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NATIONAL INSTITUTE OF TECHNOLOGY CALICUT

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NOTICE INVITING TENDER

for

INSTALLATION OF A 32 KWP ON-GRID SOLAR POWER PLANT AT NITC PUMP HOUSE

Publishing date	:	04/08/2025, 05:00 PM
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NATIONAL INSTITUTE OF TECHNOLOGY CALICUT

NOTICE INVITING TENDER

- 1.01 Online item rate competitive e-Tenders are invited by the Superintending Engineer, Engineering Unit, on behalf of **The Director, National Institute of Technology Calicut, Kozhikode, Kerala**, for the following work on SITC of solar power plant, experienced contractors who have carried out similar works in government institutions and PSUs'.

Work reference No.	Engg/EMU/TO-EE/01/Solar/02
Name of Work	Installation of a 32 kWp On-Grid Solar Power Plant at NITC Pump House
P A C	₹20,00,000/- (Rs. Twenty Lakh Only) (Inclusive of GST)
Time of completion	150 days
Defect Liability Period	1 year
Earnest Money Deposit	₹40,000/- (Rs. Forty Thousand Only)

A firm/company having three (03) or more works, each with PAC/work order value more than Rs. 10 lakhs, under execution at NIT Calicut as of the bid submission date, is not eligible for submission of this tender. This includes works that are already awarded, but the execution has not started by the contractor (except for the works wherein the site handing over is pending from the Institute's side and the works which the Engineer in Charge (EIC) has certified as substantially completed). **[However, this clause will not be applicable for works with a PAC less than Rs. 10 lakhs.]**

- 1.02 **List of documents to be uploaded and also submitted as hardcopies to the office of the undersigned within the stipulated time period:**

- a) Contractor's self certificate reflecting the experience of minimum 5 years in the solar PV installation work. (Attach relevant proof)
- b) Company registration certificate with registration number and validity
- c) Copy of the Power of Attorney and certified copy of registered partnership deed, if any, as per clause 1.04.
- d) Copy of PAN card and Aadhaar card
- e) GST Registration Certificate
- f) Experience certificates for works of a similar nature, as per clause 1.13
- g) Proof of E.M.D, as per clause 1.14
- h) List of ongoing or awarded works with the agency at NITC, with work order no., date, contract amount, and present status

1.03 The tender form can be downloaded from the eprocure.gov.in/eprocure/app website from **04/08/2025, 05:00 PM** to **25/08/2025, 06:00 PM**.

1.04 Authorised Signatory

If the tender is made by or on behalf of a company incorporated under the Companies Act (of 1956), it shall be signed by their managing director or one of the directors duly authorised on that behalf. If it is made by a partnership firm, it shall be signed with the co-partnership name by a member of the firm, who shall sign his own name, give the name and address of each partner of the firm, and attach a copy of the Power of Attorney authorising him to sign on behalf of the other partners with the tender. A certified copy of the registered partnership deed shall also be submitted along with the tender.

1.05 Site Inspection

Before tendering, the tenderer is advised to visit the proposed work site and its surroundings at his own cost before quoting his rates to assess and satisfy themselves about the local conditions, such as the working and other constraints at the site, approach roads to the site, nature of ground, soil and subsoil condition, underground water table level, availability of labour and materials, availability of water/electricity, accommodations/storage space they may require, etc. He must also go through all the drawings and documents. The tenderer shall be deemed to have considered site conditions, whether he has inspected them or not, and have satisfied himself in all respects before quoting his rates, and no claim or extra charge whatsoever in this regard shall be entertained/payable by the Institute at a later date.

1.06 Schedule of Quantities

A schedule of approximate quantities of various items is given in the tender schedule. It shall be definitely understood that the Institute does not accept any responsibility for the correctness or completeness of the schedule in respect of items and quantities, and this schedule is liable to alterations by omissions, deductions, or additions at the discretion of the Institute without affecting the terms of the contract, and the contractor's quoted rate is valid for all such variations. The Institute reserves the right to completely delete any item from the scope of the work without affecting the terms of the contract.

The contractor shall execute the schedule of quantities to any extent of variation. But the rate for the individual item so exceeded shall remain the same (i.e. agreement rate) up to a limit of 25% excess, exceeding which the rate applicable for such quantities (exceeded beyond the 25% limit) will be the least among the agreement rate, the rate derived from DSR (for DSR items) and the Local Market rate (for non-DSR Items)

However, while executing such deviation, the total value of executed work shall be within the agreed value. Due to site conditions, if any variation is to be executed for the functional requirements and the total amount is more than the agreed value, it shall be executed with the prior approval of the competent authority.

