

**TAMIL NADU GENERATION AND DISTRIBUTION CORPORATION
LIMITED**



**SPECIFICATION FOR SUPPLY, ERECTION,
TESTING, COMMISSIONING & MAINTENANCE
OF 20 KWp ROOF TOP LT GRID CONNECTED
SOLAR PLANT AT MLDC BUILDING OF TANGEDCO
HEAD QUARTERS COMPLEX, CHENNAI,
UNDER EPC CONTRACT**

SPECIFICATION NO: R&D -03/2015-16

DUE DATE : 27.01.2016

**OFFICE OF THE CHIEF ENGINEER
INDUSTRIAL CO-ORDINATION, R&D,
144, ANNA SALAI, CHENNAI-600 002
TAMIL NADU .**

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TANGEDCO

SPECIFICATION No. R&D- 03/2015-16

1. Scope : Supply, Erection, Testing, Commissioning & Maintenance of 20 KWp LT Grid connected Solar power plant at roof top of MLDC building TANGEDCO Head quarters complex, Chennai under EPC contract.
2. Quantity : As per schedule
3. Closing date for sale of Specification : 14.00 Hrs on 25.01.2016
4. Due date & time for receipt of tenders : 14.00 Hrs on 27.01.2016
5. Due date & time for opening of tenders : 14.30 Hrs on 27.01.2016
If the due date for receiving and opening the tenders happens to be a declared holiday, then the tender will be received and opened on the next working day, for which no prior intimation will be given.
6. i) Earnest Money Deposit :Rs.15,000/- (Rupees Fifteen Thousand only)
Exempted for Local SSI Units Registered within Tamil Nadu & SSI Units located outside the state and Registered with NSIC - Undertaking in lieu of E.M.D. to be furnished.
ii) Permanent EMD with TANGEDCO :EMD holders at TANGEDCO Headquarters of Rs.10,00,000/- and above are exempted from payment of Separate EMD.
7. Tender outer cover should be addressed to : The Chief Engineer,
Industrial Co-ordination, R&D,
TANGEDCO, 4th Floor/Eastern Wing/
NPKRR Maaligai, 144 Anna Salai,
Chennai 600 002.

8. Method of submission of Tender : Two Part - Open Tender System
9. Clarification to be sought for from : The Chief Engineer,
Industrial Co-ordination, R&D,
TANGEDCO, 4th Floor/Eastern Wing/
NPKRR Maaligai, 144 Anna Salai,
Chennai 600 002.
10. Required number of tender copies : Two
(One Original and One duplicate)
11. Place at which tenders will be opened : The Executive Engineer,
Research and Lab, TANGEDCO, 3rd
Floor/Western Wing/ NPKRR
Maaligai, 144 Anna Salai,
Chennai 600 002.
- | | | | |
|--------------------|---|------------|------------|
| 12. Cost of tender | : | Within | Outside |
| | | Tamil Nadu | Tamil Nadu |
| Obtained in person | | Rs.2500/- | Rs.2500/- |
| By post | | Rs.2600/- | Rs.2600/- |

NOTE - I :

The tender document is also placed in the website (www.TNEB.in) and also in Govt. Website (www.tenders.tn.gov.in). The Bidders can get the specification by downloading from the Website. In such case they need not pay any amount towards cost of tender documents.

NOTE - II :

A Xerox copy of the Tender documents should be duly signed and stamped on each and every page and all Schedules duly filled in shall be submitted by the tenderer along with his offer. Otherwise the offer will be liable for rejection.

Sd/xx...19.12.2015
Chief Engineer/IC,R&D
TANGEDCO

SECTION – I

(Specn.No. R&D- 03/15-16 : Due on 27.01.2016)

EARNEST MONEY DEPOSIT

- 1) Tenderer should pay the specified amount towards Earnest Money Deposit as follows:

