

भारत सरकार
GOVERNMENT OF INDIA
केन्द्रीय लोक निर्माण विभाग
CENTRAL PUBLIC WORKS DEPARTMENT
कार्यपालक अभियंता(वैधूत) कालीकट कार्यालय
Office of the Executive Engineer (E) – Calicut,
CPWD, Calicut / के. लो. नि. वि.कालीकट
निविदा आमंत्रण सूचना
NOTICE INVITING TENDER
सूचकांक/INDEX

Name of work- SITC of 40 kWp On- Grid roof top Solar Photovoltaic (SPV) Power Generation System at Directorate of Arecanut and Spices Development (DASD), Kozhikode.

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Certified that this NIT contains page 1 to page 76 including this index page. Further certified that this NIT contains printed matter only and there is no correction/insertion/addition/deletion in it.

This NIT is approved for. Rs.28,77,410/-

(Rupees Twenty Eight Lakh Seventy Seven Thousand Four Hundred and Ten only)

EXECUTIVE ENGINEER(E)
CLTED, CPWD, CALICUT

PART -A

**INFORMATIONS AND INSTRUCTIONS FOR CONTRACTORS FOR
e-TENDERING**

CPWD-6

CPWD 7

SCHEDULE A TO F

**INFORMATION AND INSTRUCTIONS FOR CONTRACTORS FOR e- TENDERING FORMING
PART OF BID DOCUMENT AND TO BE POSTED ON WEB SITE**

The Executive Engineer (Elect), CLTED, CPWD, Calicut.(Tele.No.0495-2326501) on behalf of the President of India invites online percentage rate bids from CPWD enlisted contractors of appropriate class in Buildings & Roads / Manufactures or OEM/ Specialized Agencies/Firms, in two Bid system [(i) Eligibility Bid & (ii) Financial bid] for the following work.

S. No.	NIT No.	Name of work & Location	Estimated cost put to Bid	Earnest Money	Period of Completion	Last date & time of submission of bid, copy of receipt for deposition of original EMD and other document as specified in the NIT	Time & date of opening of Eligibility Bid
1	2	3	4	5	6	7	8
1	15/CLTED/2026-27	SITC of 40 kWp On-Grid roof top Solar Photovoltaic (SPV) Power Generation System at Directorate of Arecanut and Spices Development (DASD), Kozhikode.	Rs.28,77,410/-	Rs.57,548/-	04(Four) Month	22.10.2026 up to 15.00Hrs.	22.10.2026 at 15.30Hrs.

1. Contractors who fulfill the following requirements shall be eligible to apply. Joint ventures are not accepted. [1(b), 1(c) & 1(d) are not applicable for CPWD enlisted contractors of appropriate class.

1(a) (i) are applicable for CPWD enlisted contractors also].

(a) Should have satisfactorily completed the works as mentioned below during the last Seven years ending last day of the month previous to the one in which tenders are invited.

(i) Three similar works each costing not less than Rs. 11.50 Lakhs

OR

Two similar works each costing not less than Rs. 17.26 Lakhs

OR

One similar work costing not less than Rs. 23.01 Lakhs.

Similar work shall mean works of “SITC of 40 kWp On- Grid roof top Solar Photovoltaic (SPV) Power Generation System” The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7% per annum, calculated from the date of completion to previous day of last day of submission of bid.

(ii) In case, the eligible work has been executed by a Joint Venture through one or more individual firm(s), then cost of completed work shall be distributed among the individual firm(s) in proportion to their share in Joint Venture and that will be considered as work experience for individual firm(s) for pre-qualification in bidding.

- (b) Should have had Average Annual Financial Turnover of **Rs. 8.63 Lakhs** (30% of the estimated Cost put to tender) on Construction/Maintenance works during the last 3 years ending 31st March 2026. (Scanned copy of Certificate from CA with Unique Document Identification Number (UDIN) to be uploaded. The value of annual turnover figures shall be brought to current value by enhancing the actual turnover figures at simple rate of 7% per annum.
 - (c) Should not have incurred any loss (profit after tax should be positive) in more than two years during the last five years ending 31st March 2026
 - (d) Should have a Banker's Certificate from a commercial Bank for Rs. **11.50 Lakhs** (40% of the Estimated Cost put to tender (ECPT)), or Net Worth certificate from CA with Unique Document identification Number (UDIN) of Rs. **2.87 Lakhs** (minimum 10 % amount of ECPT) (Scanned copy of original to be uploaded).
 - (e) **Firms / agencies whose contract is rescinded during the last seven years of its operations ending last day of the previous month of submission of tender is not eligible.**
 - (f) **Firms / agencies who are blacklisted and/or debarred for the last 7 years of its Operations ending last day of the previous month of submission of tender are not eligible.**
 - (g) Associated contractor should not have been debarred from any Ministry or any govt. organization in the last five years.
2. The intending bidder must read the terms and conditions of **CPWD-6** carefully. He should only submit his bid if he considers himself eligible and he is in possession of all the documents required.
 3. This information and instructions for bidders posted on website shall form part of bid document.
 4. The bid document consisting of Plans, Specifications, Schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents can be seen and downloaded from website **www.etender.cpwd.gov.in** or **www.cpwd.gov.in** free of cost.
 5. But the bid can only be submitted after deposition of original EMD either in the office of Executive Engineer inviting bids or division office of any Executive Engineer, CPWD within the period of bid submission and uploading the mandatory scanned documents such as Insurance Surety Bonds, Account Payee Demand draft or Banker's Cheque or Fixed Deposit Receipts or/ and Bank Guarantee including e-Bank Guarantee (for balance amount as prescribed) from any of the Commercial Bank towards EMD in favour of Executive Engineer as mentioned in NIT, receipt for deposition of original EMD to division office of any Executive Engineer (including NIT issuing EE/ AE), CPWD and other documents as specified.
 6. Those contractors who are not registered or have not updated their profile on the website mentioned above, are required to get registered / update their profile beforehand. The necessary training materials including the videos with step to step process are available on download section of <https://etender.cpwd.gov.in>
 7. The intending bidder must have valid Class-III digital signature certificate with encryption key (combo type) to perform any operations / transactions on the e-tendering portal / website and the bidder should download and install the eMSigner on their system as per instructions available on download section of <https://etender.cpwd.gov.in>.
 8. On opening date, the contractor can login and see the bid opening process. After opening of bids, he will receive the competitor bid sheets.
 9. Contractor can upload documents in the form of **JPG** format and **PDF** format.
 10. The work is **SITC of 40 kWp On- Grid roof top Solar Photovoltaic (SPV) Power Generation System at Directorate of Arecanut and Spices Development (DASD), Kozhikode** The bidder shall be required to execute the work on top priority and to arrange the resources of men and materials

accordingly as directed by Engineer-in-Charge.

11. Certificate of Financial Turn Over: At the time of submission of bid contractor may upload Affidavit/ Certificate from CA mentioning Financial Turnover of last 7 years or for the period as specified in the bid document and further details if required may be asked from the contractor after opening of technical bids. There is no need to upload entire voluminous balance sheet.
12. Contractor must ensure to quote rate in the prescribed column(s) meant for quoting rate in figures appears in yellow colour and the moment rate is entered, it turns sky blue. In addition to this, while selecting any of the cells a warning appears that if any cell is left blank the same shall be treated as "0". Therefore, if any cell is left blank and no rate is quoted by the bidder, rate of such item shall be treated as "0" (ZERO). However, If a tenderer quotes nil rates against each item in item rate tender or does not quote any percentage above/below on the total amount of the tender or any section / sub head in percentage rate tender, the tender shall be treated as invalid and will not be considered as lowest tenderer.
13. Pre Bid conference shall be held in the chamber of Executive Engineer (E), CLTED, CPWD at CALICUT on **08.10.2026** to clear the doubt of intending bidders, if any.
14. The Eligibility Bid shall be opened first on due date and time as mentioned above. The time and date of opening of financial bid of contractors qualifying the Eligibility bid shall be communicated to them at a later date.
15. The tenderer should also read the **General Conditions of Contract for CPWD Works 2023(Construction Works)** amended up to date (available on CPWD above websites), which is available as Govt. of India Publications.
16. The department reserves the right to reject any prospective application without assigning any reason and to restrict the list of qualified contractors to any number deemed suitable by it, if too many bids are received satisfying the laid down criterion.
17. Tenders with any condition including that of conditional rebates in the tender document shall be rejected forthwith.
18. If any information furnished by the applicant is found incorrect at a later stage, he shall be liable to be debarred from tendering/ taking up of works in CPWD. The Department reserves the right to verify the particulars furnished by the applicant independently.
19. If the bidder has not obtained GST registration as applicable, then he shall scan and upload following under taking along with bid documents.
"If work is awarded to me, I/we shall obtain GST registration certificate, as applicable, within one month from the date of receipt of award letter or before release of any payment by CPWD, whichever is earlier, failing which I/we shall be responsible for any delay in payments which will be due towards me/us on account of the work executed and/or for any action taken by CPWD or GST department in this regard".
20. If the bidder has not possessed valid electrical license of appropriate voltage to execute electrical work in "KERALA", then in such a case the bidder shall scan and upload following under taking along with other bid documents.

"If work is awarded to me, I/we shall either obtain valid electrical license at the time of execution of electrical work or associates with contractor registered in composite category in appropriate class in CPWD for execution of the above said work possessing Valid Electrical License of appropriate voltage issued by competent authority".

List of Documents to be scanned and uploaded within the period of bid submission:

A. For CPWD Enlisted Contractor

1. Insurance Surety Bonds/ Account payee Demand Draft/ Fixed Deposit Receipt (FDR)/ Banker's cheque or Bank Guarantee (as prescribed) issued by a Commercial Bank against EMD.
2. Receipt for deposition of original EMD issued from division office of any Executive Engineer (Including NIT issuing EE, CPWD)
- 3 .a) Certificates of Works Experience Form C/C1 (In case of Non-Government works TDS issued Shall also be submitted and uploaded)

and

Affidavit stating that similar works have not been got executed through another Contractor on back-to-back basis (Form 'D')

OR

b) Affidavit for association of agency (Form E)

4. GST registration Certificate or undertaking as per Para -16 above.
5. Valid Electrical License of appropriate voltage issued by Kerala State Electrical Inspectorate to Execute works in "KERALA" or undertaking as per Para -17 above.
6. CPWD enlistment order of contractors of appropriate class.
7. Undertaking regarding site inspection (Form 'G')

(Note: -If the CPWD-enlisted contractor does not possess the requisite experience as specified in the Notice Inviting Tender (NIT), the contractor shall associate with a specialized agency meeting the prescribed eligibility criteria for the execution of the work, in accordance with the conditions stipulated in the NIT)

(The bidder shall upload scanned copies of all the documents stipulated in the bid document.)

B. For Manufactures/OEM, Specialised Agencies/firms

1. Insurance Surety Bonds/ Account payee Demand Draft/ Fixed Deposit Receipt (FDR)/ Banker's cheque or Bank Guarantee (as prescribed) issued by a Commercial Bank against EMD.
2. Receipt for deposition of original EMD issued from division office of any Executive Engineer (Including NIT issuing EE, CPWD)
3. Certificate of Financial Turnover from Chartered Accountant as per Form 'A1.
4. Bank Solvency Certificate as per Form 'B' OR Net worth certificate as per Form "B-1".
5. Certificates of Works Experience Form C/C1. (In case of Non-Government works TDS issued Shall also be submitted and uploaded).
6. Affidavit stating that similar works have not been got executed through another Contractor on back-to-back basis (Form 'D')
7. GST registration Certificate or undertaking as per Para -16 above.
8. Valid Electrical License of appropriate voltage issued by Kerala State Electrical Inspectorate to execute works in "KERALA" or undertaking as per Para -17 above.
9. Affidavit regarding non-rescission of contract and non-blacklisting/debarment during the last seven (7) years (Form 'F')
10. Undertaking regarding site inspection (Form 'G')

(The bidder shall upload scanned copies of all the documents stipulated in the bid document.)

**Executive Engineer (E)
CLTED, CPWD, Calicut**

**INFORMATION AND INSTRUCTIONS FOR EXECUTIVE ENGINEER
for e-TENDERING**

1. The Executive Engineer of all divisions including Division / Sub Division of CPWD should receive the original EMD for tender of other division.
2. The NIT approving authority/EE at the time of issue of NIT shall also fill and upload the following prescribed format of receipt of deposition of original EMD along with NIT:-

Receipt of deposition of original EMD (Receipt

No...../Date.....)

Name of Work: SITC of 40 kWp On- Grid roof top Solar Photovoltaic (SPV) Power Generation System at Directorate of Arecanut and Spices Development (DASD), Kozhikode.

1 NIT No. :15/CLTED/2026-27.

2 Estimated Cost: : Rs.28,77,410/-

3 Amount of Earnest Money Deposit: Rs.57,548/-

4 Last date of submission of bid : 22.10.2026 up to 15.00.Hrs

*(*To be filled by NIT approving authority/EE at the time of issue of NIT and uploaded alongwith NIT)*

1. Name of Contractor :
2. Form of EMD :
3. Amount of Earnest Money Deposit :
4. Date of submission of EMD :

Signature, Name and Designation of EMD receiving officer(EE/AE(P)/AE/AAO) along with Office stamp.

(# to be filled by EMD receiving EE)

3. The Authority receiving EMD in original form examines the EMD deposited by the bidder and issues receipt of deposition of earnest money to the agency in a given format uploaded by tender inviting authority. The receipt can also be issued by any subordinate gazette authority as authorized by the Engineer-in-Charge/DDH.
4. The authority receiving original EMD also intimates tender inviting authority about deposition of EMD by the agency by email/fax/telephonically.
5. The original EMD receiving authority releases the EMD to unsuccessful bidders after the expiry of stipulated bid validity period or immediately after acceptance of the successful bidder, whichever is earlier, after verification from the e-tendering portal website (<https://etender.cpwd.gov.in>>closed Tender>all) that the particular contractor is not L-1 tenderer and work is awarded.
6. The tender inviting authority calls for original EMD of the L-1 tenderer from EMD receiving authority immediately.

Note: Earnest Money in the form of Insurance Surety Bond, Account Payee Demand Draft, Fixed Deposit Receipt, Bankers Cheque or Bank Guarantee (as prescribed) from any of the Commercial Bank (drawn in favour of Executive Engineer, CPWD, Calicut).

THE MINIMUM ELIGIBILITY CRITERIA FOR SPECIALIZED WORKS WHEREVER APPLICABLE

Should have satisfactorily completed the works as mentioned below during the last Seven years ending last day of the month previous to the one in which tenders are invited. The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7% per annum, calculated from the date of completion to previous day of last day of submission of bid. For other conditions, refer special conditions specified in Part B.

The CPWD Enlisted contractor shall either himself meet the eligibility conditions for the respective E&M packages or otherwise, he will have to associate an agency meeting the eligibility requirements as given in this tender document and submit the details as per Annexure-1A, in Part A of this tender document within 7 days of award of work.

Sl. No	Component of E&M works	Estimated cost in Rs.	Eligibility
1	SITC of 40 kWp On-Grid roof top Solar Photovoltaic (SPV) Power Generation System	Rs.28,77,410/-	Eligibility : The main contractor shall have to associate with agency fulfilling the following eligibility criteria (if he himself does not fulfil the eligibility criteria) having successfully completed during last seven years ending last day of month previous to the one in which tenders are invited as given below with completion certificate issued by an officer not below the rank of Executive Engineer or equivalent duly attested. Three similar completed works each of value not less than 40% of the Estimated cost of this particular sub head. or Two similar completed works each of value not less than 60% of the Estimated cost of this particular sub head. or One similar completed work of value not less than 80% of the Estimated cost of this particular sub head. Similar work shall “SITC of ON GRID Roof top Solar Photovoltaic Power generation System”. However, the Composite category contractor shall also be eligible to carry out himself without associating any specialized agency provided: (a) He fulfils the prescribed eligibility criteria respectively for this work Or (b) He directly procures the equipment of approved make from manufacturer and gets it installed from authorized agency/service provider of the manufacturer Or specialized agency as per criteria mentioned as above.