1.07 Interpretation

In interpreting the specifications, the following order of decreasing importance shall be followed:

- (a) Nomenclature of the item as given in the Schedule
- (b) CPWD Specifications
- (c) Particular or special specifications
- (d) General Specifications/Conditions
- (e) Drawings

Matters not covered by the specifications given in the contract as a whole shall be covered by the relevant Indian Standard Specifications. If such specifications for a particular item do not exist, the decision of the Institute shall be final and binding.

1.08 Contractor's Rates

The contractor's rates for each item must include the cost of materials, their transportation and storage at the site, **all taxes and duties, including GST, water and electricity charges, etc.**, and all operations contemplated in the schedule and specifications. The institute will not provide Form 'C' or any other such certificates to the contractor.

The rate quoted by the contractor as per this tender is final and binding on the contractor; there is no revision of rates at a later stage, and there is no payment to the contractor towards cost escalation at a later stage.

All the work as per the BoQ is to be completed in line with the CPWD specifications, ensuring the functional requirements of the particular item. All the activities as per the CPWD specifications are to be treated as included in the rate and are to be followed while executing the work. All works should be executed as per the work procedures and quantity mentioned by IS standards / CPWD specifications.

1.09 Alterations in Tender Documents

No alterations shall be made by the tenderer in any of the tender documents, and if any alterations are made or any special condition is attached, the tender is liable to be rejected. Conditional tenders will not be acceptable. The conditions laid down by the institute are final and binding on all contractors.

1.10 Registration

In the case of electrical works execution, the electrical work is permitted to be carried out through the bidder/ his authorized representative who has a registered electrical contractor's licence of class B and above, issued by the Kerala State Electrical Licensing Board. If the bidder/his representative possesses a licence issued by another state government, it must be endorsed by the Department of Electrical Inspectorate, Government of Kerala (an endorsement copy needs to be produced along with the tender documents).

The contractor has to register as per central labour laws.

1.11 Income Tax

Every tenderer shall furnish, along with his tender, a scanned copy of their income tax PAN card, without which his tender is liable to be rejected. The Institute will deduct the amount towards Tax Deducted at Source (TDS) as per the latest Income Tax Rules from all payments made to the Contractor.

1.12 Goods and Services Tax (GST)

In the case of a contract involving materials required for the works, the contractor should have a valid registration number for GST before entering into the contract, and it is mandatory for the contractor to mention the registration number in the bills/claims. All payments made to the contractor will attract TDS liability, and therefore, it is the responsibility of the contractor to obtain the Liability Certificate from the Sales Tax Department for the release of the final payment against bills/claims as per GST rules.

1.13 Certificate of experience

Certificate of experience (original with copy) from a government/Public sector organisation from the agreement authority or Executive Engineer of the work executed showing the name of **a single similar work costing 80% of the P.A.C., or two similar works costing 60% of the P.A.C., or three similar works costing 40% of the P.A.C., completed by the contractor after 01-01-2018 with the total cost (final bill amount), date of commencement of the work**, date of completion as per agreement, and date of actual completion with a statement that the work was directly executed by the contractor without subcontracting with a good rate of progress.

1.14 Earnest Money Deposit (EMD)

The EMD is required to be remitted to the State Bank of India account under the UPI identification **emd5027.597@sbi**, mentioning the **Tender ID** in 'Remarks', and the copy of the UTR transaction ID/receipt should be uploaded along with the bid.

The EMD amount can also be paid by Demand Draft(**DD**) or Fixed Deposit Receipt(**FDR**) or Bank Guarantee(**BG**) from a Scheduled Commercial Bank, assigned in favour of the **Director, National Institute of Technology Calicut, NIT Campus P.O, Calicut – 673 601, Kerala** and made payable at State bank of India, NIT Calicut branch, Chathamangalam. A scanned copy of the DD/FDR/BG has to be uploaded along with the bid, and the original of the same should be submitted to the office of the undersigned before the date of the opening of the tender.

The tender received without EMD or with EMD in any other form than as stated above is liable to be rejected. The EMD will be refunded to the unsuccessful tenderer within one month of the acceptance of the tender.

This being a Work Contract, the MSME Act will be applicable in this context only.

1.15 Acceptance of Tender

The acceptance of the tender rests with the Institute, which does not bind itself to accept the lowest tender. The Institute also reserves the right to reject any or all the tenders without assigning any reason(s) thereof. The Institute also reserves the right to accept the whole or any part of the tenders received, and the tenderers shall be bound to perform the same at their quoted rates.

1.16 Acceptance Period

The tender shall remain firm for acceptance for a period of **90 days** from the date of its opening. Any withdrawal during the firm period will entail the forfeiture of the EMD.

