting Bid

Maharashtra Industrial Township Limited, State Govt company
Udyog Sarathi, MIDC Office Marol Ind. Area,
Andheri (East), Mumbai, MH 400093 INDIA

NOTICE INVITING BID

2.1.1. Maharashtra Industrial Township Limited (MITL) (hereinafter called "MITL") as a Special Planning Authority is implementing a project for Design, fabrication, Supply, installation, testing, commissioning with remote monitoring system (RMS) including insurance and warrantee with 5 years comprehensive maintenance contract(CMC) of 0.9MW capacity of grid connected solar PV plant under net metering arrangement of Solar PV based Power Plant of 0.9MWp at Auric hall, Shendra Industrial area, Aurangabad in the State of Maharashtra for meeting its own consumption. Brief details are as follows:

1	Tender Reference No.	MITL/SBIA/2022-2023/005
2	Tender can be downloaded from	08.03.2023
3	Estimated Cost	**Rs. 5 Cr** (Rs. Five Crore Only)
4	Tender document fee	Rs. 35400 /- (Rs. Thirty five Thousand Four hundred Only) i.e. Rs. 30000/-plus 18% GST (Non-Refundable & Non-transferable)
5	Earnest Money Deposit (EMD)	Rs. 2.5 Lakhs (Rs. Two Lakhs & Fifty Thousand Onlys)
6	Date and Time of Pre-bid Meeting and Venue	14.03.2023 at 12.00 Hrs Maharashtra Industrial Township Limited, Udyog Sarathi, MIDC Office, Marol Industrial Area, Andheri East, Mumbai / Pre-bid meeting will be held through video conferencing.
7	Last date and time of submission of Bid	23.03.2023 up to 15.00 Hrs
8	Date and Time of opening of Technical Bids.	23.03.2023 at 15.30 Hrs. (Tentative)
9	Security Deposit	5% of the Contract Value in the form of DD or BG to be submitted by the successful bidder within 7 days after placement of LOA.

2.1.2. As a part of this effort, MITL invites solar project developers, Solar PV system integrators, solar entrepreneurs, EPC Contractors, to participate in the BIDs. Interested bidders are invited to submit their online bid proposal along with all supporting documents complete in all aspect on or before 23rd March 2023 up to 15.00 hrs.

2.1.3. Bid documents which include Eligibility criteria, "Technical Specifications", various conditions of contract, formats, etc., can be downloaded from website of https://aitl .eproc.in,www.auric.city Any amendment (s)/corrigendum/clarifications with respect to this Bid shallbe uploaded on https://aitl .eproc.in

2.1.4. The Bidder should regularly follow up for any Amendment/Corrigendum/ Clarification on the above website.

2.1.5. The selection of successful bidder will be based on technical & financial bidding.

2.1.6. Managing Director, MITL reserves all rights to accept, cancel the BIDs or reject any or all bidders or change the conditions mentioned in BID documents at any stage or take any decision regarding implementation of these projects.

2.1.7. All the documents submitted in tender should be original and true, in case, duplicate and fraudulent documents are submitted by bidder, Managing Director, MITL reserves all rights to reject the bid and take appropriate action against the bidder.

2.2. Accessing/Purchasing of BID documents

2.2.1. It is mandatory for all the applicants to have class-III Digital Signature Certificate (DSC) (with both DSC components, i.e. signing and encryption in the name of authorized signatory who will sign the BID) from any of the licensed Certifying Agency (Bidders can see the list of licensed CAs from the link https://aitl .eproc.in to participate in e-tendering of the Employer.

2.2.2. To participate in the submission of Bids against this RFQ cum RFP, it is mandatory for the applicants to get themselves registered with the https://aitl .eproc.in and to have user ID and password. The RFQ cum RFP can be viewed/downloaded from the https://aitl .eproc.in from issue date to Proposal Due Date up to 1500 Hours. Following may be noted:

(a) Proposals can be submitted only during the validity of registration with the https://aitl .eproc.in

(b) The amendments / clarifications to the RFQ cum RFP, if any, will be posted on the https://aitl .eproc.in

(c) If the firm is already registered with https://aitl .eproc.in and validity of registration is not expired, then such Applicant does not require fresh registration.

2.3. Preparation & Submission of BIDs:

The Bidder may submit BID online following the instruction appearing on the screen. A buyer manual containing the detailed guidelines for e-procurement is available on e-procurement portal.

2.3.1. The documents shall be prepared and scanned in different files (in PDF or JPEG format such that file size is not more than 10 MB) and uploaded during the on- line submission of BID.

2.3.2. BID must be submitted online only through e-procurement portal of the Employer, using

the digital signature of authorized representative of the Bidder on or before 23rd March 2023(up to 1500 Hours IST).

2.4. Modification / Substitution / Withdrawal of BIDs:

2.4.1. The Bidder may modify, substitute or withdraw its e- BID prior the BID Due Date. No BID shall be modified, substituted or withdrawn by the Bidder on or after the BID Due Date & Time.

2.4.2. Any alteration / modification in the BID or additional information supplied subsequent to the BID Due Date, unless the same has been expressly sought for by the Employer, shall be disregarded.

2.4.3. For modification of e-BID, Bidder has to detach its old BID from e-tendering portal and upload / resubmit digitally signed modified BID.

2.4.4. For withdrawal of BID, Bidder has to click on withdrawal icon at e-tendering portal and can withdraw its e-BID.

2.4.5. It may specifically be noted that once a bid is withdrawn for any reason, a Bidder cannot re-submit the e-BID.

2.4.6. Managing Director, MITL reserves all rights to accept, cancel the Tender or reject any or all bidders or change the conditions mentioned in tender documents at any stage or take any decision regarding implementation of this project.

2.4.7. MITL will not bear any responsibility or liability arising out of non-receipt of the information regarding amendments in time or otherwise. Bidders must check the website for any such amendment before submitting their Bid. All the notices related to this Bid which are required to be publicized shall be uploaded on above mentioned website.

2.5. Clarifications and Amendments in the Bid Document

Project developers have to submit their queries on or before 14th March 2023 13:00 Hrs through email only to:-dgmelecpra@auric.city, sagar.paraswar@auric.city.

Seeking verbal clarifications and information from MITL or its employees or its representatives shall not be in any way entertained. The Bidder(s) or their authorized representative(s) is /are invited to attend pre-bid meeting(s) through video conferencing. During the pre-bid meeting MITL will explain its views on the clarification / amendments sought by the interested bidders.

2.6. Opening & Evaluation of BIDs.

(i) Opening of Proposals will be done through online process.

(ii) The Employer shall open on-line received technical proposals at 15:00 hours on the Proposal due date in the presence of applicants, who chose to attend.

2.7. Disclaimer

2.7.1. This RFQ cum RFP document is neither an agreement nor an offer by the Maharashtra Industrial Township Limited (MITL) to the prospective Applicants or any other person. The purpose of this RFQ cum RFP is to provide information to the interested parties that may be useful to them in the formulation of their proposal pursuant to this RFQ cum RFP.

2.7.2. MITL does not make any representation or warranty as to the accuracy, reliability or completeness of the information in this RFQ cum RFP document and it is not possible for MITL to consider particular needs of each party who reads or uses this RFQ cum RFP document. This RFQ cum RFP includes statements which reflect various assumptions and assessments arrived at by MITL in relation to the consultancy. Such assumptions, assessments and statements do not purport to contain all the information that each Applicant may require. Each prospective Applicant should conduct its own investigations and analyses and check the accuracy, reliability and completeness of the information provided in this RFQ cum RFP document and obtain independent advice from appropriate sources.

2.7.3. MITL will not have any liability to any prospective Consultancy Company/ Firm/ Consortium or any other person under any laws (including without limitation the law of contract, tort), the principles of equity, restitution or unjust enrichment or otherwise for any loss, expense or damage which may arise from or be incurred or suffered in connection with anything contained in this RFQ cum RFP document, any matter deemed to form part of this RFQ cum RFP document, the award of the Assignment, the information and any other information supplied by or on behalf of MITL or their employees, any consultants or otherwise arising in any way from the selection process for the Assignment. MITL will also not be liable in any manner whether resulting from negligence or otherwise however caused arising from reliance of any Applicant upon any statements contained in this RFQ cum RFP.

2.7.4. MITL will not be responsible for any delay in receiving the proposals. The issue of this RFQ cum RFP does not imply that MITL is bound to select an Applicant or to appoint the Selected Applicant, as the case may be, for the consultancy and MITL reserves the right to accept/reject any or all of proposals submitted in response to this RFQ cum RFP document at any stage without assigning any reasons whatsoever. MITL also reserves the right to withhold or withdraw the process at any stage with intimation to all who submitted the RFQ cum RFP Application.

2.7.5. The information given is not an exhaustive account of statutory requirements and should not be regarded as a complete or authoritative statement of law. MITL accepts

no responsibility for the accuracy or otherwise for any interpretation or opinion on the law expressed herein.

2.7.6. **MITL reserves the right to change/ modify/ amend any or all provisions of this RFQ cum RFP document. Such revisions to the RFQ cum RFP / amended RFQ cum RFP will be made available on the website of MITL.**

SECTION – 3: SCOPE OF WORK

3. Scope of Work

The successful bidder would be required to commission solar power plant and undertake comprehensive Maintenance Contract (CMC) over a period of 5 years. The selected bidder has to undertake following activities as part of the scope of work during various stages of project execution:

3.1. The Scope of the work includes Design, fabrication, Supply, installation, testing, commissioning with remote monitoring system (RMS) including insurance and warrantee with 5 years comprehensive maintenance contract(CMC) of 0.9MW capacity of grid connected solar PV plant under net metering arrangement at the project location given under clause 1.2 above. **Selected Bidder has to set up and commission solar plant on or before 120 (one hundred twenty days from date of award of contract.** If the Bidder fails to commission the sanctioned project withinspecified time, penalty as mentioned in the Liquidated Damage would be deducted.

The Scope of Work under this package, includes site survey, all design & engineering, procurement & supply of equipment and materials, testing at manufacturers works, inspection, packing and forwarding, supply, receipt, unloading and storage at site, associated civil works, services, permits, licenses, installation and incidentals, insurance at all stages, erection, testing and commissioning of 0.9 MWp Grid Interactive Solar PV Power Plant and performance demonstration with associated equipment and materials on turnkey basis and 5 (Five) years comprehensive operation and maintenance. The Grid Interactive Solar PV Power Plant with associated system (typical) shall include the following:

a) Solar PV modules, Module mounting structures, fasteners, array foundation and module interconnection

b) Array Junction boxes, distribution boxes and fuse boxes: MCBs, Surge Arrestors with string monitoring capabilities and with proper lugs, glands, ferrules, terminations and mounting structures.

c) DC and AC cables of appropriate sizes with adequate safety and insulation

d) Power Conditioning Units (PCU)/Inverter (String or Central grid-tie) with SCADA compatibility, common AC power evacuation panel with bus bars and circuit breakers LT Power Interfacing Panels, Plant Monitoring Desk, AC & DC Distribution boards

e) Lightning arrestors for entire plant area.

f) PVC pipes, cable conduits, cable trays and accessories/trenches

g) Earthing of the entire plant as per relevant standards

h) Testing, maintenance and monitoring of equipment(s). Spares & consumables, as required, for 5 years O&M period

i) Necessary CCTV cameras at suitable locations in the plant area in order to cover entire plant area.

j) Adequate no of Fire extinguishers in the plant as per the relevant safety standards. All safety gadgets during Construction and O&M period including but not limited to, anti-static rubber mats of appropriate grade, PPE, rubber gloves and shoes etc.

k) Design of 0.9MWp Grid Interactive Solar Power Generating System and its associated civil, structural, electrical & mechanical auxiliary systems includes preparation of single line diagrams and installation drawings, manuals, electrical layouts, erection key diagrams, electrical GTP and GA drawings for the major equipment & facilities, design basis & calculation sheets, and other relevant drawings and documents required for engineering of all facilities within the fencing to be provided under this contract, are covered under contractor's scope of work. The contractor has to provide the project design document with all the necessary technical details including simulation reports.

l) Any other equipment / material not mentioned but essentially required to complete the small solar power plants in all respects.

m) Contractor has to carry out the site survey of the open land allocated to the contractor and install the solar PV power plant of proposed capacity considering the shadow free area.

n) Requisite testing facilities at site, safety requirements and provision for other things that may require for successful operation and maintenance of plant and equipment.

o) In case, the contractor wishes to use higher quantity of solar PV modules on the DC side of any power plant, the contractor has to provide the complete design document justifying the necessary AC/DC ratio. However, the maximum acceptable AC to DC ratio is 1:1.20.

p) Submission of work progress report by the contractor

q) In case of absence of the standards for any of the equipment, the contractor shall comply to the latest CEA/CERC/State Grid code

3.2. During the O&M period, the contractor shall;

a) Keep the measured daily generation, import, auxiliary, fault log data at regular intervals and provide the same to MITL in compatible electronic form. The right to use the data shall remain with MITL. The plant outage data (due to solar plant or DISCOM grid) shall be maintained and submitted to MITL on monthly basis.

b) Maintain materials, spares, tools & tackles, logistics and accessories, which are necessary or usual for satisfactory and trouble-free operation and maintenance of the Solar Power Generating System(s).

3.3. Civil and Construction work:

The items of civil design and construction work shall include all works required for solar power generating system and shall perform specifically with respect to following but not limited to:

a) Conducting Soil testing of the allocated plot area for foundation design.

b) Conduction of contour survey and mapping of the whole plot area.

c) Construction of foundation for mounting structures for SPV panels, considering life of Plant & existing soil/ natural conditions

d) Construction of foundation for transformers, switchgears, buildings (if any), equipment etc.

e) Necessary arrangement for module cleaning shall be made available in SPV array yard.

f) Suitable Communication System with redundancy.

g) Perimeter lighting: Fabrication, supply & erection along with required GI Poles, junction boxes, support, brackets, accessories & LED lights as required.

h) Supply of ferrules, lugs, glands, terminal blocks, galvanized sheet steel junction boxes with powder coating paint for internal fixtures, cable fixing clamps, nuts and bolts etc. of appropriate sizes as required in the Plant.

i) Power Cables laying underground / over ground with proper cable tray arrangements

j) Entire GI cable tray with proper support and accessories inside equipment room and control room and other locations as required.

3.4. The contractor shall carry out the site surveys and submit the report approval to MITL. The report shall contain the details of the solar PV system, site specific information, layout etc. in site survey report format.

3.5. All approvals as necessary for setting up of a Solar PV system including CEIG/CEA/DISCOM, net metering as per the latest regulations/guidelines shall be in the bidder's scope.

3.6. The Contractor shall arrange deployment of qualified and suitable manpower and required necessary tools, logistics, spares & consumables during construction, commissioning and O&M.

3.7. Complete responsibility of total Operation & Maintenance of Solar PV System including all the infrastructure developed as a part of EPC Contract for 5 years from Operational Acceptance of the Plant, including deployment of necessary staff after the commissioning till final acceptance shall be with the Contractor. Any cost(s) associated with the project for successful commissioning and O&M during the project period shall be borne by the contractor.

3.8. All approvals, equipment, item and works which are not specifically mentioned in this document but are required for successful completion of work including construction, commissioning, O&M of Solar PV Power Plant in every respect and for safe and efficient construction & erection, operation and guaranteed performance are included in the scope of the Contractor.

3.9. Submission of following documents, drawings, data design, and engineering information to MITL or its authorized representative for review and approval in hard copy and soft copy from time to time as per project schedule.

a) Contour map of the complete land area.

b) General arrangement, array layout diagrams and assembly drawings of all major equipment

c) Design basis criteria along with relevant standards (list of standards and respective clause description only).

d) Design calculations and sheets with expected power loss at each stage and backup sheets, if any. Lightening arrestor with area coverage also to be provided.

e) Detailed technical specifications of all the equipment.

f) Schematic diagram for entire electrical system including single line diagrams (SLD)

g) GTP & G.A. drawings for all types of structures/ components, & other interfacing panels.

h) Relay setting charts.

i) Quality assurance plans for manufacturing and field activities

j) Detailed site EHS plan, fire safety & evacuation plan and disaster management plan.

k) Detailed risk assessment and mitigation plan

l) Test reports (for type, acceptance, and routine tests).

m) O&M Instructions manuals and its drawings.

n) As-built drawings / documents and deviation list from good for construction (GFC).

o) O&M plans, schedules and operational manuals for all equipment etc.

p) Daily progress update.

q) Weekly site work progress report with catch-up plan(s), as necessary to monitor actual timelines of the project during construction period along with the real time monitoring

r) Inverter capacity should be equivalent to the solar AC power of plant capacity.

s) The contractor shall provide State of the art web based solar plant generation monitoring and data logging system along with the solar power plant. MITL should be able to monitor all plant efficiency related parameters remotely. Cost of instrument, installation & monthly/yearly charges for first five years/ under CMC period shall be borne by contractor.

After five years contractor shall handover the plant in working condition to MITL.

t) The projects should have the provision for connection with Centralized Monitoring Centre (CMC) of the MITL. It is the responsibility of the contractor to provide support in establishing technical handshake between the RMS system and the CMC, while ensuring uninterrupted connectivity at the same time. The MITL shall monitor the performance of all the projects to ensure the desired level of performance, by computing the generation on the basis of data retrieved from the data logger of the RMS enabled PCU/inverter.

u) Seeking permission for net-metering and grid connectivity of the solar PV system would be the responsibility of the Bidder in accordance with the prevailing guidelines of MITL. MITL's regional offices shall facilitate and provide required information & necessary documents for filling the application for net-metering application; however, the entire responsibility of getting the Solar Rooftop Net-metering permission from MITL lies with Bidder only with the help of concern offices. The bidder shall consider all the cost of net metering including net meter and associate accessories cost, possible required modification in incomer / suggestions of the electrical inspectorate / MITL requirements to avail net metering for the consumer. Further, in case of HT consumer, the cost of HT metering kiosk as per MITL requirement, if any, shall be also included in the bid offer.

v) All approvals including approvals/consents required under regulation & local regulations, building codes and approvals required for distribution of utility etc. relating to installation and operation of the system and generation and supply of solar power from the project are to be obtained by the Bidder.

w) Snap shots during the time of construction.

x) Monthly O&M reports after commissioning of the project.

3.10. All drawings shall be fully corrected to agree with the actual "as built" site conditions and submitted to MITL after commissioning of the project for record purpose. All as-built drawings must include the Good for Construction deviation list.

3.11. The Contractor shall provide a detailed training plan for all operation, maintenance procedures, which shall after approval by MITL form the basis of the training program. The Contractor shall employ and coordinate the training of contractor's personnel who will be qualified and experienced to operate and monitor the facility and to coordinate operations of the facility with the grid system.

3.12. Establishing a system to maintain an inventory of spare parts, tools, equipment, consumables and other supplies required for the facility's hassle-free operation.

3.13. Adequate and seamless insurance coverage during construction period and O&M period to cater all risks related to construction and O&M of Plant to indemnify the MITL.

3.14. Maintain at the facility accurate and up-to-date operating logs, records and monthly reports regarding the generation, Operation & Maintenance of facility. Contractors shall also submit monthly energy bills (export, import etc.) to MITL before 3rd date of every month.

3.15. Perform or contract for and oversee the performance of periodic overhauls or

maintenance required for the facility in accordance with the recommendations of the original equipment manufacturer (OEM).

3.16. Procurement for spares parts, overhaul parts, tools, equipment, consumables, etc. required to operate and maintain the project in accordance with the prudent utility practices and having regarded to warranty recommendations during entire O&M period.

3.17. The contractor shall transfer (if any) and handover all the SPGS assets in good condition on completion of the 5 years period to MITL.

3.18. The Contractor shall, if advised by the MITL, clear all the debris / scrap / equipment in line with Govt. of India's guidelines and rules for waste management and disposal of waste, at the end of the 5 years of O&M period at no extra cost to MITL.

3.19. Maintain and keep all administrative offices, roads, tool room, stores room, equipment, clean, green and in workable conditions. All the type test reports along with Material Dispatch Clearance Certificate (MDCC) and MSDS for all applicable product & equipment and cables are to be submitted by the Contractor prior to the dispatch of the same. Contractor has to provide the type test report for all the equipment used under this contract. If the equipment is not type tested, the Contractor has to ensure conduction of such test and supply the type test Report to the MITL without any additional cost.

SECTION – 4: QUALIFICATION CRITERIA

4. Qualification of the Bidder

4.1. General Eligibility Criteria:

Qualification of Bidders shall be based on meeting the statutory requirement specified below as demonstrated by the Bidder's responses in the corresponding Bid Schedules. The Bidders who are not meeting the below statutory requirements shall not be considered for further Technical and Financial evaluation.

4.1.1. Bidder should be registered contractor on MITL's e-tendering website https://aitl.eproc.in for this work.

4.1.2. The bidder should have valid Goods and Services Tax Registration Certificate (GST). (GST Registration Certificate to be uploaded)

4.1.3. The bidder should have the valid Income Tax Permanent Account Number. (PAN Document to be uploaded)

4.1.4. The bidder should be registered under Provident Fund (P.F.) Act.

4.1.5. The bidder is liable for disqualification on account of any of the following reasons:

a) Bidder, against whom litigation is in process. (Self-declaration to be submitted)

b) Bidder should have, during the last five years, neither failed to perform on any agreement ,as evidenced by imposition of penalty by an arbitral or judicial authority or judicial pronouncement or arbitration award against the bidder, nor been expelled from any project or contract by any public authority nor have had any agreement terminated by any public authority for breach on part of agreed terms and condition.

c) Bidder must not be blacklisted / debarred by any Statutory, Regulatory or Government Authorities or Public Sector Undertakings (PSUs/PSBs) at the time of bidding. (Self-declaration to be submitted by Bidder).

d) The Bidder to provide an undertaking on his letter head that all the technical features highlighted as part of Technical Scope are covered in totality in the proposal submitted by the bidder. (Self-declaration to be submitted by Bidder). Copies of Certificate should be submitted with bid. If the documents submitted by the bidder found fraudulent, the bidder will be disqualified for the current bid as well as debarred from participating in future bids for a period of three years. MITL reserves the right & may waive minor deviations if they do not materially affect the capability of the bidder to fulfil the contract.

The qualification of Bidder will be based on meeting minimum pre-qualifying criteria specified below regarding the Bidder's technical experience and financial position as demonstrated by the Bidder's responses in the corresponding bid schedules. Technical experience and financial resources of any proposed sub-contractor shall not be taken in to account in determining the Bidder's compliance with the qualifying criteria.

The MITL may assess the capacity and capability of the bidder to successfully execute the scope of work covered under the package within stipulated completion period. The assessment shall include:

a) Document verification submitted by the bidder.

b) Project execution capacity, details of work executed, compatible work in hand with the present scope of work.

c) Details of experienced & qualified manpower suitable for execution of scope of work mentioned in this RFP. CVs of the proposed Team Members are required to be submitted with Bid Document.

d) Experience and performance of the Bidder.

4.1.6. The Bidder should be a legal entity duly incorporated in India under the relevant Law and engaged in any business related to renewable energy projects, electricity distribution, engineering services etc. The bidder shall submit a copy of Certificate of Incorporation/Memorandum of Association/Article of Association, or any other relevant document(s) may be furnished along with the bid in support of above. In the Memorandum and Articles of Association, Article Number should be highlighted separately wherein above information has been stated.

4.1.7. A Bidder firm shall not have a conflict of interest (the "**Conflict of Interest**") that affects the Bidding Process. Any Bidder found to have a Conflict of Interest shall be disqualified.

4.1.8. The Bidder **shall not** be falling under any one of the following criteria:

- A constituent of one Bidder is also a constituent of another Bidder
- Bidder has the same legal representative for purposes of this Bid as any other Bidder
- Bidder has a relationship with another Bidder directly or through common third party/ parties, that puts either or both of them in a position to have access to each other's' information about, or to influence the Bid of either or each other;
- Such Bidder or any of its Member thereof has participated as a consultant to the Employer in the preparation of any documents, Design or Technical specifications of the Project.

4.1.9. Bidder will be declared as a Qualified Bidder based on meeting the eligibility criteria and as demonstrated based on documentary evidence submitted by the Bidder in the Bid.

4.2. Joint venture (JV)/ Consortium

4.2.1. Consortium agreement/ joint venture is Permitted in this RFP. However, the joint venture partner must be only among the manufacturers of the solar PV module/Inverters and/or the PV system integrator/licensed electrical EPC contractor.

4.2.2. A joint venture or consortium must be registered.

4.2.3. There can be a maximum of 02 (Two) partners in a JV/ Consortium.

4.2.4. The JV/ Consortium shall meet collectively 100% Financial & Technical Eligibility

Conditions given in tender.