The applicant/ main contractor has to submit consent letters as per Annexure- 1B, given in Part A of this tender document from at least one eligible associate agency of the respective component of E&M work for each of the component of E& M works by clearly indicating the component of work within 7 days of award of work.

The main contractor will submit Affidavit of MOU signed with eligible associated contractor. The Affidavit of MOU in the enclosed Annexure-1C" shall be signed by both contractors, Main contractor

as 1st party and associated contractor as 2nd party, independently for NAME OF WORK: **:SITC of 40 kWp On- Grid roof top Solar Photovoltaic (SPV) Power Generation System at Directorate of Arecanut and Spices Development (DASD), Kozhikode., specified** as above.

If the main contractor fails to associate agency for execution of minor components of work within 7 days of award of work or furnishes incomplete details or furnishes details of ineligible agencies even after the tenderer is given due opportunity, the entire scope of such component of work shall be withdrawn from the tender and the same shall be got executed by the Engineer-in-Charge at the risk and cost of the main contractor.

Verifiable completion certificates of the work, Valid Electrical license, self-attested GST registration documents in respect of the associated agencies as the case may be, duly attested by the applicant shall be submitted within 7 days of award of work.

Executive Engineer (E)
CLTED, CPWD, Calicut

PROPOSAL FOR ELIGIBLE ASSOCIATING AGENCIES FOR MINOR/SPECIALIZED COMPONENTS OF WORK

I/we hereby propose the following agencies as per mentioned against each for executing corresponding minor components of work. Their consent letters are also attached.

Sl.No	Name of Associated Contractor	Category and Class of registration	Enlistment copy/completion Certificates attached	Monetary Limit of work	Validity of registration	Consent letter attached (Yes/No)
SITC of 40 kWp On- Grid roof top Solar Photovoltaic (SPV) Power Generation System						

Note: Self Attested photocopies of valid electrical contractor license, work experience certificates of each agency for each component of E&M work shall be submitted.

Signature of contractor

CONSENT LETTER FROM ELIGIBLE ASSOCIATE AGENCY OF MINOR/SPECIALIZED COMPONENT OF WORK

NAME OF WORK: **SITC of 40 kWp On- Grid roof top Solar Photovoltaic (SPV) Power Generation System at Directorate of Arecanut and Spices Development (DASD), Kozhikode.**

I / We hereby give my consent to associate with M/s, for executing the minor component of work of (Mention category).

I / We will execute the work as per specifications and conditions of the agreement and as per directions of the Engineer –in-Charge for the corresponding minor work till the completion of the work.

I / We will be responsible for necessary action to handover the installations and for rectification of defects and repair during the maintenance / warranty period.

Also I / We will employ full time technically qualified Engineer / supervisor for the minor component of the work as required for the work. I / We will attend inspection of officers of the department as and when required.

Date:

Signature with date of Main Contractor Signature with date of Associated Contractor

Contractor

Contractor

Address

Address

Witness with address

Witness with address

(From main contractor side)

(From Associated contractor side)

AFFIDAVIT OF MEMORANDUM OF UNDERSTANDING (MOU) FOR ASSOCIATED CONTRACTOR

(to be submitted for each and every E&M component separately)

M/s. (Name of the firm with full address)

(Henceforth called the main Contractor)

And

M/s. (Name of the firm with full address)

(Henceforth called the Associated Contractor)

Name of Work: **SITC of 40 kWp On- Grid roof top Solar Photovoltaic (SPV) Power Generation System at Directorate of Arecanut and Spices Development (DASD), Kozhikode.**

NIT No.15/CLTED/2026-27

This MoU is made at on between the (herewith called the main contractor) and (herewith called the Associated contractor).

Whereas the main contractor has agreed to entrust the E&M works only to the associated contractor.

We state that M.O.U between us will be treated as an agreement and has legality as per Indian Contract Act (amended up to date) and the department (CPWD) can enforce all the terms and conditions of the agreement for execution of the above work. Both of us shall be responsible for the execution of work as per the agreement to the extent this MOU allows. Both the parties can be paid consequent to the execution as per agreement to the extent this MOU permits. In case of any delay in the payment by the main contractor, the associated contractor can apply to the CPWD to release the payment under Clause 7B and deduct the same from the bills of the main contractor. In case of any dispute, either of us will go for mediation by the CE or SE (as the case may be) and his decision shall be final and binding on both of us.

We have agreed as under:

- 1) The Associated Contractor will execute all E & M works in the wholesome manner as per terms and conditions of the agreement.
- 2) The Associated Contractor shall be liable for disciplinary action if he fails to discharge the action(s) and other legal action as per agreement.
- 3) All the machinery and equipment, tools and tackles required for execution of the E & M works, as per agreement, shall be the responsibility of the Associated Contractor.
- 4) The site staff required for the E & M work shall be arranged by the Associated Contractor as per terms and conditions of the agreement.
- 5) Site order book maintained for the said work shall be signed by the main contractor as well as by the Engineer of the Associated Contractor and by Associated Contractor himself.

6) All the correspondence regarding execution of the E & M work shall be done by the department with the main contractor. In case of non-compliance of the provisions of agreement of the work by the associated contractor, the main contractor shall be held responsible and action will be taken against him as per agreement provisions.

7) In case of non-performance, associated contractor will be debarred from participation or association in the CPWD tenders by the CPWD.

(Authorized Signatory)

SIGNATURE OF THE MAIN CONTRACTOR

Date :Date :

Place :Place :

1. Witness with address

(Authorized Signatory)

SIGNATURE OF THE ASSOCIATED CONTRACTOR

1. Witness with address

(From main contractor side)

(From associated contractor side)

(NOTE: Affidavit to be furnished on a 'non-judicial' stamp paper worth Rs.200/-)

**GOVERNMENT OF INDIA
CENTRAL PUBLIC WORKS DEPARTMENT
CPWD-6 FOR e-TENDERING**

1. Percentage rate bids are invited on behalf of the President of India invites online percentage rate bids from approved and eligible contractors of CPWD/ Manufacturers or OEM/ Specialized Agencies/Firms, in two Bid system [(i) Eligibility Bid & (ii) Financial bid] for the following work.

2.

Name of Work: SITC of 40 kWp On- Grid roof top Solar Photovoltaic (SPV) Power Generation System at Directorate of Arecanut and Spices Development (DASD), Kozhikode.

The enlistment of the contractors should be valid on the last date of submission of bids. In case the last date of submission of bid is extended, the enlistment of contractor should be valid on the original date of submission of bids.

- 1.1 The work is estimated to cost **Rs.28,77,410/-**. This cost, however, is given merely as a rough guide.
- 1.2 Intending Bidders is eligible to submit the bid provided he has definite proof from the appropriate authority, which shall be to the satisfaction of the competent authority, of having satisfactorily completed similar work of magnitude specified below.
- 1.2.1 **Criteria of Eligibility for submission of Bid documents:**

(a) Should have satisfactorily completed the works as mentioned below during the last 7 years ending last day of the month previous to the one in which tenders are invited.

Three similar works each costing not less than Rs. 11.50 Lakhs

OR

Two similar works each costing not less than Rs.17.26 Lakhs

OR

One similar work costing not less than Rs. 23.01 Lakhs.

Similar work shall mean works of **SITC of ON GRID Roof top Solar Photovoltaic Power generation System**". The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7% per annum, calculated from the date of completion to previous day of last day of submission of bid.

Associated contractor should not have been debarred from any Ministry or any govt. organization in the last five years.

(b) Should have had Average Annual Financial Turnover of **Rs.8.63 Lakhs**. (30% of the estimated Cost put to tender) on Construction /Maintenance works during the last 3 years ending 31st March 2026. (Scanned copy of Certificate from CA with Unique Document Identification Number (UDIN) to be uploaded. The value of annual turnover figures shall be brought to current value by enhancing the actual turnover figures at simple rate of 7% per annum.

(c) Should not have incurred any loss (profit after tax should be positive) in more than two years during the last five years ending 31st March 2026

(d) Should have a Banker's Certificate from a commercial Bank for **Rs.11.50 Lakhs** (40% of the Estimated Cost put to tender (ECPT)), or Net Worth certificate from CA

with Unique Document identification Number (UDIN) of **Rs. 2.87 Lakhs** (minimum 10% amount of ECPT) (Scanned copy of original to be uploaded).

(e) Firms / agencies whose contract is rescinded during the last seven years of its operations ending last day of the previous month of submission of tender are not eligible.

(f) Firms / agencies who are blacklisted and/or debarred for the last 7 years of its operations ending last day of the previous month of submission of tender are not eligible.

To become eligible for issue of bid, the bidders shall have to furnish an affidavit asunder:

I/We undertake and confirm that eligible similar works(s) has / have not been got executed through another contractor on back-to-back basis. Further that, if such a violation comes to the notice of Department, then I/we shall be debarred for bidding in CPWD in future forever. Also, if such a violation comes to the notice of Department before date of start of work, the Engineer-in-Charge shall be free to suspend me/us for one year and shall not be eligible to bid for CPWD tenders from date of issue of suspension order or to forfeit the entire amount of Performance Guarantee. (Scanned copy to be uploaded at the time of submission of bid)

2. Agreement shall be drawn with the successful bidders on prescribed Form No.CPWD7/8(or other standard Form as mentioned) which is available as a Govt. of India Publication and also available on web site www.cpwd.gov.in. Bidders shall quote his rates as per various terms and conditions of the said form which will form part of the agreement.
3. The time allowed for carrying out the work will be **04 (Four) Month** from the date of start as defined in schedule 'F' or from the first date of handing over of the site, whichever is later, in accordance with the phasing, if any, indicated in the bid documents.
4. The entire site is available
5. The bid document consisting of plans, specifications, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents except Standard General Conditions of Contract Form can be seen on website <https://etender.cpwd.gov.in> or www.cpwd.gov.in free of cost.
6. After submission of the bid, the contractor can re-submit revised bid any number of times or withdraw it before last date and time of submission of bid as notified. No post-tender modification is allowed by the tenderers except through negotiations, if required. In case, any tenderer does so, the tender will be rejected and the tenderer will be debarred for future tendering in CPWD for two years by the concerned enlisting authority (in case of CPWD enlisted contractor) and by the concerned CE/SE (in case of non-enlisted contractor).
7. While submitting the revised bid, contractor can revise the rate of one or more items(s) any number of times (he need not re- enter rates of all the items) but before last time and date of submission of bid as notified.
8. When bids are invited in three stage system and if it is desired to submit revised financial bid then it shall be mandatory to submit revised financial bid. If not submitted then the bid submitted earlier shall become invalid.
9. Earnest Money in the form of Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee including e- Bank Guarantee (for balance amount as prescribed) from any of the Commercial Banks (**drawn in favour of Executive Engineer, CPWD, Calicut**) shall be scanned and uploaded on the e-Tendering

website within the period of bid submission. The original EMD should be deposited either in the office of Executive Engineer inviting bids or division office of any Executive Engineer, CPWD within the period of bid submission. The EMD receiving Executive Engineer (including NIT issuing EE/AE) shall issue a receipt of deposition of earnest money deposit to the bidder in a prescribed format (enclosed) uploaded by tender inviting EE in the NIT.

A part of earnest money is acceptable in the form of bank guarantee also. In such case, minimum 50% of earnest money or Rs. 20 lac, whichever is less, shall have to be deposited in shape prescribed above, and balance may be deposited in shape of Bank Guarantee including e- Bank Guarantee of any Commercial bank having validity for a period of 90 days for single bid works and 180 days for two bid system or more from the last date of receipt of bids which is to be scanned and uploaded by the intending bidders.

The earnest money given by all the tenderers except the lowest tenderer shall be refunded immediately after the expiry of stipulated bid validity period or immediately after acceptance of the successful bidder, whichever is earlier. However, in case of two/ three bid system, earnest money deposit of bidders unsuccessful during technical bid evaluation etc. should be returned within 30 days of declaration of result of technical bid evaluation.

Copy of Enlistment Order and certificate of work experience and other documents as specified in the notice inviting e- tender shall be scanned and uploaded on the e-Tendering website within the period of bid submission. However, certified copy of all the scanned and uploaded documents as specified in e- tender notice shall have to be submitted by the lowest bidder within a week physically in the office of tender opening authority. Online bid documents submitted by intending bidders shall be opened only of those bidders, who has deposited EMD with any division of CPWD and other documents scanned and uploaded are found in order.

The Bid submitted shall be opened at 15.30 Hrson 22.10.2026.

10. The bid submitted shall become invalid and e-Tender processing fee (if applicable) shall not be refunded if:
 - (i) Thebidderisfoundineligible.
 - (ii) The bidder does not upload scanned copies of all the documents stipulated in the Bid document.
 - (iii) If any discrepancy is noticed between the documents as uploaded at the time of submission of bid and hard copies as submitted physically by the lowest bidder in the office of tender opening authority.
 - (iv) If a tenderer quotes NIL rates against all items in Item rate tender or does not quote any percentage above/below on the total amount of the tender or any section/sub head in percentage rate tender, the tender shall be treated as invalid and will not be considered as lowest tenderer.
11. The contractor whose bid is accepted will be required to furnish performance guarantee at specified percentage of the tendered amount as mentioned in schedule E and within the period specified in Schedule F. This guarantee shall be in the form of Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt or Bank Guarantee from any of the Commercial Banks in accordance with the prescribed form. In case the contractor fails to deposit the said performance guarantee within the period as indicated in Schedule 'F', including the extended period if any, the Earnest Money deposited by the contractor shall be forfeited automatically without any notice to the contractor. The earnest money deposited along with bid shall be returned after receiving the aforesaid performance guarantee. The contractor whose bid is accepted will also be required to furnish either copy of applicable

licenses/ registrations or proof of applying for obtaining labour licenses, registration with EPFO, ESIC and BOCW Welfare Board including Provident Fund Code No. If applicable and also ensure the compliance of aforesaid provisions by the sub-contractors, if any engaged by the contractor for the said work within the period specified in Schedule F.

12. The Description of the work is as follows:

SITC of 40 kWp On- Grid roof top Solar Photovoltaic (SPV) Power Generation System at Directorate of Arecanut and Spices Development (DASD), Kozhikode.

Intending Bidders are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their bids as to the nature of the ground and sub-soil (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their bid. A bidders shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charge consequent on any misunderstanding or otherwise shall be allowed. The bidders shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, water, electricity access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a bid by a bidders implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and of conditions and rates at which stores, tools and plant, etc. will be issued to him by the Government and local conditions and other factors having a bearing on the execution of the work.

13. The competent authority on behalf of the President of India does not bind itself to accept the lowest or any other bid and reserves to itself the authority to reject any or all the bids received without the assignment of any reason. All bids in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the bidders shall be summarily rejected.
14. Canvassing whether directly or indirectly, in connection with bidders is strictly prohibited and the bids submitted by the contractors who resort to canvassing will be liable for rejection.
15. The competent authority on behalf of President of India reserves to himself the right of accepting the whole or any part of the bid and the bidders shall be bound to perform the same at the rate quoted.
16. The contractor shall not be permitted to bid for works in the CPWD Circle (Division in case of contractors of Horticulture/Nursery category) responsible for award and execution of contracts, in which his near relative is posted a Divisional Accountant or as an officer in any capacity between the grades of Superintending Engineer and Junior Engineer (both inclusive). He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any gazetted Officer in CPWD or in the Ministry of Urban Development. Any breach of this condition by the contractor would render him liable to be removed from the approved list of contractors of this Department.
17. No Engineer of Gazetted Rank or other Gazetted Officer employed in Engineering or Administrative duties in an Engineering Department of the Government of India is allowed to work as a contractor for a period of one year after his retirement from Government service, without the prior permission of the Government of India in writing. This contract is liable to be cancelled if either the contractor or any of his employees is found any time to be such a person who had not obtained the permission of the Government of India as aforesaid before submission of the bid or engagement in the contractor's service.