1.17 Contract Signing

After acceptance of the tender, the tenderer shall sign the necessary contract agreement on non-judicial stamp paper worth ₹200/- **within 14 days** of intimation in the prescribed form.

To execute the agreement, within **07 (seven) days** of the award of the contract (work order date), the Contractor shall furnish to the Institute a bank guarantee as per clause 1.18. The contractor shall also submit a programme schedule also along with the performance guarantee.

Expenses for the agreement, including the cost of stamp papers, etc., shall be borne by the Contractor. In case of delay/non-compliance, the 'Earnest Money' shall be forfeited, the tender cancelled, or the contract enforced as per the terms of the tender, and the tenderer shall thus be bound by the terms of the contract even though the formal agreement has not been executed and signed by the tenderer.

1.18 Performance Guarantee (Security Deposit)

Within **07 (seven) days** of the award of the contract, the Contractor shall furnish to the Institute a Performance Guarantee (Security Deposit) in the form of an Fixed Deposit Receipt from a Scheduled Commercial Bank, or Bank Guarantee from a Scheduled Commercial Bank, in favour of the **Director, National Institute of Technology Calicut, NIT Campus P.O, Calicut – 673 601, Kerala**, for a sum equivalent to 5% of the contract value or as specified in the work order, valid up to the completion of the defect liability period as specified in clause 1.33.

The PG/SD can also be remitted to the State Bank of India account under the UPI identification **sd3926.901@sbi**, mentioning the Tender ID in 'Remarks', and the UTR transaction ID/receipt should be submitted to the office of the undersigned within **07 (seven) days** of the award of the contract.

EMD already deposited along with the tender shall be returned upon furnishing the performance guarantee.

If the selected bidder fails to furnish the prescribed performance guarantee within the prescribed period, without any specific reason (unless the reasons are intimated to the Institute and approved), the Institute shall, without prejudice to any other right or remedy, be at liberty to forfeit the earnest money absolutely and shall debar the party from participation in any of the tenders of the Institute for the next 03 (three) years. Alternatively, the Institute shall be at liberty to condone the delay in submitting the performance guarantee after levying a suitable fine/delay fee at the FD interest rate/BG charges for the delayed period on a daily basis and will be deducted from the first payment to the party.

Similarly, if the party fails to start the works within the prescribed time limits, the institute, upon issuing a one-week notice period, has the liberty to terminate the contract, execute the works at the risk and cost of the party, and proceed with the penalising action as desired by the Institute.

1.19 Commencement of work/Period of Completion

The Contractor shall commence work within **10 days from the date of issue of the work order**. This date shall be treated as the date of commencement of the work. **Time is the essence of the contract**. All works as per this contract shall be completed within “**Time of Completion**” from the date of commencement of the work as decided by the Institute.

The party shall maintain a hindrance register at the site to record any hindrances or issues that arise and affect the works that are beyond the control of the contractor. This register shall be countersigned by the EIC (Engineer-in-Charge) or his representative assessing the situation.

1.20 Liquidated Damages

The entire work shall be completed and handed over within the agreed time limit. The institute shall levy liquidated damages by way of **compensation of a sum of 2% (two per cent) per month of delay** to be computed on a per-day basis based on the quantum of damage suffered due to the stated delay on the part of the Contractor, subject to a maximum of 10% (ten percent) of the total value of work. After a delay of 200 days or the contract period, whichever is earlier, the Institute reserves the right to terminate the Contract.

1.21 Part Occupation

If the Institute wants to occupy areas in part, the Contractor shall have to complete the work of the areas in conjunction with the Institute and hand over the same to the Institute without affecting any of the clauses of the Contract agreement.

1.22 Site Supervision

The work shall be carried out under the direction and supervision of the Institute or its representative on site. On acceptance of the Work Order, the contractor shall intimate the name of his accredited, technically qualified representative in the prescribed proforma, who would be in charge of the construction and would be responsible for taking instructions from the Institute for the performance of the contract. If the PAC of the work is more than 15 lakhs, such personnel shall be a graduate engineer with two years of experience or a diploma engineer with five years of experience as a planning/quality/site/billing engineer. In case of electrical works, a graduate/diploma engineer should be appointed for works with a PAC of 5 lakhs and above. In the event of not fulfilling this condition, recovery will be made from the contractor at the rate of Rs.15,000/- per month per person.

1.23 Supply of materials

The Institute does not bind itself to supply any materials whatsoever required for the work. All materials for this work are to be brought by the Contractor. The quality/make of material to be purchased by the Contractor shall have the approval of the Institute before incorporation into the works.