4.2.5. JV / Consortium member should not Bid independently and in JV/ Consortium both, in case of multiple bid JV/ Consortium & independently bid both bids will be disqualified

4.2.6. Work Order will be issued in the name of JV / Consortium firm

4.2.7. JV/Consortium arrangements shall be required to submit EMD along with the tender.

4.2.8. Foreign companies shall not be permitted to participate in Consortium / JV

4.2.9. Experience of a bidder as a member of Consortium or JV, for any project/work shall be considered to the extent of work shown for the assignment.

4.2.10. The following additional necessary conditions shall be applicable for the joint venture.

4.2.11. The undertaking of individual J.V. Partners shall not be demanded.

4.2.12. The application shall be signed by all JV Partners so as to be legally binding on all JV Partners.

4.2.13. The lead member of the consortium shall furnish the notarized joint venture agreement duly notarized along with another joint venture partner on Rs.500 stamp paper without which, they shall not be qualified. (ANNEXURE -10)

4.2.14. The notarized JV MoU / Agreement should give details as under:

4.2.14.1. Particulars of the Firm.

4.2.14.2. Profit sharing ratio.

4.2.14.3. Principal place of business.

4.2.14.4. Details of the Lead Member of the Joint Venture Consortia.

4.2.14.5. Details of the authorized representative of all Joint Venture Consortia members etc.

4.2.14.6. The JV constituting agreement shall be irrevocable till the completion of work.

4.2.14.7. The JV constituting agreement should cover clauses pertaining to liabilities arising out ofthe work, if any and liquidation thereof.

4.2.15. The share of the lead member should not be less than 51% in the JV.

4.2.16. One of the Partners shall be nominated as lead member and this authorization shall be evidenced by submitting a power of attorney signed by legally authorized signatories of all the JV Partners.

4.2.17. The Partner in-charge shall be authorized to incur liabilities and receive instructions for and on behalf of any and all Partners of the Joint Venture Consortia and entire execution of the contract including payment shall be done exclusively with the partner in-charge.

4.2.18. All Partners of the Joint Venture Consortia shall be liable jointly and separately for execution of the contract in accordance with contract terms and a relevant statement to this effect shall be included in the authorization mentioned under (x) above.

4.2.19. The notarized JV/consortium agreement so submitted along with the Tender shall be considered as a Legal Document for establishing the Joint Venture Consortia.

4.2.20. In case of Joint Venture consortium, the sponsoring firm has to submit complete information and identify the lead firm. It would be necessary for the Joint Venture Consortia to establish to the satisfaction of the MITL that the venture has made practical, workable and legally enforceable agreements amongst the parties, that responsibilities etc., assigned are capable in their individual capacity to discharge them competently and satisfactorily and also that, the lead firm has necessary skill and capacity to lead and responsibility and involvement for the entire period of execution as well as a leading role in control and direction on the resources of the entire Joint Venture Consortia.

4.2.21. All joint venture partners shall be fully responsible for the satisfactory completion of work.

4.3. Technical Eligibility Criteria:

4.3.1. Bidder should have experience successfully completing cumulative 5 MW Grid connected Solar PV Power Plants during last Five years for any central/state/semi government/local bodies/private sector/organization in India. All these systems should be commissioned and in successful working condition for at least one year as on bid submission date. The Bidder need to submit documentary evidence like work order, work completion certificate, commissioning report etc.

4.3.2. Additionally, at least one project of 900 KW or above at single location should be installed and commissioned by the Bidder and which should be in successful operation for at least one year as on bid submission date. . The Bidder need to submit documentary evidence like work order, work completion certificate, commissioning report etc.

4.3.3. The bidder shall submit documentary evidence like work order, work completion certificate and commissioning report/interconnection permission (connected utility).

4.4. Financial Eligibility Criteria:

4.4.1. **Annual Turn Over:**

Bidder's Firm shall have average turnover (from solar /electrical EPC business) of **Rs. 5 Crore or above in any three years of last five financial years. (2017-18 to 2021-22).** Which should be evidenced by certificate from the Chartered Accountant and extract of statutory audited accounts. However ,in case of JV, the JV partners should jointly meet the turnover criterion with the condition that the minimum turnover of each JV patterner will be to the extent of his equity contribution in the JV.

[Certified copies of the annual returns submitted to the 'Registrar of Companies' (R.O.C.) should be enclosed. For the last three years, a summarized sheet of turnover (from solar/electrical EPC business) certified byregistered CA may be enclosed.]

4.4.2. **Net-worth:**

Bidder's firm shall have positive Net-worth for any three financial years in last five financial years. (FY 2017-18 to FY 2021-22) Which should be evidenced by certificate from Chartered Accountant. However ,in case of JV, both the JV partners should have positive Net Worth individually.

The net worth will be computed as:

Net Worth = Equity Share Capital + Reserves – (Revaluation Reserves + Intangible Assets + Misc. Expenditure to the extent not written off and carry forward losses)

4.4.3 Liquid Assets / Credit Facilities/Solvency certificate: The bidder shall have Liquid Assets / Credit Facilities/ Solvency of not less than **Rs. 1.5 Crores** (Rupees One crore fifty lakhs only) as on the date of submission of the bid. However ,in case of JV, the JV partners should jointly meet this criterion by each JV patterner to the extent of his equity contribution in the JV.

4.4.4 Bid Capacity:

Bidder must demonstrate having experience and resources sufficient to meet the aggregate of the qualifying criteria for the individual contracts. Bidder should furnish information as required in ANNEXURE-3: FINANCIAL CAPACITY - MINIMUM PROJECT VALUE AND BID CAPACITY.

Sub-contractors' experience and resources shall not be taken into account in determining the bidder's compliance with the qualifying criteria.

Bidders who meet the minimum qualification criteria will be qualified only if their available bid capacity is more than the total bid value. The available bid capacity will be calculated as under:

Assessed Available Bid capacity = (A x N x 2.5 - B), where

A = Maximum value of construction works executed in anyone year during the last four years (updated to the price level of the year indicated below*) considering the completed as well as works in progress.

N = Number of years prescribed for completion of the works for which bids are invited.

B = Value (updated to the price level of the year indicated in Appendix) of existing commitments and on-going works to be completed during the Construction Period of this work.

Note: The Statement showing the value of existing commitments and on-going works as well as the stipulated period completion remaining for each of the works listed should be countersigned by the Statutory Auditor of the company. Also, such list of ongoing works including agreement values and balance works shall be declared on non-judicial stamp paper of worth INR 500/- and notarized.

*The following updation factor shall be applicable for updating the values of work to bring them to the base year. The current financial year in which the BID is invited shall be considered as base year.

Year	Financial Year	Updation Factor*
Base (Year of Inviting tenders)	2022-2023	1.0
-1	2021-2022	1.1
-2	2020-2021	1.21
-3	2019-2020	1.33
-4	2018-2019	1.46
-5	2017-2018	1.61

Note: The statements showing the value of existing commitments and on-going works as well as the stipulated period of completion remaining for each of the works listed should be countersigned by the Engineer in charge, not below the rank of an Executive Engineer or equivalent.

Even though the bidders meet the above qualifying criteria, they are subject to be disqualified if they have:

- made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirements; and/or

record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, litigation history, or financial failures etc.; and/or participated in the previous bidding for the same work and had quoted unreasonably high bid prices and could not furnish rational justification to the employer.

SECTION – 5: BID PREPARATION, SUBMISSION OF BID AND BID EVALUATION

5. BID PREPARION AND SUBMISSION OF BID

5.1. Submission of BID

The Bidder should submit the Bids online on https://aitl.eproc.in as per the due date mentioned in Notice Inviting Bid. Technical Bid along with tender documents (duly signed on each page) to be uploaded in the e-tender portal. Technical Bid to be opened by the MITL committee.

- The hard copy of technical bid duly completed and signed on each page, should be submitted along with the **"TECHNICAL BID"** and other supporting documents with in two days after due date. Hard copy from the Vendors who have participated in e-bid will only be accepted.
- Board resolution/ Authorization letter for signing of the bid document from the Vendor be submitted.
- Prices / Costs of the items ***should not be*** indicated anywhere in the Technical Bid. This should be followed meticulously failing which the bid is liable to be rejected.
- EMD of Rs. 2.5 Lakhs only be submitted with the bid in the form of Demand Draft / Bank Guarantee.

The Technical Bid to be kept in a sealed envelope super-scribed with for "Design, Engineering, Supply, Construction, Erection, Testing, Transportation, Unloading, Installation, Commissioning and 5 years Operation & Maintenance of Solar PV based Power Plant with capacities ranging from 0.9MWp at "Auric hall, Shendra Industrial Area, Aurangabad". The cover should also be sealed and addressed to the

Managing Director, MITL,

Udyog Sarathi, MIDC Office Marol Indl Area,

Andheri (East) Mumbai-400093.

For financial bid, the price bid BOQ given with tender is to be uploaded strictly as per the format available with the tender failing which the offer is liable for rejection (renaming or changing format of BOQ sheet will not be accepted by the system).

Tenders submitted without the "Two Bid" System procedure will be rejected. Any bid received after the due date and time of submission on account of delay of any kind shall not be opened. e-Procurement system does not allow submission of documents after due date of tender. Incomplete form or non-submission of required documents may result into rejection of offer by Bidder and no communication shall be done for submission of documents. Telegraphic/Faxed Bids shall not be considered.

5.2. Proforma /Schedule to be Filled in along with Bid

The bidder must furnish all required information in the specified Proforma/Schedule. If this

information is not furnished, MITL shall not be responsible for any error in evaluation of bid and the bidder shall have no claim whatsoever, on this account.

5.3. Signing of Bid

The person authorized to sign the bid document through the power of attorney shall put initials under official seal on each and every page of the bid. The bid submission form shall bear full signatures under official seal fully disclosing the Name, Designation and Relationship of the Signatory with the firm/bidder.

The Bidders should authorize a person for performing task related to the bid submission such as providing information, responding to enquires, signing of Bid etc. The bidders shall submit along with bid, a Power of Attorney in original authorizing the signatory of the person signing the bid. The person authorized through the power of Attorney shall be the single point of contact for the purposes of the Bid process. The proforma of the power of Attorney is given as **Annexure 3**

5.4. Site Visit

It is mandatory for the bidder to visit the site and obtain all the required information before submitting the BID document. Site visit report needs to be uploaded as a part of the technical BID as per the **Annexure 8.**

5.5. Language of BID

The bid, any correspondence and the documents shall be in English language.

5.6. Composition of BID

The bid shall comprise two envelopes to be submitted simultaneously, one containing Technical Bid and Supporting documents and the other Financial Bid.

5.6.1. **Envelop –I (Technical Bid)**

The Envelop –I (Technical Bid) shall contain the following things:

Supporting documents for technical bid that needed to submit online are:

i. Document of techno commercial offer, with scanned copies of original documents addressed in offer.

ii. Certificate of incorporation

iii. Power of Attorney for authorized signatory in non-judicial stamp paper

iv. Copy of board resolution

v. Original Non-Refundable Tender Processing Fee, if any

vi. Bidder’s general information, Experience & shareholding certificate.

vii. Declaration regarding the procurement of Solar Inverters & Solar Modules from class I local suppliers.

viii. Disclosure for ALMM (Approved List of Models and Manufacturers) compliance

ix. Format of Chartered Accountant certificate for financial capability of the bidder

x. Documents in accordance with the "Qualifying Requirements (QR)" establishing the qualification

xi. Document showing annual turnover for the financial years as required in Qualifying Requirements (QR) such as annual reports, profit and loss account, net worth etc

The Bidder is expected to examine all instructions, forms, terms and specifications in the Tender Documents. Failure to furnish all information required, by the Bidder, documents or submission of a Bid not substantially responsive to the Tender documents in every respect or incomplete bid document will be at the Bidder's risk and may result in rejection of its Bid.

NOTE: It may be noted that Technical Bid (Envelope-I) shall not contain any information/document relating to Financial Bid. If Technical Bid contains any such information/documents relating to price, the bidder will be declared as disqualified / outright rejected.

5.6.2. **Envelop-II (Financial bid)**

The Financial Bid quote in the given proforma.

Financial Bid shall contain:

Bidder should submit following documents along with Technical bid :-

i. Balance sheet for any three years of last five financial years.

ii. Turnover and net-worth value duly certified by CA.

iii. Photocopy of the any Three years of last five financial years Income Tax Return.

iv. Experience in Installation, Commissioning and maintenance of SPV Power Plant Systems. (attached verified documents such as I&C and maintenance certificate.

v. Photocopy of GST/service tax registration No., TIN no., PAN no.

vi. EMD.

vii. Declaration that firm is not blacklisted by any government department/ PSU.

viii. Any other relevant documents

ix. Complete documentation shall be provided for the design, manufacturing/ assembling, testing, installation, commissioning, start-up, operation, maintenance, repair and disposal of the solar power generating system components.

The bidder shall provide the following minimum documentation:

i. Project design document containing detailed engineering calculations, losses, drawings,

simulation reports, performance guarantee etc.

ii. Technical data sheets

iii. Test reports and commissioning protocols

iv. Installation, operation and maintenance manual

v. The bidder should quote the price including all taxes as against total contract tender estimate as shown in price schedule format.

vi. Installation, testing, commissioning charges includes "FOR" destination prices inclusive of packing, forwarding, freight, inland transportation, insurance, loading, unloading, supply, distribution, collection, testing inspection and any/ all charges incidental for successful design, supply, Installation, commissioning and comprehensive maintenance for five years of Solar PV system.

vii. Prices shall be quoted in Indian Rupees only.

viii. In no circumstances, escalation in the prices will be entertained.

ix. The Bidder shall complete the price schedule furnished in the Tender Document, Indicating the price of Solar plant towards Design, Manufacture, Supply, Transport, Installation, Testing and Commissioning of Solar plant as per the Technical specifications. MITL will not pay any extra charges over and above rate quoted by the Bidder. The quoted price shall be 'FIXED', during the entire term of the Contract.

x. Financial Bid uploaded with an adjustable price quotation will be treated as non-responsive and will be rejected.

xi. Any Bid not in accordance with above clauses of this Section will be rejected.

5.7. Bid Currency

i. Prices/Financial bid are to be quoted in Indian Rupees and must be meaningful and measurable in the context.

ii. Bidders should clearly specify whether prices quoted are inclusive of GST/duties/ statutory charges or such charges as extra. Where no specific mention GST or other duties quoted shall be **deemed to be inclusive of such taxes** / charges.

iii. **Price must be quoted in original sheet of BOQ failing which the same is liable to be rejected.**

5.8. Bid Validity

Bids shall be valid for120 calendar-days from the date of opening of technical bid. Bid with lesser validity will get disqualified. In exceptional circumstances, prior to expiry of the original Bid validity period, the MITL may request that the Bidders extend the period of validity for a specified additional period. The request and the responses thereto shall be made in writing or by Email. A bidder may refuse the request without forfeiting its bid security. A bidder agreeing to the request will not be required or permitted to modify its bid but will be required to extend the validity of its bid security for the period of the

extension, and in compliance with Clause 2.13 in all respects. In exceptional circumstances, MITL may solicit the Bidder's consent to an extension of the period of validity. The request and the responses there to shall be made in writing.

5.9 Bid Security

A Bidder is required to deposit, along with its Bid, a Bid security as indicated in Contract Data Sheet (the "BID Security"), refundable after signing of contract with successful bidder. Bid Security in the case of the Selected Bidder whose shall be retained till the Bidder has provided a Performance Security under the Agreement.

The Bidders will have to provide BID Security in the form of a bank guarantee issued by any Nationalised / Scheduled Bank, approved by RBI, located in India, in favour of**:**

Managing Director,
Aurangabad Industrial Township Limited
Udyog Sarathi, MIDC Office,
Marol Industrial Area, Andheri (East)
Mumbai – 400 093

Bidders are required to scan the original BG and upload the same in the e-tendering portal of Employer along with technical proposal of BID. Original BG will have to be submitted to the Employer's as per clause 5 [*Submission of Bids*].

Any Bid not accompanied by the Bid Security will be rejected. Employer, if desired, will get the Bank Guarantee submitted for Bid Security verified from the bank. In case the verification reveals that the submitted Bank Guarantee is fraudulent, Employer reserves the right to reject the BID.

The validity period of the bank guarantee shall not be less than 180 (one hundred and eighty) days from the Bid Due Date with a claim period of 60 (sixty) days from the date of expiry., and may be extended as may be mutually agreed between Employer and the Bidder from time to time. The format of the bank guarantee shall be in accordance with the sample form of bid security included in this document .The Bank Guarantee shall be able to encash at branch located in Mumbai.

Bank Details of Employer required for Bid Security Bank Guarantee:

Beneficiary Name: Aurangabad Industrial Township Limited
Address: Udyog Sarathi, MIDC Office, Andheri (E), Mumbai – 93
Name of the Bank: ICICI Bank Ltd.
Branch address: MIDC, Andheri (E)
Type of Account: Current Account
Account No: 054405007224
IFSC Code: ICIC0000544

The Bid shall be summarily rejected if it is not accompanied by the BID Security.

The Bid securities of unsuccessful Bidders will be returned as promptly as possible, but not later than 28 days after the expiry of the period of bid validity.

The Bid security of the successful Bidder will be returned when the Bidder has signed the Agreement and furnished the required performance security.

The Bid security may be forfeited:

- if the Bidder withdraws its Bid during the period of bid validity; or
- if the Bidder does not accept the correction of its bid price in case of any arithmetic errors
- in the case of a successful Bidder, if it fails within the specified time limit to:

  i. sign the Agreement, or

  furnish the required performance security, or
- if the Bidder is determined, at any time prior to the award of contract, to have engaged in corrupt or fraudulent practices in competing for the Contract; or in giving effect to any other provisions given in the Instructions to Bidders.

5.10 Performance Security

The successful bidder upon receipt of Letter of Award shall furnish to the Employer performance security in prescribed format for an amount specified in the Contract Data Sheet in accordance with the Conditions of Contract. The Performance Security shall be submitted by the successful bidder within stipulated time as indicated in Contract Data Sheet.

Failure of the successful bidder to comply with the Contract requirements shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security.

Extension of Performance Security - The Contractor may initially provide the Performance Security for a period of five (5) years; provided that it shall procure the extension of the validity of the Performance Security, as necessary, at least 2 (two) months prior to the date of expiry thereof. Upon the Contractor providing an extended Performance Security, the previous Performance Security shall be deemed to be released and the Employer shall return the same to the Contractor within a period of 7 (seven) business days from the date of submission of the extended Performance Security.

Release of Performance Security - The Employer shall return the Performance Security to the Contractor within 60 (sixty) days of the expiry of the DLP Period under this Agreement. Notwithstanding the foresaid, the Parties agree that the Employer shall not be obliged to release the Performance Security until all Defects identified during the Defects Liability Period have been rectified.

5.11 Format, Signing, Sealing and Marking of Bid

i. The bidders shall submit the requisite information/documents in the prescribed format.

ii. Strict adherence to the formats wherever specified, is required. Non-adherence to formats and/or submission of incomplete information may be a ground for declaring the Bid as non-responsive.

iii. The bids should be submitted in English language only.

iv. The document should be neatly typed and printed on A4 page. All the necessary enclosures should be attached to the BID document as per the requirement of BID tosupport the qualification of the bidder.

v. The Bidder shall provide all the information sought under this RFQ cum RFP. The MITL will evaluate only those BIDs that are received online in the required formats and complete in all respects and Bid Security, processing fee and POA are received in hard copies. Incomplete and/or conditional Bids shall be liable to rejection.

vi. The Bid shall be typed or written in indelible ink and shall be signed and sealed by a

person or persons duly authorized to sign on behalf of the bidder who shall also initial each page, in blue ink. All pages of the bid and all entries where amendments have been made shall be initialed by the person or persons signing the bid.

vii. The Bid shall contain no alterations, omissions or additions, except those to comply with instructions issued by the MITL, or as necessary to correct errors made by the bidder, in which case such corrections shall be numbered and initialed by the person or persons signing the Bid.

5.12 Deadline for Submission of Bid

The bidder shall bear all the costs associated with the preparation and submission of bid. MITL will in no case be responsible or liable for those costs, under any conditions. The Bidder shall not be entitled to claim any costs, charges and expenses of and incidental to or incurred by him through or in connection with his submission of bid.
BIDs must be received on or before the date specified in Notice Inviting BID.

5.13 Late Bids

Any bid received after the deadline shall be outright rejected.

5.14 Opening of Technical Bid

Envelope-I, Technical Bid shall be opened on the time and date as mentioned in Notice Inviting BID. The Price/Financial bids of the bidders whose technical bids are found technically suitable only will be opened later. The decision of the evaluation committee on technical suitability shall be final.

i. Prices/Financial bid are to be quoted in Indian Rupees and must be meaningful and measurable in the context.

ii. Bidders should clearly specify whether prices quoted are inclusive of GST/duties/ statutory charges or such charges as extra. Where no specific mention GST or other duties quoted shall be deemed to be inclusive of such taxes / charges

iii. Price must be quoted in original sheet of BOQ failing which the same is liable to be rejected.

5.15 Evaluation of Bid Document

The evaluation process shall comprise of two steps:

Step I – Evaluation of Technical Bid

Step II - Evaluation of Financial Bid

5.15.1 Evaluation of Technical Bid

The Technical Bid submitted by Bidders shall be scrutinized to establish responsiveness tothe general, technical and financial requirements specified in this section.

The bids shall be considered as unsuccessful technical bids in case of any of the following situations:

a) The Bids that are incomplete, i.e. not accompanied by any of the applicable formats inter alia covering letter, power of attorney, applicable undertakings, format for disclosure, tender fee etc.;

b) Bid not signed by authorized signatory and /or stamped in the manner indicated in this Bid Document;

c) BIDs having material inconsistencies in the information /documents submitted by the Bidder, affecting the Eligibility Criteria;

d) Required information not submitted in the formats specified in this BID document;

e) Bid not received by the Bid Deadline

f) Bid having Conflict of Interest

h) Bidder delaying in submission of additional information or clarifications sought by MITL.

i) Bidder makes any misrepresentation.

The evaluation of Bidder's Technical Eligibility will be carried out based on the information furnished by the Bidder as per the prescribed Formats and related documentary evidence in support of meeting the Eligibility Criteria – General, Technical and Financial as specified above. Non-availability of information and related documentary evidence for the satisfaction of eligibility criteria may cause the Bid to be non-responsive. MITL reserves the right to call the shortfall from bidder.

5.15.2 Evaluation of Financial Bid

All the technically qualified bidders will be selected for opening of the financial Bid. **Financial Bid (Envelope II)** of the Qualified Bidders shall be opened and the date will be intimated to qualified bidders who may choose to attend opening of financial bids.

The bidder has to quote the Financial Bid in the prescribed format. Financial Bids of Qualified Bidders shall be ranked from the lowest (L1) to the highest and the L1 bidder shall be declared as the Successful Bidder.

5.16 Award of Contract

After detailed evaluation of the bidding documents from bidders, the successful bidders will be informed within seven working days from the date of opening and evaluation of the tender. The successful bidder will be informed about the award of contract for further needful action.

5.17 Signing of Contract Agreement

5.17.1 **On submission of above documents the bidder will be called for signing of contract** agreement. The bid document shall be the integral part of contract agreement and all the terms and conditions under the contract agreement shall be binding on the bidder irrespective of the fact that all of them may or may not be appeared in the contract agreement.

5.17.2 The detailed project technical specifications, engineering drawings of solar power plant comprising of generation plants and distribution network, project execution plan submitted by the bidder after issue of LOA shall be a part of contract agreement and it is binding on the bidder to execute the entire work as per the specifications agreed upon.

5.17.3 The costs of stamp duty / franking (0.05% of the project cost) and similar charges (if any) imposed by law in connection with entry into the contract agreement shall be borne by the bidder.

5.18 Disclaimer

5.18.1 This document is not transferable.

5.18.2 Though adequate care has been taken for preparation of this document, the Bidder shall satisfy himself that the document is complete in all respects. Intimation of any discrepancy shall be given to this office immediately. If no intimation is received from any bidder within ten days from the date of issue of the bid document, it shall be considered that bid document is complete in all respects and has been received by the bidder.

5.18.3 MITL reserves all rights to accept, cancel the BIDs or reject any or all bidders or change the conditions mentioned in bid documents at any stage or take any decision regarding implementation of the project.