18. The bids for the work shall remain open for acceptance for a period of 30 (thirty) days from the date of opening of bids in case of single bid system and 75 (seventy five) days from the date of opening of technical bids in case bids are invited in 2 or 3 bid system. Further
 - (i) If and tenderer withdraws his tender within 7 days after last date and time (24 hours basis) of submission of bids, then the Government shall without prejudice to any other right or remedy, be at liberty to forfeit 50% of the earnest money absolutely irrespective of letter of acceptance for the work is issued or not.
 - (ii) If and tenderer withdraws his tender after expiry of 7 days after last date and time (24 hours basis) of submission of bids, then the Government shall without prejudice to any other right or remedy, be at liberty to forfeit 100% of the earnest money absolutely respective of letter of acceptance for the work is issued or not.
 - (iii) In case of forfeiture of earnest money as prescribed in para (i) and (ii) above, the bidders shall not be allowed to participate in the rebidding process of the same work.
19. This notice inviting Bid shall form a part of the contract document. The successful bidders/contractor, on acceptance of his bid by the Accepting Authority shall within 15 days from the stipulated date of start of the work, sign the contract consisting of:-
 - (a) The Notice Inviting Bid, all the documents including additional conditions, specifications and drawings, if any, forming part of the bid as uploaded at the time of invitation of bid and the rates quoted online at the time of submission of bid and acceptance thereof together with any correspondence leading thereto.
 - (b) Standard C.P.W.D. Form 7 / 8 or other Standard C.P.W.D. Forms applicable.
20. In case any discrepancy is noticed between the documents as uploaded at the time of submission of the bid online and hard copies as submitted physically in the office of Executive Engineer, then the bid submitted shall become invalid and the Government shall, without prejudice to any other right or remedy, be at liberty to forfeit 100% of the said earnest money as aforesaid. Further the tenderer shall not be allowed to participate in the retendering process of the work.
21. The Contractor/Agency shall not execute any Extra/Substitute and deviated item as specified in BOQ without prior approval of Engineer-in-charge.
22. Water and electricity to be used in the work will be in the scope of agency. No extra payment will be done for it.
23. Contractor shall submit the drawing before execution of work for all E&M services to the respective Engineer in charge for approval without any cost/claims.
24. Small civil work such as cutting or making any hole or after installation of items making it good again will be in the scope of agency without any cost/claims.
25. The intending bidders are required to update their profile in CPWD e-tender portal and to upload their bids well in advance of last date of submission of tender. Any issue related to updating profile / uploading tender can be resolved through the concerned Executive Engineer/ Assistant Engineer (Phone no 0495-2326501, e-mail Id eeectcdcpwd@gmail.com.) ERP help line no. 18001803286 or email ID: [cpwd.support @techmahindra.com](mailto:cpwd.support@techmahindra.com). The e-tendering bidders are also advised not to wait to raise any issue till the last date of submission of bid in their own interest.

26. Price Preference to SC/ST individual contractor for item rate/percentage rate tender:

Price preference in quoted item rate/percentage rate tender shall be applicable to the individual enlisted/non-enlisted SC/ST contractor as under:

(i) For work(s) upto and equal to an estimated cost of Rs. 2.80 lakh a pricePreference upto 5% (with reference to the lowest valid tender) may be allowed in favor of individual SC/ST enlisted/non-enlisted contractor. No earnest money is required in such case(s).

(ii) For work(s) beyond an estimated cost of Rs. 2.80 lakh and upto and equal to estimated cost of Rs. 6.40 lakh, the price preference upto 5% (with reference to the lowest valid tender) may be allowed in favour of individual enlisted SC/ST contractor. However, earnest money at a reduced rate of $\frac{1}{2}\%$ may be accepted in such cases.

The price preference upto 5% (with reference to the lowest valid price bid) may be allowed In favour of individual SC/ST contractor only. The above concession shall be allowed only after verification of the individual contractor's claim of belonging to SC/ST community.

- 27.** PG shall be 5% of the estimated cost put to tender (ECPT) or contract amount whichever is higher, or as prescribed from time to time, to be submitted in the form as prescribed in GCC. Performance Guarantee shall remain valid for a minimum period of six months beyond the date of completion of all contractual obligations as per GCC. In case of contracts where supplementary agreement is drawn, the fresh PG shall be obtained from the contractor @ 5% of the amount of the supplementary agreement or as prescribed from time to time. The PG received against the original work shall be released as per contract conditions.

A bid will be treated as abnormally low if the quoted bid amount is lesser than 80% of the estimated cost put to tender.

Requirement of Additional Performance Guarantee (APG): In case of abnormally low bids as defined above, the bidder shall be required to submit Additional Performance Guarantee (APG) in addition to the Standard Performance Guarantee (PG). The amount of Additional Performance Guarantee (APG) shall be equivalent to the difference between the 80% amount of ECPT and quoted amount. (E.g. if ECPT is A and quoted amount is 0.7A then the amount of APG shall be 0.8A-0.7A). The Additional Performance Guarantee (APG) shall be in the prescribed format of Performance Guarantee and has to be submitted within the time frame of prescribed for submission Performance Guarantee. The other terms and conditions of release etc. of APG shall be same as that of PG.

**EXECUTIVE ENGINEER (E)
CLTED, CPWD, CALICUT**

FORM 'A1 '**FINANCIAL INFORMATION**

Name of the firm / contractor.....:

- I. Financial Analysis-Details to be furnished duly supported by figures in balance sheet/profit & loss account for the last five years duly certified by the Chartered Accountants, as submitted by the applicant to the Income Tax Department (Copies to be attached).

Fig in lakhs

Sl. No.	Particulars	Financial Years				
i)	Gross Annual turnover on construction works					
ii)	Profit / Loss (Standalone finance statement and consolidated financial statement both)					

- II. Financial arrangements for carrying out the proposed work.

Signature of Chartered Accountant with Seal Signature of Bidder(s)

Note: This Form 'A1' of financial information regarding the bidder must be signed by both bidder as well as Chartered Accountant.

BANKERS' CERTIFICATE FROM A COMMERCIAL BANK

This is to certify that to the best of our knowledge and information that M/s./Shri..... having marginally noted address,.....as a customer of our bank are / is respectable and can be treated as good for any engagement upto a limit of Rs.(Rupees.....).

This certificate is issued without any guarantee or responsibility on the bank or any of the officers.

(Signature) For the Bank

NOTE:

- (1) Banker's certificate should be on letter head of the Bank addressed to the Executive Engineer- Electrical, CPWD, Calicut.
- (2) In case of partnership firm, certificate should include names of all partners as recorded with the Bank.

FORM FOR CERTIFICATE OF NET WORTH FROM CHARTERED ACCOUNTANT

It is to certify that as per the audited balance sheet and profit & loss account during the financial year.....,the net worth of M/s..... (name and registered address of individual/firm/company), as on (the relevant date) is Rs..... after considering all liabilities. It is further certified that the net worth of the company has not eroded by more than 30% in the last three years ending on(the relevant date).

Unique Document Identification Number (UDIN)
Signature of the Chartered Accountant.....
Name of the Chartered Accountant.....
Membership no. of ICAI.....
Date and seal

DETAILS OF ELIGIBLE SIMILAR NATURE OF WORKS COMPLETED DURING THE LAST SEVEN YEARS ENDING PREVIOUS DAY OF LAST DAY OF SUBMISSION OF TENDERS

Name of the firm / contractor.....

Sl. No.	Name of work/ project and location	Owner or sponsoring organization	Cost of work in crores of Rs.	Date of commencement as per contract	Stipulated date of completion	Actual date of completion	Litigation/ arbitration case pending /in progress with details*	Name & Address (Postal & E-mail)/ telephone no. of officer to whom ref. may be made	Whether work was done on back to back basis. Yes/no
1	2	3	4	5	6	7	8	9	10

*indicate gross amount claimed and amount awarded by the Arbitrator.

Signature of bidder(s)

FORM 'C1'**PROJECTS UNDER EXECUTION**

Sl. No.	Name of work/ Project and location	Owner or sponsoring organization	Cost of work in crores of Rs.	Date of commencement as per contract	Stipulated date of completion	Up-to-date % progress of the work	Slow progress if any and reasons there of	Name and Address (Postal & E-mail)/ tel. Number Of officer to whom ref. may be made	Remarks
1	2	3	4	5	6	7	8	9	10
Signature of bidder(s)									

FORM 'D'

AFFIDAVIT

I/We undertake and confirm that eligible similar works(s) has/have not been got executed through another contractor on back-to-back basis. Further that, if such a violation comes to the notice of Department, then I/we shall be debarred for bidding in CPWD in future forever. Also, if such a violation comes to the notice of Department before date of start of work, the Engineer-in-Charge shall be free to suspend me/us for one year and shall not be eligible to bid for CPWD tenders from date of issue of suspension order or to forfeit the entire amount of Performance Guarantee. (Scanned copy to be uploaded at the time of submission of bid).

Signature of Bidder(s) or an authorized
Officer of the firm with stamp

FORM 'E'
AFFIDAVIT

(NOTE: Affidavit to be furnished on a 'non-judicial' stamp paper worth Rs.100/-)

I/We, M/s. _____, having our registered office at _____, represented by the undersigned, do hereby solemnly affirm and declare as under:

1. That I/We have submitted our bid for the work "SITC of 40 kWp On- Grid roof top Solar Photovoltaic (SPV) Power Generation System at Directorate of Arecanut and Spices Development (DASD), Kozhikode."
2. That I/We understand and accept the conditions stipulated in the Notice Inviting Tender (NIT).
3. That in the event I/We, being a CPWD-enlisted contractor, do not possess the requisite experience in the execution of similar nature of specialized works as prescribed in the NIT, I/We shall associate a specialized agency fulfilling the eligibility and experience criteria specified in the NIT for execution of such specialized work.
4. That the details and consent of the specialized agency, along with all supporting documents, shall be submitted within the time stipulated in the NIT or within such period as may be directed by the Engineer-in-Charge.
5. That I/We understand and undertake that failure to associate an eligible specialized agency within the stipulated period shall constitute a breach of the conditions of the NIT, and the Earnest Money Deposit (EMD) submitted by me/us shall be liable to be forfeited, without prejudice to any other rights or remedies available to the Government under the contract, the CPWD General Conditions of Contract, or any other applicable law.
6. That I/We further undertake that the association of a specialized agency shall not absolve me/us of any contractual obligations, and I/We shall remain solely responsible for the quality, execution, safety, performance, and timely completion of the work.
7. That I/We hereby declare that the above statements are true and correct to the best of my/our knowledge and belief, and no material fact has been concealed therefrom.

I/We hereby verify that the contents of this affidavit are true and correct to the best of my/our knowledge and belief, and that no part of it is false and nothing material has been concealed therefrom

Place: _____

Date: _____

Signature of Bidder(s) or an authorized

Officer of the firm with stamp

FORM 'F'
AFFIDAVIT

(NOTE: Affidavit to be furnished on a 'non-judicial' stamp paper worth Rs.100/-)

I/We, **M/s.** _____, having our registered office at _____, represented by the undersigned, do hereby solemnly affirm and declare as under:

1. That I/We have submitted our bid for the work **"SITC of 40 kWp On- Grid roof top Solar Photovoltaic (SPV) Power Generation System at Directorate of Arecanut and Spices Development (DASD), Kozhikode.**
2. That during the last seven (7) years ending on the last day of the month previous to the one in which the tenders are invited, no contract awarded to me/us **has been rescinded** by any Government Department, Central Public Sector Undertaking (CPSU), State Government Department, Autonomous Body, or any other Public Sector Organization on account of default, non-performance, or breach of contractual obligations on my/our part.
3. That I/We have **not been blacklisted**, debarred, banned, or otherwise declared ineligible to participate in tenders by CPWD or by any Central Government Department, State Government Department, CPSU, Autonomous Body, or any Government Organization during the last seven (7) years ending on the last day of the month previous to the one in which the tenders are invited.
4. That I/We understand and accept that if any information or declaration made in this affidavit is found to be false, incorrect, or misleading at any stage, my/our bid shall be liable to be rejected, and if the contract has already been awarded, the same shall be liable to be terminated. Further, the Earnest Money Deposit (EMD), Performance Guarantee, and other securities, as applicable, shall be liable to forfeiture, without prejudice to any other rights or remedies available to the Government under the contract, the CPWD General Conditions of Contract, or any other applicable law.
5. That I/We hereby declare that the above statements are true and correct to the best of my/our knowledge and belief, and no material fact has been concealed therefrom.

I/We hereby verify that the contents of this affidavit are true and correct to the best of my/our knowledge and belief, and that no part of it is false and nothing material has been concealed therefrom

Place: _____

Date: _____

Signature of Bidder(s) or an authorized

Officer of the firm with stamp

UNDERTAKING REGARDING SITE INSPECTION

To,

The Executive Engineer (E)

CPWD, Calicut

Name of Work: - **"SITC of 40 kWp On- Grid roof top Solar Photovoltaic (SPV) Power Generation System at Directorate of Arecanut and Spices Development (DASD), Kozhikode."**

1. It is hereby declared that, in accordance with CPWD-6 for e-Bidding, I/We, the bidder(s), have inspected and examined the site and its surroundings and have satisfied myself/ourselves regarding the existing roof, roof-sheet supporting structure and other site conditions relevant to the proposed installation of the Solar PV System.
2. I/We have specifically inspected the existing roof-sheet structure and supporting members for their condition, accessibility and suitability for installation of the proposed solar mounting structure. I/We have also inspected the site for providing a suitable access/walkway arrangement from the terrace to the roof-sheet/solar panel area for safe inspection, cleaning and maintenance of the Solar PV System.
3. I/We have obtained all necessary information regarding the site, existing structures, access, risks, contingencies and other factors affecting the execution of the work. No claim for additional cost or compensation arising from any misunderstanding or failure to inspect the site shall be entertained at a later stage.
4. I/We shall arrange, at my/our own cost, all materials, tools and plants, labour, access arrangements, safety measures and other facilities required for execution of the work, unless otherwise specifically provided in the Contract Documents.
5. Submission of the bid by me/us shall be deemed to imply that I/We have read and understood this undertaking and all other Contract Documents and have made myself/ourselves fully aware of the scope, specifications, site conditions, existing structural arrangements, access requirements and all other factors having a bearing on the execution of the work.

Place: _____

Date: _____

Signature of Bidder(s) or an authorized

Officer of the firm with stamp

**GOVERNMENT OF INDIA
CENTRAL PUBLIC WORKS DEPARTMENT**

Percentage Rate Tender & Contract for Works

(A) Tender for the work of: - **Name of Work:**

SITC of 40 kWp On- Grid roof top Solar Photovoltaic (SPV) Power Generation System at Directorate of Arecanut and Spices Development (DASD), Kozhikode.

(i) Tender to be uploaded by **15:00 hours on 22.10.2026** to Executive Engineer(E) , CPWD, Calicut / uploaded at www.etenderwizard.cpwd.gov.in.

(ii) Tender to be opened in presence of tenderers who may be present at **15:30 hours** on **22.10.2026** in the Office of Executive Engineer(E),CPWD, Calicut.

TENDER

I/We have read and examined the notice inviting tender, schedule, A, D, E & F Specifications applicable, Drawings & Designs, General Rules and Directions, Conditions of Contract, clauses of contract, Special conditions, Schedule of Rate & other documents and Rules referred to in the conditions of contract and all other contents in the tender document for the work.

I/We hereby tender for the execution of the work specified for the President of India within the time specified in Schedule 'F' viz., schedule of quantities and in accordance in all respect with the specifications, designs, drawing and instructions in writing referred to in Rule-1 of General Rules and Directions and in Clause 11 of the Conditions of contract and with such materials as are provided for, by, and in respect of accordance with, such conditions so far as applicable.

We agree to keep the tender open for Thirty (30) days from the date of opening of bids in case of single bid system and 75 (seventy five) days from the date of opening of technical bids in case bids are invited in 2 or 3 bid system for specialized works and not to make any modification in its terms and condition.

A copy of earnest money in receipt treasury challan / deposit at call receipt of a scheduled bank/ fixed deposit receipt of scheduled bank / demand draft of a scheduled bank / bank guarantee issued by a schedule bank is scanned and uploaded (strike out as the case may be). If I/We, fail to furnish the prescribed performance guarantee within prescribed period. I/We agree that the said President of India or his successors, in office shall without prejudice to any other right or remedy, be at liberty to forfeit the said earnest money absolutely. Further, if I/We fail to commence work as specified, I/We agree that President of India or the successors in office shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the said earnest money and the performance guarantee absolutely, otherwise the said earnest money shall be retained by him towards security deposit to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to those in excess of that limit at the rates to be determined in accordance with the provision contained in Clause 12.2 and 12.3 of the tender form.

