

TANGEDCO

**SPECIFICATION FOR SUPPLY, ERECTION, TESTING,
OBTAINING SAFETY CERTIFICATE, COMMISSIONING & 3
YEARS MAINTENANCE OF 17 KWp ROOF TOP LT GRID
CONNECTED SOLAR PLANT AT THIRUVARUR 230KV
SUBSTATION.**

SPECIFICATION No.01/20-21 .

DUE DATE : 09.07.2020

**OFFICE OF THE
SUPERINTENDING ENGINEER/TEDC/THIRUVARUR**

::TANGEDCO::

General information on Tender Specification No.**01/20-21**

1.Description of material	: E-tender for Supply, Erection, Testing, obtaining safety certificate, Commissioning and 3 years Maintenance of 17 KWp Roof top LT Grid connected solar plant at Thiruvapur 230KV Substation.
2.Due date and time for receipt of tender electronically	: 14:00 Hrs on 08.07.2020.
3.Due date and time of opening of tender electronically	: 14:30 Hrs on 09.07.2020
4.(i) Earnest Money Deposit	: Rs. 11,900/-
(OR)	
(ii) Permanent EMD	: Rs.10,00,000/- or above
Permanent EMD holder of Rs.5,00,000/- are not eligible to participate in this tender. Firms who have a valid (not forfeited or a request had been made as on the date of tender opening) Permanent Earnest Money Deposit(PEMD)of Rs.10,00,000/- (Rupees Ten lakhs only) with Head quarters (OR) the SE/TEDC/THIRUVARUR/ TANGEDCO are exempted from payment of Earnest Money Deposit. (Refer Section-I, Page No.4, Clause (2))	
6. URL for online bid submission for e-tender	: https://tntenders.gov.in
7. Type of Tender	: Two Part Open Tender System by E-tendering.
8.Clarification to be sought for	: Superintending Engineer / TEDC/ THIRUVARUR
9. Place at which tenders will be opened	: Will be opened electronically at Office of Superintending Engineer/ TEDC/THIRUVARUR
The Tender Documents are available in the website https://tntenders.gov.in . The prospective bidders may get the specification by down-loading from above Website, free of cost.	
They shall ensure whether any clarification/amendment is issued to the specification before submission of their tender by visiting the above mentioned Websites.	
Sd/-- 18.06.2020. SUPERINTENDING ENGINEER, TEDC/THIRUVARUR	

	SPECIFICATION. NO.01/20-21	
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SECTION – I
EARNEST MONEY DEPOSIT

1) Tenderer should pay the specified amount towards Earnest Money Deposit, as follows. **Earnest Money Deposit : Rs. 11,900/- (Rupees Eleven Thousand Nine Hundred only)** (or) Permanent EMD : Rs.10,00,000/- (Rupees Ten Lakhs) or above. Permanent EMD holder of Rs.5,00,000/- are not eligible to participate in this tender.

2) Firms who have a valid (not forfeited or a request had been made as on the date of tender opening) Permanent Earnest Money Deposit(PEMD)of Rs.10,00,000/- (Rupees Ten lakhs only) with the SE/ TEDC/THIRUVARUR / TANGEDCO are exempted from payment of Earnest Money Deposit. The permanent EMD holders of TANGEDCO Head quarters are also exempted from payment of EMD.

The tenderers who have a made Permanent Earnest Money Deposit(PEMD) with the TANGEDCO at Head quarters are eligible to participate the tenders floated by all tender inviting authorities of TANGEDCO .

The tenderers who have a made Permanent Earnest Money Deposit(PEMD) with the TANTRANSCO at Head quarters are eligible to participate the tenders floated by all tender inviting authorities of TANTRANSCO .

3) The Earnest Money Deposit specified above should be a DEMAND DRAFT/ BANKER'S CHEQUE for the above amount from any of the Nationalised/scheduled/Foreign Banks with branches in India payable to the Superintending Engineer/TEDC/THIRUVARUR payable at THIRUVARUR. The DD/Banker's Cheque should be submitted at Office of Superintending Engineer/ TEDC/THIRUVARUR on or before 2.00PM at 09.07.2020.

4) The EMD will not carry any interest.

5) The Earnest Money Deposit will be refunded on finalization of tender to the unsuccessful tenderers on application to the Superintending Engineer/ TEDC/THIRUVARUR after intimation of the rejection/non-acceptance of their tender is sent to them.

6) Cheques will not be accepted towards EMD and the tenders shall be rejected if EMD is not paid in the prescribed manner.

7) The Small Scale Industrial units/UAM located within the State and Registered with the Tamil Nadu Small Industries Development Corporation or the National Small Industries Corporation (NSIC) or Holding Acknowledgement issued for Entrepreneur Memorandum Part-II obtained from

the District Industries centers in respect of those items for which the Registration Certificate/ Acknowledgement has been issued, Departments of the Government of Tamil Nadu and Undertakings and corporations owned by the Government of Tamil Nadu, Labour contract Co-operative Societies. Tiny Industries classified under SSI/UAM registered with the state of Tamil Nadu and Registration Certificate issued by Department of Industries and Commerce / Government of Tamil Nadu, Small Scale Industrial units located outside the State and such of those units registered with National Small Industries Corporation in respect of the items manufactured by them are the only categories of institutions/industries exempted from the payment of Earnest Money Deposit.

8) Those Tenderers who are exempted from payment of EMD shall furnish in lieu of EMD an undertaking on a non-judicial Stamp paper of value not less than Rs.80/- (Rupees Eighty Only) to the effect to pay as penalty an amount equivalent to EMD or an amount equal to the actual loss incurred whichever is less in the event of non-fulfillment or non observance of any of the conditions stipulated in the contract consequent to such breach of contract. The State Government, who are exempted from payment of EMD should also pay as penalty an amount equivalent to the amount fixed as Earnest Money deposit in the event of fulfillment or non observance of any of the conditions stipulated in the contract.

9) TENDERS RECEIVED WITHOUT THIS UNDERTAKING WILL NOT BE OPENED.

10) Small Scale Industries registered within the State of Tamil Nadu shall enclose duly attested Photostat copy of their Registration Certificate showing the subject materials specifying capacity which they are permitted to manufacture and the period of validity of the certificate as proof of eligibility for exemption from payment of EMD in a sealed outer cover or in envelope 'A' as specified in Clause-2.

11) The prospective bidders shall furnish the audited attested copy of Profit and Loss Account, Balance sheet **with the value of Plant & Machinery** , along with the proof for exemption from payment of EMD in order to ensure the SSI status of the firm.

All SSI units shall furnish the above audited attested copy of Profit and Loss Account, Balance sheet **with the value of Plant & Machinery**, along with the proof for exemption from payment of EMD. **If not furnished along with undertaking, the tenders will not be opened.**

In case the investment held by them in Plant and Machinery as per their financial statement of Accounts exceeds Rs. 5 Crores, the General Manager, District Industries Centre concerned shall be requested to verify the SSI status of the firm. Till receipt of confirmation from General Manager, District Industries Centre concerned the exemption from paying EMD for SSI units will not be extended.

12) Others viz. Central and Other State Government Departments, Undertakings and Corporations other than Tamil Nadu shall have to pay Earnest Money Deposit and Security Deposit.

13) The following should be uploaded by the Vendor during submission of Techno-commercial bid for payment of EMD failing which the offer will be SUMMARILY REJECTED .

(i)The proof of Permanent EMD Holder.

(ii)The proof of exemption of EMD with an undertaking in lieu of EMD and documents in support of investment held in plant and machinery.

14) The Earnest Money Deposit made by the Tenderer will be forfeited if :-

- (a) He withdraws his tender or backs out after acceptance.
- (b) He withdraws his tender before the expiry of validity period stipulated in the specification or fails to remit the security deposit.
- (c) The tenderer violates any of the provisions of these regulations contained herein.
- (d) The tenderer revises any of the terms quoted during the validity period.
- (e) The tenderer produces bogus documents or if the documents contain false particulars.
- (f) In the event of the document furnished with the offer being found to be bogus or the documents contain false particulars, the EMD paid by the tenderer will be forfeited in addition to blacklisting them for future tenders/contracts in TANGEDCO.
- (g) The EMD received from the unsuccessful tenders will be refunded on finalisation of tender and on getting application for refund along with pre-stamped receipt.

15) Apart from the above, the TANGEDCO has the right to adopt any changes, based on the TANGEDCO's Accounts Branch instructions, with regard to extending exemption from paying EMD.

SECTION II

BID QUALIFICATION REQUIREMENTS (BQR)

GENERAL:

1. Scope of bid.

The TANGEDCO invites bids for works (as defined in these documents and referred to as "the works") detailed below:

Supply, Erection, Testing, **obtaining safety certificate**, Commissioning and Maintenance for 3 years of 17 KWp LT Grid connected solar power plant at roof top of 230 KV substation Thiruvarur, TANGEDCO.

The bidders should submit bids for the works detailed in the Section VI.

2. Eligible Bidders .

Following are the minimum qualifying requirements for the firms, who intend to express their interest:

2.1 The bidder shall be a manufacturer of SPV systems or a system integrator cum EPC contractor having adequate experience in executing LT Grid supported solar power projects in India and had established and commissioned two or more Rooftop solar power plants in India with aggregate capacity of 50 KWp, the minimum plant capacity being 1 KWp and above (Evidence supported by Contracts and Project completion certificates as per Schedule III annexed).

2.2 The bidder should have minimum 1 system of capacity of 5 KWp and above should be in working condition in any one of the buildings for past 4 years. Necessary proof of work order and performance certificate should be enclosed along with the tender.

2.3 The bidder should have an annual turnover of not less than Rs. 60 lakhs in any one of the last three completed financial years (supported by the attested copy of IT return filed by bidders, attested copy of STCC, attested copy of the profit & loss and balance sheet or turnover certificate issued by the Chartered Accountant and attested copy of enlistment certificate issued by NSIC containing turnover details of bidder for respective period may also be submitted as proof for annual turnover.)

2.4 The bidder should be registered with TEDA.

The Bidders not satisfying any of the above "Bid Qualification Requirements" will be summarily rejected.

SECTION III

REJECTION OF TENDERS:

1. Tenders will be **SUMMARILY REJECTED** if
 - a) The EMD requirements are not complied with.
 - b) Not satisfying Bid Qualification Requirements.
2. Tender is liable to be rejected if it is:
 - a) not covering the supply of equipments/materials with all accessories
 - b) with validity period less than that specified in this specification
 - c) not in conformity with TANGEDCO's Commercial terms and Technical Specification. (Section V and VI)
 - d) not signed properly by the tenderer
 - e) received from consortium of SSI units
 - f) received " after due date and time"
 - g) received from the tenderer who is directly or indirectly connected with Government service or TANGEDCO service or services of Local authority.
 - h) from any black listed firm
 - i) from a tenderer whose past performance/ vendor rating is not satisfactory.
 - j) offer received by Telex / Telegram / E mail / Fax.
 - k) not containing all the required particulars as per schedules A to D.
 - l) **Tenderers not furnished the GST No. in the offers. (To be furnished in envelope A)**

SECTION - IV

INSTRUCTION TO TENDERERS

1.0 Two part tender System (a) Technical Bid with commercial terms but without Price Bid and (b) Price Bid, will be received through **e-tender** for and on behalf of TANGEDCO herein after referred as TANGEDCO so as to reach on or before the due date prescribed. All the tenders shall be prepared and submitted strictly in accordance with the Instructions set forth herein.