Earnest Money Deposit : Rs. 15,000/- (Rupees Fifteen thousand only). For exempted cases, Undertaking to be furnished in lieu of payment of E.M.D. (Please see clause (7) of Section - I - Earnest Money Deposit)
- 2) The Earnest Money Deposit specified above should be in the form of A DEMAND DRAFT/ BANKER CHEQUE/ PAY ORDER payable at Chennai for the above amount from any of the Nationalised/ Scheduled/ Foreign Banks with branches in India payable to "TANGEDCO, Collection Account, Chennai-2". The above Demand Draft/ Banker's Cheque/Pay order payable at Chennai should be attached to the sealed inner cover and put in the Outer sealed Envelope or in Envelope 'A' and should not be placed in Envelope 'B'
- 3) The Tenderers who are having valid Permanent EMD at TANGEDCO Headquarters of Rs.10,00,000/- and above are exempted from payment of Earnest Money deposit and are eligible to participate in the tender. Firms who have PEMD less than specified above are not eligible to participate on the basis of the PEMD deposited by them even for lesser quantity and value. If the Tenderer desires to become a Permanent E.M.D. holder, he is advised to deposit the required amount with the TANGEDCO as Permanent E.M.D. well in advance, obtain a certificate from the Financial Controller/Purchase and enclose a copy of the same along with the tender offer as mentioned in Clause-2 above.
- 4) The EMD will not carry any interest.
- 5) The Earnest Money Deposit will be refunded to the unsuccessful Tenderers on application to the Chief Engineer/ Industrial Coordination and Research and Development after intimation of the rejection/ non-acceptance of their tender is sent to them.
- 6) Cheque will not be accepted towards EMD and the tenders shall be rejected if EMD is not paid in the prescribed manner.
- 7) i) The following categories of Industries are exempted from payment of Earnest Money Deposit.
 - a) The SSI Units located within the State and registered with TANSIDCO.
 - b) The SSI Units located within the state and registered with NSIC.

- c) The SSI Units holding permanent registration certificates, Entrepreneur Memorandum Part-II and acknowledgement received from the District Industries Centres of Directorate of Industries and Commerce in respect of those items covered under the Registration Certificate.
 - d) Department of Government of Tamil Nadu.
 - e) Undertaking & Corporation owned by Government of Tamil Nadu.
 - f) Labour Contract Co-operative Society.
 - g) Tiny Industries classified as SSI registered within the State of Tamil Nadu and Registered certificate issued by the Department of Industries and Commerce / Government of Tamil Nadu.
 - h) SSI Units located outside the state registered with NSIC for the products manufactured by them.
 - i) For SSI units having investment of value exceeding Rs.5 cores in plant and machinery as per the Annual accounts details submitted, the EMD exemption will be allowed only after ascertaining the exact status of SSI from DIC.
- ii) SSI Units having provisional registration certificate are not eligible for the exemption.
- 8) Those Tenderers who are exempted from payment of EMD shall furnish in lieu of EMD an undertaking in a non-judicial Stamp paper of value not less than Rs.80/- (Rupees Eighty only) in the form as per Annexure-I 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-fulfilment or non-observance of any of the conditions stipulated in the contract consequent to such breach of contract. The State Government, Public Sector Undertakings who are exempted from payment of EMD should also provide an undertaking to pay as penalty an amount equivalent to the amount fixed as E.M.D. in the event of non-fulfilment or non-observance of any of the conditions stipulated in the contract. Tenders received without this undertaking will not be readout and it will be rejected.
- 9) Small Scale Industries registered within the State of Tamil Nadu shall enclose duly attested copy of their Permanent Registration Certificate issued by the District Industries Centre as SSI Unit or the photocopy of valid registration certificate issued by NSIC for small scale industrial unit for subject materials specifying capacity for 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 sealed outer envelope or in Envelope - 'A' and should not be placed in Envelope - 'B' as specified in Clause-2 above.

- 10) Others viz. Central and other State Government Departments/ Undertakings and Corporations other than those in Tamil Nadu shall have to pay Earnest Money Deposit.
- 11) Demand Draft / Banker's Cheque/Pay Order towards cost of EMD payable at Chennai or the proof of exemption of EMD and an undertaking in lieu of EMD or proof of Permanent EMD shall be enclosed in outer cover or in Envelope 'A' otherwise the contents of Envelope 'A' will not be readout.
- 12) The Earnest Money Deposit / Permanent EMD made by 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) he violates any of the provisions of these regulations contained herein.
 - (d) he revises any of the terms quoted during the validity period.
 - (e) the documents furnished with the offer, being found to be bogus or the documents contain false particulars, the E.M.D. paid by the Tenderers will be forfeited in addition to black listing them for future tenders / contracts in TANGEDCO.
- 12.1 Forfeiture of permanent EMD would be reverted if the tenderer pay the EMD value separately.