Further, I/We agree that in case of forfeiture of Performance Guarantee as aforesaid. I/We shall be debarred for participation in the re-tendering process of the work.

I/We undertake and confirm that eligible similar work(s) has/have not been got executed through another contractor on back-to-back basis. Further that, if such a violation comes to the notice of Department, then I/We shall be debarred for tendering in CPWD in future forever. Also, if such a violation comes to the notice of Department before date of start of work, the Engineer-in-Charge shall be free to forfeit the entire amount of Performance Guarantee.

I/We hereby declare that I/We shall treat the tender documents drawings and other records connected with the work as secret/confidential documents and shall not communicate information/derived there from to any person other than a person to whom I/We am/are authorized to communicate the same or use the information in any manner prejudicial to the safety of the State.

Dated:

Signature of Contractor

Witness:

Postal Address

Address:

Occupation:

ACCEPTANCE

The above tender (as modified by you as provided in the letters mentioned hereunder) is accepted by me for an on behalf of the President of India for a sum of

`.....(Rupees.....
.....).

The letters referred to below shall form part of this contract agreement:-

(a)

(b)

(c)

For & on behalf of President of India

Signature

Designation

Dated:

(Guarantee offered by Bank to CPWD in connection with the execution of Contracts)

**FORM OF BANK GUARANTEE FOR EARNEST MONEY DEPOSIT / PERFORMANCE
GUARANTEE / SECURITY DEPOSIT / MOBILIZATION ADVANCE**

1. Whereas the Executive Engineer (E)(name of Division)CPWD on behalf of the President of India (hereinafter called “The Government”) has invited bids under(NIT number)dated For(name of work) The Government has further agreed to accept irrevocable Bank Guarantee for Rs(Rupeesonly) valid upto(date)* as **Earnest Money Deposit** from(name and address of Contractor)(hereinafter called “the contractor(s)”) for compliance of his obligations in accordance with the terms and conditions of the said NIT.

OR**

Whereas the Executive Engineer (E)(name of Division)CPWD on behalf of the President of India (hereinafter called “The Government”) has entered into an agreement bearing numberwith(name and address of the contractor).....(hereinafter called “the Contractor) for execution of work(name of the work).....The Government has further agreed to accept to accept an irrevocable Bank Guarantee for Rs(Rupeesonly) valid upto(date) as **Performance Guarantee / Security Deposit / Mobilization Advance** from the said Contractor for compliance of his obligations in accordance with the terms and conditions of the Agreement.

2. We..... (indicate Hereinafter referred to as “the Bank”) hereby undertake to pay to the Government an amount not exceeding Rs..... (Rupees.....only) on demand by the Government within 10 days of the demand.
3. We(Indicate the name of the Bank) do hereby undertake to pay the amounts due and payable under this Guarantee without any demure, merely on a demand from the Government stating that the amount claimed is required to meet the recoveries due or likely to be due from the said contractor(s). Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs..... (Rupees.....only).
4. We,(indicate the name of the Bank)....., further undertake to pay to the Government any money so demanded notwithstanding any dispute or disputes raised by the contractors in any suit or proceeding pending before any Court or Tribunal, our liability under this Bank Guarantee being absolute and unequivocal. The payment so made by us under this Bank Guarantee shall be a valid discharge of our liability for payment there under and the contractors shall have no claim against us for making such payment.
5. We(Indicate the name of the Bank) further agree with the Government that the Government shall have the fullest liberty without our consent and without effecting in any manner our obligations hereunder to vary any of the terms and conditions of the said agreement or to extend time of performance by the said contractors

from time to time or to postpone for any time or from time to time any of the powers exercisable by the Government against the said contractors and to for-bear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said contractors or for any forbearance, act of omission on the part of the Government or any indulgence by the Government to the said contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision have effect of so relieving us.

6. We,(indicate the name of the Bank), further agree that the Government at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor at the first instance without proceeding against the Contractor and not withstanding any security or other guarantee, the Government may have in relation to the Contractor's liabilities.
7. This Guarantee will not be discharged due to the change in the constituted of the Bank or the Contractor.
8. We(indicate the name of the Bank), undertake not to revoke this Guarantee except with the consent of the Government in writing.
9. This Bank Guarantee shall be valid up tounless extended on demand by Government. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs. _____ (Rupees _____ only) and unless a claim in writing is lodged with us within the date of expiry or extended date of expiry of this guarantee, all our liabilities under this guarantee shall stand discharged.

Dated

Witness :

- | | | |
|----|------------------|----------------------|
| 1. | Signature | Authorized signatory |
| | Name and Address | Name |
| | | Designation |
| | | Staff Code No. |
| | | Bank Seal |
| 2. | Signature | |
| | Name and Address | |

***Date to be worked out on the basis of validity period of 90 days where only financial bids are invited and 180 days for Two / Three Bid system from the date of submission of Tender.**

**** In paragraph 1, strike out the portion not applicable. Bank Guarantee will be made either for Earnest money or for Performance Guarantee / Security Deposit / Mobilization Advance, as the case may be.**

PROFORMA OF SCHEDULE

SCHEDULE 'A'

Schedule of quantities (as per PWD-3)

: See part C of the NIT

SCHEDULE 'D' -

Extra schedule for specific requirements/document for the work, if any. : NIL

SCHEDULE 'E'

Reference to General Conditions of contract. CPWD General Conditions of Contract 2023–
Constructions Works with amendments up to date.

Name of Work:

**SITC of 40 kWp On- Grid roof top Solar Photovoltaic (SPV) Power Generation System at
Directorate of Arecanut and Spices Development (DASD), Kozhikode.**

Estimated cost of work : **Rs.28,77,410/-**
(i) Earnest Money Deposit : **Rs.57,548/-**
(ii) Performance Guarantee : **5 % of Tendered Amount or ECPT whichever is
Higher and APG as per order No.DG/Manual-2024/20
dated 27.02.2026.**

(iii) Security Deposit : 2.5% of Tendered Amount

SCHEDULE 'F'

GENERAL RULES & DIRECTIONS:

Officer inviting tender : EXECUTIVE ENGINEER(E)
CPWD,CALICUT

Definitions:

2(v) Engineer-in-Charge EXECUTIVE ENGINEER(E)
CPWD,CALICUT

2(viii) Accepting Authority. EXECUTIVE ENGINEER(E)
CPWD,CALICUT

2(x) Percentage on cost of materials and Labour to cover all overheads and profits: **15%**

2(xi) Standard Schedule of Rates Delhi Schedule of Rates (E&M) 2025
and prevailing market rates as applicable.
2(xii) Department CPWD

9(ii) Standard CPWD Contract Form CPWD GCC 2023–Construction Works Form
7/8with amendments up to date.

Clause 1

(i) Time allowed for submission of Performance Guarantee, Programme Chart (Time and Progress) and applicable labour Labour licenses, registration with EPFO, ESIC and BOCW Welfare Board or proof of applying thereof from the date of issue of letter of acceptance **07(Seven) days**

(ii) Maximum allowance extension with late fee @ 0.1% per day of Performance Guarantee amount beyond the period provided in (i) above **03(Three) days**

Clause 2

Authority for fixing compensation under clause 2 : Superintending Engineer
CPWD, Calicut – 673003

Clause 5

Number of days from the date of issue of letter of acceptance for reckoning date of start

07(Seven) days

Time allowed for execution of work : **04(Four) Month**

Authority to decide:

- (i) Extension of time : Superintending Engineer
CPWD, Kendriya Bhavan,
Calicut – 673003
- (ii) Shifting of date of start in case of delay in handing over of site : Superintending Engineer
CPWD, Kendriya Bhavan,
Calicut – 673003

Schedule of handing over of site

Part	Portion of site	Description	Time Period for handing over reckoned from date of issue of letter of intent.
Part A	Portion without any hindrance	Entire site is available for Maintenance	N/A
Part B	Portion with encumbrances	N/A	N/A
Part C	Portions dependent on work of other agencies	N/A	N/A

Clause 6

:Applicable

Clause 7**:Applicable**

Gross work to be done together with net payment
/Adjustment of advances for material collected,
if any, since the last such payment for being
eligible to interim payment

:5 lakh**Clause 7A**

Whether Clause 7A shall be applicable

:Yes**Clause 10A**

List of testing equipment to be provided
by the contractor

**:Megger, Earth Tester, Multimeter,
Tong Tester**

Clause 10B (ii)

Whether Clause 10 B (ii) shall be applicable

: Not Applicable**Clause 10C**

Component of labor expressed as percent of value
of work

:NA**Clause 11**

Specifications to be followed for execution of work: **CPWD General Specifications for Electrical Works Part-I- Internal 2023, Part-II External 2023, As per relevant MNRE, IE Rules and also as per direction of the Engineer-in-Charge.**

Clause 12

12.2. & 12.3 Deviation Limit beyond which clauses 12.2 &
12.3 shall apply for building work. **:100%**

12.5 (i) Deviation Limit beyond which clauses
12.2 & 12.3 shall apply for foundation work **:100%**
(Except items mentioned in earth work sub head in
DSR and related items)
(ii) Deviation Limit for items mentioned in
earth work subhead of DSR and related items **:100%**

Clause 16

Competent Authority for deciding reduced rates. : Superintending Engineer – Calicut
CPWD, Kendriya Bhavan,
Calicut - 673003

Clause 18

List of mandatory machinery, tools & plants to be deployed : Not Applicable
by the contractor at site

Clause 19C, 19D, 19G & 19K authority to decide penalty for each default: Executive Engineer (E)
Calicut, CPWD

Clause-25: Conciliation and Arbitration

Conciliator	ADG, CPWD, Kochi or successor thereof
Arbitrator Appointing Authority	SE, CPWD, Calicut or successor thereof.
Place of Arbitration	Calicut as decided by the Arbitration Appointing Authority

Clause 32:
Requirement of Technical Representative(s) and recovery Rate

S.No.	Minimum Qualification of Technical Representative	Discipline	Designation (Principal Technical/ Technical Representative)	Minimum Experience	Number	Rate at which recovery shall be made from the contractor in the event of not fulfilling provision of clause 32	
						Figures	Words
1	Graduate Engineer OR Diploma Engineer	E&M Engg	Project Manager cum Planning/Quality/ Site/Billing Engineer	02 Years 05 Years	1	Rs. 15,000.00 per month per person	Rupees Fifteen Thousand Only

Assistant Engineers retired from Government services that are holding Diploma will be treated at par with Graduate Engineers.

Diploma holder with minimum 10 years relevant experience with a reputed construction co. can be treated at par with Graduate Engineers for the purpose of such deployment subject to the condition that such diploma holder should not exceed 50% of requirement of degree Engineers.

Assistant Engineer (E) (P)
CLTED, CPWD, Calicut

Executive Engineer (E)
CLTED, CPWD, CALICUT.

I N T E G R I T Y P A C T

To,

.....
.....
.....

Sub: NIT No.15/CLTED/2026-27 for the work:-

SITC of 40 kWp On- Grid roof top Solar Photovoltaic (SPV) Power Generation System at Directorate of Arecanut and Spices Development (DASD), Kozhikode.

Dear Sir,

It is here by declared that CPWD is committed to follow the principle of transparency, equity and competitiveness in public procurement.

The subject Notice Inviting Tender (NIT) is an invitation to offer made on the condition that the Bidder will sign the integrity Agreement, which is an integral part of tender/bid documents, failing which the tenderer/bidder will stand disqualified from the tendering process and the bid of the bidder would be summarily rejected.

This declaration shall form part and parcel of the Integrity Agreement and signing of the same shall be deemed as acceptance and signing of the Integrity Agreement on behalf of the CPWD.

Yours faithfully

**EXECUTIVE ENGINEER(E)
CLTED, CPWD, CALICUT**

I N T E G R I T Y P A C T

To,

EXECUTIVE ENGINEER(E)
CLTED, C.P.W.D.
CALICUT

Sub: Submission of Tender for the work of: -

SITC of 40 kWp On- Grid roof top Solar Photovoltaic (SPV) Power Generation System at Directorate of Arecanut and Spices Development (DASD), Kozhikode.

Dear Sir,

I/We acknowledge that CPWD is committed to follow the principles thereof as enumerated in the Integrity Agreement enclosed with the tender/bid document.

I/We agree that the Notice Inviting Tender (NIT) is an invitation to offer made on the condition that I/We will sign the enclosed integrity Agreement, which is an integral part of tender documents, failing which I/We will stand disqualified from the tendering process. I/We acknowledge that THE MAKING OF THE BID SHALL BE REGARDED AS AN UNCONDITIONAL AND ABSOLUTE ACCEPTANCE of this condition of the NIT.

I/We confirm acceptance and compliance with the Integrity Agreement in letter and spirit and further agree that execution of the said Integrity Agreement shall be separate and distinct from the main contract, which will come into existence when tender/bid is finally accepted by CPWD. I/We acknowledge and accept the duration of the Integrity Agreement, which shall be in the line with Article 1 of the enclosed Integrity Agreement.

I/We acknowledge that in the event of my/our failure to sign and accept the Integrity Agreement, while submitting the tender/bid, CPWD shall have unqualified, absolute and unfettered right to disqualify the tenderer/bidder and reject the tender/bid in accordance with terms and conditions of the tender/bid.

Yours faithfully

(Duly authorized signatory of the Bidder)

I N T E G R I T Y P A C T

TO BE SIGNED BY THE BIDDER AND SAME SIGNATORY COMPETENT / AUTHORISED TO SIGN THE RELEVANT CONTRACT ON BEHALF OF CPWD.

INTEGRITY AGREEMENT

This Integrity Agreement is made at on thisday of 20.....

BETWEEN

President of India represented through **EXECUTIVE ENGINEER(E), CLTED, CPWD, CALICUT**, (Hereinafter referred as the (Address of Division) '**Principal/Owner**', which expression shall unless repugnant to the meaning or context hereof include its successors and permitted assigns)

AND

..... (Name and Address of the Individual/firm/Company) through..... (Hereinafter referred to as the (Details of duly authorized signatory) "**Bidder/Contractor**" and which expression shall unless repugnant to the meaning or context hereof include its successors and permitted assigns)

PREAMBLE

Name of Work:

WHEREAS the Principal / Owner has floated the Tender (**NIT No.15/CLTED/2026-27.**) (hereinafter referred to as "**Tender/ Bid**") and intends to award, under laid down organizational procedure, contract for:-

SITC of 40 kWp On- Grid roof top Solar Photovoltaic (SPV) Power Generation System at Directorate of Arecanut and Spices Development (DASD), Kozhikode.

Hereinafter referred to as the "**Contract**".

AND WHEREAS the Principal/Owner values full compliance with all relevant laws of the land, rules, regulations, economic use of resources and of fairness/transparency in its relation with its Bidder(s) and Contractor(s).

AND WHEREAS to meet the purpose aforesaid both the parties have agreed to enter into this Integrity Agreement (hereinafter referred to as "**Integrity Pact**" or "**Pact**"), the terms and conditions of which shall also be read as integral part and parcel of the Tender/Bid documents and Contract between the parties.

NOW, THEREFORE, in consideration of mutual covenants contained in this Pact, the parties hereby agree as follows and this Pact witnesses as under:

- 1) The Principal/Owner commits itself to take all measures necessary to prevent corruption and to observe the following principles:
 - (a) No employee of the Principal/Owner, personally or through any of his/her family members, will in connection with the Tender, or the execution of the Contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

- (b) The Principal/Owner will, during the Tender process, treat all Bidder(s) with equity and reason. The Principal/Owner will, in particular, before and during the Tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential / additional information through which the Bidder(s) could obtain an advantage in relation to the Tender process or the Contract execution.
 - (c) The Principal/Owner shall endeavor to exclude from the Tender process any person, whose conduct in the past has been of biased nature.
- 2) If the Principal/Owner obtains information on the conduct of any of its employees which is a criminal offence under the Indian Penal code(IPC)/Prevention of Corruption Act, 1988 (PC Act) or is in violation of the principles herein mentioned or if there be a substantive suspicion in this regard, the Principal/Owner will inform the Chief Vigilance Officer and in addition can also initiate disciplinary actions as per its internal laid down policies and procedures.