THE TENDERERS WHO DO NOT FULFILL THE "BID QUALIFICATION REQUIREMENTS" AS PER SECTION -II NEED NOT APPLY, OFFERS NOT SATISFYING THIS "BID QUALIFICATION REQUIREMENTS" WILL NOT BE CONSIDERED AND WILL BE SUMMARILY REJECTED.

1.1 This tender will be processed as per the provision in the Tamil Nadu Transparency in Tender Act 1998 and Tamil Nadu Transparency in Tenders Rules 2000.

2.0 SCOPE OF SUPPLY

2.1. The scope of supply of the material includes for design, manufacture, inspection, testing, packing, forwarding and delivery of the materials detailed herein, at our **Central stores/ Thiruvarur and after erection , commissioning of supplied materials, maintenance at suppliers scope for 3 years .**

3.0 SUBMISSION OF TENDER OFFER

The Tenderer is expected to examine all instructions and Schedules detailed in the Specification and submit the Schedule of prices and other required particulars in the Schedules called for in this Specification only as per the formats enclosed herewith.

4.0 TENDER

4.1 SUBMISSION OF TENDERS:

4.1.1. The Tender Offer consisting of Schedules-A to E should be filled up and signed by the Tenderer or any person holding Power of Attorney authorizing him to sign on behalf of the Tenderer before submission of the Tender. The date of signature should invariably be indicated.

4.1.2. In the event of tender being submitted by other than a firm, it must be signed by a partner (copy of partnership deed should be enclosed) and in the event of the absence of any Partner, it shall be signed on his behalf by a person holding a Power of Attorney authorizing him to do so, Certified copies of which shall be enclosed.

4.1.3. Tender submitted on behalf of companies registered under the Indian Companies Act, shall be signed by person duly authorized to submit the tender on behalf of the company and shall be accompanied by certified true copies of the resolutions, extracts of the Articles of Association, special or general Power of Attorney etc to show clearly the title, authority and designation of persons signing the tender on behalf of the company.

4.2. Modifications/Clarifications to Tender Documents:

4.2.1. At any time after the commencement of e-Tender and before the closing of the event, TANGEDCO may make any changes, modifications or amendments to the tender documents and same will be intimated to the concerned Vendors through corrigendum which can be downloaded from the Vendor login .

4.2.2. In case any tenderer asks for a clarification to the tender documents before 48 hours of opening of tenders, the Superintending Engineer/TEDC, TANGEDCO, Thiruvaurur will clarify the same.

4.2.3 If any tenderer raises clarifications after the opening of the tender, the clarified reply issued by the Superintending Engineer/TEDC, TANGEDCO, Thiruvaurur on the clarifications will be final and binding on the Tender.

4.3. All tender offers shall be prepared by typing or printing in the formats enclosed with this specification.

4.4. All information in the tender offer shall be in ENGLISH only. It shall not contain interlineations, erasures or over writings except as necessary to correct errors made by the tenderer. Such erasures or other changes in the tender documents shall be attested by the persons signing the tender offer.

4.5. QUOTATION OF RATES:

4.5.1. Rates should be quoted figures i.e., integers only.

4.5.2. Offers giving lump sum price, without giving their breakup as per details required in the attached Price Schedule(BOQ) shall be liable for rejection.

4.6 PRINTED TERMS AND CONDITIONS IN TENDERS:

Supplier's printed terms and conditions will not be considered as forming part of the tender under any circumstances.

4.7. INCOMPLETE TENDERS:

Tender, which is incomplete, obscure or irregular is liable for rejection.

4.8. AMBIGUITIES IN CONDITIONS OF TENDERS:

In the case of ambiguous or contradictory terms / conditions mentioned in the bid, interpretation as may be advantageous to the purchaser may be taken without any reference to the Tenderer.

4.9 The tender offer shall contain full information asked for, in the accompanying Schedules and elsewhere in the Specification.

4.10 Tenderers shall bear all costs associated with the participation in the e-Tender and the purchaser will in no case be responsible or liable for these costs.

4.11 No tender offer shall be allowed to be modified subsequent to the deadline for submission of tender offers.

4.12 No offer shall be withdrawn by the tenderer in the interval between the deadlines for submission and the expiry of the period of validity specified/extended validity of the tender offer.

4.13 The bidder shall be a manufacturer of SPV systems or a system integrator cum EPC contractor having adequate experience in executing LT Grid supported solar power projects in India

4.14 The tenderers are requested to furnish the exact location of their factories with detailed postal address and Pin Code, Telephone & Fax Nos etc. in their tenders so as to arrange inspection by the TANGEDCO if considered necessary.

5.0 TENDER OPENING:

5.0. OPENING OF COMMERCIAL & TECHNICAL BIDS WITHOUT PRICE (PART-I):

Tender offers except price Bid will be **opened electronically at 14.30 Hrs. on the date notified at the Office of the Superintending Engineer/TEDC/Thiruvavur , through <https://tntenders.gov.in> in the presence of tenderer's authorized representative who may wish to be present on the date of opening.**

5.2. OPENING OF THE PRICE BIDS: (PART - II)

The date and time of opening of Price Bids shall be later notified through registered e-mail to the Bidders who fulfill the BQR criteria and whose bids are found to be commercially and technically acceptable.

5.3 The Tenderer's names, prices, all discounts offered, and such other details as the TANGEDCO, at its discretion, may consider appropriate will be announced and recorded at the time of opening.

6.0 INFORMATION REQUIRED AND CLARIFICATIONS

6.1 To assist in the examination, evaluation and comparison of tender offers, the TANGEDCO may, at its discretion, ask the tenderers for a Clarification of his offers. All responses to requests for clarification shall be in writing to the point only. No change in the price or substance of the offer shall be permitted.

6.2 The TANGEDCO will examine the tender offers to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the offers are generally in order.

6.3 Prior to the detailed evaluation, the TANGEDCO will determine the substantial responsiveness of each offer to the Bidding Documents.

6.4 A substantially responsive offer is one which conforms to all the terms and conditions of the Specification without any deviation.

6.5 The Tender offers shall be deemed to be under consideration immediately after they are opened and until such time official intimation of award / rejection is made by the TANGEDCO to the tenderers. **While the offers are under consideration, tenderer, and/or their representatives or other interested parties are advised to refrain from contacting by any means, the TANGEDCO and/or TANGEDCO's employees/representatives on matters related to the offers under consideration.**

6.6 Mere submission of any Tender offer connected with these documents and Specification shall not constitute any agreement. The tenderer shall have no cause of action or claim, against the TANGEDCO for rejection of his offer. The TANGEDCO shall always be at liberty to reject or accept any offer or offers at its sole discretion and any such action will not be called into question and the tenderer shall have no claim in that regard against the TANGEDCO.

7.0 EVALUATION AND COMPARISION OF TENDER OFFERS :

7.1 The tender offers received and accepted will be examined to determine whether they are in complete shape all data required have been furnished, the tender offer is properly signed and the offers are generally in order and the tender offer conforms to all the terms and conditions of the specification without any deviation.

7.2 For the purpose of evaluation of the tender offers, the following factors will be taken into account for arriving the evaluated price.

7.2.1 The quoted price shall be corrected for arithmetical errors. In case of discrepancy between the prices quoted in words and in figures, lower of the two shall be considered.

7.2.2 The rate of CGST, SGST, and IGST as applicable both in percentage and amount shall be indicated in the offer along with HSN code.

7.2.3 The evaluated price shall be arrived in compliance with the provisions of GST on the Transaction value i.e. (Ex works price + P&F+ Freight and Insurance) + GST. In case of import of goods would be treated as interstate supplies and would be subject to IGST in addition to applicable customs duty.

7.2.4 Since GST is enacted wherein all taxes & duties are subsumed, price evaluation shall be inclusive of applicable GST in all cases, i.e. even if the bidders are only within the State or bidders are within the State and outside TN.

7.3 The bid evaluation will be done based on the net rate furnished by the tenderer.

8.0 VALIDITY:

8.1 The tender offers shall be kept valid for acceptance for a period of **120** Days from the date of opening of offers. Offers with lower validity period are liable for rejection.

8.2 Further, the tenderer shall agree to extend the validity of the bids without altering the substance, and prices of their bids for further periods, if any, required by the TANGEDCO.

9.0 RIGHTS OF THE TANGEDCO:

9.1 Not with standing anything contained in this specification, the TANGEDCO reserves the right to :

- (a) accept the lowest or any other tender.
- (b) revise the quantities at the time of placing orders.
- (c) reject any or all the tenders or cancel without assigning any reasons therefore.
- (d) to split the tender quantity and place orders on one or more than one firm to meet the delivery requirements.
- (e) relax or waive or amend any of the conditions stipulated in the tender Specification wherever deemed necessary in the best interest of the TANGEDCO.
- (f) award additional quantity at the same prices and conditions during the pendency of the contract.
- (g) recover losses, if any, sustained by TANGEDCO, from the supplier who pleads his inability to supply, and backs out of his obligation after award of contract. The Security Deposit paid shall be forfeited.
- (h) to cancel the orders for not keeping up the delivery Schedule.
- (i) to order either all items or a few items.

10.0. DEVIATIONS:

10.1 The tenderer shall furnish, if there are any deviations in the technical terms as per schedule-BI annexed. If no deviations are furnished it will be construed that the tenderer is accepting all terms specified in the specification. Similarly if any deviations are furnished in the specified form it will be construed that these are the only deviations and the tenderer is accepting all other terms of the specification and the offer will be taken for evaluation if the deviations are acceptable to TANGEDCO or otherwise the offer will be rejected.

10.2 THE OFFERS OF THE TENDERERS WITH DEVIATIONS IN COMMERCIAL TERMS OF THE SPECIFICATION WILL BE **SUMMARILY REJECTED.**

10.3 NO ALTERNATE OFFER WILL BE ACCEPTED.

11.0 APPEAL :

12.1 As per the provisions of the Tamil Nadu Transparency in Tender Act and Rules accepted to be adopted, any tenderer aggrieved by the order of the tender accepting authority (Competent authority) may prefer and appeal to Government within ten days from the date of receipt of order.

12.0 CLARIFICATIONS :

The Bidder is requested to carefully examine the specification and documents and fully inform himself as to all the conditions and matter which may in any way affect the supplies and service to be provided and / or the cost thereof. If the bidder finds discrepancies or omissions in the specifications and documents or is in doubt to the true meaning of any part he shall at once make a request for an interpretation / clarification, before submitting the offer, to Superintending Engineer/Thiruvapur Electricity Distribution Circle/Thiruvapur.

13.0 LOCAL CONDITIONS:

It will be imperative on each bidder to fully inform himself of all local conditions and factors which may have any effect on the equipments / materials /the execution of the works covered under these specifications and documents. If desired, the Tenderers may visit the site where the work is to be carried out and they can collect details regarding the nature of work to be carried out and the field condition etc. by contacting the Superintending Engineer/Thiruvapur Electricity Distribution Circle/Thiruvapur.

14.0 BAR OF JURISDICTION:

Save or otherwise provided in Tamil Nadu Transparency in Tender Act 1998 no order passed or proceeding taken by any officer or authority under the above act shall be called in question any court and no injunction shall be granted by any court in respect of any action taken or to be taken by such officer or authority in pursuance of any power conferred by or under the above action.

sd /-- 18.06.2020.