SECTION –II

INSTRUCTIONS TO BIDDERS

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INSTRUCTIONS TO BIDDERS

1.0 GENERAL:

- 1.1 Scope: Supply, Erection, Testing, Commissioning and Maintenance of 20 KWp LT Grid connected solar power plant at roof top of MLDC building of TANGEDCO head quarters complex located at 144, Annasalai, Chennai 600002.
- 1.2 Sealed Tenders are invited in duplicate superscribed as "TENDER FOR SPECIFICATION NO. R&D - 03/2015-16".

2.0. BID QUALIFICATION REQUIREMENT (BQR) :

The Bidders shall become eligible to bid on satisfying the following Bid Qualification Requirements and on production of the required documentary evidences along with the tender.

- 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 should have established and commissioned two or more Rooftop solar power plants in India with aggregate capacity of 50 KWp, and with the minimum plant capacity being 5 KWp. Plants below 5 KWp capacity will not be considered for the aggregation. (Evidence supported by Contracts and Project completion certificates to be provided as per Schedule III annexed).
- 2.2 The bidder should have an annual turnover of not less than Rs. 5 lakhs in any one of the last three completed financial years (supported by the copy of IT return filed by bidders, copy of STCC, copy of the profit & loss and balance sheet or turnover certificate issued by the Chartered Accountant and copy of enlistment certificate issued by NSIC containing turnover details of bidder for respective period may also be submitted as proof for annual turnover).

Note: TENDERS NOT SATISFYING THE "BID QUALIFICATION REQUIREMENTS" WILL BE SUMMARILY REJECTED.

Proofs required for BQR condition as mentioned above should be enclosed in the 'Envelope-A' of the tender. On opening the Envelope-A, if these proofs are not available, the tender will be summarily rejected.

3.0 INVITATION FOR BID

- 3.1 Sealed tenders in Two Part System (a) Technical Bid with Commercial terms but without Price Bid and (b) Price Bid (both bids in duplicate) are invited for and on behalf of TAMILNADU GENERATION AND DISTRIBUTION CORPORATION for Supply, Erection, Testing, Commissioning and Maintenance of 20 KWp LT Grid connected solar power plant at roof top of MLDC building of TANGEDCO head quarters complex located at 144, Annasalai, Chennai 600002, 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.
- 3.2 THE TENDERERS WHO DO NOT FULFILL THE "BID QUALIFICATION REQUIREMENTS" NEED NOT PARTICIPATE IN THE TENDER. OFFERS NOT SATISFYING THE "BID QUALIFICATION REQUIREMENTS" MAY NOT BE CONSIDERED AND WILL BE LIABLE FOR REJECTION.

4.0 THE TAMIL NADU TRANSPARENCY IN TENDER ACT 1998 :

The Tamil Nadu Transparency in Tenders Act 1998 and the Tamil Nadu Transparency in Tender Rules 2000 and subsequent amendment thereof are applicable to this tender.

5.0 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 and drawings called for in this specification only as per the formats prescribed herein.

6.0 TWO PART TENDER:

- 6.1 The Tenders shall be in Two parts as detailed below, each in a separate sealed envelope duly marked as,
"ENVELOPE-A" and "ENVELOPE-B"
- 6.2. The first envelope, called "Envelope-A" shall contain:
- (a) Un priced bid as per Schedule B, C, D, E, F, G and H (i.e. Technical Bid with commercial terms except price).
 - (b) Documentary evidence in support of Bid Qualification Requirements.
 - (c) Any other information called for in the specification other than price.

The **"ENVELOPE-A"** should not contain price bid or indicative of price. Any offer containing price bid in Envelope-A will not be read and summarily rejected.

- 6.3 The second envelope, called **"Envelope-B"** shall contain the **PRICE BID** only as per Price Schedule.
- 6.4 The Tender in two parts shall be prepared in duplicate and put in separate sealed and superscribed envelopes (Envelope-A and Envelope-B) as instructed above and placed inside an outer sealed cover.
- 6.5 The **"OUTER COVER"** shall consist of the following.
 - (1) a. ENVELOPE – A
 - b. Demand Draft / Banker's Cheque towards payment of EMD or copy of PEMD certificate for exemption from payment of EMD along with undertaking in lieu of EMD (Schedule – H) (This can be kept either in outer cover 'or' in Envelope – A).
 - (2) ENVELOPE – B
- 6.6 Envelope-A, Envelope-B and the overall envelope should be individually sealed, superscribed with the specification number, materials offered and due date of submission and addressed to **"The Chief Engineer, I.C, R&D, Tamil Nadu Generation and Distribution Corporation, 4th Floor, Eastern Wing, N.P.K.R.R. Maaligai, 144, Anna Salai, Chennai - 600 002."**
- 6.7 **The Tender offer in complete shape in one overall envelope containing Envelope-A, Envelope-B and other documents as required shall be sent so as to reach the Chief Engineer/ IC,R&D on or before 14.00 Hrs on 27.01.2016, the due date and time for submission of offers.**