Article 2: Commitment of the Bidder(s)/Contractor(s)

- 1) It is required that each Bidder/Contractor (including their respective officers, employees and agents) adhere to the highest ethical standards, and report to the Government / Department all suspected acts of **fraud or corruption or Coercion or Collusion** of which it has knowledge or becomes aware, during the tendering process and throughout the negotiation or award of a contract.
- 2) The Bidder(s)/Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the Tender process and during the Contract execution:
 - (a) The Bidder(s)/Contractor(s) will not, directly or through any other person or firm, offer, promise or give to any of the Principal/Owner's employees involved in the Tender process or execution of the Contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind what so ever during the Tender process or during the execution of the Contract.
 - (b) The Bidder(s)/Contractor(s) will not enter with other Bidder(s) into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to cartelize in the bidding process.
 - (c) The Bidder(s)/Contractor(s) will not commit any offence under the relevant IPC/PC Act. Further the Bidder(s)/Contractor(s) will not use improperly, (for the purpose of competition or personal gain), or pass on to others, any information or documents provided by the Principal/Owner as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
 - (d) The Bidder(s)/Contractor(s) of foreign origin shall disclose the names and addresses of agents/representatives in India, if any. Similarly Bidder(s)/Contractor(s) of Indian Nationality shall disclose names and addresses of foreign agents/representatives, if any. Either the Indian agent on behalf of the foreign principal or the foreign principal directly could bid in a tender but not both. Further, in cases where an agent participate in a tender on behalf of one manufacturer, he shall not be allowed to quote on behalf of another manufacturer along with the first manufacturer in a subsequent/parallel tender for the same item.

- (e) The Bidder(s)/Contractor(s) will, when presenting his bid, disclose (with each tender as per proforma enclosed) any and all CON 255 Page 9 payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the Contract.
- 3) The Bidder(s)/Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.
- 4) The Bidder(s)/Contractor(s) will not, directly or through any other person or firm indulge in fraudulent practice means a willful misrepresentation or omission of facts or submission of fake/forged documents in order to induce public official to act in reliance thereof, with the purpose of obtaining unjust advantage by or causing damage to justified interest of others and/or to influence the procurement process to the detriment of the Government interests.
- 5) The Bidder(s)/Contractor(s) will not, directly or through any other person or firm use Coercive Practices (means the act of obtaining something, compelling an action or influencing a decision through intimidation, threat or the use of force directly or indirectly, where potential or actual injury may befall upon a person, his/ her reputation or property to influence their participation in the tendering process).

Article 3: Consequences of Breach

Without prejudice to any rights that may be available to the Principal/Owner under law or the Contract or its established policies and laid down procedures, the Principal/Owner shall have the following rights in case of breach of this Integrity Pact by the Bidder(s)/Contractor(s) and the Bidder/ Contractor accepts and undertakes to respect and uphold the Principal/Owner's absolute right:

- 1) If the Bidder(s)/Contractor(s), either before award or during execution of Contract has committed a transgression through a violation of Article 2 above or in any other form, such as to put his reliability or credibility in question, the Principal/Owner after giving 14 days' notice to the contractor shall have powers to disqualify the Bidder(s)/Contractor(s) from the Tender process or terminate/determine the Contract, if already executed or exclude the Bidder/Contractor from future contract award processes. The imposition and duration of the exclusion will be determined by the severity of transgression and determined by the Principal/Owner. Such exclusion may be forever or for a limited period as decided by the Principal/Owner.
- 2) **Forfeiture of Performance Guarantee/Security Deposit:** If the Principal/Owner has disqualified the Bidder(s) from the Tender process prior to the award of the Contract or terminated/determined the Contract or has accrued the right to terminate/determine the Contract according to Article 3(1), the Principal/Owner apart from exercising any legal rights that may have accrued to the Principal/Owner, may in its considered opinion forfeit the entire amount of Performance Guarantee / Security Deposit of the Bidder/Contractor.
- 3) **Criminal Liability:** If the Principal/Owner obtains knowledge of conduct of a Bidder or Contractor, or of an employee or a representative or an associate of a Bidder or Contractor which constitutes corruption within the meaning of Indian Penal code (IPC)/Prevention of Corruption Act, or if the Principal/Owner has substantive suspicion in this regard, the Principal/Owner will inform the same to law enforcing agencies for further investigation.

Article 4: Previous Transgression

- 1) The Bidder declares that no previous transgressions occurred in the last 5 years with any other Company in any country confirming to the anticorruption approach or with Central Government or State Government or any other Central/State Public Sector Enterprises in India that could justify his exclusion from the Tender process.
- 2) If the Bidder makes incorrect statement on this subject, he can be disqualified from the Tender process or action can be taken for banning of business dealings/ holiday listing of the Bidder/Contractor as deemed fit by the Principal/ Owner.
- 3) If the Bidder/Contractor can prove that he has resorted / recouped the damage caused by him and has installed a suitable corruption prevention system, the Principal/Owner may, at its own discretion, revoke the exclusion prematurely.

Article 5: Equal Treatment of all Bidders/Contractors/Subcontractors

- 1) The Bidder(s)/Contractor(s) undertake(s) to demand from all subcontractors a commitment in conformity with this Integrity Pact. The Bidder/Contractor shall be responsible for any violation(s) of the principles laid down in this agreement/Pact by any of its Subcontractors/sub-vendors.
- 2) The Principal/Owner will enter into Pacts on identical terms as this one with all Bidders and Contractors.
- 3) The Principal/Owner will disqualify Bidders, who do not submit, the duly signed Pact between the Principal/Owner and the bidder, along with the Tender or violate its provisions at any stage of the Tender process, from the Tender process.

Article 6- Duration of the Pact

This Pact begins when both the parties have legally signed it. It expires for the Contractor/Vendor 12 months after the completion of work under the contract or till the continuation of defect liability period, whichever is more and for all other bidders, till the Contract has been awarded.

If any claim is made/lodged during the time, the same shall be binding and continue to be valid despite the lapse of this Pacts as specified above, unless it is discharged/determined by the Competent Authority, CPWD.

Article 7- Other Provisions

- 1) This Pact is subject to Indian Law, place of performance and jurisdiction is the Headquarters of the Division of the Principal/Owner, who has floated the Tender.
- 2) Changes and supplements need to be made in writing. Side agreements have not been made.
- 3) If the Contractor is a partnership or a consortium, this Pact must be signed by all the partners or by one or more partner holding power of attorney signed by all partners and consortium members. In case of a Company, the Pact must be signed by a representative duly authorized by board resolution.

- 4) Should one or several provisions of this Pact turn out to be invalid; the remainder of this Pact remains valid. In this case, the parties will strive to come to an agreement to their original intentions.
- 5) It is agreed term and condition that any dispute or difference arising between the parties with regard to the terms of this Integrity Agreement / Pact, any

action taken by the Owner/Principal in accordance with this Integrity Agreement/ Pact or interpretation thereof shall not be subject to arbitration.

Article 8- LEGAL AND PRIOR RIGHTS

All rights and remedies of the parties hereto shall be in addition to all the other legal rights and remedies belonging to such parties under the Contract and/or law and the same shall be deemed to be cumulative and not alternative to such legal rights and remedies aforesaid. For the sake of brevity, both the Parties agree that this Integrity Pact will have precedence over the Tender/Contract documents with regard any of the provisions covered under this Integrity Pact.

IN WITNESS WHEREOF the parties have signed and executed this Integrity Pact at the place and date first above mentioned in the presence of following witnesses:

.....
(For and on behalf of Principal/Owner)

.....
(For and on behalf of Bidder/Contractor)

WITNESSES:

1.
(Signature, name and address)

2.
(Signature, name and address)

Place :

Date :

PART-B

ADDITIONAL CONDITION

GENERAL CONDITIONS

1. GENERAL

This specification covers manufacture, (testing, as needed, before dispatch), delivery at site, all preparatory works, assembly and installation, commissioning put to operation of grid Interactive Solar PV plant/ System consisting of all accessories, cabling works, earthing, final testing etc.

Location: The proposed work of SITC of 40 kWp On- Grid roof top Solar Photovoltaic (SPV) Power Generation System at Directorate of Arecanut and Spices Development (DASD), Kozhikode.

The work shall be executed as per CPWD General Specifications for Electrical Works Part – I Internal-2023, Part-II External 2023, all amended up to date, Updated MNRE, I.E. Rules, BIS/IEC, guidelines of the Kerala State Electrical Inspectorate, the prerequisites of M/s. KSEB Ltd.,/distribution licensee of the site and as per directions of Engineer-in-charge.

These additional specifications/ conditions are to be read in conjunction with above and in case of variations, the specifications given in the in the contract shall apply. However, nothing extra shall be paid on account of these additional specifications and conditions, as the same are to be read along with schedule of quantities for the work. In case of discrepancy between the Schedule of quantities, List of Makes, Technical Specifications, Drawings etc., the order of preference as per mentioned in the special conditions shall be observed.

The tenderer should, in its own interest, visit the site and get familiarized with the site conditions before tendering.

No T & P shall be issued by the Department and nothing extra shall be paid on account of this.

2. TERMS OF PAYMENT

The following percentage of contract rates for the various items included in the contract shall be payable against the stage of work shown herein.

S.No	Stage	Amount in percent
1	On supply of material at site along with test certificates, guarantee of manufacturer against defect, performance and availability of spare parts for required number of years as per tender document, insurance till handover to the document, insurance till handover to the Department (on pro-rata basis)	60%
2	On installation at site	20%
3	On successful synchronization with grid	10%
4	On successful testing and commissioning, getting necessary approval from state or Central body and handing over	10%

3. Works to be done by the contractor

In addition to supply, installation, testing and commissioning of all the equipments, as per schedule of work, and specifications, the following works shall be deemed to be included within the scope of work to be executed by the contractor. Nothing will be paid extra on this account.

- Tools and tackles required for handling and installation of equipments.
- Protection required for the equipments from rain, dust storm etc. during the course of transportation i.e. polythene covering and tarpaulin till completion & handing over to the department.
- Necessary equipments for commissioning/site testing.
- Supplying & Laying of suitable size copper conductor armoured control and power cable from SPV modules to PCU unit and PCU unit to main power source near substation or bidirectional meter, including supply and fixing of

PVC channel, steel conduits etc.in complete for making the system functional.

- v) Making arrangement of electricity and water required for installation.
 - vi) The design and stability calculations of the module mounting structure, structure for walk way and foundation shall be prepared and certified by a Chartered/Registered Structural Engineer in Kerala state and, wherever directed by the Engineer-in-Charge, shall be proof-checked by an IIT/NIT or Government Engineering College/CBRI or any other Government-approved engineering institution (Kerala state) and subsequently approved from the Engineer-in-charge prior to execution so that the entire structure with solar panel and walk way remains structurally safe for its use.
- vii) Minor building work i/c repairing/ closing of all holes /wall chases etc. for cable entry etc. complete as required.

4. RATES

No foreign exchange shall be made available by the Department for importing (purchase) of equipments, plants, machinery, materials of any kind or any other items required to be carried out during execution of the work. No delay and no claim of any kind shall be entertained from the Contractor, on account of variation in the foreign exchange rate.

The rates quoted by the tenderer, shall be firm and inclusive of all taxes (including works contract tax), GST, octroi, entry tax, duties and levies and all charges for packing forwarding, insurance, freight and delivery, installation, testing, commissioning etc at site including temporary constructional storage, risks, overhead charges, general liabilities/obligations and clearance from local authorities. The fee for the inspection of installation by government authorities shall be reimbursed by the department on production of receipts. The contractor has to, however, initially make the payment.

5. COMPLETENESS OF TENDER

All sundry equipments, fittings, unit assemblies, accessories, hardware items, foundation, foundation bolts, painting, termination lugs for electrical connections, and all other items which are useful and necessary for efficient assembly and installation of equipment and components of the work shall be deemed to have been included in the tender irrespective of the fact whether such items are specifically mentioned in the tender documents or not.

6. STORAGE AND CUSTODY OF MATERIALS

The Sub Station room may be used for storage of sundry materials and erection equipments or else the agency has to make its own arrangements. No separate storage accommodation shall be provided by the department. Watch and ward of the stores and their safe custody shall be the responsibility of the contractor till the final taking over of the installation by the department.

7. CARE OF THE BUILDING

Care shall be taken by the contractor while handling and installing the various equipments and components of the work to avoid damage to the building. He shall be responsible for repairing all damages and restoring the same to their original finish at his cost. He shall also remove at his cost all unwanted and waste materials arising out of the installation from the site of work.

8. COMPLETION PERIOD

The completion period indicated in the tender documents is for the entire work of planning, designing, approval of drawings etc., arrangement of materials & equipments, delivery at site including transportation, installation, testing, commissioning, getting necessary approvals from local/state/ central body and handing over of the entire system to the satisfaction of the Engineer-in-charge.

9. DEFECT LIABILITY PERIOD

All equipments shall have a defect liability period of 12 months, from the date of taking over the installation by the department, against unsatisfactory performance and/or break down due to defective design, workmanship or material. The equipments or components, or any part thereof, so found defective during guarantee period shall be forthwith repaired or replaced free of cost, to the satisfaction of the Engineer-in-Charge. In case it is felt by the department that undue delay is being caused by the contractor in doing this, the same will be got done by the department at the risk and cost of the contractor. The decision of the Engineer-in-charge in this regard shall be final & binding on the contractor. The solar PV module shall be offered a warranty of minimum 10 years. Power conditioning unit/Inverter shall be offered a warranty of

minimum 5 years. The solar PV module shall have a power output/linear output warranty (performance warranty) for 25 years. **Certificate in this regard shall be submitted from the OEM prior to delivery of the unit by the agency as per the proforma at Annexure-I at page No: 69.**

The tenderer shall guarantee among other things, the following:

- (a) Quality, strength and performance of the materials used as per manufacturers standards.
- (b) Safe mechanical and electrical stress on all parts under all specified conditions of operation.
- (c) Satisfactory operation during the maintenance period.

10. POWER SUPPLY/ WATERSUPPLY

Power and water supply shall be arranged by the contractor at the site for installation purpose. However, for testing purpose after completion of the installation, electricity supply will be made available free of cost to the contractor. Contractor will take due care to ensure safety of electrical installation during execution of work.

11. ACCEPTABLE MAKES OF VARIOUSEQUIPMENTS

The acceptable makes of various equipments/components/accessories have been indicated in the List of Acceptable Makes of equipments/ materials". The tenderer shall work out the cost of the offer on this basis. Alternate makes are not acceptable.

12. DATA MANUAL AND DRAWINGS TO BE FURNISHED BY THE TENDERER after award of work

The tenderer shall furnish detailed technical literature, pamphlets and performance data for appraisal. The successful tenderer would be required to submit the following drawings for approval of the department.

- (a) General arrangement drawing of the equipments
- (b) Single line diagram.
- (c) Schematic drawing including all safety interlocking.
- (d) Details of foundations for the equipments and the weights of assembled equipments.
- (e) Equipment details proposed to be procured for the execution of the work for the approval of the Engineer-in-charge.
- (f) Any other Details/drawings necessary for the job including
 - i) Detailed technical specification of all the equipments.
 - ii) Designcriteria.
 - iii) Designcalculations.
 - iv) General arrangement and assembly drawings.
 - v) Contour plan for thearea.
 - vi) Solar radiationdata.
 - vii) Schematic diagram for entire electricsystem.
 - viii) G.A. drawings for all types ofstructures.
 - ix) Quality assuranceplans.
 - x) Test report (for type, acceptance and routinetests).
 - xi) Operation & Maintenance instruction's manuals and its drawings.

- 13.** The successful tenderer should furnish well in advance three copies of detailed instructions and manuals of manufacturer's for all items of equipments regarding installation, adjustments, operation and maintenance including preventive maintenance & trouble shooting together with all the catalogue etc. all in triplicate.