5.18.4 While the BID document has been prepared in good faith, neither MITL nor their employees or advisors make any representation, warranty, express or implied or accept any responsibility or liability, whatsoever, in respect of any statements or omissions herein, or the accuracy, completeness or reliability of information, and shall incur no liability under any law, statute, rules or regulations as to the accuracy, reliability and completeness of this BID document**, even if any loss or damage is caused by any act or omission on their part.**

5.19 Check list

Check list of documents to be submitted along with the BID is as mentioned below:

Sr.	Particulars	Complied	Page-no/Flag
1	Filled in BID document duly signed and stamped at the bottom of each page.		
2	Power of Attorney		
3	Certificate of registration issued by Government organizations.		
4	Bidder Information Sheet		
5	Firm's Profile at a Glance		
6	Copy of the PAN card of the bidder's firm		
7	Copy of the GST Certificate of the bidder's firm		
8	Copies of Income Tax returns of 3 previous assessment years (2019-20, 2020-21, 2021-22)		
9	Chartered accountant certified turn over for FY 2018-19 to 2021-22.		
10	Bidder needs to have local registered office for execution of work and service center in the state of Maharashtra. In case of non-availability of such office, the bidder has to produce affidavit on Rs. 100/- stamp paper that it will open office within 1 month of issue of LoA		
11	Site Visit Report as per Annexure 8		
12	Supporting document in support of technical qualification as per bid document (Purchase orders/work completion certificatesetc.)		
13	Net Worth Certificate		
14	Nationalized / Scheduled Bank Solvency Certificate of at least INR 1.5 Crore.		
15	EPF & ESIC Registration Certificate		
16	Shop Act/Partnership firm registration certificate/Incorporation Certificate		
17	Self-Certification of No Barr/non-failure/blacklisted		
18	MNRE approved Lab Test Report solar module and inverter		
19	Positive net worth in any three of last five years certified by CA		
20	EMD.		
21	Partnership firm registration certificate/Incorporation certificate		

Section-6: General Conditions of Contract

6.1 Definitions

In the "Bid/Tender/Contract Document" as herein defined where the context so admits, the following words and expression will have the following meaning:

a) **"Affiliate"** shall mean a company that either directly or indirectly

   i. controls or

   ii. is controlled by or

   iii. is under common control with

   iv. a Bidding Company (in the case of a single company) and "control" means ownership by one company of at least twenty six percent (26%) of the voting rights of the other company.

b) **"Agreement"** shall mean the terms and condition agreed and signed between contactor and MITL

c) **"Bid"** shall mean the Technical Bid and the Financial Bid submitted by the Bidder along with all documents/credentials/attachments annexure etc., in response to this BID document, in accordance with the terms and conditions hereof.

d) **"Bidder/Developer"** shall mean Bidding Company or a Bidding Consortium submitting the Bid. Any reference to the Bidder includes Bidding Company / Bidding Consortium / Consortium, Member of a Bidding Consortium including its successors, executors and permitted assigns and Lead Member of the Bidding Consortium jointly and severally, as the context may require";

e) **"Bidding Consortium or "Consortium"** shall refer to a group of companies that has collectively submitted the Bid in accordance with the provisions of this Tender Document;

f) **"Bidding Company"** shall refer to such single company that has submitted the Bid in accordance with the provisions of this Tender document;

g) **"Bid Deadline"** shall mean the last date and time for submission of Bid in responseto this Tender Document as specified in Bid information Sheet;

h) "**CEA"** shall mean Central Electricity Authority.

i) **"Chartered Accountant"** shall mean a person practicing in India or a firm whereof all the partners practicing in India as a Chartered Accountant(s) within the meaning of the chartered accountants Act 1949

j) **"Competent Authority"** shall mean Managing Director, MITL himself and/or a person or group of persons nominated by him for the mentioned purpose herein.

k) **"Comprehensive Maintenance Contract (CMC)"** shall mean insurance, warranty, spare parts and operation & maintenance of Grid Connected Project for five (05) years from the date of Commissioning;

l) **"Commissioning"** means Successful operation of the solar power plant including the net meter and inspection / certification by electrical inspectorate.

m) "Company" shall mean a body incorporated in India under the Companies Act, 1956;

n) "Contractor" shall mean the successful bidder or a project company who has accepted the LOA and has signed the agreement.

p) "Capacity Utilization Factor" (CUF) means the ratio of the annual output of the plant in kWh to the units that the plant can produce with the installed plant capacity put in operational for 365 days x 24 hours. CUF = plant output in kWh / (installed plant capacity in kW * 365X24);

q) "Eligibility Criteria" shall mean the Eligibility Criteria as set forth in Section 6 of this bid document;

r) "Grid Connected Project" shall mean the design, fabrication, supply, installation, testing, commissioning with remote monitoring system(RMS) of required capacity of grid connected solar PV power plant under net metering arrangement.

s) "IEC" shall mean the specifications of international electro technical commission.

t) "Joint Venture" shall mean a combination of two or more parties that seek the development of a single enterprise or project for profit, sharing the risk associated with its development.

u)"kWp" shall mean kilo-Watt Peak;

v)"kWh" shall mean kilo-Watt-hour;

w) "Lead Member of the Bidding Consortium" or "Lead Member" shall mean theMember which fulfils the Financial Eligibility Criteria and submits the Bid and so designated by other Member(s) of the Bidding Consortium;

x) "Licensed electrical EPC contractor" shall mean contractor having valid PWD electrical contractor license certified by any state/UTs PWD.

y) "Member of a Bidding Consortium" or "Member" or "Consortium Member" shall mean each company in the Bidding Consortium which has executed the Consortium Agreement;

z) "MNRE" shall mean ministry of new and renewable energy, GOI.

aa) "Project" means grid connected solar power project under net metering regulationof MERC.

ab) "Project Cost" shall mean the total price of the grid-connected solar power project including the maintenance of 5 years as discussed in the Bid document.

ac) "Project capacity" means Capacity of power generating plants/stations in kWoffered

by the Bidder.

ad) "Project life" means the life of the solar power plant which is considered as 25 years.

ae) "Parent Company" shall mean a company that holds at least twenty-six percent (26%) of the paid-up equity capital directly or indirectly in the Bidding Company or inthe Member of a Bidding Consortium, as the case may be;

af) "Project Company" shall mean Company incorporated by the bidder as per Indian Laws for installation, commissioning and maintenance of the solar power plant;

ag) "RMS" Remote Monitoring System/SCADA system/ Inverter based web monitoring system for remotely monitoring the real time plant functioning, monthly generation and performance etc.

ah) "Financial Bid" shall mean Envelope II of the Bid, containing the Bidder's Quote for Design, Engineering, Supply, Installation, Testing, Commissioning with 5 Year CMC for Aggregate 900 kW Solar PV project at Aurangabad in the State of Maharashtra as per the format given in the bid document;

ai) "Qualified Bidder" shall mean the Bidder(s) who, after evaluation of their technical bid stand qualified for opening and evaluation of their Financial Bid;

aj) "Successful Bidder(s) / Project Developers(s)" shall mean the Bidder(s) selected by MITL for implementation of the proposed solar power plant as per the terms of thisbid documents, and to whom LOA will be issued;

ak) "Ultimate Parent Company" shall mean a company which directly or indirectly owns at least twenty-six percent (26%) paid up equity capital in the Bidding Company or Member of a Consortium, (as the case may be) and/or in the Financially Evaluated Entity and such Bidding Company or Member of a Consortium, (as the case may be) and /or the Financially Evaluated Entity shall be under the direct control or indirectly under the common control of such company;

6.2 Local Conditions

The intending Bidders shall be deemed to have visited the Site details given in **Section-1** and get familiarized with local conditions before submitting the Bid. Non-familiarity with the Site conditions will not be considered a reason either for not carrying out the Works in line with the scope of work and proposed Technical Specifications or for any delay in performance.

6.3 Contract Agreement

The contract shall come into full force and effect on the date stated in the contract agreement.

6.4 Responsibilities of Developer/Bidder

Protection of the environment, rules and regulations: The developer/bidder shall take all reasonable steps to protect the environment, rules and regulations applicable while installation and maintenance of solar power plant. MITL shall not be responsible for any violation of Law

and environmental damage done by the developer/bidder.

Arranging electricity, water and gas etc.: The developer/bidder shall arrange power, water and other services he may require at the site at his own cost during installation and commissioning of the solar plant.

Site Data: The developer/bidder shall be responsible for verifying and interpreting all data provided by the MITL. MITL shall have no responsibility for the accuracy, sufficiency or completeness of data.

Safety Procedures: The developer/bidder shall comply with all applicable safety regulations during project execution and maintenance of the grid connected solar power project.

Data Recording: The developer/bidder shall keep proper records of daily power generation data of all power generation plants as well as the monthly power consumption data of all consumers.

Operating practices, standards, standard of performance: The developer/bidder shall follow the applicable practices/procedures /standards/SOP norms etc. as applicable to the host utility in Maharashtra.

6.5 Design

General Design Obligations

The developer/bidder shall ensure proper design of grid connected solar power plant so as to optimize the power generation from the solar power plant. Developer needs to undertake the shadow analysis of the nearby objects so as to avoid such area for solar installation. Developer shall take utmost care in installation and commissioning and follow industries best practices.

6.6 Technical Standards and Regulations

The developer/bidder shall ensure the quality of equipment to be used in setting up of the grid connected solar power plants. The design, execution and the completed works shall comply with the relevant technical standards, design and operating limits, environmental laws, operation and safety standards, laws applicable etc.

6.7 Training

The developer/bidder shall carry out the training for one / two employees of the MITL who will be involved in day to day operation of the plant.

6.8 Operation and Maintenance (O&M) Manuals

Prior to commencement of the Tests on Completion, the developer/bidder shall prepare O&M manuals giving sufficient detail which can be used by O&M staff. Further, the O&M manuals supplied by the equipment suppliers shall be properly included in the O&M manuals to make it complete more useful for the O&M staff.

6.9 Labour laws

The developer/bidder shall comply with all the relevant provisions of Labour Laws.

6.10 Right to withdraw the BID and to reject any BID.

MD, MITL reserves all rights to accept, cancel the tender at any time without assigning any reasons thereof. MD, MITL reserves all rights to reject any or all bidders or change the conditions mentioned in tender documents at any stage or take any decision regarding implementation of this tender without assigning any reasons whatsoever.

MITL reserve the right to interpret the Bid submitted by the Bidder in accordance with the provisions of the BID and make its own judgment regarding the interpretation of the same. In this regard the MITL shall have no liability towards any Bidder and no Bidder shall have any recourse to the MITL with respect to the selection process. MITL decision in this regard shall be final and binding on the Bidders.

6.11 Risk and Responsibility

a) Indemnities

The developer/bidder shall indemnify and hold harmless the MITL and its personnel, against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of:

i. Bodily injury, sickness, disease or death, of any person whatsoever arising out of or in the course of or by reason of the design, execution and completion of the Works and the remedying of any defects, unless attributable to any negligence, willful act or breach of the Contract by the MITL, or any of their respective agents, and Damage to or loss of any property, real or personal (other than the Works), to the extent that such damage or loss:

   a. Arises out of or in the course of or by reason of the design, execution and completion of the Works and the remedying of any defects.

   b. Is not attributable to any negligence, fulfill act or breach of Contract by the MITL or its personnel, their respective agents, or anyone directly or indirectly employed by any of them.

b) Developers Care of the Works

The developer shall be fully responsible for care of the works and equipment from the commencement of installation work to commissioning of the solar PV power plant and maintenance of the plant over the next 5 years CMC period.

6.12 Insurance

The Bidder shall be responsible and take an appropriate Insurance Policy for transit-cum-storage-cum-erection for all the materials to cover all risks and liabilities for supply of materials on site basis, storage of materials at site, erection, testing and commissioning etc.

The bidder shall also take appropriate insurance during O&M period and maintain insurance cover for the works from the date of issue of the Completion Certificate until the end of the Defects liability period for any loss or damage for which the contractor is liable and arise from a cause occurring prior to the issue of Completion Certificate.

The Bidder shall also take insurance for Third Party Liability covering loss of human life, engineers and workmen and also covering the risks of damage to the third party/material/equipment/properties during execution of the Contract i.e. from start ofthe project commissioning to completion of 5 years of CMC period. Before commencement of the work, the Bidder will ensure that all its employees and representatives are covered by suitable insurance against any damage, loss, injury or death arising out of the execution of the work or in carrying out the Contract. Liquidation, Death, Bankruptcy etc., shall be the responsibility of bidder.

The bidder shall take up the matter with insurance company on its own for finalization of claims. All actions in connection with making and settling of claims, if any, will be carried out by the bidder at its own. MITL shall not be liable for any payments for financial loss or non-recovery of payment from the insurance company.

The bidder shall be responsible to make good the damage or loss by way of repairs and/ or replacement of equipment free of cost, irrespective of the fact whether claim is accepted by the insurance company or not, without waiting for settlement of claims

6.13 Force Majeure

a) Definition of Force Majeure:

The **Force Majeure "FM"** means exceptional event (s) / circumstance (s), here-in-after called the "**Eventualities**", which are:

i. Beyond a Party's control,

ii. Which such Party could not reasonably have provided against before enteringinto the Contract

iii. Which, having arisen, a party could not reasonably have avoided or overcome,which is not substantially attributable to the other party.

iv. FM may include, but not limited to, eventualities of the kind listed below, so longas conditions (i) and (ii) are satisfied

a) War, hostilities, invasion, act of foreign enemies,

b) Rebellion, terrorism, revolution, insurrection, military, usurped power, or civil war, riot, commotion, disorder, strike or lockout by persons other than the developer's/bidder's Personnel/Employees of the contractor and Sub- contractors.

c) Munitions of war, explosive materials, ionizing radiation or contamination by radio-activity, except as may be attributable to the contractor's use of such munitions, explosives, radiation or radio- activity.

d) Natural catastrophes such as earthquake, hurricane, typhoon or volcanic activity

b) Notice of Force Majeure:

- If a bidder is prevented from performing its obligation(s) under the Contract by FM, then it shall give notice to MITL of the event/circumstances constituting the FM andspecify the obligations, the performance of which is or will be prevented.
- The bidder shall, having given notice, be excused from performance of such obligations for so long as such FM prevents it from performing them.

c) Consequences of FM

- If the bidder is prevented from performing any of his obligations under the Contract by FM of which notice has been given and suffers delay and /or incurs cost by reason of such FM, the bidder shall be entitled to an extension of time for any such delay, if completion is or will be delayed.

6.14 Claims, Disputes and Arbitration

a) Disputes

Dispute (s), if any, shall be settled by mutual agreement through Amicable Settlement (Sub-Clause 3.11.2 (Amicable Settlement)) and in case of failure, through Arbitration Under Sub-Clause 3.11.3 (Arbitration.)All disputes arising out of and touching or relating to subject matter of the agreement/contract shall be subject to jurisdiction of local court(Aurangabad) or Mumbai High Court.

b) Amicable Settlement

Both parties (the developer/bidder and the MITL) shall attempt to settle the dispute amicably before the commencement of arbitration. However, unless both Parties agree otherwise, arbitration may be commenced on or after the forty-fifth day after the day on which notice of dissatisfaction was given, even if no attempt at amicable settlement has been made.

c) Arbitration

Unless settled amicably, any dispute shall be finally settled by arbitrator(s) who shall be appointed from amongst the suitably qualified person(s) to be agreed by both the parties for arbitrations.Such arbitration shall be held in accordance with the Rules of Arbitration of the International Centre for Alternative Dispute Resolution, New Delhi (the “Rules”), or such other rules as may be mutually agreed by the Parties, and shall be subject to the provisions of the Arbitration Act. The venue of such arbitration shall be [Mumbai], and the language of arbitration proceedings shall be English.

Section-7: Special Conditions of Contract

7.1 Completion of Work

The solar PV project shall be commissioned on or before 120 days from date of award of contract.

7.2 Assignment, Subletting of Contract and Purchased Items

The bidder is free to sublet any part of the contract of supply, erection and commissioning of solar PV power plant. However, bidder will have to undertake maintenance of solar PV plant at its own. In case of maintenance of Solar PV generating equipment where specific skill sets required for maintenance which is generally available with the equipment suppliers in that case such works can only be sub-contracted.

7.3 Submission Bank Guarantee for Performance Security

The bidder/developer shall furnish Security Deposit in the form of bank guarantee of any Nationalized bank of value equivalent to 5% of the agreement value / contract value towards successful completion of scope of work for Design, Engineering, Supply, Installation, Testing, Commissioning with 5 Year CMC for Aggregate 0.900 MW Grid Interactive Solar PV project at AURIC Hall or the part of assigned work. The developer/bidder shall submit the BG within 7 days of issue of LoA. The BG shall be valid until the date of issue of performance certificate. Performance security shall be submitted in the form of a Bank Guarantee duly executed on non-judicial stamp paper of requisite value.

7.4 Manuals

Developer/bidder shall furnish 3(Three) sets of bound copies of erection, commissioning, operation & maintenance manuals giving detailed instructions, procedures, precautions for all the equipment used in the solar PV power plant along with soft copy in pdf format.

7.5 Safety

All equipment and installations in the solar power plant shall be safe to the personnel working for O&M of the project and the personals and animals passing nearby such installations. Solar PV power project shall comply to the operations and safety provisions enlisted under the relevant safety rules and regulations / statutory requirement issued by the State Government and the Central Government as well as to Safety Regulations specified by Central Electricity Authority under Electricity Act 2003.

7.6 Water for Bidder's Use

Bidder shall make his own arrangement to meet water requirement during erection, installation, commissioning of the solar PV power plant. MITL may provide source. Bidder need to make its own arrangement for storage and pumping of water required at site.

7.7 Work-schedule/re-scheduling & Progress of Work

Developer shall submit a detailed PERT chart of activities within 15 (Fifteen) days after the date of receipt of LOA. The developer /bidder shall submit the progress report on monthly basis to the MITL during the project execution period. Also, during the bidders contracted project maintenance (CMC) period of 5 years the developer/bidder shall submit assist the plant operator to develop quarterly report of daily energy generation from the solar PV power plant.

7.8 Guarantee and Warranty

7.18.1 The Bidder shall warrant that the goods supplied under this Agreement are new, unused, of the most recent or latest technology and incorporate all recent improvements in design and materials as per standards specified in the technical specifications of this tender. The Contractor shall provide warranty covering the rectification of any and all defects in the design of equipment, materials and workmanship including spare parts for a period of five (05) years from the date of Commissioning.

7.18.2 The responsibility of operation of warranty and guarantee clauses and claims/ settlement of issues arising out of said clauses shall be responsibility of the Contractor and MITL will not be responsible in any way for any claims whatsoever on account of the above.

7.18.3 It will be the responsibility of the project Contractor to get the faulty instruments replaced or repaired without affecting the availability of power supply to the consumers of the solar powerproject.

7.18.4 Further, any expenses to be incurred on availing such guarantees/warrantees/repairs will have to be borne by the Contractor till the completion of CMC period.

7.18.5 The Warranty in respect of the Equipment shall be as follows:

7.18.6 Solar photovoltaic modules: Performance Warranty with guaranteed ninety percent (90%) production at the end of 10th year of operation and 80% (eighty percent) at the end of the 25th year of operation from the date of Commissioning of the Project. Product Warranty for a periodof ten (10) years from the date of Commissioning of the Project.

7.18.7 Inverter: Product Warranty period of five (5) years from the date of Commissioning of theProject.

7.18.8 Module mounting structures: Product Warranty period of five (5) years from the date ofCommissioning of the Project.

7.18.9 Balance of system: Product Warranty period of five (5) years from the date of Commissioning of the Project.

7.18.10 As a testimony, the Successful Bidder must submit the Warranty certificate and service agreement with the OEM/ suppliers prior to achieving Commissioning of the Project. Any defect noticed during the Warranty period should be rectified/ replaced by the Successful Bidder either through OEM/ suppliers or by itself, free of cost, upon due intimation by MITL.

7.18.11 In case any OEM/ supplier provides a Warranty period more than five (5) years from the date of Commissioning of the Project, then the Successful Bidder shall provide the same to MITL even if the Warranty period exceeds the CMC Period.

7.9 Contract Drawings and Technical Specifications

Within 15 (Fifteen) days from the signing of contract the bidder shall submit the

followingdocuments:

1) Drawings of power plant and power evacuation arrangement
2) Technical specifications of the Solar PV power plant and power evacuation arrangement.
3) Bill of material of the solar PV power project
4) Single line diagram of Solar PV Power plant and Evacuation Arrangement.
5) Front view and General Arrangement diagrams for panel(s).
6) Control and schematic drawings for control / protection, Lightning protection, drawings showing coverage of all equipment, structures, etc.

Before commissioning of the solar PV project the bidder/project developer shall submit following documents:

1) The technical documents and specifications of the equipment submitted by the suppliers of Solar PV power plant, catalogues for each type of equipment, relays, meters etc., installation and commissioning manuals for each equipment, relay etc.,
2) Operation manual of power plant
3) O & M manuals indicating trouble shooting procedure for all equipment
4) Details of Test results, for test conducted at works for all equipment
5) Details of Test results, for tests conducted at site for all equipment
6) Overall General Arrangement (GA) of all the panels/equipment
7) Spare part list, numbers and ordering procedure for all recommended spares
8) Static and dynamic loading of each equipment

7.10 Peripheral Boundary Fencing:

The bidder shall provide peripheral barbed Net fencing is to demarcate the boundary and to keep away the unauthorized access to the solar PV power plant. The height must be minimum of 2 meter from the ground level. The boundary wall must be provided with a rugged main entry gate (s).

7.11 Inspection & Testing

The bidder/developer shall procure the standard quality materials complying with the relevant IS standards. The inspection and testing of the materials purchased shall be the responsibility of bidder/developer. The bidder/developer shall have to submit the test certificates and inspection reports of the equipment.

Pre dispatch inspection: Successful bidder shall inform MITL for pre-dispatch inspection at their manufacturing facility or storage place by prior intimation of 15 days. After getting clearance from MITL, supplier may dispatch the material and site.

Commissioning inspection: MITL shall witness the commissioning and trial run tests of the installed power generating sets and the distribution network.

7.12 Terms of Payment

a) Payment of Grid connected Solar Project

Sr No	Payment proportion	Terms of payment
a.	60% of project cost out of which 10% shall be deducted towards CMC cost which shall be refunded quarterly @0.5%	Submission of following documents to MITL office: • Project commissioning certificate (concerned utility) • Copy of warranty certificate • Copy of the Civil and Electrical drawing of the commissioned Solar plant • Project completion report duly certified by authorized person of Contractor & MITL • Insurance policy documents for CMC period to MITL office • RMS installation report which should be duly certified by Contractor, concerned person of MITL office. • Submission of executed version of CMC with MITL office • One copy of CMC manual to MITL office. • Photographs of all installations in a site wise manner to MITL.
b.	20% of project cost out of which 10% shall be deducted towards CMC cost which shall be refunded quarterly @0.5%	After receipt of one-month successful performance report generated automatically through Remote monitoring System which should be duly certified by Contractor, concerned person of MITL office.
c.	20% of project cost out of which 10% shall be deducted towards CMC cost which shall be refunded quarterly @0.5%	After receipt of next two-month successful performance report generated automatically through Remote monitoring System which should be duly certified by Contractor, concerned person of MITL.

In case if contractor does not provide service during the warranty period, PBG shall be forfeited and action as per MITL debar policy will be taken.

b) Payment for CMC of Grid Connected Project

Sr No.	Payment proportion	Terms of payment
a.	On quarterly basis@0.5% of the 10% project cost amount deducted From RA bills	After receipt of successful performance report for the CMC months, generated automatically through Remote monitoring System which should be duly certified by Contractor and MITL.

Deduction: -

- The TDS at the source will be deducted as per the Govt. rule and regulations.

- MITL shall issue necessary certificates of TDS deduction

For claiming the payment, the project developer shall submit the following documents:

1) Submission of Performance Bank Guarantee in the format given in the bid document.
2) Monthly progress report during the project installation and commissioning. (for first installment)
3) Submission of commissioning report. (for first installment)
4) Submission of one month's performance report (for second installment)
5) Submission of next two month's performance report (for third installment)

7.13 Power to Vary or Omit Work

The bidder/developer is required to submit technical specifications, drawings and bill of material of individual power plant component of the proposed solar power project within one month from the signing of the contract. The bidder/developer has the powers to deviate in the technical specifications till the time of submission of the bids. Thereafter, no alterations, amendments, omissions, additions, suspensions or variations of the work shall be made by the developer. However, some exceptions may be granted in the change in specifications due to the site requirements or due the material availability be allowed. The developer will have to get such amendments in the specifications approved from the MITL.

Omission of some of the execution work, than that specified by the developer during submission of specifications and bill of materials shall not be allowed. MITL shall assess the cost of work omitted and can reduce the price on prorate basis.

7.14 Death and Bankruptcy

If the developer/bidder dies or commit any act of Bankruptcy, or being a corporation commence to be wound up except for reconstruction purposes or carry on its business under a Receiver, the executors, successors, or other representative in law of the estate of the developer or any such Receiver, liquidator, or any person in whom the contract may become vested, shall forthwith give notice thereof in writing to the MITL.During such process the developer/receiver/liquidator shall take all reasonable steps to continue operations of the project.

7.15 Liability for Accidents and Damage

The developer shall be responsible for the loss, damage of the solar power plant till the commissioning and handing over of the plant. The developer shall be responsible for any such loss, damage and depreciation occurring during procurement, erection, commissioning and operation of the solar power plants. The developer shall indemnify and keep the MITL harmless against all actions, suits, claims, costs, or expenses arising in connection with injuries other than such as may be attributable to the developer or his employees.