The contractor shall ensure the approval of materials intended to be used in the project by submitting samples of all items such as tiles, paint, sanitary/CP fittings, electrical fixtures, glass and any other materials within 15 days of site handing over date or date as instructed by the EIC whichever is earlier. The acceptance of any sample or material on inspection shall not be a bar to the subsequent rejection, if found defective.

If a particular brand of material is specified in the item of work in Schedule of Quantity, the same shall be used after getting the same approved from EIC. Wherever brand/quality of material is not specified in the item of work, the contractor shall submit the samples as per the list of preferred makes as listed in **Annexure I** for approval of EIC. For all other items, ISI marked materials and fittings shall be used with the prior approval of EIC. Wherever ISI Marked material/fittings are not available, the contractor shall submit samples of materials/fittings manufactured by firms of repute conforming to relevant Specifications or IS codes for the approval of EIC, prior to the work.

For the purpose of payment, actual recorded quantities shall be taken into consideration. Rejected material shall be removed at once from the site of work at the contractor's cost.

All material shall comply with the latest edition of the Indian Standard Specification, and the required MTC (Manufacturer's Test Certificate) should be produced at the time of quality checks.

1.24 Inspection During Construction

The Contractor shall provide sufficient, safe, and proper facilities, including all equipment and training as necessary, for safe access at all reasonable times for observation and/or inspection of the Work by the Institute and its representatives. "Reasonable times" of inspection allow for sufficient monitoring of the quality of materials and installation without substantially impeding the progress of the Work.

1.25 Water and Electricity

The Contractor at his own expense, shall arrange water and electricity. In case of power failure, the contractor shall have alternate arrangements (DG Set, etc.) to keep the work in progress at his own cost.

1.26 Extra Items

For the functional requirements or as per the site conditions, the contractor may have to execute certain items even though not covered in BoQ, if the EIC/Institute is of the opinion that it is to be provided/executed. Extra items shall be executed only after getting the instructions in writing.

- a) The rates of all authorised extra items or additional, altered or substituted work shall be worked out as follows:-
 - i) The rates shall be based on or derived from the existing rate in the contract or the CPWD Schedule of Rates, as far as possible, and to the maximum extent possible, from the same class and nature of work.

- ii) Where the rates cannot be derived in the manner of a(i) above, the same shall be worked out on the basis of the most competitive market rates, inclusive of any taxes, octroi, works contract tax, etc., plus 10% of the contractor's profit, overheads, and supervision charges.
- b) The Contractor shall, within 3 days of the date of receipt of an order to carry out the above works or within 3 days after having carried out the above works, submit the rates that he proposes to claim for such items of work supported by rate analysis and vouchers. The Institute shall, with due analysis and justification, communicate to the Contractor the rates admissible for these items within a period of one month.

1.27 Quality

The Institute's decision with regard to the quality of material and workmanship will be final and binding. Materials conforming to CPWD/BIS standards alone shall be used in the work. Any material rejected by the Institute shall be immediately removed by the contractor from the site at his own cost.

1.28 Insurance

The successful contractor **shall take out Contractor's All Risk (CAR) insurance policy**, in the name of the contractor, the beneficiary Director, National Institute of Technology, NIT Campus P.O. Calicut – 673 601, Kerala and **the original policy shall be deposited with the Institute**. The policy shall cover clauses as under:-

- (i) The Contractor shall at all times indemnify and keep indemnified the Institute and its officers, servants, agents and any other guest or person moving in the Campus Area premises from and against all third party claims whatsoever (including but not limited to property loss and damage, personal accident, injury or death of/to property or person of any Subcontractor and/or the servants or agents of the contractor, any subcontractor(s) and/or the Institute) and the contractor shall at his own cost and initiative at all times up to the successful completion of the defects liability period specified in Clause 1.33 hereof take out and maintain all insurable liabilities under this Clause, including but not limited to third party insurance and liabilities under the Motor Vehicles Act, Workmen's Compensation Act, Fatal Accidents Act, Personal Injuries Insurance Act, Emergency Risk Insurance Act and/or other Industrial Legislation from time to time in force in India with insurance company(ies) approved by the Institute, and such policy(ies) shall be of not lesser limit than the limits hereunder specified with reference to the matters hereunder specified, namely:
 - (a) **Workmen's Compensation Insurance** – To the extent to which compensation may be payable under the laws of the Republic of India.
 - (b) **Third Party Insurance** - Body injury and property damage to the limit of not less than Rs. 1.00 lakh (Rupees One lakh only) in each accident at each job site and to a limit of not less than Rs. 5 lakh (Rupees Five lakhs only) for all accidents at all job sites.