7.0 TENDER OPENING:

- 7.1 The Tender offers except price Bid will be opened at 14.30 Hrs. on the date notified, at the Office of the Executive Engineer /Research & Lab, 3rd floor, Western wing, 144, Anna Salai, Chennai- 600002 in the presence of Tenderer's authorized representatives who may wish to be present on the date of opening.
- 7.2 If the last date set for submission of tender offers and opening date happens to be a holiday, the tenders will be received and opened on the succeeding working day, without any changes in the timings indicated.

- 7.3 The duly authorized representatives of the Tenderers who are present shall sign the tender opening register.
- 7.4 The Tenderer's Name, 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 tender opening.

8.0 INFORMATION REQUIRED AND CLARIFICATIONS:

- 8.1 To assist in the examination, evaluation and comparison of the tender offers, the TANGEDCO may, at its discretion, ask the tenderer for a clarification of his offers. All responses to requests for clarification shall be in writing and to the point only. No change in the price or substance of the offer shall be permitted.
- 8.2 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.
- 8.3 Prior to the detailed evaluation, the TANGEDCO will determine the substantial responsiveness of each offer to the Bidding Documents.
- 8.4 A substantially responsive offer is one which conforms to all the terms and conditions of the specification without any deviation.
- 8.5 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, Tenderers, 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.
- 8.6 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.
- 8.7 An attempt by any tenderer to bring to bear extraneous pressures on the tender accepting authority shall be sufficient reason to disqualify the tenderer.

9.0 EVALUATION AND COMPARISON OF TENDER OFFERS :

- 9.1 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 Tender document without any deviation.
- 9.2 For the purpose of evaluation of the tender offers, the following factors will be taken into account for arriving at the evaluated price.
 - 9.2.1 The amount of VAT/Central Sales Tax and percentage of VAT/Central Sales Tax shall be indicated in the offer.
 - 9.2.2 The quoted price should be corrected for arithmetical errors.
 - 9.2.3 In case of discrepancy between the price quoted in words and figures, the lowest of the two shall be considered.
 - 9.2.4. The offers will be evaluated on FOR(D) all inclusive basis including CST/CENVAT quoted by the firms outside Tamil Nadu and FOR(D) all inclusive excluding TNVAT quoted by the firms ,where the Tenderers are both from the state of Tamil Nadu and outside the state of Tamil Nadu.
 - 9.2.5. Where all the offers received are from outside state of Tamil Nadu offers may be Evaluated FOR(D) all inclusive including CST/CENVAT quoted by the Firms
 - 9.2.6. Where all the offers received are within the state of Tamil Nadu offers may be evaluated FOR(D) all inclusive of TN VAT quoted by the Firms.
 - 9.2.7. Evaluation will be done for the total package.

10.0 VALIDITY :

- 10.1 The tender offer shall be kept valid for acceptance for period of 180 days from the date of opening of offers. The offers with lower validity period are liable for rejection.
- 10.2 Further, the tenderer shall agree to extend the validity of the Bids without altering the substance, and prices of their Bid for further periods, if any, required by the TANGEDCO. However the tenderer shall keep his offer open till such time his tender is either accepted or rejected by the TANGEDCO/ Competent Authority.

11.0 RIGHTS OF THE TANGEDCO :

Notwithstanding anything contained in this specification, the TANGEDCO reserves the right to :

- (a) Accept the lowest tender.
- (b) Request the bidders to furnish the required documents before opening of financial bid.
- (c) Revise the quantities at the time of placing orders.
- (d) Reject any or all the tenders or cancel without assigning any reasons.
- (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) Recover losses if any sustained by TANGEDCO, from the supplier who pleads inability to supply, and backs out of his obligation after award of contract. The Security Deposit paid shall be forfeited.
- (g) To cancel the orders for not keeping up the delivery schedule.