**SUPERINTENDING ENGINEER,
TEDC / THIRUVAPUR**

SECTION V **COMMERCIAL**

1.0 SCOPE:

1.1. The scope of supply includes manufacture, inspection, testing, packing, forwarding, insurance and delivery of the Equipments detailed herein, at our **Central stores /Thiruvarur**.

2.0 CONTRACTOR TO INFORM HIMSELF FULLY:

The Contractor shall be deemed to have carefully examined the general conditions and specifications. If he shall have any doubt as to the meaning of any portion of these general conditions of the Contract, he shall set forth the particulars thereof, and send them to the Engineer in writing, in order that such doubt may be clarified.

3.0 ENHANCEMENT OF RATES:

No representation for enhancement of rates will be considered during the currency of the Contract.

4.0 SUB - LETTING OF CONTRACT:

4.1 The Contractor shall not, without the consent in writing of the TANGEDCO, assign or sublet his contract including supply of material or any substantial part thereof, provided that any such consent shall not relieve him from any obligation, duty or responsibility, liability under the Contract. If the Contractor sublets or changes the sub-contractor without notification to the TANGEDCO, then TANGEDCO shall not make payments for such works/materials. If any defects/damages in works or materials are noticed in such unauthorized sublet portion within the expiry of guarantee period/TANGEDCO reserves the right to rectify/redo the defective goods/ works at its own cost; and such cost/damages will be recovered from the Contractor.

4.2 The tenderer should furnish an Undertaking that he is responsible for any portion of works if carried out by the sub- contractor and he is jointly and severally accountable to the TANGEDCO, in the event of defective design or defaults in the performance.

5.0 COMPLETENESS OF TENDER :

The tender should be complete with all details of illustrative and descriptive literature and drawing of the materials offered. Information regarding the country of manufacture and origin of materials used in the manufacture of the equipments should be furnished. The Tenderers shall furnish the complete technical details of the materials offered. In order that the tenders may receive full consideration, the whole information asked for in the schedule and elsewhere together with relative leaflets, literature, drawings etc., must be supplied by the tenderer. The language of Bidding and documents shall be in ENGLISH only. The tenders not containing the complete details as above are liable for rejection.

5.1 DELIVERY PERIOD:

Drawing: 15 days from the date of receipt of P.O.

Supply, Erection, Testing, Commissioning and Maintenance : 60 days from the date of receipt of drawing approval.

5.2 Maintenance schedule should be furnished in the offer.

6.0 PLACING OF ORDERS

(i) The TANGEDCO reserves the right to split and place orders for the above items on different tenderers and for revising the quantities at the time of placing of the orders. The TANGEDCO reserves the right to vary the quantity finally ordered to the extent of 25% either way of the requirement indicated in the tender documents. It is not binding on the TANGEDCO to accept the lowest or any tender.

(ii) The purchase order will be issued to the successful tenderers with all TANGEDCO's terms and conditions, duly indicating the rates and the quantity to be ordered on them. The approved rates will be FIRM and valid for one year from the date of receipt of the contract or till the completion of supply.

(iii) The quantity proposed to be ordered will be indicated in the Purchase Order.

7.0 PRICE:

7.1 The Tenderers are requested to quote FIRM price only.

7.2 The Tenderers shall quote the Ex-works price, Packing & Forwarding charges and Freight & Insurance charges with applicable rate of GST + any other charges (if any) for delivery to Central stores/ Thiruvavur of Trichy Region and after erection, price for maintenance for 3 years . A format for price schedule is given in Schedule 'A'.

7.3 It is the responsibility of the tenderer to make sure about the correct rates of duty / tax leviable on the materials at the time of tendering. If the rates assumed by the Tenderers are less than the current rates prevailing at the time of tendering, the TANGEDCO will not be responsible for the mistake.

7.4 The tenderer should quote their rates taking into account the tax relief available to them on account of duty paid for procurement of raw materials. A certificate to this effect shall be furnished along with the offer.

8.00 Goods and Services Tax [GST]:

GST Registration Number: TANGEDCO has migrated into GST regime on 15.06.2017 by duly uploading various mandatory data as required by the GST portal. The provisional ID issued to TANGEDCO is 33AADCT4784E1ZC. The details are also posted in TANGEDCO web portal.

8.1 Goods and Services Tax [GST] as a modern law, has been brought after Article 366(12A) of the Constitution as amended by 101st Constitutional Amendment Act, 2016. GST is an indirect tax system, commonly used by both the Central Government and the State/UT to final consumption with credit of taxes paid at previous stages available as set off. In a nutshell, only value addition will be taxed and burden of tax Governments on goods and services. GST is a destination based tax on consumption of goods and services. It is proposed to be levied at all stages right from manufacture up to be borne by the final consumer. GST has been rolled out w.e.f. 01.07.2017, across India.

8.2 The GST to be levied by the Centre on intra-State supply of goods and/or services would be called the Central GST (CGST) and that to be levied by the States/ Union territory would be called the State GST (SGST)/UTGST. Similarly, Integrated GST (IGST) will be levied and administered by Centre on every inter-state supply of goods and services.

8.3 Any supplier of goods and service Provider of services who makes a taxable supply with an aggregate turnover of over Rs.20 lakhs in a financial year is required to obtain GST registration. In special category states, the aggregate turnover criteria are set at Rs.10 lakhs. In simple words every business whose taxable supply of goods or services under GST (Goods and Service Tax) and whose turnover exceeds the threshold limit of Rs. 20 lakhs / 10 Lakhs as applicable will be required to register as a normal taxable person.

8.4 GST Registration Number or GSTIN is 15 Digit identification number which is allotted to each applicant who applied for GST Registration. GST Number is completely based on the Pan Number and State code. First two digits represent the state code and another 10 digit represent the PAN number of the client, one digit represent the entity code (Like proprietorship or partnership etc), one digit is blank and last one is representing check digit.

8.5 Transaction Value: The value of supply of goods or services or both shall be the transaction value, which is the price actually paid or payable for the said supply of goods or services or both where the supplier and the recipient of the supply are not related and the price is the sole consideration for the supply. Sec 15(1) states that value of supply of goods and service shall be the transaction value i.e. the price actually paid or payable.

The conditions for accepting the transaction value are

- a) Supplier and the recipient of the supply are not related.
- b) Price is the sole consideration for the supply.

8.6 Composition Scheme: Composition scheme specifies that registered person whose turnover in the preceding financial year is below certain specified limit (Currently RS.75 lakhs) may intimate the proper officer to pay in lieu of tax payable by him an amount calculated at such rate may be specified.

Eligibility for composition scheme: Sec10(2) of the central Goods and Services Tax Act, 2017 states that the registered person shall be eligible to opt under sub- section (1), if-

8.6.1 He is not engaged in the supply of services other than supplies referred to in clause (b) of paragraph 6 of Schedule II;

8.6.2 He is not engaged in making any supply of goods which are not leviable to tax under this Act;

8.6.3 He is not engaged in making any inter-State outward supplies of goods;

8.6.4 He is not engaged in making any supply of goods through an electronic commerce operator who is required to collect tax at source under section 52; and

8.6.5 He is not a manufacturer of such goods as may be notified by the Government on the recommendations of the Council.

8.7 Supply of Service and Goods: When there is a combined supply of many goods / services, it has to be determined whether it is a Composite supply or mixed supply of goods or services

8.7.1 COMPOSITE SUPPLY: A composite supply is one where all the goods or services or a combination has to be supplied together i.e., naturally bundled and there would be a Principal Supply that could be identified (Ex. Supply of Machinery with packaging, insurance and freight – the principal supply is machinery). In this case, the rate of principal supply will be applied on entire value.

8.7.2 MIXED SUPPLY: A mixed supply is one where the goods or services or a combination thereof which could be individually supplied (like Pizza and Coke) but sold together at a single price. In this case, the highest rate to the good in that mix is applied on all the goods. The GST shall be applicable at appropriate prevailing rates as notified by GST Act. In the event of delay in execution of contract, the GST rate prevailing on the scheduled period or on the actual date of execution, whichever is less only will be admitted.

The bidders should have registered under GST Act and furnish GSTIN. In the event of contractor is within TN, SGST & CGST shall apply and if the contractor is outside TN, IGST shall apply.

8.8 Goods and Services Tax:

8.8.1 The Goods and Services Tax will be paid extra as applicable. The amount of CGST, SGST, and IGST as applicable shall be indicated in percentage payable and amount separately in the tender offer.

8.8.2 The TANGEDCO has been registered as a dealer under GST Act 2017 (Registration No. 33AADCT4784E1ZC) In case of delayed delivery, the GST prevailing on the date of despatch or on the last day of the contractual delivery period whichever is LESS will be admitted. For both the cases, the supplier shall furnish documentary evidence while submitting the bills for payment.

8.8.3 It is the responsibility of the tenderer to make sure about the correct rates of duty liveable on the material at the time of tendering. If the rates assumed by the Tenderer are less than the current rates prevailing at the time of tendering, the TANGEDCO Ltd will not be responsible for the mistake. If the rates assumed by the tenderer are higher than the current rates prevailing at the time of tendering, the GST prevailing at the time of tendering will only be paid.

8.8.4 Any increase in GST consequent to the suppliers coming into different duty slab during the execution of the contract shall have to be taken into account and the all inclusive firm price shall be quoted accordingly by the Tenderers. Any Variation in GST due to statutory Variation within the contract delivery date shall be considered by the TANGEDCO Ltd.

8.8.5 In case of delayed delivery, the GST prevailed on the date of actual delivery applicable on the date of contractual date of delivery whichever is less shall be admitted.

9.0 SECURITY DEPOSIT CUM PERFORMANCE GUARANTEE:

9.1 The successful tenderer will have to furnish 5% of order value as Security Deposit cum Performance Guarantee by means of D.D./Bankers Cheque /irrevocable Bank guarantee as detailed below :

9.2 Banker's Cheque or Pay Order/Demand Draft/Irrevocable Bank Guarantee will be accepted towards payment of Security Deposit cum Performance Guarantee. It should be a single Bank Guarantee to 5% of the order value.

9.3 The Security Deposit cum Performance Bank Guarantee shall be returned to the contractor after the expiry of guarantee period ensuring a Capacity Utilisation Factor (CUF) of 19% for the entire guarantee period of 36 months and also after any defects/ damages during the guarantee period are rectified/ replaced. If TANGEDCO incurs any loss or damages on account of breach of any of the clauses or any other amount arising out of the contract becomes payable by the contractor to TANGEDCO, then TANGEDCO will in addition to such other dues that shall have under the law, appropriate the whole or part of the security deposit cum Performance bank guarantee and such amount that is appropriated will not be refunded to the contractor.

9.4 The successful tenderer will have to furnish the Security Deposit cum Performance Bank Guarantee within 15 days from the date of receipt of contract. The security deposit cum Performance Bank Guarantee will not carry any interest. The Board also reserves the right to accept the belated submission of security deposit cum Performance Bank Guarantee by levying penal interest at the rate of 22% per annum from the date of expiry of 15 days time limit till the date of actual submission of the security deposit cum Performance Bank Guarantee. The interest for penal levy will be recovered from contractor's first bill. The contractor should furnish the SD cum Performance bank Guarantee before the commissioning of solar power plant.