14. EXTENT OF WORK

The work shall comprise of entire labour including supervision and all materials necessary to make a complete installation and such tests and adjustments and commissioning, as may be required by the department. The term complete installation shall not only mean major items of the plant and equipments covered by specifications but all incidental sundry components necessary for complete execution and satisfactory performance of installation with all layout charts whether or not those have been specifically mentioned in bill of quantity in the tender document. However, major equipment not covered in the scope of the work and required subsequently as an additional feature, not covered in the contract specifications, shall be paid extra. The decision of the engineer-in-charge in the matter shall be final and binding upon the contractor.

15. INSPECTION AND TESTING

Copies of all manufacturers' routine and type test, certificates of the equipments shall be furnished to the inspecting officer at the time of inspection at the factory.

16. COMPLIANCE WITH REGULATIONS AND INDIAN STANDARDS

All works shall be carried out in accordance with relevant regulation, both statutory and those specified by the Indian Standards related to the works covered by this specification. In particular, the equipment and installation will comply with the following:

- (i) Factories Act.
- (ii) Indian Electricity Rules.
- (iii) B.I.S. & other standards as applicable.
- (iv) Workmen's compensation Act.
- (v) Statutory norms prescribed by local bodies like CEA, CPCB as amended up to date and the norms followed by Kerala State Electrical Inspectorate and M/s. KSEB Ltd./power supply Co. etc.

Nothing in this specification shall be construed to relieve the successful tenderer of his responsibility for the design, manufacture and installation of the equipment with all accessories in accordance with currently applicable statutory regulations and safety codes.

Successful tenderer shall arrange for compliance with statutory provisions of safety regulations and departmental requirements of safety codes in respect of labour employed on the work by the tenderer. **Failure to provide such safety requirement would make the tenderer liable for penalty as decided by the Engineer-in-charge.** In addition, the department will be at liberty to make arrangement for the safety requirements at the cost of tenderer and recover the cost thereof from him.

17. INDEMNITY

The successful tenderer shall at all times indemnify the department, consequent on this works contract. The successful tenderer shall be liable, in accordance with the Indian law and regulations for any accident occurring due to any cause and the contractor shall be responsible for any accident or damage incurred or claims arising there from during the period of erection, construction and putting into operation the equipments and ancillary equipment under the supervision of the successful tenderer in so far as the latter is responsible. The successful tenderer shall also provide all insurance including third party insurance as may be necessary to cover the risk. No extra tenderer on account of the above.

18. ERECTION TOOLS

No tools and tackles either for unloading or for shifting the equipments for erection purposes would be made available by the department. The successful tenderer shall make his own arrangement for all these facilities.

19. CO-OPERATION WITH OTHER AGENCIES

The successful tenderer shall co-ordinate with other contractors and agencies engaged in the construction of buildings, if any, and exchange freely all technical information so as to make the

execution of this work/contract smooth. No remuneration should be claimed from the department for such technical cooperation. If any unreasonable hindrance is caused to other agencies and any completed portion of the work has to be dismantled and re-done for want of cooperation and coordination by the tenderer during the course of work, such expenditure incurred will be recovered from the successful tenderer if the restoration work to the original condition or specification of the dismantled portion of the work was not undertaken by the tenderer himself.

The work will be carried out with least disturbance during shifting & shut down taken in consultation with the client department.

20. MOBILIZATION ADVANCE

No mobilization advance shall be paid to the contractor.

21. INSURANCE AND STORAGE

All consignments are to be duly insured up to the destination from warehouse at the cost of the contractor. The insurance covers shall be valid till the equipment is handed over, duly installed, tested and commissioned.

22. VERIFICATION OF CORRECTNESS OF EQUIPMENT AT DESTINATION

The contractor shall have to produce all the relevant records to certify that the genuine equipments from the manufacturers has been supplied and erected.

23. PAINTING

This shall include cost of painting of the entire installation. The major equipments shall be factory final finish painted. The agency shall be required to do only touching to the damages caused to the painting during transportation, handling & installation at site, if there is no major damage to the painting. However hangers, supports etc. of bus trunking shall be painted with required shade including painting with two coats of anticorrosive primer paint at site.

24. TRAINING

The scope of works includes the on job technical training of two persons of department at site. Nothing extra shall be payable on this account.

25. INTERPRETING SPECIFICATIONS

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

- (a)** Schedule of quantities
- (b)** Particular specifications and special conditions
- (c)** Drawing (If any)
- (d)** CPWD Specifications
- (e)** Relevant MNRE/IEC/IS/BIS or other international code in case BIS code is not available
- (f)** Decision of Engineer-in-charge

26. Quality Assurance

The technical data sheet and manufacturing drawing of all equipments and materials as per contract specifications shall be prepared by the respective manufacturer's and will be submitted by contractor duly signed before placing the order or manufacturing the material. The Engineer-in-charge shall approve as per contract conditions.

All the materials to be used in the work shall be new and of good quality and shall be got approved from the Engineer-in-Charge before use at site. **The equipment shall be not older more than 6 months from the date of receipt at site or year of manufacturing should be current.** The equipment shall be procured directly from the manufacturer or authorized dealer and delivery

challan/invoice/ proof of dispatch of material of the Agency from where the material is purchased in support of genuineness of material shall be submitted along with bill for verification.

Manufacturer test certificates of all the equipment and material shall be submitted along with supply.

27. Comprehensive Operation & Maintenance (O&M) Clause

No separate supplementary agreement shall be executed with the successful tenderer for the Comprehensive Operation and Maintenance (O&M) of the **SITC of 40 kWp On- Grid roof top Solar Photovoltaic (SPV) Power Generation System at Directorate of Arecanut and Spices Development (DASD), Kozhikode**, for a period of five (5) years after the successful completion and commissioning of the work. The Comprehensive O&M shall form an integral part of the original agreement.

The payment towards Comprehensive O&M shall be released at the end of each successfully completed year, subject to satisfactory performance of the system and certification by the Engineer-in-Charge.

The Comprehensive O&M rates quoted by the contractor shall remain final and valid for the entire O&M period of five (5) years and no escalation on any account shall be admissible.

Before commencement of the Comprehensive O&M period, the contractor shall submit a fresh Performance Guarantee (PG) for the Comprehensive O&M work for an amount calculated on the tendered amount of the O&M component or the Estimated Cost Put to Tender (ECPT) of the O&M component, whichever is higher, along with Additional Performance Guarantee (APG), wherever applicable, in accordance with **CPWD Order No. DG/Manual-2024/20 dated 27.02.2026** and subsequent amendments, if any.

The original Performance Guarantee furnished for the execution of the work shall not be released until the fresh Performance Guarantee for the Comprehensive O&M period has been accepted by the competent authority.

The contract shall have two distinct completion milestones:

1. Completion of the original work, including successful testing and commissioning of the Solar PV System, for the purpose of recording physical completion of the installation works.
2. Completion of the five-year Comprehensive Operation and Maintenance period, after satisfactory fulfilment of all contractual obligations under the Comprehensive O&M component.

The Defect Liability Period and the Comprehensive O&M period shall be governed by the relevant provisions of the CPWD General Conditions of Contract (GCC), the Notice Inviting Tender (NIT), and other applicable CPWD instructions issued from time to time.

PARTICULAR SPECIFICATIONS OF GRID INTERACTIVE ROOF TOP SOLAR PHOTOVOLTAIC POWER PLANT/ENERGY INSTALLATION SYSTEM

1 . GENERAL SCHEME &SCOPE

This document contains the requirement of on -grid/grid interactive Solar Photo Voltaic (SPV) power supply System for general electrical load. Suitable size of solar photovoltaic system is to be installed at each location and has to feed all the electrical installations in the campus and shall be importing power to the grid also. The Power Conditioning Unit (PCU) shall be Grid tied, i.e. with a priority for use of Solar power for general electrical load and if the solar power becomes inadequate due to solar radiation outage or the fault in solar generation system then, Main/grid supply shall be used for meeting the power demand due to general electrical load.

Roof top area with pathway is available and the same shall be used for Installation of the solar modules/arrays. The PCU shall be installed inside solar inverter room. Solar Inverter room will be provided by the Department.

The scope of work includes designing and providing suitable size of Grid interactive solar power system, PCU (power conditioning unit), all measuring devices, indication devices, protection Devices, switching devices with all necessary wiring, cabling, terminations, mounting structure on MS structure of the covered pathway and any other item needed for proper functioning and protection of system from external/internal causes & from all kind of surges etc. System shall be designed with sound engineering and state of the art manner.

The scope of work includes supply, installation, testing and commissioning of the entire solar PV plant in compliance to applicable standards including Central Electricity Authority (CEA) regulations, Kerala State Electricity Regulatory Commission regulations, Kerala State Electrical Inspectorate norms & guidelines, pre-requisites/norms laid down by power supply company/KSEB Ltd.

2 . DEFINITION

In an on grid solar photovoltaic system, an array of solar panels is connected with solar inverter which is connected to the grid through meter. The solar panels convert sunlight into DC electricity which is then converted into alternating current termed as AC power. A Grid Connected Solar Rooftop Photo Voltaic (SPV) system consists of Solar PV modules combined into arrays, Mounting Structure, Inverter/Power Conditioning Unit (PCU) consisting of Maximum Power Point Tracker (MPPT), Controls & Protections, interconnection cables and switches. PV Array(s) to be mounted on a suitable structure. Grid connected SPV power plant is without battery and should be designed with necessary features to supplement the grid power and interact with mains power during day time. Components and parts used in the Solar power plants including the PV modules, metal structures, cables, junction box(s), switches, inverters/PCUs etc. should conform to the BIS or IEC or international specifications, wherever such specifications are available and applicable.

3 . GRID TIED SPV POWER SUPPLY SYSTEM:

Grid tied solar inverters are suited for outdoor/indoor use and the ideal solution for medium voltage application. The inverters provide a wide maximum point power tracking (MPPT) voltage range on effective efficiency more than 97%.

4 . SITE LAYOUT DESIGN:

The contractor will submit his layout design for SPV module including its structure details to Engineer in charge for approval before start of work. The contractor should visit the site before quoting the tender to have idea of the site related preparation to be included in their offer.

5 . SPV MODULE/ARRAY:

Solar Photo Voltaic Generating Sources: SPV generating sources constituted of following building blocks:

SPV Module: SPV Module is the basic building block of the SPV power supply, which consists of a number of Solar cells (Semiconductor Devices which when exposed to sunlight produces DC electricity) connected in

series and hermetically sealed with a toughened and highly transparent front glass cover. These modules are connected in series as well as in parallel to get the desired power and voltage. The Rated DC current of One solar PV module shall be 330Wp or higher. Solar PV modules shall be PID (Potential induced degradation) free.

SPV Panel: SPV Modules of same rating are connected in series to form a SPV panel to get the desired voltage.

SPV Array: A number of panels are connected in parallel to get the desired power. This whole combination is called an array. The SPV array is designed in such a way that, it provides simultaneous power to meet the load demand, when sufficient solar irradiation is available.

Design Features: The mechanical design and construction of SPV modules, panels and mounting structure shall be inherently robust and rigid under all conditions of operation, adjustment, storage and transport. Sharp edges shall be avoided.

Array capacity of each power plant shall not be less than 3 kWp @ standard test conditions depending on size of the power plant. Number of modules required shall be worked out accordingly. Standard test conditions shall be solar irradiance of 1000w/m², cell operating temp. Of 25 Deg C and spectral AM of 1.5.

Single module with the highest wattage is preferred. Solar PV module array will be made by utilizing Poly/mono crystalline high efficiency Silicon Solar PV cells. Minimum power output guarantee offered for the SPV Module shall not be less than for a period of 25 years as per the tender conditions. Individual solar PV module rating shall not be less than 330 Wp at standard test conditions. Each Solar PV module offered shall meet following minimum requirements.

5.1 SOLAR PHOTOVOLTAIC MODULES- General features:

The module conversion efficiency of the PV modules should be minimum 23% under standard test conditions.

- 5.1.1 The solar PV modules shall be MNRE approved (ALMM).
- 5.1.2 Modules of any type and of mono/poly crystalline can be used.
- 5.1.3 The module type must be qualified as per IEC 61215 latest edition. Modules must qualify to IEC 61730 Part I and II for construction and safety qualification testing. Certificate of MNRE approval to be submitted prior to delivery. I-V curve of each PV module with serial number of each module should be submitted along with supply of modules. Solar PV modules shall conform to IEC-61215 standards. Documentary evidence of IEC- 61215 certification shall be submitted after award of work but prior to supply of material.
- 5.1.4 The total solar PV array capacity should not be less than allocated capacity (kWp) and should comprise of solar crystalline modules of minimum 330 Wp and above wattage per module. Solar PV modules having Power generation capacities less than minimum 330 Watts shall not be accepted. Test reports of the modules should be submitted.
- 5.1.5 Protective devices against surges at the PV module shall be provided as per Kerala State Electrical Inspectorate norms. Low voltage drop bypass diodes shall also be provided.
- 5.1.6 DC surge arrester shall be provided at DC side and it shall be of type II (as per IEC 61643-I, IEC 62548/2016) rated at continuous operating voltage of at least 125% of open circuit voltage of PV string and a flash current of more than 5Amps.
- 5.1.7 PV string connected in parallel shall have matched open circuit voltage within 5% per string to avoid circulation current as per IEC: 62548:2016.
- 5.1.8 Sizing of cables for PVC sub array shall be chosen as per IEC: 62548: 2016 and its amendments.
- 5.1.9 The module frame shall be made of corrosion resistant materials having anodized aluminium or as per manufacturer standard.
- 5.1.10 Crystalline high-power cells shall be used in the Solar Photovoltaic module. Each Solar module shall consist of 72 Photovoltaic cells redundantly interconnected.
- 5.1.11 Junction box with cable gland & terminal connection block accepting 2.5mm² to 6mm² cable would be preferred.

- 5.1.12 The rated output power of any supplied module shall not vary more than 3-5% from the average power rating.
- 5.1.13 The fill factor of modules shall not be less than 0.70 (typical).
- 5.1.14 The bidder shall carefully design & accommodate requisite numbers of the modules to achieve the rated power.
- 5.1.15 Other general requirement for the PV modules and subsystems shall be of the following:
- 5.1.16 The rated output power of any supplied module shall have a tolerance of $\pm 3\%$.
- 5.1.17 The peak-power point voltage and the peak-power point current of any supplied module and/or any module string (series connected modules) shall not vary by more than 2 (two) per cent from the respective arithmetic mean for all modules and/or for all module strings, as the case may be.
- 5.1.18 The module shall be provided with a junction box with weather proof lid of sealed type and IP-65 rated.
- 5.1.19 Warranty: The PV Modules must be warranted for output wattage, which should not be less than 90% at the end of 10 years and not less than 80% at the end of 25 years. Solar PV module shall be product warranted for 10 years by the OEM/authorized channel partner/agent. Also, solar PV Module shall be offered a power output/linear output warranty for 25 years by the OEM as above. The certificate in this regard shall be furnished by the agency from OEM prior to delivery of unit.

5.2 SPV MODULES- Other features

- (a) Each SPV Module to be supplied should have minimum declared output of 330Wp or higher. Number of Modules to be provided shall be worked out accordingly. Test reports of the modules should be submitted.
- (b) Stabilized output of the Solar PV Array for the Power Plant should not be less than Calculated Kw under standard Test Conditions of solar irradiance of 1000W/m² at 25 Deg. Celsius, spectrum Air mass: 1.5 at cell temperature of 25 Deg.C
- (c) Modules for Power Plant shall be made of poly or mono-crystalline Silicon Solar cells.
- (d) Except otherwise specified, the front module surface shall consist of impact resistant, low iron and high transmission glass.
- (e) The module frame shall be made of aluminium or corrosion resistant material, which shall be electrically compatible with the structural material used for mounting the modules.