12.0 DEVIATIONS :

12.1 The tenderer shall furnish, if there are any deviations in the commercial / technical terms in the Schedule I and II annexed. Deviations mentioned elsewhere will not be considered. Tenderer should not merely mention 'No Deviation' generally and deviate in specific clauses. 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 said schedules 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 accordingly.

12.2 THE OFFERS OF THE TENDERERS WITH DEVIATIONS IN COMMERCIAL OR TECHNICAL TERMS OF THE TENDER DOCUMENT WHICH COULD NOT BE ACCEPTED WILL BE LIABLE FOR REJECTION.

12.3 NO ALTERNATE OFFER WILL BE ACCEPTED.

13.0 APPEAL:

13.1 As per Tamil Nadu Transparency in Tenders Act 1998, any tenderer aggrieved by the order passed by the Tender accepting Authority under Section 10 may also appeal to the Government within ten days from the date of receipt of order and the Government shall dispose the appeal within fifteen days from the date of receipt.

13.2 In disposing of an appeal under sub section(1), the Government may, after giving the party an opportunity of making his representations, pass such order thereon as deemed fit.

13.3 The order of the Government on such appeal shall be final.

13.4 The Government may, pending the exercise of their powers under this section pass such interlocutory orders as they may deem fit.

14.0 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 48 hours (excluding holidays) of the opening of the tenders, to Chief Engineer/ Industrial Co-ordination, R&D, TANGEDCO, 4th Floor, Eastern Wing, New No.144, Old No.800, Anna Salai, Chennai-2. Replies to such clarification shall be sent with copies to all those who have purchased the tender documents. Verbal clarifications and information obtained by the Tenderer shall not, in any way be binding on the TANGEDCO.

15.0 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 Chief Engineer/Industrial Co-ordination, R&D / Chennai TANGEDCO.

16.0. REJECTION OF BIDS

- 16.1 Tenders will be **summarily** rejected if
- i) the EMD requirements are not complied
 - ii) non compliance of Bid Qualification Requirements.
- 16.2 Tender is **liable** to be rejected, if it is:
- a) not in the prescribed form.
 - b) not properly signed by the tenderer.
 - c) from any blacklisted firm or contractor.
 - d) received after the expiry of the due date and time.
 - e) received by Telex 'or' Telegram 'or' email.

- f) not accompanied by an undertaking / agreement where Earnest Money Deposit is to be exempted.
- g) not in conformity with TANGEDCO's Technical specification .
- h) from an approved tenderer whose Permanent Earnest Money Deposit is not adequate or valid for the particular tender.
- i) from a tenderer who is directly 'or' indirectly connected with Government service 'or' TANGEDCO's service or service of local authority.
- j) from a tenderer whose past performance 'or' vendor rating is not satisfactory.
- k) from a tenderer who has indicated the price in the technical / commercial bid (Envelope – A) in a two part tender.
- l) Received without TIN number

16.3 Any attempt by any tenderer to bring extraneous pressures on the Tender accepting authority shall be sufficient reason to disqualify the tenderer.

17.0 BAR OF JURISDICTION :

Save as otherwise provided in the Tamil Nadu Transparency in Tenders Act 1998 no order passed or proceeding taken by any officer or authority this Act shall be called in question in 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 this Act.(Act means the Tamil Nadu Transparency in Tenders Act, 1998 (Tamil Nadu Act 43 of 1998).

18.0 SALES TAX CLEARANCE CERTIFICATE (STCC) :

The latest Sales tax clearance certificate shall be furnished by the tenderer for verification along with the tender.

SECTION - III
GENERAL AND COMMERCIAL TERMS AND CONDITIONS
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GENERAL AND COMMERCIAL CONDITIONS OF CONTRACT