9.5 Failure to comply with the terms regarding security deposit cum Performance Guarantee set out in the contract within the stipulated time of the successful tenderer will entail in the cancellation of the contract without any further reference to the contractor.

9.6 The Security Deposit cum Performance BG shall be valid for a continuous period of 36 months (Thirty Six months), from the anticipated date of commissioning of solar power plant. In case of delay in commissioning, the BG should be extended suitably. And the Bank Guarantee should be a single Bank Guarantee.

INTERCHANGEABILITY

All similar materials and removable parts of similar equipments shall be interchangeable with each other.

10.0 PACKING AND FORWARDING:

10.1 The equipment and all its accessories shall be securely packed and despatched, freight paid, duly insured, at supplier's risk and cost. The packing may be in accordance with the manufacturer's standard practice. The supplier is responsible for ascertaining the facilities that exist for Road Transport to site.

Each package shall be clearly marked and contain detailed packing list, such as gross weight, net weight etc. The supplier is solely responsible for any loss or damage during transport. The despatch of materials shall be only after the approval of test certificates by the TANGEDCO.

10.2 Each consignment shall be accompanied by a detailed packing list containing the following information.

- a) Name of the consignee.
- b) Details of consignment

- c) Destination
- d) Total weight of consignment
- e) Handling and unpacking instructions.
- f) Bill of material indicating contents of each package.

10.3 The supplier shall ensure that the bill of material is approved by the purchaser before despatch.

10.4 The supplier is responsible to make sure about the facilities that exist for Road and Rail transport to site, the maximum packages which can be conveyed by the railways and crane lift available at the destination railway station. The supplier is also responsible for any loss or damage during transport and storage for 60 days.

11.0.PAYMENT:

11.1 Payments will not be made for materials damaged during transit. All defective materials shall be replaced by the supplier free of cost. Payments will not be made unless Test Certificates are approved by the Purchaser.

11.2 Payment will be made only on the actual quantity of materials used and actual works done.

Payments for the supplies will be made by the Superintending Engineer/TEDC/Thiruvavur by cheque on any one of the Nationalised Banks/ Scheduled Banks approved by Reserve Bank of India, in Tamil Nadu. The Bank charges involved in making the payment will be to the account of the Tenderer.

(or)

Payment to be suppliers will be made through public fund management system(PFMS) portal from the dedicated account maintained with a nationalized bank, by TANGEDCO. The bank charges if any involved in making then payment will be on the account of tenderer.

11.3 (a) The tenderer has to furnish the following details of the bank account to which the payment be credited.

1. Name of the account holder
2. Name of the bank
3. Branch
4. Account Number
5. IFSC code of the branch

Subject to any deductions which the purchaser may be authorized to make under the contract, the contractor shall on the certificates of the Engineer, be entitled to payment as follows :

11.4.(a) For the equipments/materials delivered and works commenced within the contractual delivery period:

5% of the all inclusive price(including GST) of the contract value will be paid within a reasonable time after receipt of materials at site in good condition and erection, testing and commissioning of plant and equipment at site and meeting the technical requirements of the tender specification.

Recoveries on account of delayed erection , testing & commissioning, if any, shall be made from the above said payments. Balance 5% payment will be released after completion of Guarantee period of the supplied materials.

Maintenance Contract Bill in triplicate claimed by the bidder, shall be produced to SE/TEDC/Thiruvapur. Only with recommendation of concerned in charge officer of solar panel which is Maintenance works are carried out. Bill will be processed by Accounts Officer/APS /Thiruvapur through AEE/Mtc/230KVSS Thiruvapur and passed for payment by SE/TEDC/THIRUVAPUR .

11.4.(b) For the equipments/materials delivered and works commenced beyond the contractual delivery period:

95% of the all inclusive price(including GST) of the supplied material value will be paid within a reasonable time after receipt of materials at site in good condition and on completion of erection , testing and commissioning of plant and equipment at site and meeting the technical requirements of the tender specification after deducting the appropriate amount of Liquidated damages. If delay is taken place.

Balance 5% payment will be released after completion of Guarantee period of the supplied material.

11.6. For the delayed payments if any, TANGEDCO will not pay any interest on any account.

11.7 In case of delay in supply, the materials will be accepted subject to the following conditions.

(a) There should be no declining trend in prices.

(b) Payment will be released as per the recent purchase order rates or lowest rates obtained during the recent tenders opened subject to levy of liquidated damage for belated supplies.

(c) TANGEDCO reserves the right to accept or reject the delayed supplies without assigning any reason therefore and take action as per the other terms and conditions of this specification.

11.8 The bills for payment will be passed only after the approval/acceptance of the following:

(a) Payment of Security Deposit cum Performance Bank Guarantee.

(b) Sales Tax Clearance Certificate/ VAT Certificate & PAN details.

(c) Test Certificate for the respective materials/equipments.

(d) Undertaking towards Jurisdiction for legal proceedings in non-judicial stamp paper of value Rs.80/-.

(e) Undertaking in lieu of excess payment.

11.9 The supplier should despatch only after getting despatch instruction. If the supplier despatches the materials without the prior approval of the purchaser, then the purchaser shall not be responsible for any demurrage or wharfage or both and only

the supplier should bear any expenditure arising out of such unapproved despatches.

12.0 PROGRESS OF MANUFACTURE, SUPPLY & ERECTION

16.1 The Contractor shall submit a detailed PERT network/bar chart within the time frame agreed consisting of adequate number of activities covering various key phases of the work such as design, procurement, manufacturing, shipment and field erection activities within 15 (fifteen) days of the date of Notification of Award.

The Contractor shall intimate the TANGEDCO, the PERT/bar chart for procurement of various items and execution, enabling the Chief Engineer, Industrial Co-ordination, R&D, TANGEDCO to arrange inspection of such materials.

The successful tenderer shall furnish every fortnight three copies of the programme of work to Superintending Engineer/Thiruvavur Electricity Distribution Circle/ Thiruvavur starting from fifteen days from the commencement of contract.

12.1 SCOPE OF CONTRACT:

Conditions for Maintenance :

Maintenance works of supplied materials will be commenced only after erection of supplied materials at site by successful tenderer

- Cleaning of all supplied materials after erection in the TANGEDCO office periodically using vacuum cleaner
- Checking the configuration.
- Tuning up the system by using system tools cleaning.
- Ensuring correctness of configuration and inventory data.
- Payment shall be claimed by successful tenderer with recommendation of Asst. Exe. Engineer/Mtc/230KV SS Thiruvavur.
- All the equipments should be in working condition at the time of completion and handing over of the equipments at the close of the contract period.
- The preventive & breakdown maintenance shall be done in a highest standard in the industry by maintaining higher standard of professionalism, use of best maintenance tools, vacuum cleaners using trolleys to transport CPUs etc.
- Payment shall be paid in monthly basis and all the preventive and breakdown maintenance service reports, man power charges shall be submitted along with the bills.

Cost of spares used for replacing failed components / Equipments of supplied materials would involved at Successful tenderer scope within Guarantee period of supplied materials and TANGEDCO scope beyond guarantee period.

The scope of the maintenance is Annual and will also include replacement/repair of all components and peripherals etc(Spare parts supplied by TANGEDCO).

The service Engineers shall be responsible for the following and they shall ensure:

Technical Support Service.

12.2 The support man power to be supplied by successful tenderer should be qualified Engineers suitable for testing , attending faults and replacing spares of supplied materials

12.3 All statutory obligations/liabilities like Salary, ESI, P.F., as per Labour Laws for the persons employed for this contract will be the responsibility of the tenderer. TANGEDCO will not make any direct payment thereof and will not be responsible for any lapses by the tenderer.

12.4 In case of absence of any service engineer, the tenderer should provide alternate person immediately. A standing instruction in this respect should be issued to that person.

12.5 The personnel employed by the tenderer shall be well behaved and compliance thereof will be the responsibility of the tenderer.

12.6 All service personnel should hold suitable identity card jointly signed by the company and competent authority of TANGEDCO.

12.7 Quality of Service to be maintained during the Contract Period:

12.8 Preventive maintenance should be done periodically to avoid breakdowns.

12.9 Security Policy to be followed during the Contract period:

12.10 All the security measure should be taken as per the ISO 17799 Information Technology Security Standards.

12.11 Confidentiality should be maintained.

12.12 The Vendor should take responsibility, for any information loss and security challenge.

Safety Regulation:

The successful tenderer shall have to ensure that the workmen follow all precautions against accidents and injuries as required by the relevant rules and it should be the obligation of the vendor to pay compensation, as per Workman Compensation Act. **No responsibility rests with TANGEDCO in this regard. Undertaking regarding safety regulation should be produced to TANGEDCO/Thiruvarur before maintenance is taken up**

Breakdown Maintenance:

1. If any of the equipment problem is not rectified within a week by the successful tenderer, then TANGEDCO has the right to call a third party to get the problem rectified and the cost is recovered from pending bill of successful vendor, irrespective of the quantum of the amount.
2. When called upon by TANGEDCO to attend any equipments problems, the same should be attended to without restriction to the number of calls and area of operation.

Preventive maintenance :

1. The preventive maintenance of IT equipments shall be carried out EVERY MONTH or as and when necessary in all the related equipments and infrastructures in the Nodal Center, Offices and Collection Centers and proper Physical & Working Conditions of the same should be ensured.

2.The scope for periodically maintenance shall be as follows:

2.1 Penalty class to the successful tenderer:

- 2.2 Maintenance and replace the faulty equipment and rectify the defect if occur during contract period will be done by successful tenderer by providing manpower and spare parts .

2.3 In case of any failure of spares/ equipments, the successful tenderer should repair/Replace with TANGEDCO applications within the permitted time.

2.4 Otherwise penalty will be levied to the Vendor.

2.5 After issuing the 7 days notice suppose the successful tenderer will not come forward and rectify this problem, Without giving any further notice, The TANGEDCO TVR Thiruvavur will rectify the same and the entire cost incurred for rectification will be deducted from the successful tenderer's every month payment .

EPF:

The Tenderer should have EPF registration and insurance of the labourer. If registration is not available on the date of opening of the tender the same should be produced before LOA (Letter of acceptance) is issued.

13.0. FORCE MAJEURE

13.1 If at any time, during the continuance of the contract, the performance in whole or in part, in any obligation under this contract, shall be prevented or delayed by reasons of any war, hostility, acts of public enemy, acts of civil commotion, strikes, lockouts, sabotages, fires, floods, explosions, epidemics, quarantine restrictions or other acts of God (herein after referred to as eventualities) then, provided notice of the happening of any such eventuality is given by the tenderer to the TANGEDCO within 15 days from the date of occurrence thereof, neither party, by reasons of such eventuality, be entitled to terminate this contract nor shall any claim for damages against the other in respect of such non performance or delay in performance and deliveries under this contract, shall be resumed as soon as practicable after such eventuality has come to an end or ceased to exist.

13.2 Provided that of the performance in whole or part by the supplier on any obligation under this contract is prevented or delayed by reasons of any eventuality for a period exceeding 60 days, the TANGEDCO may at its option terminate this contract by a notice in writing.