Provided that the limits specified above shall operate only as a specification of minimum limits for insurance purposes but shall not in any way limit the contractor's liability in terms of this clause to the limit(s) specified.

- (ii) Should the Contractor fail to take out and/or keep afoot insurance as provided for in the foregoing sub-clause, the Institute shall be entitled (but without obligation to do so) to take out and/or keep afoot such insurance at the cost and expenses of the Contractor and without prejudice to any other rights or remedies of the Institute in this behalf to deduct the sum(s) incurred from the views of the Contractor.

(iii) Period of Policies

All insurance covers mentioned above shall be kept alive during the completion period of the contract and defects liability period.

1.29 E.S.I. and Provident Fund Obligations

The Contractor shall include in his rates all expenses towards meeting obligations under the Employees State Insurance Act and the Provident Fund Act. He shall follow all rules and regulations required under the Act as may be in force from time to time.

All employees engaged in the work shall be covered under these schemes, and the required amounts shall be deposited by the Contractor directly with the concerned authorities. All records in connection with the above shall be properly maintained by the Contractor and produced for scrutiny by the Institute whenever called for.

1.30 Advances

The Contractor shall not be entitled to get any sort of advance for the work.

1.31 Payment of Bills

Payments of the bills shall be made by the Institute following the procedures and guidelines issued by the Institute from time to time. This will be against the bills submitted by the party and duly accepted and certified by the EIC or the person authorised by EIC.

For works with completion period less than 03 months or value less than 75 lakhs, only one bill - final bill - will be entertained.

The bills shall be submitted along with supporting documents like Measurement books (computerised/manual) as prescribed and other documents as instructed by EIC and as per the agreement/tender conditions. For the preparation of the Measurement books and connected works, necessary assistance shall be provided by the contractor. No claim in this regard will be entertained.

All statutory deductions will be made from the bill as per the direction of the Government.

1.32 Retention Money

Retention money at the rate of 2.5% of each running bill amount shall be deducted from each running account payment. The Retention Money shall not bear any interest.

1.33 Defects Liability Period

Any defects that develop within the 'Defect Liability Period' of such period as specified in clause 1.01, from the actual date of completion of a works will have to be rectified by the contractor at his own cost. The rectification of such defects shall be done immediately upon receipt of written notice from the Institute. In case of failure to do so, the Institute shall get the rectification work done by some other agency at the risk and cost of the contractor.

1.34 Refund of deposit

Security deposit and retention money shall be refunded only after the successful completion of the defect liability period, on the request of the party. Generally, the defect liability period shall be as specified in clause 1.33.

1.35 Safety

The contractor shall ensure that the labour and staff deployed by him follow all safety norms and religiously use all safety appliances. Similarly, all equipment deployed by him must have all the safety devices attached to it in good working condition, and the operator/labour deployed by the contractor must be fully conversant with the operation of such devices. Any eventuality arising out of non-compliance by the contractor shall be to his account only, and the Institute shall have no liability whatsoever.

1.36 Compliance with the statutory laws

The contractor shall comply with the statutory laws, rules, and regulations as applicable pertaining to the labour provided by him at the work site under this contract/work order.

The contractor shall also follow the rules and regulations, working schedule, etc. as notified by the Institute, without affecting the day to day functioning of the Institute.

1.37 Jurisdiction

The Courts at Calicut alone shall have exclusive jurisdiction in all matters arising out of this contract/work order.

1.38 Risk and Cost

In case the contractor fails to complete the work within the stipulated completion time including the extended period, if any, the EIC, without prejudice to any other right or remedy available to him under the contract, shall have the power to rescind the contract, take possession of the works, and get the part work/part incomplete work by any means at the risk and cost of the contractor. The sum, as determined by the EIC, recoverable from the contractor shall be recovered from all the sums that had remained due to the contractor at the time of rescinding the contract after giving due credit to the contractor for the value of the work done in all respects in the same manner and at the same rate as if it had been done.

1.39 Termination

The Institute reserves the right to terminate the contract/work order by giving 07 (seven) days' notice without assigning any reason thereof or even without any notice in the event the performance of the contractor is found to be unsatisfactory.

1.40 Clearance of site after completion of works

The contractor, after completion of work, shall clean and clear the site of all debris and remove all unused materials other than those supplied by the department and all plant and machinery, equipment, tools, etc., belonging to him within one week from the date of completion of the work, and the site shall be handed over to the Institute, or otherwise the same will be removed by the Institute at his cost or disposed of as per departmental procedure.