5.3 SOLAR PV MODULE (ELECTRICAL FEATURES)

- (a) Crystalline high-power cells shall be used in the Solar Photovoltaic module. Solar Module shall be laminated using laminating technology using established polymer (EVA) and Tedlar/Polyester laminate. The solar modules shall have suitable encapsulation and sealing arrangement to protect the silicon cells from the environment. The arrangement and the material of encapsulation shall be compatible with thermal expansion properties of the Silicon cells of the module framing arrangement/ material. The encapsulation arrangement shall ensure complete moisture proofing during life of solar modules.
- (b) SPV Module conversion efficiency should be greater than 23%. Module shall be made of high transmissivity glass front surface giving high encapsulation gain.
- (c) All materials used shall be having a proven history of reliable and stable operation in external outdoor/indoor applications.
- (d) Module rating is considered under standard test conditions, however Solar modules shall be designed to operate and perform in relative humidity up to 95% (non-condensing) with temperature between -10 Deg C and +85 Deg C and withstand gusts (short-duration high-speed winds) up to 180 Km/hr from back side of the panel or the Geological data of Kerala can be followed for the design to meet optimum generation whichever is higher.
- (e) Sample modules and production processes employed in the manufacture of the offered module shall be in accordance with the requirement of IEC 61730 with appropriate certificate.
- (f) Each PV module used in any solar power project must use a RF identification tag. The following information must be mentioned in the RFID used on each module. This can be inside or outside

the laminate, but must be able to withstand harsh environmental conditions.

- (1) Name of the manufacturer of PV module.
- (2) Name of the manufacturer of Solar cells.
- (3) Month and year of the manufacturer (Separately for Solar cell and module)
- (4) Country of origin (Separately for Solar cell and module)
- (5) I-V curve for the module
- (6) Wattage, I_m , V_m and fill factor for the module.
- (7) Unique Serial No and Model Number of the module.
- (8) Date and year of obtaining IEC PV module qualification certificate.
- (9) Name of the test lab issuing IEC certificate.
- (10) MNRE certificate details

5.4 SOLAR PV MODULE (MECHANICAL FEATURES)

Solar PV module design shall conform to following Mechanical requirement: -

- (1) Toughened, low iron content.
- (2) High Transmissivity front glass.
- (3) Anodized Aluminium Frame.
- (4) Ethyl vinyl Acetate (EVA) encapsulates.
- (5) Silicon edge sealant around laminate.
- (6) Tedlar/ Polyester tri-laminate back surface.
- (7)** Weather-proof DC rated MC connections easier and secure, not allowing for any loose connections, Resistant to water, abrasion, hail impact, humidity & other environment factor for the worst situation at site.

6 . JUNCTION BOXES (JBs):

- a)** The junction boxes are to be provided in the PV array for termination of connecting cables. The J. Boxes (JBs) shall be made of GRP/FRP/Powder Coated Aluminium /cast aluminium alloy with full dust, water & vermin proof arrangement. All wires/cables must be terminated through cable lugs. The Junction Boxes shall be such that input & output termination can be made through suitable cable glands.
- b)** Copper bus bars/terminal blocks should be housed in the junction box with suitable termination threads conforming to IP65 standard and IEC 62208. Hinged door should be used with EPDM rubber gasket to prevent water entry.
- c)** Each Junction Box shall have High quality Suitable capacity Metal Oxide Varistors (MOVs)/ surge arrestors and suitable Reverse Blocking Diodes etc. The Junction Boxes shall have suitable arrangement for monitoring and disconnection for each of the groups.
- d)** A test point for each sub-group for quick fault location shall be provided. It shall have facility for group isolation.
- e)** The rating of the JB's shall be suitable with adequate safety factor to inter connect the Solar PV array

7 . PV ARRAY CONFIGURATION

- a) The Solar array shall be configured in multiple numbers of sub- arrays, providing optimum DC power. The bidder shall submit their own design indicating configuration of PCU and respective sub arrays.
- b) The PV modules should be mounted on aluminium structures/GI of adequate strength and appropriate design, which can withstand load of modules and high wind velocities up to 180 km per hour or as per the geological wind map for Kerala whichever is stringent. STADD analysis in substantiation of meeting this condition to be submitted for verification by department.
- c) The array structure shall be so designed that it will occupy minimum space without sacrificing the output from the SPV panels.
- d) The bidder needs to take care of the load bearing capacity of the roof and to arrange suitable structures based on the quality of roof. The total load of the structure (when installed with PV modules) on the terrace/roof should be **less than 60 kg/m²**. Suitable civil work for installation of the structure as per schedule of quantities is to be done by the supplier. Civil Structure should be neat & clean, with proper alignment and round in shape with emphasis on proper grouting and there should not be leakage, seepage in roof after installation of plant.

8 . MODULE MOUNTING STRUCTURE

The mounting structure would be designed to sustain wind loading of up to **180 Kmph** or as per the geological wind map of Kerala whichever is stringent and shall be protected by using Eco friendly anticorrosion on structure and shall be as per MNRE Quality control manual for Grid connected roof top solar PV plant. The entire structure including array will be earthed to an independent pit with redundant paths. Mounting Structures with fixed/adjustable tilt have been proposed. The Hardware shall be made of SS material or as per manufacturer standard.

- α) The structure design shall be appropriate and innovative and must follow the existing structure and profile.
- β) **Design, drawing with material selected shall be submitted for prior approval of Engineer-in-charge. The design shall consider the structural design and safety of the proposed steel structure being provided for base structure. The design and stability calculations of the module mounting structure, structure for walk way and foundation shall be prepared and certified by a Chartered/Registered Structural Engineer in Kerala state and, wherever directed by the Engineer-in-Charge, shall be proof-checked by an IIT/NIT or Government Engineering College/CBRI or any other Government-approved engineering institution (Kerala state) and subsequently approved from the Engineer-in-charge prior to execution so that the entire structure with solar panel and walk way remains structurally safe for its use.**
- χ) The structure shall be designed to allow easy replacement of any PV module.
- δ) The structure shall be designed for simple mechanical and electrical installation. It shall support SPV module at a given orientation, absorb and transfer the mechanical loads to the roof properly.
- ε) The array structure shall be so designed that it will occupy minimum space without sacrificing the output from SPV panels at the same time.
- φ) Nut & bolts supporting structure including module Mounting Structures shall have to be adequately protected from atmosphere and weather prevailing in the area; Nut, bolts should be especially in SS material.
- γ) The bidder/manufacturer shall specify installation details of the PV modules and the support structures with appropriate diagrams and drawings.
- η) The drawings along with detailed design shall be submitted in three sets to the engineer- in-charge for approval before starting the execution of work. The work will be carried out as per designs approved by the Engineer-in-charge.

9 . POWER CONDITIONING UNIT (PCU)

Power Conditioning Unit (PCU) is critical equipment in Grid interactive SPV Power Plant. This equipment converts DC power generated by SPV array, into three phase medium voltage AC to be connected to Grid. It also provides necessary protections for Grid Synchronization and Data Logging/Monitoring. The DC energy, thus produced has to be utilized to maximum and supplied to the DC bus for inverting to AC voltage with the

help of Power Conditioning Unit using its MPPT (The efficiency of MPPT shall not be less than 97% & shall be designed to meet the Solar PV Array capacity control) to extract maximum energy from solar array and provides 415V AC, 3- ph 50Hz to synchronize with local grid. Power conditioning unit shall be MNRE approved/complying IEC and to be tested at NISE.

- a) The PCU shall have protection features such as, over current, short circuit, over temperature etc.
- b) The PCU shall be of very high quality having high efficiency (>97%) and shall be capable of running in isolated mode.
- c) The PCU should be designed to be completely compatible with the SPV array voltage and grid supply voltage.
- d) The PCU should be designed for continuous, reliable power supply as per specifications.
- e) The PCU shall have internal protection arrangement against any sustained fault.
- f) The dimension, weight, foundation details etc. of the PCU shall be clearly indicated in the detailed technical specification submitted by contractor prior to delivery of the unit.
- g) It should have user friendly LCD/LED display for programming and view on line parameters such as DC power input, DC input voltage, DC current, AC power output, AC voltage and AC current and Power factor etc.
- h) The PCU shall have arrangement for adjusting DC input current and should trip against sustainable fault downstream and shall not start till the fault is rectified.
- i) The Grid connect PCU shall be sourced from list of acceptable makes, which will incorporate latest technological advances to provide highly reliable and efficient energy conversion from DC to AC. The PCU incorporates a new system design which uses multiple power stacks which work in tandem. The PCU should be Single phase static solid state type power conditioning units/string inverters suitably connected & synchronized to give three phase supply output. Both AC & DC lines shall have suitable fuses/MCBs and contactors to allow safe start up and shut down of the system. Fuses/MCBs used in the DC circuit should be DC rated. The PCU shall have provision for input and output isolation. Each solid-state electronic device shall have to be protected to ensure long life of the inverter as well as smooth functioning of the inverter.

AC side specifications for inverter

Nominal AC power	40kwp
Output AC voltage	415V with a variation at $\pm 10\%$ at nominal voltage
Frequency	50 Hz
Total harmonic distortion	$\leq 3\%$
Under frequency protection	Yes
Under voltage protection	Yes
PV power	As per manufacturer design
Maximum DC voltage	As per manufacturer design
MPPT voltage range	As per manufacturer design
Maximum DC current	As per manufacturer design
DC over voltage protection	Yes
DC voltage ripple	$\leq 3\%$
Efficiency	$\geq 97\%$
Ambient temperature range	0-50°C
Degree of protection	IP20 for internal units and IP65 for outdoor units
Accurate display on front panel	DC input voltage
	DC current
	AC voltage (all 3phases)
	Instantaneous and cumulative output power
	Daily DC energy produced
	Solar charge current and ambient temperature
	Individual power stage heat sink and cabinet temperature
	Inverter ON
	Grid ON
	Inverter under/over voltage
	Inverter overload
	Inverter over temperature

Communication interface	RS485/RS232
	PCU shall also house MPPT (maximum power point tracker) an interface between solar PV arrays to power conditioning unit/inverter.
Power factor	≥ 0.9
Test certificates	PCU/inverter should be tested from MNRE/IEC accredited testing-calibration laboratories

- j) The PCU shall be able to withstand an unbalanced load conforming to relevant IEC standard and Indian electricity condition. The PCU shall include appropriate self-protective and self-diagnostic features to protect itself and the PV array from damage in the event of PCU component failure or from parameters – beyond the PCU's safe operating range due to internal or external causes. The self- protective features shall not allow signals from the PCU front panel to cause the PCU to be operated in a manner which may be unsafe or damaging. Faults due to malfunctioning within the PCU, including commutation feature, shall be cleared by the PCU protective devices and not by the existing site utility grid service circuitbreaker.
- k) The PCU shall go to shutdown/standby mode, with its contacts open, under the following conditions before attempting an automatic restart after an appropriate timedelay.
- l) When the power available from the PV array is insufficient to supplythe losses of the PCU, the PCU shall go to standby/shutdownmode.
- m) The PCU control shall prevent excessive cycling of shut downduring insufficient solarradiance.
- n) Operation outside the limits of power quality should cause the power conditioner to disconnect the grid. Additional parameters requiring automatic disconnectionare:
 - i. Neutral voltage displacement
 - ii. Overcurrent
 - iii. Earthfault
 - iv. Reversepower
 - v. In each of the above cases, tripping time should be very less.
- o) PCU / Inverter should be tested from the test centres MNRE / BIS /IEC accredited testing calibrationlaboratories and shall be MNRE approved.

10 . WIRING

- 1. All instruments and Panel wiring shall be of heat resisting and self-extinguishing type in compliance with IS. Plastic or porcelain cleats of the limited compression type shall be used for holding wiring runs. All wires shall be suitable for bending to meet the terminal studs at right angles. Metal cases of all apparatus mounted on panels shall be separatelyearthed.
- 2. The following color scheme of the wiring shall be used as per IS:375.
 - a) AC three phasecircuits:
 - i) No.1 Phase: Red. No.2 Phase: Yellow. No.3 Phase:Blue
 - ii) Neutral Conductor:Black
 - iii) Connection to Earth: Green
 - iv) D.C. circuits:Grey

The cabling for solar PV system shall be UV protected.

11 . CABLEACCESSORIES

Only terminal cable joints shall be accepted. No cable joints to join two cable ends shall be accepted.

Cable terminations shall be made with suitable cable lugs & sockets etc., crimped properly and passed through brass compression type cable glands at the entry and exit point of the cubicles. The panels" bottoms should be properly sealed to ensure the required ingress protection of IP 42.

The terminal end of cables and wires are to be fitted with good quality numbered ferrules of proper sizes so that the cables can be identified easily.

12 . INTEGRATION OF PV POWER WITHGRID:

- i) In this case, Power plant is without battery bank (i.e. with string inverter), the existing uni-directional meter of the user shall be installed for gross metering of solar generation while a Bi-directional meter shall be installed for net-metering purpose or conditions pertaining to Net Metering Policy of M/s. KSEB Ltd.

- ii) Kerala State Electrical Inspectorate guidelines/norms for interconnecting solar power with Grid and for the grid tied solar PV plant/system shall be complied in full.
- iii) Certification of anti-Islanding protection in the inverter/PCU from the manufacturer of the equipment shall be mandatory.

13 . DATA MONITORING OF POWERPLANT:

- i) PCU to log the inverter performance data and transmit the same to the Datalogger.
- ii) Data logger shall then gather information and monitor the performance of the inverter. It shall also support measurements from the external sensors. The data can be acquired remotely via modem.

14 . LIGHTNING & OVER VOLTAGE PROTECTION

The SPV Power plant should be provided with Lightning and surge voltage protection connected to proper earth electrodes.

The Lightning Conductors shall be made as per applicable Indian Standards and as per Kerala State Electrical Inspectorate norms in order to protect the entire Array Yard/Shed from lightning strike.

The lightning conductor shall be earthed through flats and connected to the Earth electrodes as per applicable Indian Standards with earth pits. Each Lightning Conductor shall be fitted with individual earth pit as per required Standards including accessories, and providing masonry enclosure with cast iron/MS cover plate having locking arrangement, watering pipe, charcoal or coke and salt as per required provisions of IS.

The bidder shall ensure adequate lightning protection to provide acceptable degree of protection as per IS for the array Yard/Shed. If necessary, more numbers of Lightning conductors may be provided.

For each earth pit, necessary test Point shall have to be provided.

15 . EARTHING SYSTEM

- a) Each array structure of the SPV shall be grounded properly. The array structure is to be connected to earth pits as per CPWD General Specifications and as per requirements of Kerala State Electrical Inspectorate norms whichever is stringent. Junction boxes shall be connected to the main earthing conductor/electrode.
- b) Earthing system installation shall be in strict accordance with CPWD General Specifications Part-I Internal 2023 amended up to date and as per Kerala State Electrical Inspectorate norms. The size of earthing conductor to solar PV array shall be 1.56 times the maximum short circuit current of the PV array.
- c) Necessary test point provision shall be made for bolted isolating joints of each earthing pit for periodic checking of earth resistance.
- d) In compliance to Rule 33 and 61 of Indian Electricity Rules, 1956 (as amended up to date) all non-current carrying metal parts shall be earthed with two separate and distinct earth continuity conductors to an efficient earth electrode.
- e) Earth resistance of the earth pits shall be tested in presence of the representative of Engineer-in-charge.

16 . AC Distribution Box (ACDB)

- i) All switches and the circuit breakers, connectors should conform to IEC 60947, part I, II and III/ IS-60947 part I, II and III.
- ii) The switches, cabling work, Manual isolation of Inverters/Grid should be undertaken by the bidder as part of the project within quoted rates.

17 . DATA ACQUISITION SYSTEM / PLANT MONITORING

- i) Web based remote monitoring which shall also be linked with servers of client / Board or software such as SCADA monitoring system must be provided by Bidder. If needed, access to MNRE/CREST shall also be provided.

- ii) PV array energy production: Digital Energy Meters to log the actual value of AC/DC voltage, Current & Energy generated by the PV system shall be provided.
- iii) All instantaneous data shall be shown on the computer screen.
- iv) The bidder must avail approval, feasibility certificate from M/s. KSEB Ltd. and energization approval in liaison with other agencies including M/s. KSEB Ltd, M/s. Kerala State Electrical Inspectorate etc.
- v) NOC for connecting solar PV plant to the distribution system of IMU and synchronization of SPV plant with distribution network and submit the same before commissioning of SPV plant shall be availed by the agency. Nothing extra shall be paid on this account.

18 . PRIORITY FOR POWER CONSUMPTION:

Regarding the generated power consumption, in case of string inverter, priority needs to give for internal consumption first and thereafter any excess power can be exported to grid.