14.0. LIQUIDATED DAMAGES AND PENALTY :

14.1. The delivery as specified should be guaranteed by the supplier under the liquidated damages clause given below:

If the supplier fails to deliver the equipments/materials within the time specified in the contract or any extension thereof, the purchaser shall recover from the supplier as liquidated damages, a sum of **HALF PERCENT (0.5%)** of the contract price of the undelivered equipments/materials for each completed week of delay. The total liquidated damages shall not exceed **TEN PERCENT (10%)** of the contract price of the equipments/materials so delayed. **Only the date of actual receipt of materials at stores will be reckoned as date of delivery for this purpose.**

It should be noted that if a contract is placed on the higher tenderer in preference to the lowest acceptable tender in consideration of the offer of earlier delivery, the said contractor will be liable to pay the TANGEDCO the difference between the contract rate and that of the lowest acceptable tender in case of failure to complete the supplies in terms of such contract within the delivery period specified in the tender and incorporated in the contract. This is without prejudice to other rights under the terms of contract.

14.2. Equipment will be deemed to have been delivered only when all its component parts and its accessories are also delivered. If certain components and accessories are not delivered in time the whole equipment will be considered as delayed unless, the missing parts are delivered. **The Liquidated damages will also be levied for the quantity not supplied as is done for the delayed supplies. If supplies effected in part which could not be beneficially used by the TANGEDCO (due to such incomplete supply), liquidated damage will be worked out on the basis of entire contract price of the such whole units which could not be beneficially used and not on the value of delayed portion.**

14.3. If supplies to be rendered are made by the supplier beyond the period of delivery and they are accepted by the TANGEDCO, such acceptance is without prejudice to TANGEDCO's right to levy liquidated damages for the delay in supply.

14.4. If the ordered materials are not delivered, the purchaser shall recover from the supplier, as liquidated damages a sum equal to TEN PERCENT (10%) of the contract price of the equipments/materials undelivered.

14.5. The suppliers are liable to pay the amount of loss sustained by the TANGEDCO in the event of non-execution of orders, if any placed on them either in full or part to the satisfaction of the TANGEDCO under the terms and conditions of contract and in the event of placing orders for such quantities on some others at a higher price.

14.6. Tenderers not giving clear and specific acceptance to the above clauses are liable for rejection.

14.7. If there is any downward trend in prices on account of belated supplies, the tenderers have to accept the same with the levy of liquidated damages, for belated supplies. In respect of contracts where supply effected in part or works executed in part, could not be beneficially used by the TANGEDCO, (due to such incomplete Supply/execution), Liquidated damages should be worked out on the basis of entire contract price of such whole units which could not be beneficially used and not on the value of the delayed portion.

The TANGEDCO will also be at liberty to cancel the contract if the supply is not completed within the accepted delivery period not with standing the liquidated damages clause applicable for the belated supplies. Any charge for canceling the contract will not be accepted under any circumstances.

In the event of cancellation of contract or non completion of supply by the suppliers, then the short supplied items may be ordered fresh. The excess price if any between the original and new contract will be recovered from the original supplier from the amount due to the original supplier either from this contract or from any other contract.

15.0 LOSS OF DAMAGE

15.1 External damages and/or shortages that are prima facie, the results of rough handling in transit or due to defective packing will be intimated within one month from the date of receipt of the materials at site. Internal defects, damages or shortages of integral parts which cannot ordinarily be detected on a superficial visual examination, due to bad handling in transit or defective packing, should be intimated within 2 months from the date of receipt of materials. In either case, the defective materials shall be replaced / rectified by the supplier, free of cost.

15.2 If during the period of supply, it is found that goods already supplied are defective in material or workmanship or do not conform to specification or unsuitable for the purpose for which they are purchased, then it will be open to the purchaser either to reject the goods or repudiate the entire contract and claim such loss that the purchaser may suffer on that account or require the supplier to replace the defective goods, free of cost.

15.3 Similarly, if during the eighteen months subsequent to the date of receipt of the goods, any of the goods found to be defective in materials or workmanship or do not conform to specification or unsuitable for the purpose for which they are purchased, it will be open to the purchaser either to repudiate the entire contract and claim damages or accept such parts of the goods that are satisfactory and require the supplier to replace the balance or to claim compensation for the entire loss sustained by the purchaser on that account.

15.4 In the event of supplies being received damaged or any shortages at the destination stations, the cost of such materials, excise duty and sales tax (if payable) and other charges payable thereof will be paid only proportionate to the value of materials received in good condition, unless the damaged goods or short supplies are made good free of cost by the suppliers.

15.5 For all legal purposes, the materials shall be deemed to pass into the TANGEDCO's ownership at the destination stores, where they are delivered and accepted.

16.0 GUARANTEE CERTIFICATE :

14.1 A written guarantee guaranteeing the TANGEDCO against defects in the materials supplied either in materials or workmanship shall be furnished on receipt of the order.

17.0 GUARANTEE PARTICULARS :

The Tenderer shall furnish all the guaranteed particulars of the materials offered. Unless full details are furnished, the tender is liable to be rejected.

18.0 GUARANTEE :

18.1 The entire works inclusive of the materials supplied by the contractor should be guaranteed for satisfactory operation at least for a period of 36 months from the date of commissioning and handing over of the plant to the TANGEDCO.

18.2 Any defects noticed during this period shall be rectified free of cost to the TANGEDCO immediately within 48 hours from the date of intimation of failure. Irrespective of number of failures and repairs, the suppliers are responsible for replacement of defective materials till the completion of guarantee period.

18.3 A written guarantee guaranteeing the Board against defects in the materials supplied, either in materials or workmanship, should be furnished preferably along with the initial bill payment. The guarantee shall be operative for a period of Thirty six (36) months from the date of commissioning and handing over of the solar power plant to TANGEDCO.

18.4 Any defects or failure occurring within the guarantee period due to faulty design, poor workmanship and bad quality of raw materials used shall be rectified / replaced free of cost within 48 hours on receipt of intimation from the purchaser on such defects of failures. If, they are not rectified or replaced within this period the contractor shall pay the liquidated damages as per the liquidated damages clause in the contract for the delay from the date of receipt of intimation for the defects of failures. Any expenditure incurred in the transportation of materials for rectification or replacement will be to the suppliers account.

18.5 The Tenderers may indicate whether any service centers are available inside Tamil Nadu, so as to rectify / repair the units that are defective / failed within guarantee period without delay.

18.6 The incidental expenses, transport and freight charges for the replacement of defective materials within guarantee period may also be borne by the Contractor till such time it serves continuous period of 36 months.

18.7 The tenderer shall guarantee among other things, the following

- i) Quality and strength of materials used.
- ii) Performance figures given by the tenderer in the Schedule of Guaranteed particulars.
- iii) Safety and accident free operation of the plant

18.8 In the event of any emergency where in the judgment of the Engineer, delay would cause serious loss or damages, repairs or adjustment may be made by the Engineer or a third party chosen by the Engineer without advance notice to the Contractor and the cost of such work shall be paid by the Contractor. In the event such action is taken by the Engineer, the Contractor will be notified promptly and he shall assist wherever possible in making necessary corrections. This shall not relieve the Contractor of his liabilities under the terms and conditions of the Contract.

18.9 If it becomes necessary for the Contractor to replace or renew any defective portions of the works the provision of this clause shall apply to portion of the works so replaced or renewed until the expiry of Thirty six (36) months/ or the periods as mentioned in guarantee clause, from the date of such replacement or renewal. If any defects are not remedied within a reasonable time, the Engineer may proceed to do the work at the Contractor's risk and cost but without prejudice to any other rights, which the Owner may have against the Contractor in respect of such defects.

18.10 The repaired or new parts will be furnished and erected free of cost by the Contractor. If any repair is carried out on his behalf at the site, the Contractor shall bear the cost of such repairs.

18.11 The cost of any special or general overhaul rendered necessary during the maintenance period due to defects in the equipment or defective work carried out by the Contractor, the same shall be borne by the Contractor.

18.12 The acceptance of the equipment by the Engineer shall in no way relieve the Contractor of his obligations under this clause.

18.13 The provisions contained in this clause will not be applicable:

a) If the Owner has not used the equipment according to generally approved industrial practice and in accordance with the conditions of operations specified and in accordance with operating manuals, if any.

b) In cases of normal wear and tear of the parts to be specifically mentioned by the Contractor in the offer.

19.0 INSPECTION, TESTING & INSPECTION CERTIFICATES

The Plant and Equipment covered by this Contract shall be subjected to inspection and testing. The supplier/ vendor/contractor/ fabricator shall provide all services to establish and maintain quality of workmanship in his works and that of his sub-suppliers / sub-vendors / sub-contractors/sub- fabricators to ensure the mechanical accuracy of components, compliance with drawings, identification and acceptability of all materials, parts and Equipment.

The engineer and / or his duly authorised representative shall have at all reasonable times access to the supplier's /vendor's / contractor's / fabricator's premises or works and shall have the power, at all reasonable times to inspect and examine the materials and workmanship during manufacture and if part of the equipment is being manufactured or assembled on other premises or works, the supplier/vendor/contractor/fabricator shall obtain for the engineer and for his duly authorised representatives, permission to inspect as if the Equipment were manufactured or assembled on the supplier's / vendor's / contractor's / fabricator's own premises or works.

20.0 INSPECTION OF SITE BY BIDDERS :

Bidder shall inspect the site, examine and obtain all information required and satisfy himself regarding matters and things such as access to site, communication, transport, right of way, the type and number of equipment and facilities required for the satisfactory completion of works, the quantity of various sections of the work, the availability of local labour, availability and rates of material, local working conditions, uncertainties of weather, obstructions and hindrances that may arise, etc. which may affect the work or cost thereof, before submission of his bid. Ignorance of site condition shall not be accepted by the Owner as basis for any claim for compensation. The submission of a bid by the bidder will be construed as evidence that such an examination was made and any later claims/disputes in regard to rates quoted shall not be entertained or considered by the Owner.

The rates quoted by BIDDER shall be based on his own knowledge and judgment of the conditions and hazards involved and shall not be based on any representations of the ENGINEER

21.0 REPLACEMENT OF DEFECTIVE / DAMAGED MATERIALS:

21.1 Notwithstanding anything contained in the above liquidated damages clause when the whole or part of the materials supplied by the supplier are found to be defective/damaged or are not in conformity with the specification or sample, such defects or damages in the materials supplied shall be rectified within two months from the date of intimation of defect/damage either at the

point of destination or at the supplier's works, at the cost of supplier, against proper security and acknowledgement. In the alternative, the defective or damaged materials shall be replaced free of cost within three months from the date of receipt of the intimation from the purchaser of such defects or damages. If the defects or damages are not rectified or replaced within this period, the supplier shall pay a sum towards liquidated damages as per liquidated damages clause given above, for the delay in rectification / replacement of the defects or damages.

21.2 If even after such rectification or replacement of the damaged or defective part, if the equipment ordered is not giving the satisfactory performance as per the contract, then it will be open to the purchaser either to reject the goods or repudiate the entire contract and claim such loss sustained by TANGEDCO.

21.3 "Notwithstanding any other remedies available, the purchaser shall be entitled to dispose of the defective/damaged materials in 'as is where is condition' without further notice, if the contractor/supplier fails to rectify the defect and/or replace the damaged materials and/or fails to remove the defective/damaged materials within such period as may be notified by the Purchaser through notice and the sale proceeds of such disposal shall be appropriated towards the dues to the TANGEDCO such as Liquidated Damages, ground rent, etc. as may be determined by the Purchaser".