All construction debris, excess materials, and any unserviceable dismantled materials that are not required to be handed over to the Institute stores shall be removed from the campus and disposed of at the contractor's cost, irrespective of any notes, remarks, or lead/lift provisions mentioned in the BoQ item description. The expenditure for this is deemed to be included in the rate quoted by the contractor.

1.41 Scope of Work:

The scope of work includes, but is not limited to, the following:

1. Detailed Engineering Design:

- Site survey and assessment for optimal solar panel placement, tilt, and orientation, considering shading analysis and structural integrity of the rooftop.
- Preparation of detailed system design documents, including layout drawings, single line diagrams (SLDs), electrical schematics, earthing layouts, and structural drawings.
- Energy yield estimation and performance prediction.
- Design of module mounting structures (MMS) suitable for the existing rooftop, considering wind loads, dead loads, and seismic zones, with hot-dip galvanized (80 micron) or equivalent corrosion-resistant material.
- String sizing and micro-inverter selection for optimal performance and redundancy.
- Cable sizing calculations for AC and DC circuits to minimize losses and ensure safety.

2. Supply of Materials and Equipment:

- **Solar PV Modules:** Supply of high-efficiency Monocrystalline PERC/TOPCon solar PV modules, minimum 540 Wp or as required to achieve 32 kWp, from Approved List of Models and Manufacturers (ALMM) certified manufacturers (as per MNRE guidelines), with a minimum 25-year performance warranty.
- **Micro-Inverters:** Supply of grid-tied micro-inverters suitable for panel-level power optimization and monitoring, with appropriate IP rating, anti-islanding protection, and certified to **IEC 62109-1 (General Requirements for Safety of Power Converters for use in Photovoltaic Power Systems)** and **IEC 62109-2 (Particular Requirements for Inverters)**, ensuring robust safety against electric shock, energy, fire, mechanical, and other hazards. The micro-inverters shall have a minimum 10-year warranty. The total AC output capacity of micro-inverters shall be optimized for the 32 kWp DC array.
- **Module Mounting Structure (MMS):** Supply of robust, corrosion-resistant (hot-dip galvanized steel or equivalent) mounting structures, designed for the specific rooftop type (e.g., RCC flat roof, shed roof, pitched roof), including all necessary fasteners, clamps, and accessories.

- **AC Distribution Board (ACDB) & DC Distribution Box (DCDB):** Supply of weatherproof (IP65 or higher) ACDB and DCDB enclosures with appropriate surge protection devices (SPDs), MCBs/MCCBs, fuses, and necessary busbars and terminals as per IS/IEC standards.
- **Cables:** Supply of UV-resistant, fire-retardant, high-quality solar DC cables (e.g., 1Cx4 sqmm or higher as per design) and AC cables (e.g., **4C x 16 sqmm copper or higher as per design** for 3-phase output, considering voltage drop and derating factors), along with conduits, lugs, ferrules, cable ties, and other accessories.
- **Earthing and Lightning Protection System:** Supply of complete earthing system as per IS standards (including copper bonded electrodes/GI electrodes, earthing strips, test links, etc.) and a lightning arrestor system (including copper lightning arrestor, down conductors, and associated accessories) to protect the entire installation.
- **Net Meter/Gross Meter:** Supply of bi-directional net meter/gross meter as per KSEB specifications, tested and certified by KSEB.
- **Hazard/Safety Boards:** Supply and installation of all necessary safety signs and warning labels as per relevant regulations.
- **Monitoring System:** Supply of a comprehensive online monitoring system for real-time performance tracking, data logging, and fault detection at module and system level, accessible via web portal and mobile application. Internet connectivity will be provided by the institute.

3. **Installation:**

- Installation of module mounting structures with proper anchoring and waterproofing arrangements.
- Installation of solar PV modules on the mounting structures.
- Installation of micro-inverters below each solar module.
- Laying and termination of all DC and AC cables in appropriate conduits/cable trays.
- Installation of ACDB, DCDB, and other electrical components.
- Installation of earthing and lightning protection systems.
- Installation of the net meter/gross meter in coordination with the local KSEB.
- Integration of the monitoring system.
- All civil works related to the installation, including minor modifications to the rooftop, grouting, and sealing.
- Provision for accommodating a battery storage system

4. **Testing and Commissioning:**

- Conducting all pre-commissioning checks and tests as per relevant IS/IEC standards, including but not limited to:
 - Open circuit voltage (Voc) and short circuit current (Isc) measurement of PV strings.
 - Insulation resistance testing.
 - Earth resistance testing.
 - Polarity checks.
 - Functionality testing of all protection devices.

- Performance ratio (PR) testing and system efficiency calculation.
- Grid synchronization and commissioning of the entire solar power plant in coordination with KSEB.
- Demonstration of the system operation and monitoring to the client.