1.0. DEFINITION OF TERMS:

- 1.1. In construing these general conditions and the annexed specification, the following words shall have the meanings herein assigned to them unless there is something in the subject or context inconsistent with such construction.
- 1.2. "The Owner / Purchaser / Employer" shall mean the TANGEDCO, Chennai and shall include their legal representatives, successors and permitted assignees.
- 1.3. "The Contractor / Supplier" shall mean the Tenderer whose tender has been accepted by the TANGEDCO and shall include the Tenderer's legal/personal representatives, successors and assignees.
- 1.4. "The Sub-Contractor" shall mean the person named in the Contract for any part of the work or any person to whom any part of the Contract has been sublet with the consent in writing of the Owner/Engineer shall include legal representatives, successors and permitted assigns of such person.
- 1.5. "Engineer" shall mean the Chief Engineer/Industrial Co-ordination, R&D, TANGEDCO, Chennai-2. In case, where no such Engineer has been so appointed, the word "Engineer" shall mean the "TANGEDCO" or its duly authorized Representative. "Engineer's Representative" means any resident Engineer or Assistant of the engineer or any clerk appointed for works from time to time by the Employer or the Engineer whose duties and authority will be noticed to the Contractor in writing by the Engineer.
- 1.6. "The Goods" means all the equipment, machinery and/or other materials, which the Contractor is required to supply to the TANGEDCO under the contract.
- 1.7. "Plant, Work or Works" shall mean and include plant materials to be provided and work and / or services to be done by the Contractor under the Contract. This also includes all temporary works of every kind required in or about the execution of the works.
- 1.8. "Services" means services auxiliary to the detailed engineering, fabrication, supply, erection, testing and commissioning of 20KWp solar power plant and such as transportation and Insurance, and any other incidental services, such as testing and commissioning, providing of technical

assistance, training and other such obligations of the supplier/ Contractor under the Contract, whether specified or not but necessary for completion of the work.

- 1.9. "The Contract" shall mean the Agreement and include the general conditions, specifications, schedules, sections, drawings, form of tender, covering letter, schedule of prices or the final general conditions, any specific conditions applying to the particular contract, specification and drawings, Contractor's quotation and subsequent correspondence lists under reference and the agreement to be entered as per the conditions of supply or work with these general conditions.
- 1.10. "The Specification" shall mean all technical and other stipulations annexed to these general conditions.
- 1.11. "The Site" shall mean the place where equipments are to be installed/ erected and serviced for commercial operation and also include all the area in which operation in respect of the works are carried out. This term shall also include material stocking yard and the area where temporary structures are put up for installing any part of the work etc.
- 1.12. "Tests and Commissioning" shall mean such tests as required for the plant's satisfactory operation and also as prescribed by the TANGEDCO.
- 1.13. "Commercial Use" shall mean that use of the work, which the Contract contemplates or usage when it is to be commercially available.
- 1.14. "Guarantee Period" shall mean 60 months for the 20KWp grid interactive Solar plant including all equipments / materials and accessories from the date of completion and handing over of the whole work.
- 1.15. "Month" shall mean calendar month.
- 1.16. "Writing" shall include any manuscript, typewritten, print out or seal as the case may be.
- 1.17. "Persons" shall include firm, Company, Corporation and other body of persons whether incorporated or not.
- 1.18. Words imparting the singular meaning shall also include the plural and vice versa where the context so requires.

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.

6.0 ROYALTIES AND PATENTS :

All royalties and patents or the charges for the use or infringement thereof that may be involved in the construction or use of any equipment or appliance to be supplied against this specification shall be included in the tender prices. The contractor shall protect the purchaser against any claims, actions, suits and proceedings for the infringement or alleged either in the country of origin or in India by the use of any equipment supplied by the contractor other than for the purpose indicated by or reasonable to be inferred from the specification.

7.0 SPECIFICATION DOCUMENTS :

This Specification consists of eight sections as listed below and all of these are to be considered together for correct understanding and interpretation of the Specification.

Section-I	EMD
Section-II	Bid Qualification Requirements
Section-III	Guidelines and Instructions to Tenderers.
Section-IV	General and Commercial terms & conditions.
Section-V	Technical Specifications.
Section-VI	Operation and maintenance Schedule.
Section-VII	Price schedule.
Section-VIII	Schedules and Annexure.
Section-IX	Drawings

8.0 PRICE :

- a) The price should be FIRM for the entire duration of Contract. The rates quoted shall be in Indian Rupees only.
- b) Tenderers should take into account the "CENVAT" scheme and quote their price accordingly. A certificate on the effect that "CENVAT" scheme has been taken into account and prices are quoted accordingly should be furnished.
- c) The price should be for delivery FOR (Destination) price and erection at site taking all probable taxes and duties, freight charges and transit Insurance into account and for erection, testing and commissioning including storage / erection insurance and applicable taxes.

- d) Excise Duty & Central Sales Tax/TNVAT for supply of equipment will be paid at actual and limited to the total amount indicated in the offer.