22.0 FAILURE TO EXECUTE THE CONTRACT:

Suppliers failing to execute the order placed on them to the satisfaction of the TANGEDCO under the terms and conditions set forth therein, will be liable to make good the loss sustained by the TANGEDCO, consequent to the placing of fresh orders elsewhere at higher rate, i.e. the difference between the price accepted in the contract already entered into and the price at which fresh orders have been placed. This is without prejudice to the imposition of Liquidated Damages and forfeiture of security deposit.

23.0 NON-ASSIGNMENT:

The supplier shall not assign or transfer the contract or any part thereof without the prior approval of the Purchaser.

24.0 EFFECTING OF RECOVERIES:

Any loss, arising incident to non-fulfillment of this contract or any other contract, will be recovered from the Security Deposit held or any other amount due to the supplier from the TANGEDCO.

25.0 SALES TAX CLEARANCE CERTIFICATE:

The tenderer should enclose with the tender, a copy of certificate of sales tax clearance for the previous year from the appropriate Sales Tax Authorities.

NOTE: The successful tenderer should submit the latest copies of STCC after receiving the order along with the PAN Details.

26.0 PATENT RIGHTS ETC.:

The supplier shall indemnify the purchaser against all claims, actions, suits and proceedings for the infringement or alleged infringement of any patent, design or copy right protected either in the country of origin or in India by the use of any equipment supplied by the supplier, other than that for the purpose indicated by or reasonably to be inferred from the specification.

27.0 JURISDICTION OF LEGAL PROCEEDINGS:

No suit or any proceedings in regard to any matter arising in any respect under this contract shall be instituted in any court say in the High Court , Madras or District Court at Thiruvavarur or Sub-Court at Thiruvavarur or at the District Munsif Court at Thiruvavarur . It is agreed that no other court shall have jurisdiction to entertain any suit or proceedings eventhough part of the cause of action might arise within their jurisdiction. In case, any part of cause of action arises within the jurisdiction of any of the courts in Tamil Nadu and rest within in the jurisdiction of courts of outside the state of Tamilnadu , then it is agreed to between parties that such suits or proceedings shall be instituted in a court within the state of Tamil Nadu and no other court outside the state of Tamil Nadu shall have jurisdiction eventhough any part of the cause of action might arise within the jurisdiction of such courts.

The successful tenderer shall furnish an undertaking in a non-judicial stamp paper of Rs.80/- agreeing to the above condition.

28.0 ARBITRATION:

The TANGEDCO will not accept any arbitration in case of disputes arising in any respect under this contract. Any dispute arising out of this contract shall not be subject to arbitration under the provisions of Arbitration Act 1940 in the event of any dispute between the parties.

29.0 DEVIATIONS FROM SPECIFICATION:

If the tenderer wish to deviate from the provisions of this specification, he shall list out such deviations, in the format enclosed and submit full particulars and reasons therefore. Unless this is done, the equipment offered shall be considered to comply, in every respect within the terms and conditions of this specification.

30.0 RESPONSIBILITY:

The tenderer is responsible for safe delivery of the materials at the destination stores. The tenderer should include and provide for packing and secured protection of the materials so as to avoid damages or loss in transit.

31.0 QUANTITIES:

The quantities mentioned in this specification are only tentative. The purchaser reserves the right to revise the quantities at the time of placing the order and ordering more materials during the pendency of the order at the accepted rates.

The tenderers should quote minimum quantity of 10% of tendered quantity. The offer of bidders who have quoted for lesser quantity than the minimum quantity prescribed shall be summarily rejected. In the event of floating tender for procurement of more items of similar materials of various sizes or ratio etc. the cumulative 10% of the aggregate quantity of various items shall be considered for arriving at minimum quantity.

32.0 CLIMATIC CONDITIONS:

The materials are for use in Tamil Nadu and should be satisfactory for operation under tropical conditions in Tamil Nadu.

33.0 RECOVERIES OF DUES:

The TANGEDCO is empowered

a) To recover any dues against this contract in any bills Security Deposit / Earnest Money Deposit due to the suppliers either in this contract or any other contracts with TANGEDCO.

b) To recover any dues against any other contract of the supplier with TANGEDCO, with the available amount due to the suppliers against this contract.

34.0 PAST PERFORMANCE:

The intending tenderers shall furnish the details of various supply orders/work contracts executed by them for the past three years as on the date of Tendering in the proforma enclosed in the Tender Specification and also the proof for having manufactured the tendered item and for their satisfactory performance. The details furnished by the tenderers shall be in complete shape and if it is found that any information is found omitted, suppressed, incomplete or incorrect, the same will be taken note of while dealing with the Tenderers in future. Tenders furnished by the tenderers without these accompanying details of their past performance are liable for rejection.

35.0 SICK INDUSTRIAL UNITS:

Tenderers are requested to state whether the company is a potentially sick industrial company or sick industrial company in terms of section 23(or) 15 of the Sick Industrial Companies (Special provision) Act 1985. Failure to furnish the information will make the tender liable for rejection.

36.0 General

An undertaking to the effect that if lesser prices offered to any one else for the proposed materials during the period of one year from the date of P.O, the same benefit shall necessarily be passed on to TANGEDCO.

37.0 TEST CERTIFICATES

The test certificates in triplicate for the materials furnishing the results of the tests as per latest issue of IS shall be forwarded and got approved before the materials are despatched. In addition to the tests called for in the specification, the purchaser reserves the right of having such tests as he desires carried out at his own expenses to satisfy himself that the materials conform to the requirement of this specification. The materials may be rejected if the test results are not satisfactory. The details furnished by the tenderers shall be in complete shape and if it is found that any information is found omitted, suppressed, incomplete or incorrect, the same will be taken note of while dealing with the Tenderers in future. Tenders furnished by the tenderers without these accompanying details of their past performance are liable for rejection.

Sd/-- 18.06.2020.

**SUPERINTENDING ENGINEER,
TEDC/THIRUVARUR**

SECTION VI
TECHNICAL SPECIFICATION

TECHNICAL SPECIFICATION OF GRID SPV POWER PLANT

1. SCOPE :

Supply, installation, testing, **obtaining safety certificate** , commissioning and Maintenance for 3 years of LT Grid connected Solar Photo voltaic (SPV) Power Plant of capacity of **17KWp** at 230 KV SS the Roof top of Office of the Superintending Engineer/TEDC/TANGEDCO/Thiruvarur.

Note:

Procedure for obtaining safety certificate

- i) Register the application in the name of SE/TEDC/Thiruvarur to the Government of Tamil Nadu Electrical Inspectorate.
- ii) Remit the registration fee and License fee
- iii) Be present at the time of inspection of the site by the concerned Electrical Inspector.
- iv) If remarks found attend the same completely.
- v) Obtain the safety certificate from the Government of Tamil Nadu Electrical Inspectorate.

2. GENERAL REQUIREMENTS :

The Solar PV Power plant shall have capacity of **17KWp** . The power plant shall provide the following general requirements.

The plant should have the Capacity Utilisation Factor (CUF) of not less than 19% as per the CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations 2012.

Supply of adequate capacity of SPV modules, etc to ensure maximum generation.

The power plant has to operate in parallel with the grid system which is an infinite electrical system. Any faults not taken care will result in damage of SPV power plant, thus the Solar Power Plant has to protect its equipment against any possible fault or other disturbances from the Grid.

All the materials shall be as per standard SPV plant requirements and may adhere to the necessary safety standards and environmental requirements.

A grid-tied Solar Photo Voltaic (SPV) power plant consists of SPV array, Module Mounting Structures, Solar Grid Inverter (SGI), control and protection devices, circuit breakers, interconnection cables and switches.

Components and parts used in the SPV power plants shall conform to the BIS or IEC or other international specifications, wherever such specifications are available and applicable.

The bidder should be registered with TEDA.

3. Quality and Workmanship

Solar PV modules are designed to last 25 years or more. It is therefore essential that all system

components and parts, including the mounting structures, cables, junction boxes, distribution boxes and other parts also have a life cycle of at least 25 years. Therefore all works shall be undertaken with the highest levels of quality and workmanship. During inspection, TANGEDCO and its representatives will pay special attention to neatness of work execution and conformity with quality and safety norms. Non compliant works will have to be redone at the cost of the Installer.

4. System Configurations:

Name of the Beneficiary	TANGEDCO / Thiruvarur
System capacity	17kWp
Total Power output of panel(s)	should not be less than 30 Kw
Type of PV Module	Indigenous Crystalline module
Minimum rated power of each module	250Wp and above
Solar Grid Inverter minimum KVA	Minimum KVA is as per the respective required capacity

5. Specifications of Solar PV Modules

Solar PV modules should be of the crystalline silicon type, manufactured in India. Detailed specifications of the solar PV modules are given below:

Type	Crystalline silicon
Origin	Manufactured in India
Efficiency	$\geq 13\%$
Fill factor	$\geq 70\%$
Warranty	Panel output (Wp) capacity to be $\geq 90\%$ of designed normal power at the end of 12 years and $\geq 80\%$ of at the end of 25 years
Module frame	Non-corrosive and electrolytically compatible with the mounting structure material
Termination box	Thermo-plastic, IP 65, UV resistant
Blocking diodes	Schottky type
Module minimum rated power	The nominal power of a single PV module shall not be less than 250Wp and above .
RF Identification tag data	a) Name of the manufacturer of PV Module b) Name of the Manufacturer of Solar cells c) Month and year of manufacture (separately for solar cells and module) d) Country of origin (separately for solar cells and module) e) I-V curve for the module f) W_m , I_m , V_m and FF for the module g) Unique Serial No and Model No of the module h) Date and year of obtaining IEC PV module qualification certificate

	i) Name of the test lab issuing IEC certificate j) Other relevant information on traceability of solar cells and module as per ISO 9000 standard.
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Power output rating	To be given for standard test conditions (STC). IV curve of the sample module shall be submitted
Compliance with standards and codes	IEC 61215 / IS 14286 IEC 61730 Part 1 and 2

6. Solar PV Mounting Structure

The PV modules shall be mounted on fixed metallic structures having adequate strength appropriate design and as per specifications given below which can withstand the load of the modules and high wind velocities. The array structure will be made of hot dip galvanized Mild steel.

Detailed specifications for the mounting structure are given below:

Wind velocity withstanding capacity	150 km / hour
Structure material	Hot dip galvanised steel with a minimum galvanisation thickness of 120 microns and the structural patterns shall be made before galvanizing.
Bolts, nuts, panel mounting clamps, fasteners (with spring washers)	Stainless steel SS 304
Mounting arrangement for Ground installation	The structure has to be securely anchored to the supporting surface. Concrete foundations of appropriate weight and depth for structures mounted directly on the ground; Bolted with anchor bolts of appropriate strength for structures mounted on RCC surfaces.
Installation	The structures shall be designed for simple mechanical on-site installation. There shall be no requirement of welding or complex machinery at the installation site
Minimum distance between roof edge and mounting structure	0.6m
Access for panel cleaning and maintenance	All solar panels must be accessible from the top for cleaning and from the bottom for access to the module junction box.
Panel tilt angle	North – south orientation with a fixed tilt angle of 11 – 13 degrees (depending on location), south facing

7. Solar Array Fuse

The cables from the array strings to the solar grid inverters shall be provided with DC fuse protection. Fuses shall have a voltage rating and current rating as required. The fuse shall have DIN rail mountable fuse holders and shall be housed in thermoplastic IP 65 enclosures with transparent covers.