5. Statutory Approvals and Documentation:

- Preparation and submission of all necessary applications and documents to relevant authorities for obtaining:
 - **No Objection Certificate (NOC)** from KSEB.
 - **Grid Connectivity Approval** from KSEB.
 - **Net Metering/Gross Metering Approval** from KSEB.
 - **Kerala Electrical Inspectorate (KEI)** approval (as applicable in Kerala for systems of this capacity).
 - Any other state-specific or local municipal approvals/permits required for the installation and operation of a 32 kW solar power plant in Kerala.
- Coordination with all statutory bodies for inspections and clearances.
- Submission of detailed As-Built drawings and comprehensive operation and maintenance (O&M) manuals.
- Submission of As-Fit SLD drawing of new pump house.
- Assistance in obtaining any applicable government subsidies (if applicable to the consumer type).

6. Warranty and Maintenance:

- Provision of a minimum 5-year comprehensive warranty for the entire solar power plant, covering all components and workmanship.
- Inclusion of initial operation and maintenance support for a year, including quarterly cleaning and performance checks.

Notes for Bidders/Contractors:

- All equipment and materials shall be new, unused, and of the latest technology, conforming to relevant Indian and International Standards (BIS, IEC, MNRE guidelines).
- Micro-inverters provided shall comply with the safety requirements specified in IEC 62109-1 and IEC 62109-2, and relevant test reports/certifications shall be submitted.
- The quoted rate shall be all-inclusive, covering all costs associated with design, supply, installation, testing, commissioning, statutory approvals, transportation, insurance, labor, tools, taxes, duties, and any other incidental charges required for the complete and functional solar power plant.
- Bidders must specify the make, model, and technical specifications of all major components (PV modules, micro-inverters, cables, etc.) in their technical bid.
- The bidder shall be responsible for ensuring compliance with all local safety regulations and codes during the entire project execution.
- The BoQ assumes a typical rooftop installation. Any specific site challenges or unique requirements shall be addressed during the detailed design phase and may require re-evaluation.

- The bidder shall provide a detailed project schedule outlining key milestones for design, procurement, installation, and commissioning.

**Superintending Engineer
Engineering Unit, NIT Calicut**

Annexure I

Preferred makes of materials:

No.	Material Description	Manufacturer/Brand Name
1	Cement (PPC/OPC)	ACC, UltraTech, Zuari, Dalmia, JSW, Chettinad, Ramco, Malabar Cements, Ambuja, JK Cement, Jaypee Cement
2	White Cement	Birla White, JK White, India Cements
3	Structural Steel	SAIL, Tata Steel, Vizag(RINL) Steel, JSW Steel, Jindal Steel, ArcelorMittal Nippon, APL Apollo
4	Vitrified, Double Charge Vitrified, Glazed Vitrified (Polished/ Matt/ Digital) Tiles	Kajaria, Somany, RAK, Asian Granito, Johnson, Orient Bell
5	Tile Adhesive	Ramco, Somany, Ultratech, Roff, JK TileMaxx, Myk Laticrete, Ardex Endura
6	Epoxy Tile Grout	Weber, Myk Laticrete, Roff
7	Flush door shutters	Archidply, Greenply, Greenlam, Duroply, Century, Greenpanel, Jain Doors Pvt. Ltd., Feroke Boards Ltd.
8	FRP doors shutters & frame	Jayna, Fiberways, Jain Doors Pvt. Ltd. & Selected Product Co
9	Commercial Board/ Plywood/ Veneers	Archidply, Greenply, Duroply, Century, Merino, Greenlam, Greenpanel
10	Floor spring & door closer	Godrej, Dormakaba, Ebco, Dorset, Kich, Doorking, Everite, Sandhu, Hardwin, Hyper, Myra, Volo, Sunshield, Upan, L&K
11	SS fittings for doors & windows	Jindal, Dormakaba, Kich, Dorset, Godrej, Ozone, Define
12	Brass fittings for doors & windows	Harrison, Godrej, Ashish, L&K
13	Aluminum Door Fittings	Classic, Everest, Argent
14	Modular Kitchen	Everyday/Hettich/Steel Art Brand Baskets of AISI 304(18/8); Hettich/Hafele Brand Auto Closing Concealed Hinges; DMS/ Dynasty/ Indoline Brand Shutters
15	Waterproofing chemicals	Fosroc, Sika, Pidilite, Ultratech