It is the responsibility of the tenderer to inform himself of the correct rates of duty leviable on the materials 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 will not be responsible for the mistake and only the lower rate quoted by the tenderer will be admitted, in case where such tenderer is successful in getting an order from the TANGEDCO. If the rates assumed are higher than current rates prevailing at the time of tendering, the difference will be to the credit of TANGEDCO.

BOUGHT OUT ITEMS :

The price quoted for bought out items from within/outside Tamil Nadu shall be inclusive of Excise Duty, Sales Tax etc., as the case may be and no increase in statutory levy will be allowed.

9.0 SPLIT UP DETAILS OF THE QUOTED PRICES :

The following split up details shall be given

- I) Ex-works price
- II) ED & Cess on ED
- III) Freight charges for delivery at site.
- IV) Transit insurance covering storage at site from the date of receipt of materials / equipment at site till the commissioning.
- V) Value Added TAX if any as applicable payable on the ex-works plus excise duty.
- VI) Other statutory levies such as service tax etc Total of (i) to (v)Tenders with break up rates not furnished as above are liable for rejection.

Note : The break up for ED/VAT etc., adopted in the Tender will form the basis for regulating the variation in statutory levies after opening the tender.

10.0 Central Sales Tax/ TNVAT :

- 10.1 The Central Sales Tax / TNVAT will be paid extra as applicable. The amount of Central Sales Tax / TNVAT and percentage payable shall be indicated separately in the tender offer. Central Sales Tax / TNVAT is not applicable to freight and insurance charges.
- 10.2 The TANGEDCO Limited has been registered as a dealer, under Central Sales Tax Act 1956 (under Registration Nos. 956815) and under TNVAT Act 2006 with TIN No. 33060641471.

- 10.3 As per G.O.Ms No.77 dated 11.07.2011 Notification - III No.II(1)/CTR/ 12 (R-17) / 2011, the concessional rate of VAT @ 5% is applicable for the goods supplied to TNEB Ltd., TANGEDCO and TANTRANSCO, used in Generation, Transmission and Distribution of Electricity Energy except Petrol, Cement and Diesel.
- 10.4 The necessary certificate as per G.O. shall be furnished for availing concessional rate of VAT. The "C" form for the classes of goods specified for the purpose as per CST Act shall be furnished for availing concessional / Nil rate of CST.
- Appropriate Sales Tax , if any found admissible, will be paid over and above the purchase price in accordance with the provisions of the relevant Sales Tax Act in force.
- 10.5 In case of delayed delivery the Central Sales Tax / TNVAT prevailing on the date of dispatch 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.
- 10.6 Provided always, it is hereby agreed and declared that in case, where the TANGEDCO has doubt whether Central Sales Tax / TNVAT is not at all payable for the transaction in question, the TANGEDCO reserves the right to withhold the amount of tax until the party produces an order of court of competent jurisdiction, declaring the liability of the transaction to Central Sales Tax / TNVAT. Concessional rate of Central Sales Tax / TNVAT if any shall be taken into account and included in the price quoted giving proof thereof.
- 10.7 The following certificates have to be furnished for admittance of claim of Central Sales Tax / TNVAT.
- (i) Certified that the transaction in which the Central Sales Tax / TNVAT has been claimed / will be included in the return submitted / to be submitted to the Central Sales Tax / TNVAT authorities for assessment of the Central Sales Tax / TNVAT and the amount of Central Sales Tax / TNVAT claimed from the purchaser has been /will be paid to the Sales Tax authorities.
 - (ii) Certified that the goods on which the Central Sales Tax / TNVAT has been charged have not been exempted under Central Sales Tax Act or TNVAT Act and the Rules made there under and the charges on account of Central Sales Tax / TNVAT on these goods are correct, under provisions of relevant Act or Rules made there under.
 - (iii) Certified that we shall indemnify the TANGEDCO, in case it is found at a later date that wrong / in-correct or excess payment has been recouped on account of Central Sales Tax / TNVAT paid by us.
 - (iv) Certified that we are registered as Dealer under the Central Sales Tax Act and our Registration No. is _____and

under TNVAT Act 2006 and our Registration No. is

- (v) Certified that TNVAT credit availed by us has been taken into account in the rates quoted.