7.16 Penalty / Liquidity Damages

If the systems are not installed and commissioned within the stipulated period as mentioned in the work order the Bidder shall be required to pay penalty of 1/2% (half percent) per week, maximum up to 10% of the total cost of the systems and the amount shall be recovered either from the amount due to the Bidder or from Performance Bank Guarantee.

If Successful bidder is not able to complete the project in due time, the same shall be get done through other contractor and the Successful bidder has to bear all the cost incurred against the balance work left by him for the completion of project.

Any shortfall in generation below guaranteed generation of 15 lakhs kWh / MW ac shall be recover from the developer at the prevailing MSEDCL tariff for that consumer subject to maximum 10 % of project cost up to the CMC period of 5 years. Monitoring of the generation guarantee compliance shall be done at the end of each year till the completion of CMC period.

7.17 Replacement of Defective Plant or Materials

If during the progress of the work the MITL notifies in writing to the Developer/Bidder about the unsound or imperfect work or has supplied any plant of inferior in quality than that specified, the developer/bidder, on receiving details of such defects or deficiency shall, at his own expense, within such time as may be reasonably necessary for making it good, proceed to alter, reconstruct or remove such work, or supply fresh materials up to the standard of the specification. In case the developer fails to do so, the MITL may, assess the difference in cost of standard and substandard work and consider the same for reduction of bid price on prorate basis.

7.18 Test on Commissioning

The developer/Bidder shall undertake all necessary tests at the time of commissioning of the Solar PV project to ensure the satisfactory and safe operation of the project. The developer shall inform well in advance to the MITL regarding the commissioning tests to be carried out along with its schedule. The officials of MITL or their authorized representative may witness the commissioning tests.

7.19 Plant Power Performance Ratio Testing

The successful bidder shall be required to meet minimum guaranteed generation with Performance Ratio (PR) at the time of commissioning. PR should be shown minimum of 75% at the time of inspection for initial commissioning acceptance.

7.20 Plant Energy Performance Ratio Testing

The overall energy performance ratio of the system shall exceed 75%. (Sum total of the system energy losses shall not exceed 25%). Capacity Utilization Factor (CUF) as per the GHI levels of the location during the O&M period shall be maintained above minimum CUF of

17% for CMC period of 5 years. Correction shall be applied based on grid non availability more than 3%. In case of exceeding the grid non availability of 3% on annual basis, the bidder shall timely inform the MITL about the issues. In case of plant shut down / shut down on incomer if the solar plant remains close, such electricity loss shall be considered for loss in generation.

7.21 Operation and Maintenance

The developer/bidder shall maintain the solar power project for 5 years in efficient and safe manner. The developer shall undertake maintenance of the project at its own cost. Following minimum O&M activities shall be executed within the CMC period.

- Cleaning of solar PV modules with soft water, wet and dry mops at 15 days cycle for which laying of water pipeline is essential.
- DC String / Array and AC Inverter monitoring: Continuous and computerized.
- AC Energy monitoring: Continuous and computerized.
- Visual Inspection of the plant: Monthly
- Functional Checks of Protection Components and Switchgear: Quarterly.
- Inverter, transformer, data acquisition, energy meters and power evacuation checks:Half Yearly.
- Support structure and terrace water-proofing checks: Yearly.
- O & M log sheet shall be provided and maintained.
- The repair/replacement work shall be completed within 48 hours from the time ofreporting the fault.
- A half yearly performance report of the plant inclusive of energy generation datashall be provided as per approved format.
- All recorded data for the first 5 years shall be preserved in both manual andcomputer format and submitted at the time of handing over.

On completion of first year of project operation, the plant will be handed over to MITL along with plant performancereport. MITL shall monitor and release the yearly O&M payment to the developer up to the completion of CMC period of 5 years.

The MITL shall have the right to terminate the O&M contract at any point of time in case the O&M services of developer are not satisfactory.

7.22 Land for the Project

The required land for setting up solar project will be provided by the MITL free of cost. The successful developer/bidder shall develop the land with chain-link fencing as per specification given INFRA section of MITL.

7.23 Clearance of Site on Completion

On completion of installation and commissioning works, the developer/bidder shall clear away and remove from the site all the remaining construction equipment, surplus materials, rubbish and temporary works of every kind, and leave the whole of the site and works of every kind clean and in a workmanlike condition.

7.24 Training of the Personnel

The developer shall train the MITL personnel to undertake the work of operation of the solar PV power plant. Wherever required developer shall assist the plant operator of MITL under the expertise of its equipment suppliers so that the persons employed for operation of the project will have upto date knowledge of the systems.

7.25 Miscellaneous

7.35.1 Storage of consumables, spares & parts, equipment, tools etc. shall be maintained at site by the bidder at its own cost. The Selection Process shall be governed by, and construed in accordance with, the laws of India and the Courts at Mumbai shall have exclusive jurisdiction over all disputes arising under, pursuant to and/or in connection with the Selection Process.

7.35.2 MITL, in its sole discretion and without incurring any obligation or liability, reserves the right, at any time, to:

7.35.3 suspend and/or cancel the Selection Process and/or amend and/or supplement the Selection Process or modify the dates or other terms and conditions relating thereto;

7.35.4 Consult with any Applicant in order to receive clarification or further information;

7.35.5 Retain any information and/or evidence submitted to the Client by, on behalf of and/or in relation to any Applicant; and/or

7.35.6 Independently verify, disqualify, reject and/or accept any and all submissions or other information and/or evidence submitted by or on behalf of any Applicant.

7.35.7 It shall be deemed that by submitting the Proposal, the Applicant agrees and releases MITL, its employees, agents and advisers, irrevocably, unconditionally, fully and finally from any and all liability for claims, losses, damages, costs, expenses or liabilities in any way related to or arising from the exercise of any rights and/or performance of any obligations hereunder, pursuant hereto and/or in connection herewith and waives any and all rights and/ or claims it may have in this respect, whether actual or contingent, whether present or future.

7.35.8 All documents and other information provided by MITL or submitted by an Applicant to MITL shall remain or become the property of MITL. Applicants and the Bidders, as the case may be, are to treat all information as strictly confidential. MITL will not return any proposal or any information related thereto.

7.25.9 All information collected, analysed, processed or in whatever manner provided by the Bidders to MITL in relation to the consultancy shall be the property of MITL. MITL reserves the rightto make inquiries with any of the clients listed by the Applicants in their previous experience record.

7.26 Price Variation, Taxes, Duties and Levies etc.

7.26.1 The price quoted by the bidder shall remain valid for 120 days from the date of the technical bid.

7.26.2 The bidder shall take care of variations in prices/taxes/duties/levies of the material, labours, supplies etc and quote the price appropriately.

7.26.3 The quote shall include all the taxes and duties. MITL shall not entertain any addition in project cost

7.27 Judicial Jurisdiction

All disputes arising out of and touching or relating to subject matter of the Agreement / Contract shall be subject to jurisdiction of local courts of (Aurangabad) and the High Court of Mumbai (Bombay).

Section-8: General Technical Specifications

8 General Technical Specifications

8.1 Type and Quality of Material and Workmanship

The design, engineering, manufacture, supply, installation, testing and performance of the equipment shall be in accordance with latest appropriate IEC/Indian Standards. The specifications of the components shall meet the minimum technical specifications mentioned in the RFP.

The bidder shall ensure successful maintenance on the solar PV power plant over the period of 5 years post commissioning of entire plant. Further, the electricity supplied from the solar PV power plant shall be within the allowed voltage and frequency range/ within the permitted power quality standards.

8.2 Standards

Standard(s) referred to shall mean the current Edition/Revision together with Amendments issued. As per MNRE order dated 6th Sep 2019, eligible models and manufacturers and solar PV cells and modules complying with BIS standards shall be included in ALMM list. In compliance with directives, contractors shall be required to procure solar PV modules from the manufacturer indicated in ALMM list. Thus, the contractor will have to ensure adherence to this order and its subsequent amendments. A list of some of the Standards is given as below:

Technical specifications, standards for solar PV system

Standards	Details
1. Solar PV Modules/Panels	
IEC 61215/ IS 14286	Design Qualification and Type Approval for Crystalline SiliconTerrestrial PV Modules
IEC 61701	Salt Mist Corrosion Testing of PV Modules
IEC 61853- Part 1/ IS16170: Part 1	PV module performance testing and energy rating –: Irradiance and temperature performance measurements, and power rating
IEC 62716	PV Modules –Ammonia (NH3) Corrosion Testing (As per the site condition like dairies, toilets)
IEC 61730-1,2	PV Module Safety Qualification – Part 1: Requirements for Construction, Part 2: Requirements for Testing
IEC 62804	PV modules -Test methods for the detection of potential-induced degradation. IEC TS 62804-1: Part 1: Crystalline silicon (mandatory for applications where the system voltage is > 600 VDC and advisory for installations where the system voltage is < 600 VDC)
IEC 62759-1	PV modules –Transportation testing, Part 1: Transportation and shipping of module package units

2. Solar PV Inverters-	
1) solar PV inverter shall meet all CEA, statutory and regulatory guidelines applicable till the date of commissioning. 2) Inverters to be equipped with type I+II SPD of minimum 10 KA pe Pole.	
IEC 62109-1, IEC 62109-2	Safety of power converters for use in Solar PV power systems – Part 1: General requirements, and Safety of power converters for use in Solar PV power systems Part 2: Particular requirements for inverters. Safety compliance(Protection degree IP 65 for outdoor mounting, IP 54 for indoor mounting)
IEC 60255-27	Measuring relays and protection equipment –Part 27: Product safety requirements
IEC 60068-2(1,2,14, 27, 30 & 64)	Environmental Testing of PV System –Power Conditioners and Inverters a IEC 60068-2-1: Environmental testing -Part 2-1: Tests - Test A: Cold b) IEC 60068-2-2: Environmental testing -Part 2-2: Tests -Test B: Dry heat c) IEC 60068-2-14: Environmental testing -Part 2-14: Tests -Test N: Change of temperature d) IEC 60068-2-27: Environmental testing -Part 2-27: Tests -Test Ea and guidance: Shock e) IEC 60068-2-30: Environmental testing -Part 2-30: Tests-Test Db: Damp heat, cyclic (12 h + 12 h cycle) f) IEC 60068-2-64: Environmental testing -Part 2-64: Tests -Test Fh: Vibration, broadband random and guidance
IEC 61000 –2,3,5 (as applicable)	Electromagnetic Interference (EMI) and Electromagnetic Compatibility (EMC) testing of PV Inverters
3. Fuses	
IS/IEC 60947 (Part 1, 2 & 3), EN 50521	General safety requirements for connectors, switches, circuit breakers (AC/DC): a) Low-voltage Switchgear and Control-gear, Part 1: General rules b) Low-Voltage Switchgear and Control-gear, Part 2: Circuit Breakers c) Low-voltage switchgear and Control-gear, Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units d) EN 50521: Connectors for photovoltaic systems –Safety requirements and tests
IEC 60269-6	Low-voltage fuses -Part 6: Supplementary requirements for fuse-links for the protection of solar photovoltaic energy
4. Surge Arrestors- Surge Arrestors should be in line with technical and testing requirement stated in NFC 2011.	
IEC 62305-4	Lightening Protection Standard
IEC 60364-5-53/IS 15086-5 (SPD)	Electrical installations of buildings -Part 5-53: Selection and erection of electrical equipment -Isolation, switching and control

IEC 61643-11:2011	Low-voltage surge protective devices -Part 11: Surge protectivedevices connected to low-voltage power systems -Requirements and test methods
5. Cables	
IEC 60227/IS 694 IEC 60502/IS 1554 (Part 1 & 2)/ IEC69947	General test and measuring method for PVC (Polyvinyl chloride) insulated cables (for working voltages up to and including 1100 V, and UV resistant for outdoor installation)
BS EN 50618	Electric cables for photovoltaic systems (BT(DE/NOT)258), mainly for DC Cables
6. Earthing /Lightning	
IEC 62561 Series (Chemical earthing)	IEC 62561-1 Lightning protection system components (LPSC) -Part 1 Requirements for connection components IEC 62561-2 Lightning protection system components (LPSC) -Part 2 Requirements for conductors and earth electrodes IEC 62561-7 Lightning protection system components (LPSC). Earthling shal be complied with IS 3043.
7. Junction Boxes	
IEC 60529	Junction boxes and solar panel terminal boxes shall be of the FRP/PC type with IP65 protection for outdoor use, and IP54 protection for indoor use
8. Energy Meter	
IS 16444 or as specified by DISCOM	A.C. Static direct connected watt-hour Smart Meter Class 1 and 2 —Specification (with Import & Export/Net energy measurements)
9. Solar PV Roof Mounting Structure	
IS 2062/IS 4759	Material for the structure mounting

8.3 Solar Photovoltaic Modules

a) This specification covers the requirements of quality for solar PV panels. Suitable solar panels should performance 100% at STC condition. Solar PV panels shall pass all test in order to withstand harsh environmental condition & perform well for 25yrs & more.

b) Bidder shall supply of SPV module reputed make. If any other make, bidder will take prior approval from MITL.

c) All the components shall be in accordance with technical specifications given in relevant latest IS/IEC standards. Use of PV modules with higher power output is preferred.

d) PV module (s) containing Mono-crystalline silicon shall be used.

e) Each of the Solar PV module shall be rated for a minimum of **400 Watts peak with 72cells**. The Solar PV modules shall have a positive power tolerance.

f) The efficiency of the PV modules shall be minimum 19% and fill factor should be more than 75%.

g) Power Output Warranty: PV modules must be warranted for output wattage, which should not be less than 90% at the end of 10 years and 80 % at the end of 25 years.

h) Any damage/rejection shall be made good or replaced immediately without any extra cost or loss to MITL.

i) The PV modules shall be supplied with the suitable Aluminum frame. The terminal box on the module shall have a provision for "Opening" for replacing the cable, if required.

j) The Contractor shall obtain the approval of the Quality plan prior to manufacturing/ inspection call. The cells used for module making shall be free from all defects like edge chipping, breakages, printing defects, discoloration of top surface etc. Only Class A solar cells shall be used. The modules shall be uniformly laminated without any lamination defects.

k) Supplier to submit all the requisite latest test certificates of solar PV modules at the time of submission of the bid.

l) Four bus bar or better technology solar PV modules to be used.

m) Bidder must submit valid Construction Data Form (CDF) in support of Bill of Material (BoM).

n) The Solar PV module shall be free of potential induced degradation (PID). The PID test of module, the system voltage will be subject to a conditioning of three cycles at 85^0 C and 85% RH for a period of 96 hours.

o) In case of expiration of standards or inapplicability, local standards and regulations may apply.

p) The bidder will ensure that all Solar PV modules from their plant after their end of life (when they become defective/ non-operational/ non-repairable) shall be disposed in accordance with the "e-waste (Management and Handling) Rules, 2011" notified by the Government and as revised and amended from time to time.

q) MITL reserves the right to test the Solar PV Modules before the dispatch to confirm their standards to the contract specifications. If required, the pre dispatch testing of the Solar PV Modules shall be done at the manufacture's place. These tested parameters should match the IEC/ISI/MNRE/BEE standards of tender. If components of the system are not as per the standards, entire lot shall be replaced with new components which shall confirm to the standards mentioned in the tender at Supplier's cost. MITL, reserves the right to verify flash test reports of Solar PV modules.

r) The PV modules deployed shall have valid test certificates for their qualification as per above specified IEC/ BIS Standards by one of the NABL Accredited Test Centres in India. In case of module types/ equipment for which such Test facilities may not exist in India,

test certificates from reputed ILAC Member Labs abroad will be acceptable.

s) Factory Acceptance Tests (FAT): The Quality Plan/ test program for the Factory Acceptance Tests (FAT) shall be submitted to MITL for approval at least 4 weeks prior commencing of tests. The test report shall be submitted prior to shipment of material. MITL reserves the right to visit the PV module factory at any time during manufacturing process to assess quality and production scheduling status.

t) Additional independent tests: Additional independent certified Third-Party testing of the PV modules is required. The bidder shall propose a list of Third-Party testing laboratories for MITL approval. The bidder shall organize and facilitate the MITL visit and/or testing in the factory or laboratory, if required. MITL reserves the right to select PV modules randomly for the following tests:

- Module behavior test (irradiation and temperature)
- Module performance tests
- Module electroluminescence tests
- All testing must be included in the proposal and be supported by the bidder.

u) Site tests: The PV modules shall be subject to witness testing onsite to ensure their performance. The testing should be performed during the following phases of the project:

- Pre-commissioning
- Commissioning and test on completion
- Performance tests

The site tests shall be witnessed by the MITL. The commissioning test program shall be submitted at least 2 weeks prior in advance of any testing.

8.4 Module Mounting structure and General Arrangement

The ground mounting structure design must follow the existing land profile.

The structure shall be designed to allow easy replacement of any module and shall be in line with the site requirements.

The MMS stub/ column, rafter, purlin, ties and bracing members shall confirm to Indian standards as mentioned in the list of codes and standards: IS: 2062 – Hot rolled Medium and High tensile structural steel IS: 811 – Cold formed light gauge structural steel sections IS: 1161 – Steel tubes for structural purposes IS: 4923 – Hollow steel sections for structural use.

The minimum thickness (BMT) of various elements of MMS structure shall be as following: Stub/ column & Bracing/Purlin & other members. Final thickness of the members shall be arrived by structural analysis considering combination of all possible loads.

The contractor can also propose new light gauge structural steel or structural aluminium sections other than specified above subject to approval of the MITL. In this case the contractor

shall submit his proposal stating the technical advantages of the proposed sections for MITL's review along with supporting literature.

MMS column post shall be supported with base plate secured to foundation using anchor bolts for easy maintenance/ repair/ replacement.

The primary loads and load combinations for design of MMS structure shall be as specified under "Design Load".

The support structure design shall be as per relevant Indian standard(s) and shall be with working stress method considering appropriate factor of safety. No increase in permissible stress under wind/ Seismic load combination shall be permitted.

The maximum permissible deflection/side sway limits for various elements of MMS under serviceability conditions shall be as following:

Lateral deflection for Column/ stub– Span/ 240 & Vertical deflection for Rafter and Purlin – Span.

In case of fundamental time period of MSS table structure more than 1 Sec, the structure design shall be checked against dynamic effects of wind as per provisions of IS – 875 (Part-3).

MMS shall support SPV modules at a given orientation and tilt, absorb and transfer the mechanical loads to the ground properly.

Welding of structure at site shall not be allowed and only bolted connections shall be used.

The MMS structure shall be hot dip galvanized with minimum thickness of coating not less than 80 microns on each side. Galvanization shall conform to IS-2629, 4759 & 4736 as applicable, considering coastal environmental condition. It is to ensure that before application of this coating, the steel surface shall be thoroughly cleaned of any paint, grease, rust, scale, acid or alkali or such foreign material as are likely to interfere with the coating process. The Contractor should ensure that inner side should also be coated. The galvanization shall be done after fabrication of members to ensure galvanization of all cut surfaces. In case the proposed section is made up of Aluminium, anodized coating shall be Gr AC10 and shall conform to IS: 1868. The array structure shall be so designed that it will occupy minimum space without sacrificing the output from SPV panels at the same time.

Two numbers of anti-theft fasteners of stainless steel on two diagonally opposite corners for each module shall be provided. All the fasteners and washers (packing & spring) for Module Mounting Structure and Module shall be adequately protected from atmosphere and weather prevailing in the area. Fasteners and washers to be used for erection of mounting structures and those for fixing Module over MMS shall be of stainless steel grade SS 316 equivalent and must sustain the adverse climatic conditions to ensure the life of the structure for atleast 10 years.

Modules shall be clamped & bolted with the structure properly. The material of clamps shall be Anodized Al / Stainless Steel. Clamp/bolt shall use EPDM rubber and must be designed in

such a way so as not to cast any shadow on the active part of a module. In case bolts are used, Spring Washers shall be used bolt head end and EPDM rubber shall be used in between Module & purlin.

The MMS foundation shall be designed as per the loads specified under clause “Design Loads”. The anti-theft bolts, nuts etc shall be provided by the Contractor.

The array structure shall be grounded properly using maintenance free earthing kit

The Contractor shall specify installation details of the PV modules and the support structures with appropriate diagram and drawings.

The Contractor should design the structure height considering highest flood level at the site and the finished grade level.

For multiple modules mounting structures located in a single row, the alignment of all modules shall be within an error limit of maximum 10mm.

The Successful Bidder/ Contractor shall submit the detailed foundation & structural design basis and the list of reference standards, in this Bid, duly certified by a Chartered Structural Engineer having adequate successful experience in similar works.

The contractor shall submit the detailed design calculations and drawings for MMS structure, bill of materials and their specifications/ standards to the MITL for approval within 30 days from issue of LOA/ NTP before start for fabrication work.

Contractor must submit the complete quality documents i.e. test certificates for all tests conducted starting from raw material stage, in process, final testing w.r.t structure.

8.5 Switchboard box/DC Distribution Box/AC Distribution box

a) Successful Bidder/Contractor shall provide sufficient no. of switchboards /DCDB/ ACDB wherever required.

b) All boxes/ panels should be equipped with appropriate functionality, safety (including fuses, grounding, etc.) and protection.

c) The terminals will be connected to bus-bar arrangement of proper sizes to be provided. The panels/ boxes will have suitable cable entry points fitted with cable glands of appropriate sizes for both incoming and outgoing cables.

d) Adequate rating fuses & isolating MCB/ MCCB should be provided.

e) The panels/ boxes shall have suitable arrangement for the followings

f) Provide arrangement for disconnection

g) Provide a test point for quick fault location

h) To provide isolation The current carrying rating of the boxes/ panels shall be suitable with adequate safety factor

i) The rating of the boxes/ panels shall be suitable with adequate safety factor to

interconnect to the local/ internal grid

j) Thermal/ heat dissipation arrangement/ Vent for safe operation.

k) Adequate number of spare terminals to receive suitable runs and size of cables required for the Inverter/Transformer rating

l) The boxes/ panels must be grounded properly to ensure all safety related measures for safe operation. The parts of panel, wherever applicable, must be insulated properly.

m) All the Panels to be manufactured with sufficient space for working and must have temperature suitability up to 850 C with separate cable and bus bar alley.

n) The boxes/ panels shall be dust, vermin, and waterproof and made of thermoplastic/ metallic in compliance with IEC 62208, which should be sunlight/ UV resistive as well as fire retardant & must have minimum protection to IP 65(Outdoor)/ IP 20(indoor) and Protection Class II.

o) All panels/ boxes shall be provided with adequately rated bus-bar, incoming control, outgoing control etc. as a separate compartment inside the panel to meet the requirements of the Chief Electrical Inspector General (CEIG)/CEA. All live terminals and bus bars shall be shrouded.

p) All cubical panel shall be fabricated out of cold rolled sheet steel, thickness of 2 mm. Internal Partition panel thickness shall be 1.6mm.

q) The LT/ HT switchgear panels shall be designed as per the relevant IS codes and as per the approved design for the panel. All the parts of the panel must be rated as per the relevant rated voltage level. All the panels must have multifunction meters (MFM) flushed with the surface of the panels. However, the outgoing feeder can have Tri vector meter (TVM) for the energy accounting.

r) The Power Control Centre (PCC)/ Switchgear shall be rated for the maximum output of the supply transformer feeding the system. The short circuit withstand rating (1 sec) at rated voltage of the switchgear shall be relevant to the existing electrical system short circuit ratings.

s) The structure shall be mounted on a rigid base frame of folded sheet steel of minimum 3mm thickness and 75mm height.

t) Panels shall be totally enclosed dust and vermin proof rubber gasket shall be provided around doors, covers and other cut outs. Degree of protection shall be IP – 42 as per IS standards for LT panels.

u) All floor mounting panels/ boards shall be provided with 50 mm high channel base frame. Total height of all floor mounting cubicles / panels shall be 2500 mm (maximum).

v) Metal clad switchgear shall be extensible on both ends. Switch handles shall be provided with padlocking facility in off position.

w) All steel work used in the construction of PMCC be given degreasing, de-rusting, phosphatizing and passivation treatment followed by the coats of red oxide primer and two coats of final stove enamel paint of shade 631 of IS:5.

x) Each Switchgear cubicles shall be fitted with a label on the front and rear of the cubicle Each Switchgear cubicles shall be fitted with a label indicating the switchgear rating and duty.

y) Metal clad Switchgear shall comprise separate, segregated modules for each circuit.

z) Bus ways, cable ways and wire ways on medium voltage Switchgear shall be run separate, segregated compartments. Cable's way width shall be less than 250 mm.

aa) Provision for ventilation/pressure relieving and internal arc protection

bb) Single front / compartmentalized, modular design, degree of protection IP52 with provision of extension on both sides.

cc) Incomer feeders: mains incomer - Electrically operated draw out type Air Circuit Breakers (ACBs)/ Vacuum Circuit breakers (VCBs), as applicable.

dd) Outgoing feeders: Molded Case Circuit Breakers (MCCBs)/ electrically operated draw out type Air Circuit Breakers (ACBs) / Vacuum Circuit Breakers (VCBs), as applicable.

ee) The color finish shade of switchgear enclosure for interior shall be glossy white & for exterior it shall be light grey, semi glossy shade 631 of IS: 5. if a different exterior shade is desired by the MITL, the same shall be intimated to the supplier.

ff) The PCC shall be fabricated out of CRGO sheet steel; 2 mm thick for the outer shall all-round. The internal walls and separators shall be of 1.6 mm thick CRGO sheet steel.