8. Solar Grid Inverter

The solar grid inverter converts the DC power of the solar PV modules to grid-compatible AC power. The detailed specifications of the solar grid inverter are given below.

Total output power (AC)	To match solar PV plant capacity while achieving optimum system efficiency
Input DC voltage range	As required for the solar grid inverter DC input.
Maximum power point (MPPT) tracking	Shall be incorporated
Number of independent MPPT inputs	1 or more
Operation AC voltage	Three phase 415V (+ 12.5%, -20%)
Operating Frequency range	47.5 – 52.5 Hz
Nominal frequency	50 Hz
Power factor of the inverter	>0.98 at nominal power
Total harmonic distortion	Less than 3%
Built-in Protection	AC high / low voltage; AC high /low Frequency
Anti-islanding protection	As per VDE 0126-1-1 / IEC 60255.5 / IEC 60255.27 / IEC 62116
Operating ambient temperature range	-10 °C - +60 °C
Humidity	0 – 95% Rh
Inverter efficiency	>=98%
Inverter weighted efficiency	>=94%
Protection degree	IP 65 for outdoor mounting, IP 54 for indoor mounting
Communication interface	RS 485 / RS 232 / RJ45
Safety compliance	IEC 62109-1, IEC 62109-2
Environmental Testing	IEC 60068-2 (1,2,14,30)
Efficiency Measurement Procedure	IS/IEC 61683

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Cooling	Convection
Display type	LCD for data display. LCD / LED for status display
Display parameters to include	Output power (W), cumulative energy (Wh), DC voltage (V), DC current (A), AC voltage (V), AC frequency (Hz), AC current (A), cumulative hours of operation (h).

9. DC Combiner Box

A DC Combiner Box shall be used to combine the DC cables of the solar module arrays with MCCB for both +ve & -ve protection for the outgoing DC cable(s) to the DC Distribution Box.

10. DC Distribution Box

A DC distribution box shall be mounted close to the solar grid inverter. The DC distribution box shall be of the thermo-plastic IP65 DIN-rail mounting type and shall comprise the following components and cable terminations:

- Incoming positive and negative DC cables from the DC Combiner Box;
- DC circuit breaker, 2 pole (the cables from the DC Combiner Box will be connected to this circuit breaker on the incoming side);
- DC surge protection device (SPD), class 2 as per IEC 60364-5-53;
- Outgoing positive and negative DC cables to the solar grid inverter.

As an alternative to the DC circuit breaker a DC isolator may be used inside the DC Distribution Box or in a separate external thermoplastic IP 65 enclosure adjacent to the DC Distribution Box. If a DC isolator is used instead of a DC circuit breaker, a DC fuse shall be installed inside the DC Distribution Box to protect the DC cable that runs from the DC Distribution Box to the Solar Grid Inverter.

11. AC Distribution Box

An AC distribution box shall be mounted close to the solar grid inverter. The AC distribution box shall be of the thermo plastic IP65 DIN rail mounting type and shall comprise the following components and cable terminations:

- Incoming 5-core (three-phase) cable from the solar grid inverter
- AC circuit breaker, 4-pole
- AC surge protection device (SPD), class 2 as per IEC 60364-5-53
- Outgoing cable to the building electrical distribution board
- Connection to the Building Electrical System.

The AC output of the solar grid inverter shall be connected to the building's electrical system after the TANGEDCO service connection meter and main switch on the load side. The solar grid inverter output shall be connected to a dedicated module in the Main Distribution Board (MDB) of the building. It shall *not*

be connected to a nearby load or socket point of the building. The connection to the electrical system of the building shall be done as shown in single line diagram in the Annexure.

12. Cables

- All cables shall be supplied conforming to IEC 60227/ IS 694 & IEC 60502/ IS 1554. Voltage rating: 1,100V AC, 1,500V DC.
- **For the DC cabling, XLPO insulated and sheathed with the voltage rating of 1500 V DC or higher UV stabilised single core flexible copper cables shall be used. Multi-core cables shall not be used.**
- For the AC cabling, PVC or XLPE insulated and PVC sheathed single or multi-core flexible copper cables shall be used. Outdoor AC cables shall have a UV-stabilised outer sheath.
- The total voltage drop on the cable segments from the solar **PV modules** to the solar grid inverter shall not exceed 2.0%.
- The total voltage drop on the cable segments from the **solar grid inverter** to the building distribution board shall not exceed 2.0%.
- The DC cables from the SPV module array shall run through a **UV stabilised PVC conduit pipe** of adequate diameter with a minimum wall thickness of 1.5mm or through a High Density Poly Ethylene (HDPE) conduit. **The conduits shall not run across the pathway of the terrace. Flexible corrugated PVC conduits shall not be used.**
- Cables and wires used for the interconnection of solar PV modules shall be provided with solar PV connectors (MC4) and couplers.
- **All cables and conduit pipes shall be clamped to the rooftop, walls and ceilings with thermo-plastic clamps at intervals not exceeding 50 cm.**
- The minimum AC & DC cable size shall be as per diagram enclosed.
- In three phase systems, the size of the neutral wire shall be equal to the size of the phase wires. The following colour coding shall be used for cable wires:
 - DC positive: **red** (the outer PVC sheath can be black with a **red** line marking)
 - DC negative: **black**
 - AC three phase: Phases: **red, yellow, blue**; neutral: **black**
 - Earth wires: **green**
- **Cables and conduits that have to pass through walls or ceilings shall be taken through a PVC pipe sleeve.**
- Cable conductors shall be terminated with tinned copper end-ferrules to prevent fraying and breaking of individual wire strands. The termination of the DC and AC cables at the Solar Grid Inverter shall be done as per instructions of the manufacturer, which in most cases will include the use of special connectors.

- Cable lugs and end –ferrules for all cable conductor and wire terminations shall be crimped with crimping pliers and end-ferrule pliers.
- All cable ties shall be UV resistant.

13. Earthing

- The PV module structure components shall be electrically interconnected and shall be grounded.
- Earthing shall be done in accordance with IS 3043-1986, provided that earthing conductors shall have a minimum size of 6.0 mm² copper, 10 mm² aluminium or 70 mm² hot dip galvanised steel. Unprotected aluminium or copper-clad aluminium conductors shall not be used for final underground connections to earth electrodes.
- A dedicated earth electrode must be used for the earthing of DC side and AC side separately.
- The earth electrodes shall have a precast concrete enclosure with a removable lid for inspection and maintenance. The entire earthing system shall comprise non-corrosive components.
- A minimum of two separate dedicated and inter connected earth electrodes must be used for each of solar PV system strength support structure .

14. Surge protection

- Surge protection shall be provided on both the DC and the AC side of the solar system.
- **The inverter shall not permit the surges transferred from A.C to D.C and vice versa by having suitable isolation mechanism . If the facility is not available internally, a suitable isolation transformer shall be additionally provided .**
- The DC surge protection devices (SPDs) shall be installed in the DC distribution box adjacent to the solar grid inverter.
- The AC SPDs shall be installed in the AC distribution box adjacent to the solar grid inverter.
- The SPDs earthing terminal shall be connected to earth through the above mentioned dedicated earthing system. The SPDs shall be of type 2 as per IEC 60364-5-53.

15. Lightning Protection

Lightning protection as per IS 2309 "Protection of Buildings and Allied structures against Lightning –code of practise" (second revision)(1989) shall be provided.

16. Junction Boxes

- Junction boxes and solar panel terminal boxes shall be of the thermo plastic type with IP 65 protection for outdoor use and IP 54 protection for indoor use.
- Cable terminations shall be taken through thermo-plastic cable glands. Cable ferrules shall be fitted at the cable termination points for identification

17. Data Monitoring:

- a) For online monitoring, a data logging system shall be provided and the same shall be fixed at a reachable height.
- b) Net / SIM based Data logging system shall be provided. The data storage facility has to be provided in the Inverter. The net charges will have to be borne by the installer till the completion of 3 year Maintenance period.

18. Tools, Tackles and Spares

- The Installer shall keep ready stock of tools, tackles and essential spares that will be needed for the day-to-day maintenance of the solar PV system. This shall include but not be limited to, the following:
- Screw driver suitable for the junction boxes and combiner boxes; Screw driver and / or Allen key suitable for the connectors, power distribution blocks, circuit breaker terminals and surge arrestor terminals;
- Spanners / box spanners suitable for the removal of solar PV modules from the solar PV module support structure;
- Solar panel mounting clamps;
- Cleaning tools for the cleaning of the solar PV modules, spare fuses

19. Caution Signs

In addition to the standard caution and danger boards or labels as per Indian Electricity Rules, the AC distribution box near the solar grid inverter and the building distribution board to which the AC output of the solar PV system is connected, shall be provided with a non-corrosive caution label with the following text:

WARNING – DUAL POWER SOURCE EB & SOLAR
--

The size of the caution label shall be 105mm (width) x 20mm (height) with white letters on a red background.

Caution labels as may be prescribed by TANGEDCO shall be fixed as per TANGEDCO specifications.

20. Metering

The existing service connection meter shall be replaced by a net meter of adequate capacity. Net meter shall be supplied by TANGEDCO. The cabling /wiring up to meter location shall be done by the contractor. An isolation switch shall be erected near the meter for the purpose of safely/emergency need/maintenance.

Documentation

The Installer shall supply the following documentation:

- a) System description with working principles.
- b) System single line diagram.
- c) Solar PV array lay-out.
- d) Routing diagram of cables and wires.
- e) Data sheets and user manuals of the solar PV panels and the solar grid inverter.
- f) A system operation and maintenance manual.
- g) Name, address, mobile number and email address of the service centre to be contacted in case of failure or complaint.
- h) Warranty cards.
- i) Maintenance registers.

21. Test Certificates and Reports to be Furnished

Test Certificates / Reports from IECQ / NABL accredited laboratory for relevant IEC / equivalent BIS standard for quoted components shall be furnished. Type Test Certificates / reports shall be provided for the solar modules and solar grid tied inverters up to 20kW to provide evidence of compliance with standards as specified above. **For solar grid tied inverters above 20kW, self certification by the manufacturer of the said inverter is acceptable as specified in above.** TANGEDCO reserves the right to ask for additional test certificates or (random) tests to establish compliance with the specified standards.

Safety Certificate from the Government of Tamil Nadu Electrical Inspectorate:

After completion of the Solar panel erection in complete shape, the tenderer should obtain the Safety Certificate from the **Electrical Inspector / Trichy** by adopting usual procedure at the Office of the Government of Tamil Nadu Electrical Inspectorate & Produce the same to the Office of the SE/TEDC/Thiruvavur. Then only the Solar Panel will be commissioned

Sd/-- 18.06.2020.