19 . Grid Islanding:

- i) In the event of a power failure on the electric grid, it is required that any independent power-producing inverters attached to the grid turn off in a short period of time. This prevents the DC-to-AC inverters from continuing to feed power into small sections of the grid, known as "islands." Powered islands present a risk to workers who may expect the area to be unpowered, and they may also damage grid-tied equipment. The Rooftop PV system shall be equipped with islanding protection. In addition, to disconnection from the grid (due to islanding protection) disconnection due to under and over voltage conditions shall also be provided.
- ii) A manual disconnect pole isolation switch beside automatic disconnection to grid would have to be provided at utility end to isolate the grid connection by the utility personnel to carry out any maintenance. This switch shall be locked, if required, by the utility personnel.

20 . PAINTING & FINISH

- i. All metal surfaces shall be thoroughly cleaned of rust, scale, oil, grease, dirt etc. Fabricated structures shall be pickled and then rinsed to remove any trace of acid. The under surface shall be made free from all imperfections before undertaking the finishing coat.
- ii. After Phosphate treatment, two (2) coats of yellow zinc chromate primer shall be applied followed by two (2) coats of epoxy based synthetic enamelled paint. Thickness of paint shall be not less than 75 micron.
- iii. All unpainted steel parts shall be cadmium plated or suitably treated to prevent rust formation. If these parts are moving elements then they shall be greased.

21 . STANDARDS FOR SOLAR PHOTOVOLTAIC (PV) POWER PLANTS/SYSTEMS

A. PV MODULES:

The PV modules must conform to the latest edition of any of the following IEC/equivalent BIS standards for PV module design qualification and type approval:

Crystalline Silicon Terrestrial PV modules: IEC 61215/ISI 14286 Thin Film Terrestrial PV Modules: IEC 61646 Concentrator PV Modules & Assemblies: IEC 62108

In addition, the modules must conform to IEC 61730 Part 1-requirements for construction & Part 2 – requirements for testing, for safety qualification.

PV modules to be used in a highly corrosive atmosphere (coastal areas, etc.) must qualify.

Salt Mist Corrosion Testing as per IEC 61701.

B. BALANCE OF SYSTEM (BoS) ITEMS/COMPONENTS:

The BoS items/components of the SPV power plants/systems deployed under the work must conform to the latest edition of IEC/equivalent BIS standards as specified below

BoS Item/Component	Applicable IEC/equivalent BIS standard	
	Standard Description	Standard Number
Power Conditioner/Inverter	Efficiency measurement environmental testing	EN 61000-6-3 EN 50178
MPPT Units	Design Qualification Environmental testing	EN 50178 UL1741 CSA 107.1
Cables	General testing and measurement methods PVC insulated cables for working voltage up to and including 1100 V ,UV resistant for outdoor installation	IEC 60189 IS 694/IS 1554 IS/EC/69947 IEC 62548
Switches/Circuit Breakers/Connectors	General requirements connectors-safety	IS/IEC 60947 part I,II & III, EN 50521
Junction Boxes/ Enclosures	General requirements	IP65(for outdoor)/IP21 (for indoor) IEC 62208
SPV system design	PV Stand-alone Systems Design verification	IEC61215 IEC61730 IEC61701 IEC 62548
Installation Practices	Electrical installation of buildings requirements for SPV power supply systems	IEC61730

1) TECHNICAL SPECIFICATIONS OF SPV PANEL

Sl. No	Description	As per NIT
1.	Max. output (Pmax) at standard test conditions (solar irradiance of 1000W/m ² at a cell temperature of 25 Deg.C and spectral air mass=1.5)	≥330 Wp
2.	MPP Voltage (Vmpp) V	As per manufacturer standards
3.	MPP current (imp) A	As per manufacturer standards
4.	Open circuit voltage (Voc)V	As per manufacturer standards
5.	Normal operating cell temperature	0 to 50°C
6.	Module dimensions (LxWxH) Appx.	As per manufacturer standards
7.	No. of PV cells per Module	As per manufacturer
8.	Min. efficiency of module	Not less than 19%
9.	Solar module frame material	Aluminium/anti corrosive material
10.	Weather resistant junction	IP65 or better
11.	Glass	Toughened

12.	Glass iron content	Low Iron
13.	Glass transmissivity	High transmissivity
14.	Frame	Anodized aluminium/anti corrosive material
15.	Encapsulation	Ethyl Vinyl Acetate (EVA)
16.	Trilaminate back surface	Tedlar / Polyester
17.	By-pass diode	To be provided
18.	Standard	IEC61215/IS14286&IEC61730Part1& Part 2,
19.	Guarantee	Performance guarantee of 90% of peak output power capacity at the end of 10 years
		Performance guarantee of 80% of peak output power capacity at the end of 25 years
		10 years against manufacturing defects (product warranty).

2) TECHNICAL SPECIFICATION OF SOLAR INVERTER (PCU)

Sl. No	Description	As per NIT
1.	Type	On -grid/Grid interactive
2.	Max DC Array Input voltage	Not more than 800 V DC
3.	DC voltage tolerance	-20% to +15% of DC array input voltage
4.	Type of solar charge controller	MPPT based solar charge controller to suit to individual array voltages.
5.	Switching device	MOSFET/IGBT
6.	Topology	With isolation transformer/transformer less
7.	Continuous inverter output rating	Peak/Maximum Inverter output rating
8.	Output wave form	Pure sine wave output
9.	Ripple content	DC Voltage ripple content shall be not more than 3% ; DC current not greater than 1% of rated output current
10.	Total harmonic distortion	Less than 3% of power injected into the grid (with resistive load)
11.	Nominal AC output voltage and frequency	415V, 3phase, 50Hz
12.	Output frequency	50Hz +/- 2.5Hz
13.	Grid frequency tolerance	+3%
14.	Grid frequency synchronization range	+3Hz
15.	No load losses	Not more than 1%
16.	Power factor	0.9
17.	PCU efficiency	Greater than 97% at nominal voltage and power
18.	Noise level	Less than 75 dBA
19.	Certifications	IEC 61727, CE, IEC 62109-1, IS:16221, part-II Clause 5/ IEC 62109-2 & IS 16169 /IEC 62116
20.	Idle current	4% of rated capacity
21.	Regulation	Line regulation and load regulation
22.	Overload features	2% to 150% for one minute
23.	Cooling	Forced air cooling with temperature controlled cooling
24.	Operating temperature	-20 to 50°C

25.	Relative humidity	Upto 95% non-condensing or better
26.	LED/LCD display	Indication display shall indicate system functional parameters and protection functional indicators
27.	Data monitor and display control	RS485, Ethernet or RS 232 connectivity
28.	Recommended LED indications	i) ON ii) Grid ON iii) Under/ Over voltage iv) Overload v) Over temperature
29.	Protection	1. Input and output over voltage 2. Input and output over current 3. over/under grid frequency 4. Short circuit 5. Under output voltage 6. Over temperature 7. Grid input under/over voltage with auto-recovery 8. Ground fault monitoring 9. DC disconnect device 10. DC reverse polarity 11. Surge voltage induced at output due to external source islanding 12. Anti-islanding protection as per standard 13. Lightning protection- PV: Type-II, AC: Type-II
30.	Enclosure protection safety	IP 65 for outdoor and IP 20 for indoor
31.	Other compatibility	EMC compatible

3) TECHNICAL SPECIFICATION OF PV PANEL SUPPORT STRUCTURE

Sl. No	Description	As per NIT
1.	Material	Aluminium/Hot dip Galvanized Mild Steel conformed to IS 2062:1992 and with 80micron thickness as per IS: 4759 only with SS304 nuts and bolts as required
2.	Overall dimensions	As per manufacturer standard
3.	Wind rating	180Km/hr or as per the Geological wind map for kerala whichever is stringent; Structural design shall be appropriate with a minimum factor of safety of 1.5
4.	Tilt angle and adjustment	Upto 25°portrait
5.	Hardware and fastener	SS304
6.	Welding	Not allowed.

4) TECHNICAL SPECIFICATION OF ENERGY METER

Sl. No	Description	As per NIT
1.	Applicable IS	IS13779 or IS14679, depending upon accuracy of meters
2.	Accuracy class index	0.5 or better up to 650V
3.	Display	LCD
4.	Power factor range	Zero lag-Unity-Zero lead
5.	Display parameters	LCD test, KWH import, KWH export, MD in KW export, MD in KW import, date and time, AC current and voltage, and power factor, (cumulative KWH will be indicated continuously by default and other parameters through push button)
6.	Power consumption	Less than 1watt and 4VA in voltage circuit and 2VA for current circuit
7.	Frequency	50Hz with $\pm 5\%$ variation
8.	MD register	Meter shall store MD in every 30 minute period along with date and time. At the end of every 30 minute new MD shall be compared with previous MD and store whichever is higher and the same shall be displayed. It shall be possible to reset MD automatically at defined date or period or through MRI. Manual MD resetting using sealable push button is an optional
9.	Memory	Nonvolatile memory independent of battery backup, memory should be retained up to 10 years in case of power failure
10.	Climatic condition	As per IS: 13779 or IS14697 for climatic conditions. The meter should function satisfactorily in India with high end temperature of 50°C and humidity of 95%.
11.	Insulation	A meter shall withstand insulation test of 4KV and impulse test at 8KV
12.	Battery	Lithium with guaranteed life of 15years

ANNEXURE - A**TECHNICAL PARTICULARS****(TO BE SUBMITTED AT THE TIME OF APPROVAL OF SOLAR PV EQUIPMENT/MATERIAL)****Name of Work: SITC of 40 kWp On- Grid roof top Solar Photovoltaic (SPV) Power Generation System at Directorate of Arecanut and Spices Development (DASD), Kozhikode.****NITNo: 15/CLTED/2026-27**

S.No.	Details of Particulars	To be filled by tenderer
(A) Solar PV Module		
1	Rated power range output at standard test conditions of solar irradiance of 1000W/m ² at a cell temperature of 25 Deg.C & spectrum air mass=1.5	
2	No. of solar cells in each solar PV module	
3	V_{oc} / I_{sc}	
4	MPP Voltage (V _{mpp}) V	
5	MPP current (I _{mp}) A	
6	Normal operating cell temperature	
7	Operating Temperature range	
8	Module dimensions (LxWxH) Appx.	
9	PV Module type	
10.	Min. efficiency of solar cell	
11.	Solar module frame material	
12.	Weather resistant junction	
13.	Front Glass	
14.	Glass iron content	
15.	Glass transmissivity	
16.	Frame	
17.	Encapsulation	
18.	Trilaminate back surface	
19.	By-pass diode	
20.	Standard	
21.	Performance Warranty	

(B) Solar Inverter		
1	Type	
2	Max. DC Array Input Voltage	
3	DC voltage tolerance	
4	Type of solar charge controller	
5	Switching Device	
6	Continuous inverter output rating	
7	Output wave form	
8	Total harmonic distortion	
9	Nominal AC output voltage and frequency	
10.	Output frequency	
11.	Grid frequency tolerance	
12.	Grid frequency synchronization range	
13.	No-Load losses	
14.	Power factor	
15.	PCU efficiency	
16.	Noise level	
17.	Certifications	
18.	Idle current	
19.	Regulation	
20.	Over load features	
21.	Cooling	
22.	Operating Temperature	
23.	Relative Humidity	
24.	LED/LCD display	
25.	Data Monitor and display controls	
26.	Protections	
27.	Enclosure Protection Safety	
28.	Warranty	

(C) Array Junction Box (DCDB)		
1	No. of module in series	
2	No. of module in parallel	
3	Switch gears	
4	Connectors	
5	Wiring	
6	Enclosure Protection	
7	Enclosure	
8	Size	
9	Capacity of each SPV panel and nos.	
(D) PANEL SUPPORT/MODULE MOUNTING STRUCTURE		
1	Material	
2	Thickness of member	
3	Over all dimensions	
4	Wind rating	
5	Tilt angle and adjustment	
6	Peach of structure	
7	Hardware & fastener	
8	Foundation	
		Signature of the Contractor(s)

Note: To be furnished on a 'Non-Judicial' stamp paper worth Rs. 200/-

**UNDERTAKING FROM MANUFACTURER/AUTHORIZED CHANNEL PARTNER FOR GRID
INTERACTIVE SOLAR POWER PLANT/ SOLAR PV PANEL/SOLAR PV INVERTER (PCU)**

(To be submitted along with supply of system)

We hereby agree that

1. Solar PV panels supplied by us are offered a warranty of **10 (Ten)** years from the date of handing over.*
2. We assure a performance warranty of Solar PV panels for a period of 25 (twenty five) years; Peak output capacity will not be less than 90% of the claimed peak output capacity at the end of 10 (ten) years and peak output capacity will not be less than 80% of the claimed peak output capacity at the end of 25 (Twenty five) years. *
3. PCU/ Solar PV inverter supplied by us are offered a warranty for 5 (five) years from the date of handing over. *
4. In case of any defect, discontinuation of model and non-availability of spares, we will replace the unit with equivalent/ high end model during the above period of product warranty.

* If the solar PV module and PCU/inverter are from separate OEMs, separate affidavits may be submitted.

For M/S

.....

(Authorized signatory of manufacturer

/ dealer of Solar PV plant and /or Solar PV inverter)

Counter signed

Signature of Major contractor

LIST OF APPROVED MAKES

Sl. No	Description of Material/Equipment	Make
(a)	SPV Modules	Updated ALMM by MNRE such as M/s WAAREE Energies Limited/M/s Vikram Solar Limited/ M/s.Tata Power renewable energy Limited/ M/s Luminous Power Technologies pvt ltd
(b)	Data logging system	ABB/KACO/SMA/Schneider /Energy Recommerce/Schlumberger/ OEM of PCU
(c)	Power Control Unit (PCU) string PCU	Delta/ABB/Havells India Ltd / Luminous / Panasonic / TATA Power Solar / BOSCH /Power one/Growatt/Sungrow/
(d)	Power distribution panel board/ Metering panel board	CPRI Approved manufacturer
(e)	Moulded Case Circuit Breaker(MCCB-3P and 4P)	Schnieder / Legrand / L&K / Siemens / ABB / Havells India Ltd
(f)	Surge protector	Legrand / Schneider / Siemens / ABB/Obo betterman
(g)	Miniature Circuit Breaker(MCB)	Legrand / Schneider / Siemens / L&K/ Havells India Ltd
(h)	Residual Current Circuit Breaker(RCCB/RCBO)	Legrand / Schneider / Siemens / L&K
(i)	Power/Auxiliary Contactor (3P and 4P)	Siemens / L&K/ GE / Schneider
(j)	Indicating lamps LED type, push buttons	Siemens / Teknic / L&K/ BCH /C&S/ ABB/ Eaton
(k)	Electronic digital meter(A/V/PF/Hz/KW/KWII-networkable)	Conzerv / AE / Legrand/ Schnieder/ Mecon/ L&K/ C&S/ Siemens
(l)	XLPE insulated PVC sheathed copper conductor armoured power cable of 1.1kv grade	Polycab / Finolex/ Universal / Gloster/ Havells/ Grandlay
(m)	LT jointing kit/termination	3M / Raychem / M Seal /CCI-Xicon / Denson
(n)	Cable gland double compression with earthing links	Comet / Cosmos/Jainson / Dowells
(o)	Bimetallic copper / aluminum cable lugs	Comet / Dowells (Biller India Pvt Ltd) / HAZ Brass(Copper Alloy India Ltd)
(p)	PVC insulated copper conductor stranded flexible FRLS wire (pre twisted)	Polycab / Finolex / KEI / Havells / RR Kabel /
(q)	Poly carbonate junction boxes	Hensel / Clipsal / Sintex
(r)	Selector switch, toggle switch	L&K/ Siemens / Schnider/C&S/Legrand
(s)	Timer	Siemens / L&K/ Schneider Electric-TE/Legrand
(t)	Material for structure	TATA / JINDAL / SAIL
(u)	Sandwich PUF paneled roofing sheets	Lloyd Insulation/Jindal Mectec / Danpalon /GE Plastic/Lexan
(v)	Any other item	As per approval of the Engineer-in-charge

Assistant Engineer (E) (P)
CLTED, CPWD, Calicut

Executive Engineer (E)
CPWD, Calicut

PART -C

SCHEDULE OF QUANTITIES