8.6 Bus Bars

a) Bus bars shall be of aluminum complying with the requirements of grade E91E of IS:50252 and shall be located in air insulated enclosures non-flammable, resistant proof for acid and alkalis.

b) Bus bar joints shall be bolted type and insulated spring washers shall be provided to ensure good contact at the joints.

c) Bus bars shall be suitable for fault level 50KA.

d) Bus bar Material – The materials in common use for bus bars and connections of the strain type are ACSR conductor

8.7 Molded Case Circuit Breakers

a) Molded case circuit breaker (MCCBs) shall conform to the latest application standards.

b) MCCBS in AC circuit shall be of four pole (4P) construction arranged for simultaneous 4 pole manual/auto closing and opening and for automatic instantaneous tripping on short circuit. Operating mechanism shall be quick-make, quick-break trip – free type. The ON-OFF and

TRIP polling of the MCCB shall be clearly indicated and visible to the operator when mounted as in service. Front of board operating handle shall be provided.

c) MCCB shall be capable of withstanding the thermal stresses caused by overload and the mechanical stress caused by the peak short circuits current of value of associated with the switch-gear rating. The maximum tripping time under short circuit shall not exceed 20 milliseconds.

d) MCCB terminals shall be shrouded and designed to receive cable lugs for cable sizes relevant to circuit ratings.

e) MCCB rating 160A and above shall be provided with microprocessor based OC, SC & EF trip units & less than 160A MCCB shall be thermal magnetic type.

f) Each incomer of LT switchgear shall consist of MFM with RS485 communication port and SCADA compatible.

8.8 Electrical interlocks

Electrical interlocks shall be provided appropriately between incomer and Bus-coupler to avoid multiple live sources at a time in the circuit. On loss of both the Incomer-1 & Incomer-2, DG shall start, and DG incomer shall feed the total load. When DG is in service APFC should be disconnected automatically.

8.9 Current Transformers

CT Core Lamination shall be of high grade silicon steel. Current transformer for high voltage equipment shall be of the resign cast type. All current transformers shall comply with the requirements of IS: 2705.

8.10 Voltage transformers

Secondary winding of voltage transformers shall be rated for a three phase line voltage of 110V and shall have a minimum rated burden of 50 AVA. Voltage transformers windings for metering purposes shall be of accuracy class 1.0 and for protection purposes shall be of accuracy class 3.0. Voltage transformers shall comply with the requirements of IS: 3156.

8.11 Power and Control Cables Termination

a) Cable boxes for use on system with rated voltages up to interconnection power level I.e, 3 phase 415V LT side shall be suitable for cold setting epoxy resin type of compound filing.

b) Cable boxes shall be complete with combined armour and earthing clamps.

c) Provision shall be made for earthing the body of each cable box.

d) Equipment terminal blocks for power connections shall be complete with adequate phase segregating insulating barriers and suitable crimping type of lugs for connecting the insulated cable tails.

e) Brass wiping shall be provided with cable boxes for paper insulated, lead sheathed cables. Compression type cable glands shall be provided for all other power and control cables.

f) Gland insulation shall be capable of withstanding a high voltage test of 2000V for one minute.

g) All switchboards shall, unless otherwise specified, facilitate bottom cable entry. Removable gland plates shall be mounted at least 300mm above the base of the panel. If the gland plates are provided inside the switch board cubicles, entries in the base of the cubicle must be adequately vermin proof, hardwood board's being the proffered means.

h) Cable alley shall be minimum 250 wide.

i) All wiring for control, protective, alarm and indication circuits on all equipment shall be carried out with at least 650 V grade PVC insulated, standard tinned copper, 1.5 sq mm conductors a shall be colour coded as follows.

j) A.C Circuit - Red, Yellow or Blue determined by the phase with which the wire is associated.

k) A.C Neutral - Black

l) D.C Circuit - Grey

m) Earth Connections - Green.

8.12 Earthing of switchgear/distribution boards

a) Each switch gear / distribution boards shall be provided with an earth bus bar running along its entire length. The earth bus-bar shall be located at the bottom of the board / panel.

b) Earth bus bar shall be of galvanized iron or copper. Earth bus bars shall be rated to carry the rated symmetrical short circuit current of the associated board / panel for one second. Earth bus bar shall be supported to withstand stresses induced by the momentary current of the value equal to the momentary rating of the associated switchgear / distribution boards.

c) Positive connection of all the frames of equipment mounted in the switchgear/ distribution board to the earth bus bar shall be maintained through insulated conductor of size equal to the ground bus bar or the load current carrying conductor. Whichever is smaller, Ear thing of draw out equipment frames shall be achieved through a separate plug in contact.

d) All instrument and relay cases shall be connected to earth bus bar by means of 650 v grade, PVC insulated, stranded, tinned copper, 2.5 sqmm conductor looped through the case earth terminals.

e) Door earthing shall be done by using 2.5 square mm standards flexible copper conductor PVC insulated.

8.13 Tests

a) The design of switchgear / distribution board shall have been type tested in accordance with the relevant sections of IS: 25623. In absence of type test certificates, the following type tests have to be carried out by the Contractor free of charge to the MITL.

   i. Verification of short time current withstands and peak current withstand of main and vertical bus bars.

   ii. Temperature rise tests on main bus bars, vertical risers, power contacts and control contacts.

   iii. Routine test shall be conducted on the Panel in accordance with IS: 25623.

   iv. Dielectric tests.

8.14 ACDB/Lighting Panel/ELDB Distribution Boards

a) Double door distribution board shall be flush mounted. The boxes shall be weather and flame proof (for Flammable Material, Acetylene, Fuel storage area) sheet steel with external fixing lugs and detached gland plates.

b) An external rust proofed bolt or stud shall be provided for earthing purposes.

c) The cover shall be flat, close fitting and gasketed and provided with locking facilities.

d) Ample wiring capacity shall be provided and the M.C.B banks shall be easily removed or titled to give access to the terminals.

e) The neutral bar shall be provided with a separate neutral connection for every M.C.B way of each pole.

f) All MCB DBs shall be factory fabricated, of the type as specified in the Schedule of Quantities and shall be the same make as that of MCBs.

g) Identification of Circuits: All outgoing circuits shall be identified with PVC numbering ferrules/tags.

h) Circuit Diagram: Inside of the door of the MCB distribution board, a well prepared circuit diagram showing circuit numbers, the areas/rooms/utilities being served, conductor size etc., shall be pasted.

8.15 Earthing and Lightning Protection

Earthing system for the plant shall be carried out in compliance with the requirements of IS: 3043 and the following specifications-

Earthing system design and installation shall generally be as per IS: 3043.

The material of earthing conductor laid above ground or buried in concrete will be galvanized steel, while that of the conductor buried in soil will be mild steel. Fault current withstand time for sizing of earth conductor will be taken as 3 secs. While sizing the buried earth conductor, a corrosion allowance of at least 20% will be taken.

a) Pipe Electrode

GI pipe electrodes shall be of medium class, 40 mm dia and 3 m in length. Galvanizing of the pipe shall conform to relevant Indian Standard. GI pipe electrodes shall be tapered at the bottom and provided with holes of 12 mm dia drilled not less than 75 cm from each other and up to 3 m height from bottom. The electrode shall be buried in the ground vertically with the top not less than 200 mm below ground level.

b) Plate Earth Electrode

For plate electrodes, minimum dimensions of the electrode shall be 600 mm x 600 mm x 6 mm thick. Heavy duty CI/MS frame with cover shall be suitably embedded in the masonry enclosure.

c) Equipment Earthing connection

Separate earthing should be provided for module array, Lightning arrestor, structure, distribution boxes & inverters**.**

An inspection chamber of size 300 mm x 300 mm x 300 mm in cement concrete of 1:3:6, 50 mm thick for side walls and 100 mm thick for bottom, shall be provided. The chamber shall be provided with CI cover on MS frame. The cover shall be hinged to the frame and shall be with padlocking arrangement. The frame and cover shall be painted with anticorrosive paint.

Size of earthing conductor shall be arrived as per calculations subjected to minimum rating suggested below:

Type of Equipment	**Earth Conductor Size**
Main Earthing Grid	65x10mm GI Flat
Lighting Distribution Board	25 X 6 mm GI Flat
Lighting and receptacle system	14 SWG GI Wire
Outdoor Street Lighting	8 SWG GI Wire
Cable Tray at suitable point	25 X 3 mm GI Flat
Hand Rails and metallic structure	25 X 3 mm GI Flat
Small equipment and instrument	8 SWG GI Wire

8.16 Testing

The MITL may ask the Contractor to carry out earth continuity tests, earth resistance measurements and other tests in his presence. The Contractor shall have to bear the cost of all such tests.

8.17 Lightning Protection

For tall structures and buildings, lightning protection system shall be provided as per relevant IS with horizontal and vertical air terminations, down conductors with test links and separate earth electrodes.

8.18 AC Distribution Panel Board

AC Distribution Panel Board (ACDB) shall control the AC power from inverter, shall be supported by tapping approval from inverter manufacturer. The supply shall be provided with changeover switch and shall have necessary surge arrestors. Interconnection from ACDB to mains at LT Bus bar to be carried out and complete equipment along with metering to be installed in the ACDB. Requirement/specifications of ACDB may be changed as per site conditions. An ACDB to be provided at the cable terminating point emanating from inverter for interconnection control of dedicated electrical loads. All switches at the circuit breakers, connectors shall confirm to IEC 0947, part I, II and III.

8.19 Inverter/Power Conditioning Unit

a) The output power from SPV shall be fed to the inverters which converts DC produced by SPV array to AC and feeds it into the main electricity grid after synchronization. In case of grid failure, or low or high voltage, solar PV system shall be out of synchronization and shall be disconnected from the grid. Once the Mains comes into service PV system shall again be synchronized with Mains supply and load requirement would be met to the extent of availability of power. Four pole isolation of inverter output with respect to the grid connection need to be provided.

b) The PCU/Inverter shall comply with the requirements:

c) Power Conditioning Unit (PCU)/ Inverter shall consist of an electronic inverter along with associated control, protection, and data logging devices.

d) All three phases shall be supervised with respect to rise/fall in programmable threshold values of frequency.

e) As per preliminary design minimum 6 Nos. of Inverters shall be required, however, the bidder shall estimate the requirement for number of inverters and submit the details in the proposal. The no of inverters shall be finalized during detail engineering.

f) The inverter output shall always follow the grid in terms of voltage and frequency. This shall be achieved by sensing the grid voltage and phase and feeding this information to the feedback loop of the inverter. Thus, control variable then controls the output voltage and frequency of the inverter, so that inverter is always synchronized with the grid.

g) The PCU must have the feature to work in tandem with other similar PCU's and be able to be successively switched "ON" and "OFF" automatically based on solar radiation variations during the day. Inverters must operate in synergy and intelligently to optimize the generation at all times with minimum losses.

h) The PCU shall be capable of controlling power factor dynamically.

i) Maximum power point tracker (MPPT) shall be integrated in the power conditioner unit to maximize energy drawn from the Solar PV array. The MPPT should be microprocessor based to minimize power losses. The details of working mechanism of MPPT shall be mentioned by the Bidder in its offer. The MPPT unit shall confirm to IEC 62093 for design qualification.

j) The system shall automatically "wake up" in the morning and begin to export power provided there is sufficient solar energy and the grid voltage and frequency is in range.

k) Basic System Operation (Full Auto Mode): The control system shall continuously monitor the output of the solar power Plant until pre-set value is exceeded & that value to be indicated.

l) PCU shall have provisions/features to allow interfacing with monitoring software and hardware devices.

m) PCU shall confirm to the following standards and appropriately certified by the labs:

IEC 61683	Photovoltaic systems - Power conditioners - Procedure for measuring efficiency
EN 50530:2010 with 2013 Amendment 1	Overall efficiency of grid connected photovoltaic inverters
IEC 62109-1 Ed. 1	Safety of power converters for use in photovoltaic power systems-Part 1: General requirements
IEC 62109-2 Ed. 1	Safety of power converters for use in photovoltaic power systems - Part 2: Requirements for Inverters
IEC 61000-6-2 Ed. 2	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industria environments, Harmonics etc.
IEC 61000-6-4 Ed. 2.1	Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments
IEC 62116 Ed. 2	Utility-interconnected photovoltaic inverters - Test procedure of islanding prevention measures
IEEE 1547:2003 with 2014 Amendment 1	IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems
IEC 60068-2-1:2007	Environmental testing - Part 2-1: Tests - Test A: Cold
IEC 60068-2-2:2007	Environmental testing - Part 2-2: Tests - Test B: Dry heat
IEC 60068-2-14:2009	Environmental testing - Part 2-14: Tests - Test N: Change of Temperature
IEC 60068-2-30:2005	Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)

n) Desired technical requirement

Parameter	Specification
Rated AC power	As per design
Maximum input voltage	1000-1500 V
Rated AC output voltage	As per design
Tolerance on rated AC output voltage	+/-10%
Rated frequency	50 Hz
Operating frequency range	47.5 Hz to 52 Hz
Power factor control range	0.9 lag to 0.9 lead
European efficiency	Minimum 98%
Maximum loss in Sleep Mode	0.05% of rated AC power
Total Harmonic Distortion	Less than 3% at 100% load
Degree of protection	IP 20 (Indoor)/IP 54 (Outdoor)

o) The rated/ name plate AC capacity of the PCU shall be AC power output of the PCU at 50°C.

p) Maximum power point shall be integrated in the PCU to maximize energy drawn from the Solar PV array. The MPPT voltage window shall be sufficient enough to accommodate the output voltage of the PV array at extreme temperatures prevailing at site.

q) The PCU output shall always follow the grid in terms of voltage and frequency. The operating voltage and frequency range of the PCU shall be sufficient enough to accommodate the allowable grid voltage and frequency variations.

r) Power Conditioning Unit (PCU) shall consist of an electronic three phase inverter along with associated control, protection, filtering, measurement and data logging devices.

s) Every DC input terminal of PCU shall be provided with fuse of appropriate rating. The combined DC feeder shall have suitably rated isolators for safe start up and shut down of the system.

t) Type-II surge protective device (SPD) conforming to IEC 61643-12 shall be connected between positive/ negative bus and earth.

u) In case external power supply is required, standalone UPS shall be used to meet auxiliary power requirement of PCU. It shall have a backup storage capacity of 2 hours.

v) Circuit Breaker of appropriate voltage and current rating shall be provided at the output to isolate the PCU from grid in case of faults.

w) The PCU shall be tropicalized, and the design shall be compatible with conditions prevailing at site. Suitable number of exhaust fan with proper ducting shall be provided for cooling keeping in mind the extreme climatic condition of the site as per the recommendations of OEM to achieve desired performance and life expectancy.

x) All the conducting parts of the PCU that are not intended to carry current shall be bonded together and connected to dedicated earth pits through protective conductor of appropriate size. DC negative terminal shall be grounded.

y) Dedicated communication interface shall be provided to monitor the PCU from SCADA.

8.20 Data Acquisition System / Plant Monitoring

i. The Plant shall be automatically operated and shall be controlled by microprocessor-based control system SCADA and should be Open Platform Communications (OPC) compliant. There shall be simultaneous data logging, recording and display system for continuous monitoring of data for different parameters of different sub systems, power supply of the power Plant at DC side and AC side.

ii. An integrated SCADA shall be supplied which should be capable of communicating with all inverters and provide information of the entire Solar PV Grid interactive power Plant.

iii. The SCADA shall be string level monitoring compatible and shall have features of remote access to the real time data. SCADA shall have features for generating the day ahead schedule of generation based on historical data/ suitable logic. Also, system must be capable of sending the telemetry data to the local SLDC via GPRS/ GSM/ suitable mode.

iv. Computer-aided data acquisition unit shall be a separate & individual system comprising of different transducers to read the different variable parameters, A/D converter, multiplexer, de- multiplexer, interfacing hardware and software which will be robust & rugged suitable to operate in the control room Environment.

v. Reliable sensors for solar insolation, temperature, and other weather and electrical parameters are to be supplied with the data logger unit.

vi. The Data Acquisition System should be housed in a desk made of steel sheet.

vii. All data shall be recorded chronologically date wise. The data file should be MS Excel/ CSV compatible. The data, if needed, can be accessible remotely through authorized access. The data logger shall have internal reliable battery backup and data storage capacity to record all sorts of data simultaneously round the clock. All data shall be stored in a common work sheet chronologically and representation of monitored data shall be in graphics mode or in tabulation form. All instantaneous data can be shown in the Computer Screen. Provision should be available for Remote Monitoring.

viii. SCADA shall measure and continuously record electrical parameters and provide following data (but not limited to) at a 5-15 minute interval.

ix. SCADA shall have feature to be integrated with the local system as well remotely via the web using either a standard modem or a GSM/WIFI modem. The Contractor shall provide compatible software and hardware so that data can be transmitted via. Standard modem.

x. This will be the Contractor's responsibility to apply and get the suitable connection for SCADA, office & control room on behalf of the MITL & all the expenditures including payment of periodic bills of Internet provider shall be met by the Contractor.

xi. SCADA shall be provided with reliable power supply along with backup supply for at least one hour to cater to outage of grid.

xii. The SCADA shall be compatible to the requirements for measuring and reporting the performance-ratio (PR) of the Plant.

xiii. The Contractor shall provide all administrative rights/ privileges/passwords of the SCADA system to the MITL. The MITL shall have rights over the data generated in the Plant

8.21 Lightning Protection

i. For tall structures and buildings, lightning protection system shall be provided as per relevant IS with horizontal and vertical air terminations, down conductors with test links and separate earth electrodes.

ii. Lightning Protection with Early Streamer Air Termination rod for Complete Solar Array with associated structure shall be protected from Direct Lightning Stroke. Lightning Protection for solar array shall be achieved with any or both of the following two systems as per specification provided in the following section.

iii. Single Rod Air Terminal (Faraday Rods),

Early Streamer Emission (ESE) Air Terminal.

iv. Suitable earthling and equipotential bonding shall be ensured for the air termination rods as per applicable standard/Equipment manufacturer guidelines. Current carrying parts and accessories such as clamps, fasteners, down conductor, Test links and earth termination etc. shall be preferably procured from OEM of Air Terminals if it is supplied by them as part of lighting protection system.

Lightning Protection System for solar array with single rod air terminal

v. Solar array of Plant shall be protected from direct lightning strike with straight or angled air termination rods of suitable class as per IS:2309 to be fixed with the module mounting structure (MMS). Air termination rods shall have minimum two clamps to be fixed with MMS and must be capable of carrying full lightning current. Contractor to ensure proper fixing of the clamps with MMS to allow lightning current to pass through the clamp without damage and to sustain the rods during high velocity wind. Contractor shall submit

the calculation to determine the no. and location of air termination rods to be fixed on structure to provide the lightning protection to each solar module and structure. Earth riser shall be connected to that part/pole of MMS which is nearest to air termination rod.

Lightning Protection System for solar array with E.S.E air terminal:

vi. Solar array shall be protected from direct lightning stroke with Early Streamer Emission air terminal in accordance with NF C 17-102 (Latest revision). Number and location of ESE air terminal shall be decided during detail engineering. For this purpose, design calculation and AutoCAD drawing of the layout of ESE terminal shall be submitted to MITL for approval. ESE air terminal shall be type tested in any national/international approved lab for advance triggering time (ΔT) and lighting Impulse current test and type test report shall be submitted to MITL for approval.

vii. Each ESE air terminal shall be provided with separate earthling termination and test link for equipotential bonding of Lighting Protection System as per OEM guidelines/NFC 17 - 102. Each ESE air terminal shall be equipped with lightning stroke counter to be fixed at suitable height in serial on the down conductor.

viii. ESE air terminal shall be erected on isolated foundation to be approved by MITL If required, Suitable guy wire shall be used to support the mast of ESE terminal against the wind.

ix. Location and layout of ESE terminal shall be in such a manner that it cast no shadow on the PV Modules during 08:30 AM to 04:30 PM.

x. Lightning Protection System for Inverter Room (LCR) and MCR Contractor needs to provide the Lightning Protection for each inverter, Switchyard building and Main Control Room building in accordance to IS:2309.

8.22 Surge Protection

The surge arrestors (SAs) shall conform in general to IEC 60099-4 or IS: 3070 except to the extent modified in the specification. Arresters shall be of hermetically sealed units, self-supporting construction, suitable for mounting on lattice type support structures. Contractor shall furnish the technical particulars of Surge arrester.

The SA's shall be of heavy-duty station class and gapless Metal Oxide type without any series or shunt gaps. The SAs shall be capable of discharging over- voltages occurring during switching of unloaded transformers, and long lines.

Arrestors shall be complete with insulating base for mounting on structure. Suitably enclosed for outdoor use and requiring no auxiliary or battery supply for operation shall be provided for each single pole unit with necessary connection.

The surge arrestors shall conform to type tests and shall be subjected to routine and acceptance tests in accordance with IEC-60099-4.

8.23 Earthing Protection

Earthing system shall comply with latest revisions and amendments of relevant IEC standards/IS codes. Earthing system shall comply with the following standards and codes.

Standard/Code	Description
IS 3043	Code of Practice for Earthing
IEEE 80	IEEE Guide for Safety in AC Substation Grounding
IEEE 142	IEEE Recommended Practice for Grounding of Industrial and Commercial Power Systems

The Contractor shall design, supply, install and test, a plant earthing system, in the form of a main earth ring and branch instrumentation to equipment including bonding of structures and lightning protection system and earth electrodes. The earthing and bonding system shall include all Plant installed under this Contract.

The earthing and bonding installation shall comply with Indian standard -3043 Code of Practice for Earthing, and with the General Electrical Specification, of this document. The earthing system shall meet the requirements of IS, whose requirements will take precedence over the specific details given in this Specification. Earthing of solar PV system should be interconnected with existing pumphouse earthing at two locations. Separate earthing need to be provided for AC, DC & LA.

Earthing system shall be designed based on system fault current and soil resistivity value obtained from geo-technical investigation report. Earth grid shall be formed consisting of number of earth electrodes sufficient enough to dissipate the system fault current interconnected by earthing conductors.

The earth electrode shall be made of high tensile low carbon steel rod, molecularly bonded by high conductivity copper on outer surface with coating thickness not less than 100 micron as per relevant standards. Suitable earth enhancing material shall be filled around the electrode to lower the resistance to earth. Inspection chamber and lid shall be provided as per IS 3043.

Earth conductors shall be made of copper bonded steel or galvanized steel of sufficient cross section to carry the fault current and withstand corrosion. Earth electrodes shall not be situated within 1.5m from any building whose installation system is being earthed. Minimum distance between earth electrodes shall be the driven depth of the electrode.

Every alternate post of the transformer yard and switchyard fence shall be connected to the earth grid by one GS flat and gates by flexible lead to the earthed post.

All welded connections shall be made by electric arc welding. For rust protection the welds should be treated with red lead compound and afterwards thickly coated with bitumen compound.

8.24 Grid Islanding

Disconnection of the PV generator in the event of loss of the main grid supply is to be achieved by in built protection within the power conditioner. This may be achieved through rate of change of current, phase angle, unbalanced voltage or reactive load variants. Operation outside the limits of power quality as described in the technical data sheet shouldcause the power conditioner to disconnect the grid. In case of the above, tripping time should be less than 0.5 seconds. Response time in case of grid failure due to switch off or failure based shut down should be well within 5 seconds. In case of use of two or more Inverters of total capacity, suitable equipment for synchronizing the AC output of both the Inverters to the ACDB/Grid should be provided.

Automatic reconnection after the grid failure is restored: Inverter shall have facility to reconnect the inverter automatically to the grid following restoration of grid, subsequent to grid failure condition. The system should have integrated system control and software for plant control and remote communication with web monitoring to monitor individual strings and complete power plant from Inverter.