SUPERINTENDING ENGINEER,
TEDC / THIRUVARUR

**Guaranteed Technical Particulars
(To be filled by the bidder)**

	<u>Solar PV Module</u>	
1.	PV Module manufacturer name and country	
2.	PV Module type	
3.	No. of PV cells per module	
4.	Rated DC voltage of one module (Vmpp)	
5.	Rated DC current of one module	
6.	Open circuit voltage (Voc)	
7.	Short circuit current (Isc)	
8.	Peak power voltage (Vmp)	
9.	Peak power current (Imp)	
10.	DC rating of one module (Wp)	
11.	Fill factor	
12.	Mounting arrangement for Solar Module	
13.	Temperature rise of solar cells under severe working conditions over max. Ambient Temperature	
14.	No. of strings connected per Inverter	
15.	Weight of each module (Kg)	
16.	Solar Module frame material	
17.	Module dimensions	
18.	Cell efficiency	
19.	Module efficiency	

20.	Type test carried out in respect of following tests : (Type test certificate must be enclosed with bid offer) : Bidder to mention Name of tests.	
	<u>String Inverter</u>	
1.	Manufacturer name & country	
2.	<u>AC side</u> Nominal AC power	
3.	Output AC voltage	
4.	Frequency	
5.	Total Harmonic Distortion (Voltage)	
6.	AC over /under voltage over/ under frequency protection	
7.	Phase shift (cos phi)	
8.	<u>DC side</u> PV power	
9.	Maximum DC voltage	
10.	MPPT voltage range	
11.	Maximum DC current	
12.	DC over voltage protection & others	
13.	DC voltage ripple	
14.	Minimum efficiency	
15.	Ambient temperature range	
16.	Humidity (Non - condensing)	
17.	Dimension approx. (HXWXD)	
18.	Weight	

	<u>AC and DC Cables</u>	
1.	Manufacturer's name and address	
2.	Standard specification to which the material shall confirm	
3.	Type of cable	
4.	Conductor details	
5.	Type of sheathing	
	i) Inner sheath	
	ii) Outer sheath	
6.	Type of armoring (if any)	
	<u>Others</u>	
1.	Capacity Utilisation Factor	
2.	Monitoring system	
3.	Earthing	

MOUNTING STRUCTURE

1.	Type	
2.	Material	
3.	Overall dimensions	
4.	Coating	
5.	Wind rating	
6.	Tilt angle	
7.	Number of Module structure	

Sd/-- 18.06.2020.

SUPERINTENDING ENGINEER,
TEDC/THIRUVARUR

SECTION-VIII-FORMATS
SCHEDULE – A
SPECIFICATION No. 01/20-21

(To be filled in by the Tenderer)

ALL AMOUNT IN RUPEES ONLY

GST No.:

S. No.	Description of Materials	Qty. in Nos.	Unit Price in Rupees					TOTAL VALUE
			Ex - works price	Packing and Forwarding Charges	Freight & Insurance charges	CGST/SGST/IGST	All inclusive Unit Price (3+4+5+6)	
	1	2	3	4	5	6		
	For 17 KWp Roof top LT Grid connected solar plant at Thiruvarur 230KV substation .							
1.01	Supply of entire materials	1	Set					
1.02	Erection, Testing, Commissioning	1	Set					
1.03	Maintenance of Solar Roof Top – First Year	1	Ls					
1.04	Maintenance of Solar Roof Top – Second Year	1	Ls					
1.05	Maintenance of Solar Roof Top – Third Year	1	Ls					

NOTE 1 : Rates quoted shall be both in Words & Figures

NOTE 2 : In case of discrepancy between prices quoted in words and in figures, lower of the two will be taken for evaluation.

NOTE 3: While quoting the rates the bidder shall indicate the HSN Code and Account Code for all the tendered items as per GST Act.

COMPANY SEAL:

**SIGNATURE :
DESIGNATION :**

COMPANY :

DATE :

() For supply at the Destination Stores : Central stores/Thiruvarur.**

SCHEDULE – A1

DEVIATION FROM TECHNICAL SPECIFICATION

All technical deviations from the specification shall be filled in by the Tenderer, Clause by clause, in the Schedule.

SECTION NO.	CLAUSE NO.	DEVIATION

The Tenderer hereby certifies that the above mentioned are the only deviations from the TECHNICAL Specification and the tender confirms to the specification in all other respects.

COMPANY SEAL:

SIGNATURE :

DESIGNATION :

COMPANY :

DATE :

SCHEDULE – A2
DEVIATION FROM COMMERCIAL TERMS

All deviations from the commercial terms shall be filled in by the Tenderer, Clause by clause, in the Schedule.

SECTION NO.	CLAUSE NO.	DEVIATION

The Tenderer hereby certifies that the above mentioned are the only deviations from the Commercial terms of the Specification.

COMPANY SEAL:

SIGNATURE :
DESIGNATION :

COMPANY :
DATE :

SCHEDULE – B
STATEMENT OF SUPPLY ORDERS EXECUTED/UNDER EXECUTION
DURING THE PAST TEN YEARS AS ON THE DATE OF TENDER.

SL. NO.	Name & address of the organisation	Name of the material	P.O.No & Date	Qty	Value of order in Rs. Lakhs.	Scheduled date of completion of order	Actual date of completion of order
1.	2.	3.	4.	5.	6.	7.	8.

COMPANY SEAL:

SIGNATURE :
DESIGNATION :

COMPANY :

DATE :

SCHEDULE – C

DECLARATION FORM

To

The Superintending Engineer/TANGEDCO,
Thiruvavarur Electricity Distribution Circle,
73 C ,Durgalaya Road
Thiruvavarur. 610001

Dear Sir,

1. Having examined the above specification together with the accompanying schedules etc., we hereby offer to manufacture and supply the equipments/materials covered in this specification at the rates entered in the attached schedule of prices.
2. We hereby guarantee the particulars entered in the schedules attached to the specification.
3. In accordance with security deposit clause, Section-v, of the specification we agree to furnish security to the extent of 5% of the total value of the contract.
4. In accordance with performance guarantee clause Section-V of the specification, we agree to furnish performance guarantee to the extent of 5% of the total value of the contract/to retain 5% of the contract value till the expiry of guarantee period.
5. Our company is not a potentially Sick Industrial Company or a Sick Industrial Company in terms of Section-23 of Section-15 of the Sick Industrial Companies (Special Provisions) Act, 1985.

Yours faithfully,

PLACE :
DATE :
COMPANY SEAL :

SIGNATURE :
DESIGNATION :
COMPANY :

SCHEDULE – D

UNDERTAKING IN LIEU OF E.M.D.

(To be furnished in non-judicial stamp paper of value not less than Rs.80/-) THIS DEED OF UNDERTAKING EXECUTED AT-----ON THIS THE-----DAY OF-----TWO THOUSAND by M/s.----- hereafter called "Tenderer" (which expression shall where the context so admits mean and include their Agents, Representatives, Successors-in-office and Assigns).

TO AND IN FAVOUR OF ----- THE TANGEDCO CORPORATION LIMITED, a Body Corporate constituted under the Electricity (Supply) Act, 1948 (Central Act LIV of 1948) having its office at 10 Floor, NPKRR Maaligai, 144, Anna Salai, Chennai – 600002, herein called the "TANGEDCO" (which expression shall where the context so admits mean and include its successors in office and Assigns).

WHEREAS THE tenderer is required to pay Earnest Money Deposit of Rs----- for participation in the tender for supply of-----in terms of specification No-----

AND WHEREAS the tenderer is exempted by the TANGEDCO from payment of EMD in the form of cash, subject to the tenderer executing an undertaking to the value of Rs.....(Rupees.....) representing the amount equivalent to the amount of EMD specified to be paid to the TANGEDCO in the event of non-fulfillment of breach of any of the conditions of the tender by the Tenderer as mentioned hereunder.

AND WHEREAS in consideration of the acceptance by the TANGEDCO of the above proposal, The tenderer has agreed to pay to the TANGEDCO the said amount of Rs----- in the event of:-

- (1) Withdrawing his tender before the expiry of the validity period, OR
- (2) Withdrawing his tender after acceptance, OR
- (3) Violating any of the conditions of the tender issued by the competent authority;

NOW THIS UNDERTAKING WITNESSES that in pursuance of the said agreement the Tenderer hereby doth covenant with the TANGEDCO that in consideration of the "TANGEDCO" waiving the condition of payment of EMD in cash in terms of the said specification, the Tenderer has agreed to pay to the TANGEDCO Rs..... only) in the event of :

(i) Withdrawing his tender before the expiry of the validity period.

(ii) Withdrawing his tender after acceptance.

(iii) Violating any of the conditions of the tender issued by the competent authority.

NOW THE CONDITION OF THE above written undertaking is such that if the tenderer shall duly and faithfully observe and perform the conditions specified as above, then the above written undertaking shall be void, otherwise it shall remain in full force.

The tenderer undertakes not to revoke this guarantee till the contract is completed under the terms of contract.

The expression, 'tenderer' and the 'TANGEDCO' hereinafter before used shall include their respective successors and assign in office.

IN WITNESS WHERE OF THIRU----- acting for and on behalf of the Tenderer has signed this deed on the day, month and year herein before first mentioned.

SIGNATURE

NAME IN BLOCK LETTERS

SEAL OF THE COMPANY

In the presence of Witnesses:

1. Signature

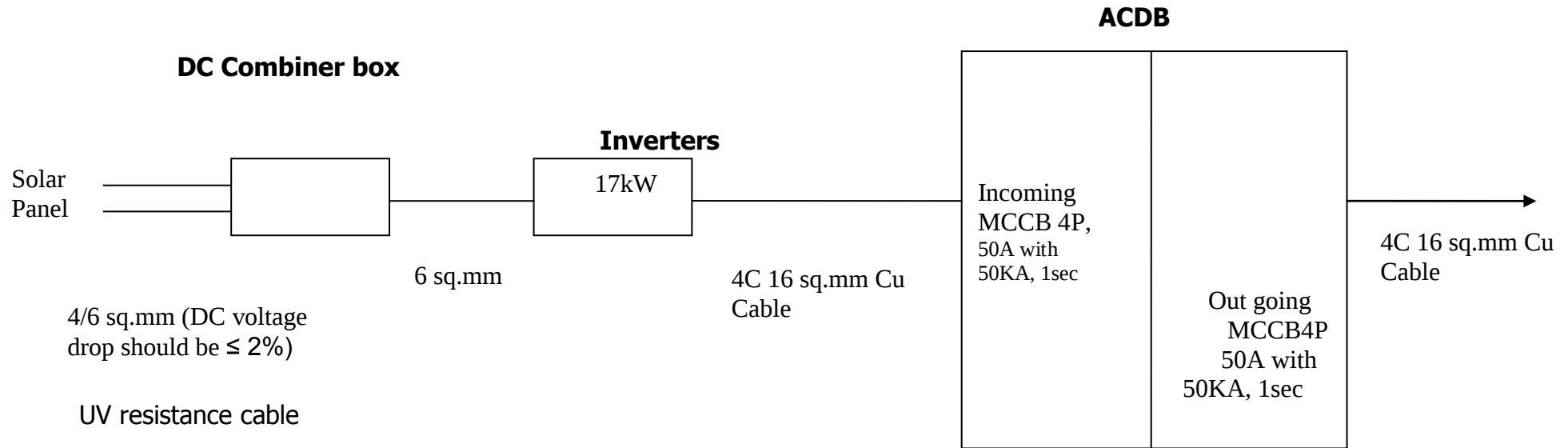
Name & Address

2 Signature

Name & Address

**SECTION – VII
DRAWING**

Single Line Diagram For The Proposed Roof Top Solar Power Plant 17kwp at Thiruvarur 230KV Substation



sd../18.06.2020
Superintending Engineer,
TEDC / Thiruvarur