16	Cement based wall putty	Birla Wall Care, JK White, Asian Paints, Berger
17	Paint (Distemper, Acrylic Emulsion, Plastic Emulsion)	Asian Paints, Berger, Dulux-ICI, Kansai Nerolac, Jotun, Nippon, AkzoNobel
18	Primer (Cement, Wood)	Asian Paints, Berger, Dulux-ICI, Kansai Nerolac, Jotun, Nippon
19	Epoxy paint	Asian Paints, STP Ltd., Kansai Nerolac, Berger, Dulux-ICI, AkzoNobel
20	Fire paint	Asian Paints, STP Ltd., Akzo Nobel, PROMAT, JOTUN
21	DI Pipes & fittings	Electrosteel, Jindal, TATA DUCTURA, Kapilansh, Kesoram
22	HDPE Pipes	Reliance, Jain Pipes, ORIPLAST, Supreme
23	UPVC, CPVC pipes and fittings	Supreme, Astral, Star, Finolex, Prince, Skipper, Ashirwad, Prayag
24	PVC/PTMT Bib cock, Pillar cock, Ball cock	Prayag, Watertec, Runs, Leader
25	UPVC SWR pipes	Supreme, Astral, Star, Parry, Perfect
26	PVC Connection pipes	Watertec, Guru, Parryware
27	GI/MS Pipe	Tata, Jindal, Prakash Surya
28	GI Fittings	Unik, AVR & Zoloto
29	CP brass fittings	Jaquar, Grohe, Roca, Kohler, Kerovit, Johnson, Prayag, ESSCO
30	Brass fittings (Bib,Pillar,Stop,Ball cocks, Ferrule)	Agi, Elite, Shakti, Sant, Leader, Prima, L&K
31	Brass Spindle for Concealed stop Cock 15mm	L&K or any brand as approved by EIC
32	Stainless steel sink	Neelkanth, Niralli, Jyna & Prayag Polymers Pvt. Ltd.
33	Sanitaryware(China), fittings & accessories	Jaquar, RAK, Kerovit, Cera
34	EWC Seat Covers	Hindware, Parryware, Cera or any ISI marked
35	Concealed Flush valve for W.C.	Jaquar, Parryware, Grohe, Kohler

36	PVC Cisterns	Parryware, Cera, Watertec
37	Clear/ Float/ Frosted/ Toughened Glass/ Refractive Glass	Asahi India (AIS), Modiguard, Saint Gobain
38	Mirror glass	Atul, Modi Guard & Golden Fish
39	Glass putty	Windowera, Asahi, Modi Guard, Saint Gobain
40	Glass rubber beading (black)	Neoprin or any brand as approved by EIC
41	FRLS PVC insulated single core stranded copper wire / three core flexible cable	Gloster/ RR Kabel / Polycab / KEI
42	PVC conduit / accessories, medium	Precision / Konseal/ Balco
43	Modular switch / sockets / GI plate / Fan Regulator / DLP trunking & Accessories	Legrand Myrius / Legrand Arteor / Crabtree or any make as approved by EIC
44	MCCB / MCB / RCCB Blanking Plate / Vertical type Double door MCCB DB / MCB DB/Enclosure	Legrand / L&T / Schneider or any make as approved by EIC
45	SFU (Switch Fuse Unit) /Direct ROM / Extendable ROM	Legrand / L&T / Schneider or any make as approved by EIC
46	Cable Straight through joint Kit / End termination kit	Raychem / 3M or any make as approved by EIC
47	Piano type switch / sockets / GI plate / Fan	Anchor / Indica / GM or any make as approved by EIC
48	Astronomical time switch	Legrand / L&T or any make as approved by EIC
49	5 in 1 Switch socket combined unit	Anchor / Indica / GM or any make as approved by EIC
50	6/16A 3 Pin top	GM or any make as approved by EIC
51	LED Luminaires	Philips / Crompton / Bajaj

52	1200 BLDC Ceiling fan	Atomberg Efficio / Crompton / Orient or any make as approved by EIC (Compatible to run with a step regulator)
53	Wall fan	Atomberg / Crompton / Bajaj / Usha or any make as approved by EIC
54	Exhaust fan	Crompton / Usha / Almonard or any make as approved by EIC
55	Condenser fan and motors	L&T or any make as approved by EIC
56	Energymeter	L&T or any make as approved by EIC
57	LED Indicator for panels	L&T / Schneider or any make as approved by EIC
58	Contactors	L&T / Schneider or any make as approved by EIC
59	Motor Starters	L&T or any make as approved by EIC
60	1.1 kV Al XLPE cable	RR Kabel / Gloster / Polycab / KEI
61	Meterbox	Sintex / Hencel or any make as approved by EIC
62	GI Pipe	Jindal / TATA or any make as approved by EIC