8.25 Cables

XLPE Power Cables

a) Materials shall conform to the latest editions of the following Indian/International Standards:

IS 5831: 1984	PVC Insulation and Sheath of electric Cables
IS 8130:1984	Conductors for insulated electric cables and flexible cords
IS 613:1984	Copper rods and bars for electrical purposes
IS 3975:1988	Mild steel wires, formed and tapes for armoring of cable
IS 10810:1984	Method of tests for cables
IEEE-383:1974	Standard for type test of class IE electric cables, field splices, and connections for nuclear power generating stations
ASTM-D2843, 1993	Standard test method for density of smoke from burning or decomposition of plastics
ASTM-D2863, 1991	Standard test method for measuring minimum oxygen concentration to support candle - like combustion of plastics (oxygen index).
NEMA-WC5, 1992	Thermoplastic Insulated Wire and cable for the transmission and distribution of Electrical Energy.
IEC:754	Test on gases evolved during combustion of electric cables
IEC:332	Test on electric cables under fire conditions - (Part I):1993 Test on a single vertical insulated wire or cable
IS 3961	Recommended current rating for cables – (Part II):1967 PVC insulated and PVC sheathed heavy duty cables
IS 10418:1982	Drums for electric cables

b) All cables shall be suitable for high ambient, high humid tropical Indian Climatic conditions. Cables shall be designed to withstand the mechanical, electrical and thermal stresses under the unforeseen steady state and transient conditions and shall be suitable for

proposed method of installation.

c) Conductor shall be of uniform, of good quality, free from defects Aluminum. Insulation shall be Cross Linked Polyethylene (XLPE).

d) Cable shall be provided with copper metallic screen suitable for carrying earth fault current. For single core armoured cables the armouring shall constitute metallic part of the screening.

e) All armoured and multi-core un-armoured cables shall have distinct extruded inner PVC sheath of black color.

f) Material for armour for Single Core Cable shall be Aluminum wire. For multicore cable it shall be GS wire/flat. Armouring shall be as per relevant IS and it shall have minimum 90% coverage.

g) Breaking Load of the joints shall be minimum 95% of the normal armour.

h) It shall be of black colour PVC (type ST2 as per IS 5831) with Cable size and Voltage grade embossed on it. Sequential marking shall be at every 1 (one) Meter distance. Word "FRLS" shall also be embossed on it at every 5 (Five) meter distance.

i) Normal current rating shall not be less than that covered by IS 3961. Vendor shall submit data in respect of all cables in the prescribed format.

j) De-rating factors for various conditions of cable installation including the following, for all types of cables shall be furnished.

- Variation in ambient air temperature.
- Variation in ground temperature.
- Depth of laying.
- Cables laid in the ground.
- Cables laid in trench.
- Cables laid in ducts.
- Soil resistivity.
- Grouping of cables.

k) The value of short circuit withstand current ratings of all cables shall be indicated for a short circuit for 1 second duration and should also specify the maximum temperature during short circuit.

1.1 kV LT Cable

a) All power and control cables for use on LT shall be heavy duty type, aluminium/copper conductor. XLPE insulated, inner sheathed, armoured and overall PVC sheathed as described below.

b) The Power and Control cables shall have the following minimum overall cross sectional areas:

- LV Power 2.5 sq.mm (Copper)
- Control Cables 1.5 sq.mm (Copper)
- Lighting Cables 2.5 sq.mm (Copper)

c) Cables p to 10 sq.mm conductor size have copper conductor, round steel wire armoured. Above 10 sq.mm size aluminum conductor flat steel armoured shall be used.

d) Cables shall be sized based on the maximum continuous load current and the voltage drop. The derating due to ambient air temperature, ground temperature, grouping of cables with each other etc. shall be taken into account. Below grade cables in paved areas shall be in concrete lined trenches with concrete covers having proper slope and suitable drainage arrangement to avoid water collection. In unpaved areas cables shall be in lined trenches or directly buries in ground. In hazardous areas and transformer bays, trenches shall be completely filled up with sand. Concrete lined cable trenches shall be sealed against ingress of liquids or gases wherever the trenches leave a hazardous area or enter control room or substation. The cable trenches shall be sized depending upon the number and voltage grade of cables. Where underground cables cross roadways, pipe sleepers at grade, etc., they shall be protected by being drawn through PVC sleeves/ducts or suitable RCC Pipes to provide a permanent crossing. Pipes laid for mechanical protection shall be sealed at both ends.

e) High voltage, medium voltage, control and signal cables shall be separated from each other by adequate spacing or running through independent pipes, trenches or cable trays as applicable. Cable trays, racks and trenches shall be sized to allow for future cables. Cable installation shall provide minimum cable bending radii as recommended by cable manufacturer.

f) Cable route markers shall be installed at every 30m interval all along the routes of directly buried cable trench and also at locations where the direction of cable trench changes.

g) All power and control cables shall be of continuous lengths without intermediate joints. Where joints are unavoidable, these shall be provided with the permission of Engineer-in-charge. All cables shall carry tag numbers for easy identification. In case of control cables all cores shall be identified at both sides by their terminal numbers Using PVC ferrules as per interconnection diagrams.

h) The insulation shall be chemically cross-linked polythene conforming to the physical, electrical and ageing properties as required by IS 7098 (Part - II). Only natural colour compounds shall be used for insulation of cables. It shall be free from voids and shall

withstand all mechanical as well as thermal stresses under steady state and transient operation conditions.

i) Insulation screening shall be in two parts, first non-metallic semi-conduction part and second metallic part. Non-metallic part shall be applied directly over insulation of each core and shall consist of tapped of extruded semi-conduction compound. On top of this, metallic screening of non-magnetic tap or braid or concentric serving of wire shall be applied.

j) In cables have three cores, the individual core shall be laid up with suitable non-hygroscopic fillers and then applied with common covering of PVC or thermoplastic material by extrusion or tapping such that circulation of cable is maintained. The sheath shall conform to requirements of type ST-2 compound of IS 5831. The thickness of sheath shall be as per IS 7098 (Part II).

k) The Armouring and outer sheath of XLPE cables shall be generally in line, as described above/elsewhere of this document. However, size and tolerance for XLPE Cables shall be as per IS 7098 (Part II), except for outer sheath to be of type ST-2 as per IS 5831.

l) All accessories like cable glands, lugs and terminal markings etc. shall be used conforming to relevant standards / as specified. The end termination for HT cables shall be heat shrinkable type. For 1100 V grade cables, Ni-Plated Brass Double Compression type glands WP to IP-65 as a minimum and tinned copper crimping type lugs shall be used.

Cable Laying

a) LV and control cables shall be separated from each other by adequate spacing or by running through independent pipes, trenches or cable trays. Cable Laying and termination shall be such that chances of cable getting damaged are remove.

b) LT cable shall be laid in cable tunnel or tray racks or buried underground with appropriate protection. Black shall indicate the neutral, while red, yellow and blue for three different phases. All LT cables when laid on the cable racks shall be properly dressed and clamped as required without crisscrossing and unnecessary overlapping. Cables shall be properly dressed and clamped.

c) Cables shall run in cable trays mounted horizontally or vertically on cable tray support system which in turn shall be supported from floor, ceiling, overhead structures, trestles, pipe racks, trenches or other building structures.

d) Horizontally running cable trays shall be clamped by bolting to cantilever arms and vertically running cable trays shall be bolted to main support channel by suitable bracket/clamps on both top and bottom side rails at an interval of 2000 mm in general.

e) For vertical cable risers/shafts cable trays shall be supported at an interval of 1000mm in general. Fixing of cable trays to cantilever arms or main support channel by welding shall not be accepted. Cable tray installation shall generally be carried out as per the approved guidelines/ drawings.

f) The cantilever arms shall be positioned on the main support channel with a minimum vertical spacing of 300 mm unless otherwise indicated.

g) All cable way sections shall have identification, designations as per cable way layout drawings and painted/stenciled at each end of cable way and where there is a branch connection to another cable way.

h) Cable installation shall be carried out as per IS: 1105 and other applicable standards. For Cable unloading, pulling etc. Following guidelines shall be followed in general:

i) Cable drums shall be unloaded, handled and stored in an approved manner on hard and well drained surface so that they may not sink. In no case shall be drum be stored flat i.e. with flange horizontal. Rolling of drums shall be avoided as far as possible. For short distances, the drums may be rolled provided they are rolled slowly and in proper direction as marked on the drum. In absence of any indication, the drums may be rolled in the same direction as it was rolled during taking up the cables.

j) For unreeling the cable, the drum shall be mounted on suitable jacks or on cable wheels and shall be rolled slowly so that cable comes out over the drum and not from below. All possible care shall be taken during unreeling and laying to avoid damage due to twist, kink or sharp bends. Cable ends shall be provided with sealed plastic caps to prevent damage and Ingress of moisture.

k) While laying cable, ground rollers shall be used at every 2 meter interval to avoid cable touching ground. The cables shall be pushed over the rollers by a gang of people positioned in between the rollers. Cables shall not be pulled from the end without having intermediate pushing arrangements. Pulling tension shall not exceed the values recommended by cable manufacturer. Selection of cable drums for each run shall be so planned so as to avoid using straight through joints. Care should be taken while laying the cables so as to avoid damage to cables. If any particular cable is damaged, the same shall be repaired or changed to the satisfaction of Project Manager.

l) Bending radii for cables shall be as per manufacturer's recommendations and IS: 1105.

m) Where cables cross roads/rail tracks, the cables shall be laid in Hume pipe/HDPE pipe.

n) No joints shall be allowed in trip circuits, protection circuits and CT/PT circuits. Also joints in critical equipment in main plant area shall not be permitted. Vendor shall identify and accordingly procure the cable drum length.

o) In each cable run some extra length shall be kept at suitable point to enable one LT/two HT straight through joints to made, should the cable develop fault at a later stage. Control cable termination inside equipment enclosure shall have sufficient lengths so that shifting of termination in terminal blocks can be done without requiring any splicing.

Laying of LT underground cables

a) The cables shall be protected by filling outdoor trench bottom with a layer of sand after

clearing the bottom from all rocks, stones and sharp objects, before the cables are placed. This sand shall be leveled and cables laid over it. These cables shall be covered with 150mm of sand on top of the largest diameter cable and sand shall be lightly compacted. A flat protective cover of 75mm thick second class red bricks shall then be laid and competed and then remainder of the trench shall then be backfilled with soil, rammed and leveled.

b) In routing, necessary barriers and spacing shall be maintained for cables of different voltages in case they lie side by side. Telephone cables shall cross the power cables only at about right angles and these two shall not run in close proximity.

c) Cable routing between cable trench and equipment/motors shall be taken through GI pipe sleeves of adequate size. Pipe sleeves shall be laid at an angle of maximum 45 Deg to the trench wall. Bending radii of pipes shall not be less than 8D. It is ensured that both ends of the GI pipe sleeves shall be sealed with approved WP sealing plastic compound after cabling. In places where it is not possible, cables shall be laid on smaller branch trays.

d) All cable shall be identified close to their termination point by cable tag numbers as per cable schedule. Cable tags shall be punched on aluminium straps (2mm thick, 20mm wide of enough length) securely fastened to the cable and wrapped around it.

e) Routes of these cables shall be arrived at on the basis of the relevant drawings and after consulting the Engineer in charge

Cable Terminations

a) For termination of HV cables, double compression type glands shall be used for indoor locations. Glands shall be of brass, Lugs of Al / Cu or tinned copper shall be used as applicable, and lugs shall be properly crimped on conductors. All glands used must be of heavy duty type.

b) In outdoor areas, except within outdoor substation area, cables shall be laid directly buried between building entry/exit points. Within buildings, cables shall be laid on cable trays to be supported from building walls columns/ beams/floors / ceilings. In outdoor substation area, cables shall be laid on cable trays in buildup cable trenches. Ladder and perforated type cable trays shall be proposed. Side members of ladder type cable trays shall be fabricated using structural steel angles of at least 6 mm thick. Perforated cable trays shall be of the formed type made from 2 mm thick sheet steel. For supports, structural angles or channels of appropriate strength shall be proposed. Vertical runs of cable trays shall be enclosed using perforated sheets as above. Cable trays, supports and covers shall be painted with epoxy paint of shade acceptable to JDA. Tray width shall be so sized that at least future margin is available for addition at later date.

c) At road crossings Hume pipe/s of adequate size shall be provided at a depth of 1000 mm (center line depth) of passage of cables, earthing conductors etc. At building entry point's pipe sleeves of GI or PVC shall be provided for the passage of cables and earthing conductors, such sleeves shall have projections on either side to facilitate extension.

Fire Proofing System

Fire proof sealing system shall be provided and shall consist of:

a) Fire-stops / fire-seals for sealing of cable / cable tray and conduit / pipe penetrations, both horizontal and vertical, through brick or RCC walls / floors, to prevent the spread of fire from one area to other areas by fire-resistant barriers.

b) The FPS system shall also include all the necessary accessories and equipment required for supporting, holding in position, fixing and installation of the fire-stop.

c) The FPS system shall comply in all respects with the requirements of the codes and standards mentioned herein IEC-331 and IEC-332.

Design and construction

a) Inter Plant Cabling: Interplant cabling for main routes shall be laid in Cable trenches/cable trays/buried/duct banks. In case of Duct banks, pull-pits shall be filled with sand and provided with a PCC covering. All buried cables shall be armoured.

b) Cable glands: Cable shall be terminated using double compression type cable glands. Cable glands shall conform to BS: 6121 and be of robust construction capable of clamping cable and cable armour (for armoured cables) firmly without injury to insulation. Cable glands shall be made of heavy duty brass machine finished and nickel chrome plated. Thickness of plating shall not be less than 10 micron. All washers and hardware shall also be made of brass with nickel chrome plating Rubber components shall be of neoprene or better synthetic material and of tested quality. Cable glands shall be suitable for the sizes of cable supplied/erected.

c) Cable lugs/ferrules: Cable lugs/ferrules for power cables shall be tinned copper solder less crimping type suitable for aluminum compacted conductor cables. Cable lugs and ferrules for control cables shall be tinned copper type. The cable lugs for control cables shall be provided with insulating sleeve and shall suit the type of terminals provided on the equipment. Cable lugs and ferrule shall conform to relevant standard.

d) Trefoil clamps : Trefoil clamps for single core cables shall be pressure die cast aluminum or fibre glass or nylon and shall include necessary fixing accessories like G.I. nuts, bolts, washers, etc. Trefoil clamps shall have adequate mechanical strength to withstand the forces generated by the peak value of maximum system short circuit current.

e) Cable Clamps & Straps : The cable clamps required to clamp multicore cables on vertical run shall be made up of suitable size. For clamping the multicore cables, self- locking, de-interlocking type nylon clamps/straps shall be used. The clamps/straps shall have sufficient strength and shall not get affected by direct exposure to sun rays and outdoor environment.

Tests

a) Routine tests as per IS: 1554 shall be carried out for each type % size of cables used for the project. Type test certificates to be furnished. In absence of type certificates for each test

shall have to be carried out without any extra cost to the Employer/ PMC.

b) At site after installation, HV test and continuity test shall also be done on cables: The LT cable termination shall include the following:

- Making necessary holes in bottom gland plates for fixing cable gland.
- Fixing cable gland, connecting armour clamp to cable armour.
- Dressing cable, provide termination kit, necessary to make termination complete.
- Putting cable lugs, crimping them on to cores of cables, taping base conductors up to lugs wherever necessary.
- Termination of individual core to equipment terminals.
- Supply and fixing of cable and core identification ferules.

8.26 Miscellaneous

- Proposed tentative BOM indicating major components shall be submitted
- Two copies of engineering, electrical drawings including detailed SLD are to be supplied.
- All items against which no make has been mentioned must confirm to ISI standards
- For complete electro-mechanical works, Bidders shall supply complete design, details and drawings for approval by PMC before progressing with installation work.

8.27 SCADA and Remote Monitoring System

The Bidder shall ensure that the following facility at all times:

a. Have SCADA installation/ any other continuous communication facility for transferring the data of Solar Energy generated from the Facility's switchyard/MSEDCL Substation to the MITL's Control room.

b. Have installed Net Meter with telecommunication facility as per relevant CEA specifications / regulations as may be applicable.

c. Moreover, it shall be mandatory to provide real time visibility of electricity generation to MITL's control room through RTU- DC, V-SAT or any other standard protocol decided by MITL.

8.28 Drawings/Documents/Manuals

- Two sets of Engineering, electrical drawings and Installation and O&M manuals areto be supplied. Bidders shall provide complete technical data sheets for each equipment giving details of the specifications along with make/makes in their bid along with basic design of the power plant and power evacuation, synchronization along with protection equipment.
- Approved ISI and reputed makes for equipment be used.

- For complete electro-mechanical works, Bidders shall supply complete design, details and drawings for approval to MITL before progressing with the installation work.

8.29 Circuit Breaker

The circuit breakers shall be capable of rapid and smooth interruption of currents under all conditions completely suppressing all undesirable phenomena even under the most severe and persistent short circuit conditions or when interrupting small currents or leading or lagging reactive currents. The circuit breakers shall be "Restrike-Free" under all operating conditions. The details of any device incorporated to limit or control the rate of rise of re-striking voltage across, the circuit breaker contacts shall be stated. The over voltage across, the circuit breaker contacts shall be stated. The over voltage caused by circuit breaker while switching inductive or capacitive loads shall not exceed 2.5 times the highest phase to neutral voltage. The actual make and break times for the circuit breakers throughout the ranges of their operating duties shall be stated in the offer and guaranteed.

The materials shall conform in all respects to the relevant Indian Standard Specifications/ IEC Standards, with latest amendments indicated (reference only) below:

IS- 13118/1991	General requirements for Circuit breakers for voltage above 1000 V IEC 62271-100-1/2001
IS-2705/1992	Current Transformers
IS-2099/1986	Bushings for alternating voltages above 1000 V
ISS-2633/1964	Methods of testing uniformity of coating of zinc coated articles
IS-3231/1986	Electrical relays for power system protection
IS-1248/1983	Specification for Ammeters & Voltmeters
IS-335/1983	New insulating oils Electrical IEC 71 (For oils in CTs) Clearances
IS-2147/1962	Degree of protection provided by enclosures for low voltage switchgear & control gear

a. The arc quenching chambers shall have devices to ensure almost uniform distribution of voltage across the interrupters.

b. Appropriate & adequate Capacity 415V AC indoor air Circuit Breaker as per the IEC 60898 / IEC 62271 – 100 or equivalent Indian Standards along with control circuit and protection relay circuit, fuses, annunciations and remote operating and controlling facility from the Main Control Room.

c. Circuit breaker shall be C2/Ml class under all duty conditions and shall be capable of performing their duties without opening resistor. The circuit breaker shall meet the duty requirement of any type of fault or fault location and shall be suitable for line charging and dropping when used on 6kV effectively grounded or ungrounded systems and perform make and break operations as per the stipulated duty cycles satisfactorily.

d. The circuit breaker shall be capable for breaking the steady & transient magnetizing current corresponding to transformers. It shall also be capable of breaking line charging currents as per IEC- 62271-100 with a voltage factor of 1.4

e. The rated transient recovery voltage for terminal fault and short line faults shall be as per IEC: 62271-100.

f. The Contractor may note that total break time of the breaker shall not be exceeded under any duty conditions specified such as with the combined variation of the trip coil voltage, pneumatic pressure etc. While furnishing the proof of the total break time of complete circuit breaker, the Contractor may specifically bring out the effect of non-simultaneity between same pole and poles and show how it is covered in the guaranteed total break time.

g. Contractor shall indicate the noise level of breaker at distance of 50 to 150 m from base of the breaker.

h. While furnishing particulars regarding the D.C. component of the circuit breaker, the Contractor shall note that IEC-62271-100 requires that this value should correspond to the guaranteed minimum opening time under any condition of operation.

i. The critical current which gives the longest arc duration at lock out pressure of extinguishing medium and arc duration shall be indicated.

j. Contractor has to provide the type test reports for the CB before the dispatch.

k. All the duty requirements specified above shall be provided with the support of adequate test reports.

The fuse unit and the wires and cables chosen for the capacitors of double the current carrying capacity of the normal permissible current. Similarly, the ammeter and current transformer shall also be designed acc

Circuit shall be vacuum type with electrically spring charged mechanism.

The operating mechanism shall be anti-pumping and trip free (as per IEC definition) electrically under every method of closing. The mechanism of the breaker shall be such that the position of the breaker is maintained even after the leakage of operating media and /or gas. The circuit breaker shall be able to perform the duty cycle without any interruption.

Electrical tripping shall be performed by shunt trip coil. Provision shall also be made for local electrical control. 'Local / remote' selector switch and close & trip push buttons shall be provided in the breaker central control cabinet. Remote located push buttons and indicating lamps shall also be provided. The VCB coil DC supply through appropriately rated battery bank and charger to be supplied by the Contractor.

Operating mechanism and all accessories shall be in local control cabinet. A central control cabinet for the three poles of the breaker shall be provided along with supply of necessary tubing, cables, etc.

Mounting and supporting structure for Circuit Breaker: The circuit breakers should be self-supporting type. However, if necessary for the purpose of minimum ground clearance the circuit breakers should be mounted on raised steel structures which should be included in the scope of supply of circuit breaker. Bidder/Contractor to obtain the necessary information and data required for design of foundations of the circuit breaker be obtained from the CB supplier.

Max. Impact loading in terms of equivalent static load both compression and upward due to opening/closing of the breakers. It shall be clearly stated whether these forces shall act simultaneously or at different timing.

Necessary connecting materials such as clamps, bolts, nuts, washers etc. and fixing bolts for mounting the equipment on the supporting structures wherever required should be obtained from the circuit breaker supplier

Co-ordination of rated voltages, short circuit breaking current and rated normal current for guidance as per IS 13118 for rated voltage Circuit Breaker Protection against

- Over Current
- Earth fault
- Under voltage & over voltage protection
- Under frequency & over frequency
- SF6 gas pressure low (where applicable)
- DC supply failure

8.30 Isolator

The isolators and accessories shall conform in general to IEC 62271-102 (or equivalent Indian standard) except to the extent explicitly modified in specification.

8.31 Protective relays

The Solar PV system and the associated power evacuation system interconnections should be protected as per IEC 61727 Ed.2, norms. Over current relays, differential protection relays (for grid tie power Transformer only) and earth fault relays have to be essentially provided. All relays should be numerical type & should also be remote operation and control enabled from the control room.

All the relays must be solid state type and based on open access communication protocol. The numerical relays shall have RS 485 port for communication.

The operating voltage of the relays shall be 110 V DC/220 V DC as per battery bank rating.

Necessary battery bank shall also be provided in order to supply uninterrupted power to relays and control & protection circuit of the Plant.

Detailed Design calculations shall be provided on fault power computations and the philosophy of protective relaying with respect to short circuit kA calculations. Design, drawing and model of protection relay shall be approved by MITL/ DISCOM.

The Contractor must submit the relay setting chart as a part of design documents in coordination with the connecting substation.

8.32 Control and relay panels

The control & relay panel shall be free standing, simplex type, floor mounting type, fabricated from 2 mm thick MS sheet for main enclosure and 1.6 mm thick MS sheet for internals and partitions. The main enclosure shall be mounted on a base frame fabricated out of 100x50 ISMC mild steel section.

The enclosure external finish color shade shall be decided by the MITL, The internal surface shall have a glossy white finish all over. The control & relay panel shall contain the following metering and protection devices:

Metering, Indications & Controls

Ammeter: Ammeter selector switch

Voltmeter: Voltmeter selector switch

Load manager to display the following parameters: MW, MVA, MVArh, MVAr, Hz etc,

Indication lamps for R, Y, B phases, Breaker Status , Spring charged, Trip Circuit Healthy etc.

8.33 DC Cables and Wires

All cables and connectors for use for installation of solar field must be of solar grade which can withstand harsh environment conditions including High temperatures, UV radiation, rain, humidity, dirt, salt, burial and attack by moss and microbes for 10 years and voltages as per latest IEC standards. (Note: DC cables for outdoor installations should comply with the TUV 2PfG 1169/09.07 for service life expectancy of 10 years).

Insulation: Outer sheath of cables shall be electron beam cross-linked XLPO type and black in colour. In addition, Cable drum no. / Batch no. to be embossed/ printed at every one meter. Cable Jacket should also be electron beam cross- linked XLPO, flame retardant, UV resistant and black in colour. DC positive current carrying cables should have marking of red line on black outer sheath.

All the DC cables from SMU to Inverter must be Single Core cable.

DC cables used from solar modules to array junction box shall be solar grade copper (Cu) with XLPO insulation and rated for 1.1kV only. However, the cables used from array junction box to inverter can be XLPE Aluminium with 1.1kV rating as per relevant standards.

In addition to manufacturer's identification on DC cables as per relevant standard, following marking shall also be provided over outer sheath.

Cable size and voltage grade

Word 'FRNC/ FRLS‟(as applicable) at every meter

Sequential marking of length of the cable in meters at every meter

Wires with sufficient ampacity and parameters shall be designed and used so that maximum voltage-drop at full power from the PV modules to inverter should be less than 1.5%. Successful Bidder/Contractor shall provide voltage drop calculations in unlocked excel sheet.

Only terminal cable joints shall be accepted. No cable joint to join two cable ends shall be accepted. Necessary bimetallic connectors have to be used for connecting Cu bus bar and Al cables or vice-versa. All wires used on the LT side shall conform to IS and should be of appropriate voltage grade. Only copper conductor wires (up to Array Junction Box) compliant with IEC 60228, Class 5 of reputed make shall be used.

All high voltage cables connecting the main junction box/string inverters to the transformers should be PVC insulated grade conforming to IS 1554 and cables shall also conform to IEC 60189 for test and measuring the methods.

Cable terminations shall be made with suitable cable lugs & sockets etc., crimped properly and passed through brass compression type cable glands at the entry & exit point of the cubicles.

All cable/wires shall be provided with UV resistant printed ferrules for DC side however, for HT cables, punched/ embossed aluminium tags are required. The marking on tags shall be done with good quality letter and number ferrules of proper sizes so that the cables can be identified easily.

The wiring for modules interconnection should be weather resistant. However, for crossing with road, drain and trenches etc., the cable must pass through GI / Hume pipe of appropriate size with proper protection at ends to prevent any damage inflected by the edge of the pipe.

8.34 AC Cables

AC cables shall be flame retardant, low smoke (FRLS) type designed to withstand all mechanical, electrical and thermal stresses develop under steady state and transient operating conditions. Only terminal cable joints shall be accepted. No cable joint to join two cable ends shall be accepted. However, cable joints may be allowed if the route length is more than maximum available drum length subject to Owner’s approval.

In addition to manufacturer's identification on cables as per relevant standard, following marking shall also be provided over outer sheath.

a) Cable size and voltage grade
b) Word 'FRLS‟ at every meter
c) Sequential marking of length of the cable in meters at every meter
d) Cables shall be sized based on the following considerations:
e) Rated current the equipment

f) Maximum voltage drop in LT cable (from inverter to inverter transformer) shall be limited to 0.5% of the rated voltage. For HT cables (from inverter transformer to interconnection point), maximum voltage drop shall be limited to 0.5% of the rated voltage. Successful Bidder shall provide voltage drop calculations in excel sheet.

g) Short circuit withstand capability as per design for 1s.

h) De-rating factors according to laying pattern

8.35 Power and control cables on AC side

The size of each type of cable selected shall be based on minimum voltage drop; however the maximum drop shall be limited to 2%. Due consideration shall be made for the de-rating of the cables with respect to the laying pattern in buried trenches / on cable trays, while sizing the cables.

All cables shall be supplied in the single largest length to restrict the straight- through joints to the minimum number.

Only terminal cable joints shall be accepted. No cable joint to join two cable ends shall be accepted. All cable/wires shall be marked with good quality letter and number ferrules of proper sizes so that the cables can be identified easily. The ferrules used must be UV resistant. However, for HT cables, embossed ferrules can be used.

Cable terminations shall be made with suitable cable lugs & sockets etc., crimped properly and passed through brass compression type cable glands at the entry & exit point of the cubicles.

The cables shall be adequately insulated for the voltage required and shall be suitably colour coded for the required service. Bending radii for cables shall be as per manufacturer's recommendations and IS: 1105.

Cables inside the equipment room, control room and in the switchyard shall be laid in Galvanized Cable Trays mounted on mild steel supports duly painted, in constructed trenches with RCC raft and sidewalls or bricks sidewalls and provided with removable RCC covers.

All the communication cables (RS 485, fiber optics etc.) must be supplied with type test reports and shall laid in accordance with the relevant IS codes. It must be laid so that there is no interference with the power cables.

Type test reports and Data sheets of individual cable sizes (HT & LT) shall be submitted for approval by MITL. Drum numbers and drum length details shall be submitted with each consignment

8.36 Lighting

All internal and external areas shall be provided with lighting. The average illumination levels to be achieved shall be as follows:

Area	Lux
Switchgear Room	200

Control Room	300
Other Indoor Areas	150
Outdoor Walkways	50
Outdoor Area	50
Roads	15-20

General

In general, all lighting system used will be LED based or energy efficient lighting system including flood lights and street lights except for hazardous area classification. Lighting shall be provided for whole solar area. Accessories listed above are indicative only and any other fittings or accessories, which are usual or necessary for satisfactory operation of the lightning protection shall be provided by the Contractor without extra charges.

Necessary foundation/anchoring for holding the lightning mast in position to be made after giving due consideration to shadow on PV array, maximum wind speed and maintenance requirement at site in future.

The illumination system shall consist of lighting poles, lighting distribution boards, lighting panels / power panels complete with MCCB/ELCB/MCB, Fixtures, Cables, , cable glands, 3 pin 5A/15A convenience socket outlets, conduits and accessories and supporting and anchoring materials, LED lighting fixtures , wires, etc. All materials, fittings and appliances use in electrical installation shall conform to the relevant IS specifications, required area classification and environmental conditions. The wiring for lighting circuits shall be done by wires run in PVC conduits for indoor areas. For outdoor lighting, wiring shall be done by armoured cable.

Lighting Fixtures /Luminaries

a. All luminaire shall be LED type. Luminaries shall be designed for continuous trouble-free operation without reduction in lamp life or without deterioration of materials and internal wiring. Outdoor fitting shall be weather-proof and rain proof type confirming to minimum IP-54 protection.

b. The luminaries shall be designed so as to facilitate easy maintenance. Including cleaning, replacement of lamps/ starters etc.

c. Connections between different components shall be made in such a way that they will not work loose by small vibration.

d. All luminaries shall be supplied complete with lamps suitable for operation on a supply voltage and the variation in supply voltage and frequency indicated in the Employer's Requirement.

e. Each luminary shall have a terminal block suitable for loop-in loop-out and T-off connection by 250/ 400V, 1 core, PVC insulated copper / aluminium conductor wires up to 4 sq. mm. in size. In outdoor areas the termination at the luminary shall be suitable for 1100V, PVC insulated, copper / aluminium conductor, armored cables of sizes up to 6 sq. mm. alum conductors or suitably sizes cable as per design. Terminals shall be of stud of clamp type.

The internal wiring shall be by means of insulated copper wire of minimum 1.5 sq.mm. Size and terminated on the terminal block. Terminal blocks shall be mounted with minimum two fixing screws. Mounted facility and conduit knock-outs for the luminaries shall be provided.

Earthing

Each Luminary and control gear box shall be provided with an earthing terminal. All metal or metal enclosed parts of the luminary/ control gear box shall be bonded and connected to the earthing terminal so as to ensure satisfactory earthing continuity.

Ceiling fans

Ceiling fans shall be provided in Electrical room. Adequate ventilation arrangements shall be made for enclosed areas where ceilings fans are not proposed to be installed or cannot be provided. Power supply for the ceiling fans shall be derived from lighting circuits. Ceiling fans shall be complete with all accessories. Regulators shall be electronic type. Heavy duty exhaust fans shall be installed in pumping station as to achieve a 12 air changes per hour

Tests

a) Type tests, acceptance tests and routine tests for the lighting fixtures, accessories and receptacles covered by this specification shall be carried out as per the relevant standard.

b) Manufacturer's type and routine test certificates shall be submitted for tests conducted as per relevant standards for the fixtures, accessories and receptacles.

c) The following routine tests shall be conducted as per the relevant Indian Standards.

- Each fixture shall be tested at 1500 Volts (rms), 50 Hz, AC for one minute and no flash over or breakdown shall occur between current carrying parts and ground.
- Insulation resistance of each fixture shall be tested at 500 V DC and the insulation resistance so measured shall not be less than 2 megaohms between all current carrying parts and ground.
- All luminaries provided with glass covers shall be subjected to thermal shock- proof test. This test shall be conducted to ensure that the cover glass will withstand sudden variation in surface temperature due to rainfall or splashing water when the lighting fixture is lit. The cover glass shall be heated in an oven to attain a steady temperature of 1000 C and then plunged into cold water. No crack should develop.
- Contractor shall ensure use of calibrated test equipment having valid calibration test certificates from standard laboratories traceable to National.

8.37 Water supply and cleaning of modules

a) Contractor must plan and install the effective module cleaning system as per the prevailing conditions at Site. The system may include the storage water tanks/well, pumps, laying of GI/HDPE/UPVC pipes, flexible pipes, taps/ valves, pressure gauges etc.

as per the planning by the Contractor. Contractor has to submit the drawing / plan for the proposed module cleaning system.

b) All the pipes thus laid must be buried in ground at least 150mm below FGL. Road crossings and drain crossings, the pipes must be passed through GI/ Hume pipes as applicable.

8.38 Levelling

The contractor shall carry out Shadow Analysis at proposed site and accordingly design strings and array layout with optimum use of space, material and man power. In case of large and steep variations in topography the study shall also include the effect of topographical variations on array layout. The contractor shall submit all the details/design to the MITL for approval.

The contractor shall also identify potential quarry areas for coarse and fine aggregates to be used for concrete and shall carry out the concrete mix design for different grades of concrete to be used in the work. The concrete mix shall be designed for each source of cement and quarry as per provisions of relevant Indian Standard

8.39 Site drainage

a) Storm water drains running along the roads (to be provided under this Contract) shall be sized suitably allowing for 100% run-off.

b) All storm water drains shall be in RCC/PCC.

c) The design norms for storm water drain shall be followed as per CPHEEO Manual.

8.40 Cable and pipe trenches

a) All cables to be laid in HDPE pipes.

b) All the instruments such as measuring Meter, Panels etc. shall be well protected from heavy rainfall and corrosion with stainless steel sheeting covers and/or plastic, fibrous material having minimum life of 15 years.

8.41 Pipes and cable trench

a) All cable trenches shall be of RCC. The min. wall and base slab thickness shall be 100mm for depth ≤ 750mm and 150mm for depths > 750mm. The trench shall be designed for lateral load due to external soil fill, ground water table at FGL and 50 KN/ Sqm surcharge. External trenches shall be kept min. 100mm above FGL to avoid entry of rain water.

b) Internal cable trench shall be provided with chequered plate (min. 8mm thick) covers, the trench cover shall be provided with suitable lifting hooks. Both top edges of the cable trench shall be provided with min. 50x50x6 mm edge protection angle.

8.42 Foundations

Contractor shall design all foundations for buildings, equipment, Switch yard structures, Transformer, MMS &other structures as per relevant BIS standards and recommendation of

Geotechnical investigation report. In case the contractor proposes to provide pile foundation for support of module mounting structure (MMS); the type, dia. and length of pile shall be as per recommendations of Geotechnical Investigation Report corresponding to prevalent soil characteristics at site. In case collapse of foundation strata during drilling of the pile bore, removal steel liner shall be used to maintain design depth and diameter of the pile for proper concreting. The design pile capacity under direct compression, lateral load and pull out shall be verified through field trials by conducting initial load tests on test piles to be specially cast for this purpose. The tests shall conform to IS 2911 –Part 4. The no. and location of such tests shall be as discussed and finalized with Engineer-in-charge. However, min. 3 no. of Tests shall be conducted under each category. Contractor shall also carry out routine tests on 0.5 % of the total no. of working piles as per provisions of IS: 2911 –Part 4. Contractor must take into account that the site is prepared by filling of sand from coastal area.

8.43 Finishes

All RCC works shall be with design mix as per IS 456 and the materials used viz. Cement, coarse & fine aggregate, Reinforcement steel etc. shall conform to relevant BIS standards. The minimum grade of RCC shall be M10 except for underground (UG) water tank where grade of concrete shall be min. M30. PCC shall be of min. grade M10 (equivalent nominal (Mix 1:3:6) unless otherwise specified. Reinforcement steel shall be of high strength TMT bars of grade Fe500D conforming to IS 1786. Ductile detailing in accordance with IS: 13920 shall be adopted for superstructure and substructure of all RCC buildings and structures. For grouting works anti shrink ready mix grout of approved make or cement mortar (CM) grout with non-shrink additive shall be used. The grout shall be high strength grout having min. characteristic strength of 30 N/ mm2 at 28 days. The contractor shall design and construct the water drainage system, in accordance with the rainfall intensity, to ensure smooth drainage and lack of water stagnation at the plant. Suitable approach road and access road shall be constructed.

8.44 Spare Parts, Tools and Site Consumables

a) Spare Parts

All the spare parts supplied shall be of same material / workmanship and interchangeable with the corresponding parts of the executed work, protected against corrosion and marked Approved with identification labels. Spare parts supplied shall not be given to the sub-contractors for use during erection and commissioning for replacing the defective or damaged original components of his supplies of works.

The developer/bidder shall maintain adequate types of bolts, screws, nuts, fuse wises, cables, conductors, consumables, etc.

8.45 Fire Extinguishers

The fire-fighting system for the proposed power plant for fire protection shall be consisting of:

- Portable fire extinguishers in the control room for fire caused by electrical short circuits
- Sand buckets in the control room
- The installation of Fire Extinguishers should confirm to TAC regulations and BIS standards. The fire extinguishers shall be provided in the control room housing PCUs as well as on the site where the PV arrays have been installed.

8.46 Manufacturing Requirements

Materials

Materials used, shall be new and of first class quality free from rust, defects and imperfections. Inspection records of all materials shall be compiled before actual use. The bidder shall maintain the inspection records of materials of major components. Materials of limited shelf life shall not be used after their expiry date.

8.47 Electrical Works

General

- All components shall be of approved design.
- Works shall be pre-assembled to the extent possible in the contractor's workshop complete with all devices and wired up to common terminal blocks.
- Short-circuit calculations shall be evaluated giving full evidence that every electrical component can withstand the maximum stresses under fault conditions, for fault levels and durations under the worst conditions. All Works shall be suitable for the prevailing climatic conditions.

8.48 Clearances

Clearances shall be provided as per the Indian Electricity Rules and Standards for ready access for O & M whilst the remaining sections of Equipment are alive.

8.49 Terminal Boxes and Earthing

The terminal leads, terminals, terminal boxes and associated equipment shall be suitable for terminating the respective type of cables and meting the technical standards and specifications. Terminal boxes should be properly earthed.

8.50 Control Panel Wiring

- All wiring connections shall be readily accessible and removable for test etc. Wiring between terminals of the various devices shall be point to point.
- Multi-conductor cables shall be connected to the terminal blocks in such a manneras to minimise crossovers. Approved claw washers of crimp type connector shall be used to terminate all small wiring. Each conductor shall be individually identified at both ends through a system providing ready and permanent identification, utilising approved slip-on

ferrules.

- Markers may be typed individually or made up from sets of numbers and letters firmly held in place. Open markers will not be accepted. These must withstand a tropical environment and high humidity and only fungus proof materials will be accepted. Ferrules of adhesive type are not acceptable.

8.51 Cubical and Control Panel

- Cubicles / control panel enclosures shall be of sheet steel (minimum thickness: 2.5mm), rigid, self-supporting construction and supplied with channel bases.
- Fitted with close fitting, gasketed, hinged, lift-off doors capable of being openedthrough 180 deg. The doors shall have integral lock and master key.
- Cubicles/panels shall be vermin proof. Removable gland plates shall be supplied and located to provide adequate working clearance for cable terminations. Cables and wiring shall enter from bottom or top as Approved. Instruments, control knobs and indicating lamps shall be flush mounted. Relays and other devices sensitive to vibration shall not be installed on doors or hinged panels, and no equipment shall be installed on rear access doors.

8.52 Earthing

- Provision shall be made for earthing all equipment. All structural metal work and metal chassis shall be connected to earth.
- Earthing conductors shall be at least equal in cross-sectional area to the supply conductors and capable of carrying the fault current.
- Earthing shall be carried out confirming the relevant IS and electrical Inspectorate requirements.
- Proper concrete chamber and chamber cover shall be provided for each earthing and value of earth resistance should be displayed.
- Separate earthing shall be provided for system earthing and LA earthing
- AC / DC earthing shall be provided separately or can be interconnected as per the inverter manufacturers specifications / suggestions
- All the MMS, Battery bank, inverter, AJB etc. shall be have fixed earthing withearthing strip
- SCADA, CCTV, and any other communication systems, LA shall be provided special earthing.
- Chemical earthing shall be as per IEC 62561 Series (Part 1,2)
- Number of earthing shall be as per the installed capacity of the solar PV system.

8.53 Labels and Plates

- Labels of approved material, size, lettering and arrangements shall be provided forall instruments, relays, control switches, push buttons, indication lights, breakers,etc. No levels are required if function is indicated on the device.
- Instruction plates in the Contract and selected local language, the sequence diagrams or instructions for maintenance shall be fitted on the inside of the front door of the electrical switchboards.
- Information display containing the project capacity, no of beneficiaries, name of developer, Name of MITL and funder should be displayed at prominent location.

8.54 Warning Labels

- Warning labels shall be made of synthetic resin with letters engraved in the Contract and selected local language as Approved.
- For indoor circuit breakers, starters, etc., transparent plastic material with suitably contrasting colours and engraved lettering would be acceptable.

8.55 Labels for Cables

- Each cable shall have approved non-corrosive labels detailing identification number of the cable, voltage, and conductor size permanently attached to each end.

8.56 Single Line Diagrams

- The control room shall be furnished with a copy of the final as- built single-line diagram detailing all electrical data and denominations, separate for each individual switchgear/distribution board/MCC.

8.57 Key System for Electric Boards/Control Panels

- The LOTO systems have to be provided for the ACDB.

8.58 Instrumentation and Control Equipment

General

- The Works shall be pre-assembled to the extent possible in the contractor's workshop.
- All instrumentation and control functions shall be shown on the piping and instrumentation diagrams. Symbols to be used shall be as per ISO Standards and Identification system (tag numbers) as per the Approved Works identification system.
- Shielded cables shall be used for the control and supervisory equipment.

8.59 Sizes of Indicators, Recorders, Etc.

- Meters, instruments and recorders shall be of standard size. The front glasses shall be anti-glare type.

8.60 Tests

- Single components and pre-erected assemblies shall undergo functional and routine tests

in the contractor's workshop. Ready mounted control and supervisory system shall undergo functional tests on Site. Calibration tests shall be made on all- important pressure gauges and other instruments.

8.61 Measuring Systems

- Measuring ranges of indicators, transducers, etc. shall be selected in such a way that the rated value of the measured magnitude covers approx. 75% of the range. All local instruments shall, as far as practicable, be mounted vibration free. Wherever required, damping elements shall be used.
- The weather monitoring system and equipment's required to undertake PR testing shall be provided and the data of the same should be made available on the web based platform. The PR and other parameters should be made available on real time basis.

8.62 Erection and Commissioning

Operational Tests

- As far as practicable, operational test shall be carried out on all Works, simulating operating conditions.
- Parts to be delivered by sub-contractors shall be tested either at the premises of thesub-contractor or of the developer, as approved.

8.63 Site Inspection and Tests

- During erection, commissioning and trial run, the developer/bidder shall perform all inspections and tests in the presence of the representatives of MITL.
- Unless otherwise specified, all costs for testing at site and of the works and charges associated with it shall be borne by the developer/bidder. The developer/bidder shall delegate his experts to perform the tests at site.

8.64 Commissioning Tests

- Commissioning tests shall be carried out with standard procedures and practices on all generating units and other equipment to verify their rating characteristics. Field acceptance test reports shall be prepared by the developer/bidder and submitted to MITL for approval.

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Annexure -1: Format for Submission of Technical BID

To, **Date:**

Managing Director

Maharashtra Industrial Township Limited (MITL)

Udyog Sarathi, MIDC Office, Marol Industrial Area,

Andheri East, Andheri, Mumbai – MH 400093.

Sub: Submission of technical bid for "Design, fabrication, Supply, installation, testing, commissioning with remote monitoring system (RMS) including insurance and warrantee with 5 years comprehensive maintenance contract(CMC) of 0.9MW capacity of grid connected solar PV plant under net metering arrangement At Auric Hall, Shendra Industrial Area, Aurangabad, Maharashtra, India"

Tender No:

Dear Sir,

We, (M/s. ---name of bidder) are submitting the technical bid for undertaking the above captioned work. We have examined the tender document and understood the scope of work very well. We are hereby submitting following information:

1	Name of the Bidder	
2	Address with Pin code	Registered Address Correspondence Address
3	Phone Number	
4	Fax Number	
5	E-mail	
6	Status- Company/Society/NGO/Association/others *(enclose necessary documents)*	
7	Registration number	
8	Permanent Account No.(PAN) *(enclose necessary documents)*	
9	GST No. *(enclose necessary documents)*	
10	Name of Contact Person	
11	Telephone No(s). E-mail	Landline(s): Mobile(s): E-mail ID :
12	Bank Details for Electronic Payment	Name of the Bank: Address of Branch:

		Account No.: Type of Account:
13	9 digit MICR code printed at bottom, next to cheque no.	
14	IFSC (for RTGS)/NEFT Code of the Bank	
15	Proposed capacity	0.900 MW Grid Interactive Solar PV Project at AURIC Hall, Shendra, MITL, Aurangabad
16	Brief information of past activities carriedout showing expertise in undertaking such similar assignments	
17	Existing technical manpower in the Organization	
18	(a)Total turnover in FY 2017-18 FY 2018-19 FY 2019-20 FY 2020-21 FY 2021-22 *(enclose necessary documents)* *(b)* Networth (c) Liquid Assets	
19	Detailed Technical Description of the proposed Solar PV Ground Mounted Grid Connected System with relevant drawings (Plant layout, SLD) and Typical Specification Sheet for MW SPV Plant including IEC certificate of solar module.	

We hereby declare that

1) the above information is true and correct
2) Our Tender shall be valid for a period of 90 days from the date of opening of the technical bid in accordance with the Tendering Document, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
3) All the documents submitted in tender should be original and true, and we are aware that in case, duplicate and fraudulent documents are submitted by us; Managing Director, MITL reserves all rights to reject the bid and take appropriate action against us.
4) If our Tender is accepted, we commit to furnish bank guarantee of Rs --- within allotted time.
5) We offer to execute the work in conformity with the Bid documents

Date:..... (Signature).....

Place:..... (Name).....

(Designation).....

(Common Seal).....

Annexure- 2: Format for submission of Financial Bid

To, **Date:**

Managing Director
Maharashtra Industrial Township Limited (MITL)
Udyog Sarathi, MIDC Office, Marol Industrial Area,
Andheri East, Andheri, Mumbai – MH 400093.

Sub: Submission of financial bid for "Design, fabrication, Supply, installation, testing, commissioning with remote monitoring system (RMS) including insurance and warrantee with 5 years comprehensive maintenance contract(CMC) of 0.9MW capacity of grid connected solar PV plant under net metering arrangement At Auric Hall, Shendra Industrial Area, Aurangabad, Maharashtra, India"

Tender No:

Dear Sir,
We, the undersigned [insert name of the 'Bidder'] _____having read, examined and understood in detail the BID Document for Implementation of the above mentioned project and hereby submit our price bid for executing the solar power project.

Sl. No	Particulars	Cost in INR per kW	Project Capacity in kW	Total Project cost in INR Including GST	Total Cost in INR per kW (in words)
1	Design, Fabrication, Supply, Installation, Testing, Commissioning with Remote Monitoring System (RMS) of cumulative 900 kW capacities of Grid Connected Solar PV Power Plant under Net Metering Arrangement, including "Comprehensive Maintenance Contract (CMC)" including insurance, warranty, spare parts and operation & maintenance of Grid Connected Project for five (05) years from the date of Commissioning, at locations of MITL premises, Aurangabad as per the Scope of Work & Technical Specification in the tender inclusive of Taxes.		900		Indian Rupees [insert] only

Note:

1. The above mentioned price will be released as per terms given in the Tender Document.
2. Conditional proposal shall be summarily rejected.
3. In the event of any discrepancy between the values entered in figures and in words, the values entered in words shall be considered.
4. This offer shall remain valid for a period of 120 (One twenty days) from the due date of opening of technical Bid on above subject.

Yours faithfully,
(Signature).....
(Name).....

Organization Name …….

Address and Seal…….

ANNEXURE-3: FINANCIAL CAPACITY – MINIMUM PROJECT VALUE AND BID CAPACITY

Bidder's Project References

Sl.	Project Name & Location	Project Start and Completion Date	Client Name	Value of Project	Type of Project	Client Certificate Enclosed
1						Yes/No
2						Yes/No
3						Yes/No
4						Yes/No
5						Yes/No

Note: Bidder to provide minimum five and maximum ten number of relevant references meeting the qualification criteria as indicated in ITB

Annexure- 4: Power of Attorney

(To be on non-judicial stamp paper of appropriate value in accordance with Stamp Act relevant to place of execution)

Know all men by these presents, We_____(name and address of the registered office of the Developer) do hereby constitute, appoint and authorizeMr./Ms. (name & residential address) who is presently employed with us and holding the position of as our true and lawful attorney, to do in our name and on our behalf, all such acts, deeds and things necessary in connection with or incidental to submission of our Bid for "Design, Engineering, Supply, Construction, Erection, Installation, Commissioning Operation & Maintenance of Solar PV Power Plants At Auric Hall, Shendra Area, Aurangabad, Maharashtra, India." in response to the BID issued by MITL (No ..... dated ……..), including signing and submission of the Bid and all other documents related to the Bid, including but not limited to undertakings, letters, certificates, acceptances, clarifications, guarantees or any other document which the MITL may require us to submit. The aforesaid Attorney is further authorized for making representations to the MITL, Mumbai and providing information / responses to MITL, Mumbai representing us in all matters before MITL and generally dealing with MITL, Mumbai in all matters till the completion of the bidding process as per the terms of the above mentioned Tender Document.

We hereby agree to ratify all acts, deeds and things done by our said attorney pursuant to this Power of Attorney and that all acts, deeds and things done by our aforesaid attorney shall be binding on us and shall always be deemed to have been done by us.

All the terms used herein but not defined shall have the meaning ascribed to such terms under the BID document.

Signed by the within named

(Insert the name of the Developer)through the hand of
Mr. … (Name of the authorized person) duly authorized by the Board to issue such Power of Attorney

Dated this …… day of ……

Accepted

……..

Signature of Attorney

(Name, designation and address of the Attorney)

Attested

……(Signature of the executant)
(Name, designation and address of the executant)

……

Signature and stamp of Notary of the place of execution

Common seal of..... has been affixed in my/our presence pursuant to Board of
Director's Resolution dated……

WITNESS

1. Name & Signature ……..

2. Name & Signature …….

Annexure-5: Deviation Schedule

Bidder's Proposal Ref. No. and DateBidder's name and address

To

Managing Director

Maharashtra Industrial Township Limited (MITL)

Udyog Sarathi, MIDC Office, Marol Industrial Area,

Andheri East, Andheri, Mumbai – MH 400093.

Dear Sir,

We declare that the following are the only deviations and variations from and exception to the specifications contained in bid document No. ……. dated…….. for Design, fabrication, Supply, installation, testing, commissioning with remote monitoring system (RMS) including insurance and warrantee with 5 years comprehensive maintenance contract(CMC) of 0.9MW capacity of grid connected solar PV plant under net metering arrangement At Auric Hall, Shendra Industrial Area, Aurangabad, Maharashtra, India. The schedule has been filled, except these deviations subject to the approval and acceptance by MITL. The entire work shall be performed as peryour specifications and documents. Further we agree that additional conditions if any found elsewhere in our offer other than those stated below, shall not be given effect to.

Clause No.	Reason	Page	Statement of variation and deviation

Signature and seal of bidder

Note: Use additional sheets of the format, if required.

Annexure-6: Agreement for Consortium / Joint Venture firm

(On non-judicial stamp paper of appropriate value to be purchased in the name of executants companies oras required by the jurisdiction in which executed)

This consortium/Joint Venture agreement entered into this____day of _____

2022 at_____between_____ (hereinafter referred as "_____") and having office
at_____, India Member of the First Part And_____(hereinafter referred as "_____")and having office at _____, India Member of the Second Part

Whereas MITL has invited "Tender for Design, Fabrication, Supply, Installation, Testing, Commissioningwith Remote Monitoring System (RMS) including Insurance & Warranty with Five years Comprehensive Maintenance Contract (CMC) of cumulative 900 kW capacities of Grid Connected Solar PV Power Plant under Net Metering Arrangement at various locations of MIDC premises under Nagpur and Aurangabad region in Maharashtra state"

And whereas a combination of firms/entities who, have executed a binding agreement in the prescribed format, to enter into a Consortium/Joint Venture, and meeting the requirements stipulated in the bid document may submit a bid document signed by the Lead Member, which shall legally bind all the Members of the Consortium/Joint Venture who will be jointly and severally liable for the performance and all obligations there under to the MITL for execution of the project/ Work/ Assignment etc. The Consortium/Joint Venture members shall also be liable jointly and severally for the loss, damages caused to the MITL during the course of execution of any awarded contract or due to non-execution of the contract orpart thereof.

And whereas the Members have had discussions for formation of a Consortium/Joint Venture for biddingand have reached an understanding on the following points with respect to the Members' rights and obligations towards each other and their working relationship.

It is hereby as mutual understanding of the parties agreed and declared as follows:

1. M/s. shall act as Lead Member for and on behalf of Consortium/Joint Venture Members. The said Consortium/Joint Venture Members further declare and confirm that we shall jointly andseverally be liable and shall be fully responsible to the MITL for execution of the project/ Work/Assignment etc. The Consortium/Joint Venture members shall also be liable jointly and severally for the loss, damages caused to the MITL during the course of execution of any awarded contract or due to non-execution of the contract or part thereof.

2. The Lead Member is hereby authorized to:

(i) Sign and submit the bid document on behalf of Consortium/Joint Venture members pursuant to the biddocument initiated

(ii) In the event, the Consortium/Joint Venture Firm being selected with MITL, to enter into any awardedContract with MITL, including negotiation of the terms thereof.

(iii) To receive all payments on behalf of the Consortium/Joint Venture Firm from MITL.

3. In case of any breach of the stipulations of the bid document by the Lead Member, Consortium/Joint Venture Partner along with the Lead Member do hereby agree to be fully liable and responsible to carry outall the obligations and responsibilities under the bid document and any awarded Contract later on.

4. It is further agreed by the Members that the sharing of responsibilities and obligations shall not in anyway be a limitation of joint and several responsibilities and liabilities of the Members to MITL. The tentative roles, responsibilities and allocation of scope of work is provided below:

Lead Member:

a.

JV Member:

b.

5. It is clearly understood that the lead member shall ensure performance under the agreements and if Consortium/Joint Venture Members fail to perform its /their respective obligations under the agreement(s),the same shall be deemed to be a default by all the Consortium/ Joint Venture Members.

6. This Consortium/Joint Venture agreement shall be construed and interpreted in accordance with the laws of India and the courts in Mumbai shall have the exclusive jurisdiction in all matters arising there under.

In witness whereof, the Members to the Consortium/Joint Venture agreement have through their authorized representatives executed these presents and affixed seal of their companies, on the day, month and year first mentioned above

(Member of the first part)	(Member of the second part)
Name*:	Name*:
Designation*:	Designation*:
Seal & Sign:	Seal & Sign:

Witness:

1.

2.

* Please provide the name and designation of each signatory

Annexure 7

Power of Attorney in favour of Lead member of Consortium(to be submitted by each member of the Consortium)

Whereas Maharashtra Industrial Development Corporation (MITL) has invited applications (the "Applications") by its Tender No: ..... Dated: _____ for award of the "Tender for Design, Fabrication, Supply, Installation, Testing, Commissioning with Remote Monitoring System (RMS) including Insurance & Warranty with Five years Comprehensive Maintenance Contract (CMC) of cumulative 900 kWcapacities of Grid Connected Solar PV Power Plant under Net Metering Arrangement at various locations of MITL premises under Nagpur and Auranagabad region in Maharashtra state" (hereinafter called "Contract")

Whereas, ……., ……., and..... (collectively the Consortium) being Members of the Consortium and having signed a Joint Bidding Agreement dated [●], areinterested in submitting a Bid in accordance with the terms and conditions of the Tender and the other Bid Documents, and

Whereas, it is necessary for the Members of the Consortium to designate one of them as the Lead Member with all necessary power and authority to do for and on behalf of the Consortium, all acts, deeds and things as may be necessary in connection with the Consortium's bid for the Unit(s) and its execution.

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS

We, ……., having our registered office at ……., and ..... , having our registered office at ..... , (hereinafter collectively referred to as the Principals) do hereby irrevocably designate, nominate, constitute, appoint and authorise ..... having its registered office at....., being one of the Members of the Consortium, as the Lead Member and true and lawful attorney of the Consortium (hereinafter referred to as the Attorney). We hereby irrevocably authorize the Attorney (with power to sub-delegate) to conduct all business for and on behalf of the Consortium, and any one of us, during the Bid Process, including undertaking all acts required for the submission of the Bid in accordance with the terms and conditions of the tender. Additionally, we also authorise the Lead Member to do any other acts or submit any information and documents related to the above Bid submission, to do on our behalf and on behalf of the Consortium, all or any of such acts, deeds orthings as are necessary or required or incidental to the submission of its Bid for the Unit(s), including but not limited to signing and submission of all applications, undertakings and other documents and writings, participate in bidders and other conferences and respond to

queries, if required. In the event the Consortium is awarded the Project Documents for developing the Units, we authorise the Lead Member to submit information/documents, sign and execute contracts and undertakings consequent to acceptance of the Bid of the Consortium in relation to the Contract and generally to represent the Consortium in all its dealings with MIDC, and/or any other Government Agency or any Person, in all matters in connection with or relating to or arising out of the Consortium's Bid for the contract.

AND hereby agree to ratify and confirm and do hereby ratify and confirm all acts, deeds and things done or caused to be done by our said Attorney pursuant to and in exercise of the powers conferred by this Power ofAttorney and that all acts, deeds and things done by our said Attorney in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us/Consortium.

IN WITNESS WHEREOF WE THE PRINCIPALS ABOVE NAMED HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS …… DAY OF....., 2022

For ……..

(Signature)

……..(Name & Title)

For ……..

(Signature)

……..(Name & Title)

For ……..

(Signature)

……..(Name & Title)

(To be executed by authorized signatories of the Members of the Consortium, except the Lead Member)Witnesses:
1.

2.

(Notarised)Accepted

……

(Signature of the authorized signatory of the

Lead Member)

(Name, Title and Address of the Attorney)

Instructions:

(1) The mode of execution of the Power of Attorney should be in accordance with the procedure, if any,laid down by the applicable law and the charter documents of the executant(s) and when it is so required, the same should be under common seal affixed in accordance with the required procedure.

(2) Also, wherever required, the Members should submit for verification the extract of the charter documents and documents such as a board or shareholders' resolution/power of attorney in favour of the person executing this Power of Attorney for the delegation of power hereunder on behalf of the Member ofthe Consortium.

Annexure 8: Proforma of Bank Guarantee Towards Performance Guarantee

(To be on non-judicial stamp paper of appropriate value in accordance with Stamp Act relevant to place of execution)

To,

Managing Director

Maharashtra Industrial Township Limited (MITL)

Udyog Sarathi, MIDC Office, Marol Industrial Area,

Andheri East, Andheri, Mumbai – MH 400093.

Dear Sir,

Ref: Contract no. …….. dated……

For……M/s…….of_____(herein after called "the developer") have been awarded the contract for_____by Maharashtra Industrial Township Limited (MITL), Mumbai.

The conditions of the contract aforesaid provide inter alia that the developer shall pay the MITL a sum of Rs. …….. (Rupees……only) as performance guarantee in their form and manner and subject to the terms therein mentioned. The form of payment of performance guarantee includes a guarantee executed on behalf of and at the request of the developer, by our nationalized bank undertaking full responsibility to indemnify MITL in case of default.

The said developer has approached us and at their request and in consideration of the promises we……[Name of Bank] having our office at……[Address of Bank]having agreed to and hereby give such guarantee as is hereinafter mentioned in your favour.

1. We……of _____(hereinafter called "the bank") do hereby unconditionally and irrevocably guarantee to you the duepayment of the said sum of Rs…….. (Rupees_____only) by the developer to you in terms of the said conditions of contract and their due performance of the obligations in this behalf and undertake and agreed with you that if default shallbe made by the developer in performing any of the terms and conditions of the contract or in payment of any money payable to you i.e. MITL shall be the sole judge and its decision communicated to us in this regard shall be final and conclusively binding on us, it shall not be opened to ask you reasons/details in this regard and we shall have no right to question the same or make reference to the developer in any manner whatsoever and we shall on mere.....first demand pay to you without demur and / or protest and without notice or reference to the developer by demand draft payable at Mumbai a sum of Rs. ……such portion thereof not exceeding the said sum as you may from time to time require/demand and you can look to us as the principal debtor.

2. You will have the full liberty without reference to us and without affecting this guarantee, postpone for any time or from time to time the exercise of any of the powers and rights conferred on you under the said contract with the said developer and to enforce or to forbear from enforcing any powers or rights or by reason of time being given to the said developer which under law relating to the sureties would but for the provision have the effect of releasing us. Any such time/indulgence/forbearance and/or any act or omission or commission on your part will not vitiate our guarantee.

3. Your right to recover the said sum of Rs. ……(Rs .....only) from us in the manner aforesaid will not be affected or suspended by reason of the fact that any dispute(s) are pending before any officer, tribunal or court or arbitrator(s)/umpire.

4. The guarantee herein contained shall not be determined or affected by the liquidation or winding up, dissolution or change of constitution or insolvency of the said developer but shall in all respects and for all purpose be binding and operative until full payment is received by you as if this is a continuing guarantee to secure your ultimate dues in the premises.

5. We have power to issue this guarantee in your favour under memorandum and articles of association and the undersigned has full power to do under the power of attorney dated_____granted to him by the Bank.

6. We will have no right of subrogation against the developer unless all your dues as aforesaid are paid in full. We do hereby waive our rights of surety ship, which are inconsistent with all or any provisions hereof.

7. You will be at liberty to alter the terms and conditions of the said contract and/or to take any other security/guarantee/promissory notes from the developer of others which will not affect/vitiate/discharge our guarantee.

8. The guarantee will bind our successors and assigns and will remain operative irrespective of any change in this constitution of our bank and/or the developer.

9. Our liability under this guarantee is restricted to Rs. ……. and this guarantee shall remain in force till .....and unless a claim to enforce the guarantee is filed

10. with us within six months from the date of expiry hereof all your rights under the said guarantee shall be forfeited and we shall be relieved and discharged from all liabilities there under.

Yours faithfully,

……Bankby its constituted attorney

Signature of a person duly authorized

to sign on behalf of the bank

Annexure-9: Draft Contract Agreement

This agreement, made this _____ day of 2023, between Maharashtra Industrial Township Limited (MITL)(Formerly known as AITL) having its office at Udyog Sarathi, MIDC, Marol Industrial Area, Andheri East, Andheri, Mumbai . (hereinafter referred to as "MITL") of the _____ one part and _____ [name and address of selected developer] (hereinafter referred to as "Developer") of the other Part.

Whereas, MITL has published the (Tender No……..dated……..) for selection of developer for "Design, fabrication, Supply, installation, testing, commissioning with remote monitoring system (RMS) including insurance and warrantee with 5 years comprehensive maintenance contract(CMC) of 0.9MW capacity of grid connected solar PV plant under net metering arrangement At Auric Hall, Shendra Industrial Area, Aurangabad, Maharashtra, India" through competitive bidding.

And

Whereas, the developer has participated in the above referred bidding process and submitted its bid and subsequently MITL selected the developer for the development of said project under the terms and conditions as contained in this contract document.

NOW THEREFORE THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this Agreement, words and expression shall have the same meanings as are respectively assigned to them in the 'Contract Documents' hereinafter referred to, and they shall be deemed to form and be read and construed as part of this Agreement.
2. Contract Documents: The contract shall be performed strictly as per the terms and conditions stipulated herein and also following documents shall be deemed to form and be read and construed as part of this Agreement
    a. Tender issued by MITL (including any further clarifications/ amendments issued by MITL in this regard)
    b. Bid submitted by the Developer
3. For administrative purposes .....[Name/Designation of responsible staff of MITL] has been assigned to administer the project and to provide the Developer with all relevant information needed to carry out the assignment.
4. This agreement, its meaning and interpretation and the relations between the parties shall be governed by the Laws of Union of India.

    Developer shall commission the solar power project of 900 KW on or before 120 days from date of award of contract. List of project locationsand MW capacity is enclosed. Time schedule shall be strictly adhered to and the Developer shall plan and perform the work in accordance to the time schedule asagreed by MITL.
5. This agreement will become effective upon signing of this agreement by both parties.

The developer will complete the work of Design, fabrication, Supply, installation, testing, commissioning with remote monitoring system (RMS) including insurance and warrantee with 5 years comprehensive maintenance contract(CMC) of 0.9MW capacity of grid connected solar PV plant under net metering arrangement At Auric Hall, Shendra Industrial Area, Aurangabad, Maharashtra, India . It is binding on the developer to maintain the solar project as specified in Bid document for a period of 5 years from the date of commissioning. The price shall be disbursed to the developer as per the methodology specified in clause 8 of this agreement. In case the developer failed to maintain the project up to the agreed period of 5 years, MITL shall recover the amount on pro-rata basis from the developer by adopting appropriate measures. The MITL decision in this regard will be final and binding on the developer.

6. The developer has to Design, Engineer, Supply, Install, Test, Commission & Maintain the Grid Interactive Solar PV project for 5 years as per the technical specifications proposed in the bid document or with the proposed deviations duly accepted by MITL for setting up of this project.
7. The developer shall execute the work as per the technical specifications, drawings and bill of material submitted by him on receipt of the LoA. Developer shall maintain the plant for 5 years from the date ofcommissioning. During the maintenance period developer shall undertake cleaning of solar modules with minimum 15 days cleaning cycle or less as per the soiling condition at site.
8. Developer shall submit quarterly generation report and maintenance activities undertaken by him as a quarterly reporting within 10^{th} day of start of new quarter.
9. The developer shall request MITL through written form for releasing the appropriate price value for each stage of payment. The written request should accompany all the necessary documents as given in the terms and conditions for the release of payment in the 'contract documents'. After scrutinizing the performanceof the project, MITL will release the payment.
10. The bidder/developer shall furnish bank guarantee of any Nationalized / schedule Bank valid for period of 5 years of value equivalent to 5% of the agreement value / contract value towards guaranteed generation. The bank guarantee shall be valid for the period of 5 years of CMC period. Bidder shall submit this BG before release of the last 20% payment.
11. This PBG can be in 5 equal parts respectively valid for 1,2,3,4 and5 years from the date of commissioning and the expired PBG should be released every year (all five PBG should be submitted at time of release of final 20% payment).
12. In case if "Bidder" does not provide service during the warrantee period, PBG should be forfeited, and "Bidder" be blacklisted.

13. The amount of payment disbursement will be as per the terms and conditions of payment disbursement as follows:

a) Payment of Grid connected Solar Project

Sr No	Payment proportion	Terms of payment
a.	60% of project cost out of which 10% shall be deducted towards CMC cost which shall be refunded quarterly @0.5%	Submission of following documents to MITL office: • Project commissioning certificate (concerned utility) • Copy of warranty certificate • Copy of the Civil and Electrical drawing of the commissioned Solar plant • Project completion report duly certified by Contractor & MITL • Insurance policy documents for CMC period to MITL office • RMS installation report which should be duly certified by Contractor, concerned person of MITL office. • Submission of executed version of CMC with MITL office • One copy of CMC manual to MITL office. • Photographs of all installations in a site wise manner to MITL.
b.	20% of project cost out of which 10% shall be deducted towards CMC cost which shall be refunded quarterly @0.5%	After receipt of one-month successful performance report generated automatically through Remote monitoring System which should be duly certified by Contractor, concerned person of MITL office.
c.	20% of project cost out of which 10% shall be deducted towards CMC cost which shall be refunded quarterly @0.5%	After receipt of next two-month successful performance report generated automatically through Remote monitoring System which should be duly certified by Contractor, concerned person of MITL.

In case if contractor does not provide service during the warranty period, PBG shall be forfeited and action as per MITL debar policy will be taken.

b) Payment for CMC of Grid Connected Project

Sr No.	Payment proportion	Terms of payment
a.	On quarterly basis@0.5% of the 10%project cost amount deducted From RA bills	After receipt of successful performance report for the CMC months, generated automatically through Remote monitoring System which should be duly certified by Contractor and MITL.

Deduction: -

- The TDS at the source will be deducted as per the Govt. rule and regulations.

- MITL shall issue necessary certificates of TDS deduction

For claiming the payment, the project developer shall submit the following documents:

i. Submission of Performance Bank Guarantee in the format given in the bid document.

ii. Monthly progress report during the project installation and commissioning. (for first installment)

iii. Submission of commissioning report. (for first installment)

iv. Submission of one month's performance report (for second installment)

v. Submission of next two month's performance report (for third installment)

14. The Developer will be responsible for appropriate insurance coverage. In this regard, the Developer shall maintain worker's compensation, employment liability insurance for their staff. The Developer shall also maintain comprehensive general liability insurance, including contractual liability coverage adequate to cover the indemnity of obligation against all damages, costs, and charges and expenses for injury to any person or damage to any property arising out of, or in connection with, the services which result from the fault of the Developer or its staff. The Developer shall provide the MITL with certification thereof upon request.

15. The Developer shall indemnify and hold harmless the MITL against any and all claims, demands, and/or judgments of any nature brought against the MITL arising out of the activities by the Developer and it's staff under this Contract. The obligation under this paragraph shall survive the termination of this Contract.

16. The developer shall provide periodic review report of the project, as given in the 'contract agreement', on mutually agreed format to MITL. Also as when requested by MITL, the developer shall provide the project related information.

17. The Developer shall ensure access to and all other assistance for the inspection of the sites and works by MITL and/or its nominee(s)/Officers/ authorized 3rd party any time before and/or after the work is started during its execution and after the works are completed for the entire duration of the project.

18. Any dispute arising out of the Contract, which cannot be amicably settled between the parties, shall be referred to adjudication/arbitration in accordance with Arbitration & Conciliation Act 1996.

19. This Agreement may only be amended or supplemented by a written agreement between the Parties.

20. All agreements, correspondence and communications between the Parties relating to

this Agreement and all other documentation to be prepared and supplied under the Agreement shall be written in English, and the Agreement shall be construed and interpreted in accordance with English language. If any of the agreement, correspondence, communication or document is prepared in any language other than English, the English translation of such agreements, correspondences, communications or documents shall prevail in matters of interpretation.

21. Any notice to be served on the either party shall for the purpose of these presents be deemed to be sufficiently served, if it is left at Registered Office as mentioned in the preamble of the Agreement, and such notice shall also be deemed to be properly and duly served if it is sent by registered post to such address as aforesaid, and such service shall be deemed to have been made at the time at which the Registered letter would in the ordinary course be delivered even though returned unserved on account of refusal of the party to accept such notice or any other reason whatsoever.

In witness whereof the Parties thereto have caused this Agreement to be executed by their duly authorized representatives on the date day and year contained on the first page.

Signed by the within named

1. ……..
(Signature and Name of the authorized person duly of the Developer) on behalf of
_____(Insert the name of the Developer)
Dated this …… day of ……

2. ……
(Signature and Name of authorized representative of MITL)

Dated this …… day of ……

Common seal of.....has been affixed pursuant to Board of Director's Resolution dated……

WITNESS

1(Signature)
Name……
Designation ……

2(Signature)
Name……
Designation ……

Annexure-10: Site Visit Report Letter

(To be submitted on letterhead of bidder)

To,

General Manager (Projects-Electrical)

Maharashtra Industrial Township Limited (MITL)

Udyog Sarathi, MIDC Office, Marol Industrial Area,

Andheri East, Andheri, Mumbai – MH 400093

Subject: Site Visit Report Letter for_____Site,_District under technical bid for "Design, Engineering, Supply, Construction, Erection, Installation, Commissioning Operation & Maintenance of Solar PV Power Plants At Auric Hall, Shendra Area, Aurangabad, Maharashtra, India."

Ref: MITL's Tender No.

Sir,

This has reference to above referred tender for Design, Engineering, Supply, Construction, Erection, Installation, Commissioning Operation & Maintenance of Solar PV Power Plants At Auric Hall, Shendra Industrial Area, Aurangabad, Maharashtra, India. We hereby declare that we have visited site and enclosing the survey form duly signed by the representative of the consumer.

I / We made ourselves acquainted with site conditions, approach to site, requirement of land, soil conditions, availability of water, requirement of tender conditions etc.

I / We verified all details required to execute the projects. I / We have no problemsin undertaking the projects and complete them in the given time period as per required specification & terms and conditions of the tender.

Thanking you

Yours faithfully,

(Signature of Bidder)

Name of Bidder ----------

Designation

.....

Seal:

Survey Form

Name of Beneficiary	
Address	
Latitude	
Longitude	
Consumer No	
Contract Demand	
Voltage level of connection	1ph, 230 V / 3 Ph , 440 V/11 kV/ 33 kV /66 kV
Proposed Capacity of Solar Plant	
Nature of Shadow free area	Roof top / Ground mounted
Area available for solar installation in Sq. mtr	
Proposed area suitable for installation of solar plant	Yes / No
The proposed area falls under flood line	Yes / No
Is there requirement to increase structure height to avoid submergence of structure	Yes / No
Is there requirement to provide drainage system for flood water	Yes / No

Declaration: I / we have visited the proposed site for installation of solar plant. The site isfound to be suitable for installation of solar plant of --- kW capacity.

Surveyed by:

Name and Sign of Bidder Organization:

Witnessed by Representative of Consumer

Name and Sign