11.0 EXCISE DUTY:

- 11.1. It is the responsibility of the tenderer to make sure about the correct rates of duty leviable on the material at the time of tendering. If the rate assumed by the Tenderer are less than the current rates prevailing at the time of tendering, the TANGEDCO will not be responsible for the mistake.
- 11.2 Any increase in Excise duty consequent to the supplier coming into different duty slab during the execution of the contract shall be to the supplier's account; no claim for increase in the above respect will be admitted. In case of decrease the benefit of the same may be passed on to the TANGEDCO. Any variation in Excise Duty due to statutory variation within the contract delivery date shall be considered.
- 11.3 In case of delayed delivery, the Excise duty prevailed on the date of actual delivery or the Excise duty applicable on the contractual delivery period whichever is less shall be admitted.
- 11.4 Authenticated Invoice containing the details viz. Central Excise, Registration No., Permanent Ledger Account (PLA) No. etc. date and time of removal of goods, debit entry in PLA / RG 23 duly authenticated by authorised signatory shall be preferred by the supplier for claim of ED.
- 11.5 The Tenderer who have quoted ED as NIL and in the event of placement of order on such tenderer against this specification where the value of order is above Rs.150 Lakhs, such tenderer shall furnish an undertaking to the effect that the ED commitment on account of crossing the turnover slab will be discharged to the ED authorities and that the TANGEDCO shall not be responsible for any ED evasion by the tenderer in respect of this transaction.
- 11.6 In the case of the tenderer who has quoted ED as NIL and in the event of placement of order against this specification and the proposed order value is less than Rs. 150 lakhs, the tenderer shall furnish an undertaking to the effect that he has not obtained any other order in the same financial year and that the Board shall not be responsible for ED evasion if any by the tenderer in respect of this transaction

12.0 SERVICE TAX:

- 12.1 The Tenderers shall quote the appropriate percentage of service tax, value on which shall be applicable, the category of service under

which it is applicable and amount of Service Tax. (The copy of registration made at service tax cell shall be furnished for claiming service tax). The Service Tax quoted will be included for the purpose of evaluation.

- 12.2 The Service tax claim in the offer shall be reimbursed on production of documentary evidence. In case of delay in erection works, the service tax prevailed on the date of prescribed schedule or actual date on which erection was made whichever is less shall be admitted.
- 12.3 The tenderer who have not quoted service tax shall provide an undertaking to that effect that any service tax liability at a later date shall be discharged from their account and TANGEDCO shall not be responsible for any lapses on this account.

13.0 PAYMENT :

- 13.1. Payments will not be made for materials damaged during transit. All defective materials shall be replaced by the contractor free of charge. Payments will not be made unless Test Certificates are approved by the Purchaser.
- 13.2. Payment will be made only on the actual quantity of materials used and actual works done.
- 13.3 Payments for the supplies will be made by cheque on any one of the Nationalized / Scheduled Banks as may be decided by TANGEDCO from time to time. Exchange commission for issue of Bank Drafts will be to the account of the Tenderer. 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 :

- (I) For the Equipment delivered and works commenced within the contractual delivery period:

60% of the all inclusive price (inclusive of ST/VAT) of the contract value as per price schedule-I will be paid within a reasonable time after receipt of materials at site in good condition.

Balance 40% of the contract value as per price schedule-I shall be paid on completion of 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.

(II) For the Equipment delivered and works commenced beyond the contractual delivery period:

60% of the all inclusive price (inclusive of ST/VAT) of the contract value as per price schedule-I after deducting the appropriate amount of Liquidated damages will be paid within a reasonable time after receipt of materials at site in good condition.

Balance 40% of the contract value as per price schedule-I shall be paid on completion of 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, any, shall be made from the above said payments.

13.4 Payment for Operation & Maintenance and Comprehensive Maintenance Contract Period:

The successful Tenderer should agree to provide comprehensive maintenance of the items for five years, which shall include preventive maintenance and corrective maintenance. The maintenance shall also include replacement of all parts / consumables.

Payment for O&M will be released on a Quarterly basis only after the approval of Quarterly reports.

After the end of every quarter, the Quarterly report in a prescribed format should be submitted within 7 working days in the succeeding quarter.100% quarterly payment will be released after deducting 5% as work contract tax (WCT) and the LD or penalties of the previous quarter if any.

13.5 For the delayed payments, if any, the purchaser will not pay any interest on any account.

13.6 The bills for payment will be passed only after the approval of the following:

- a) Security Deposit cum Performance Bank Guarantee for 5% value of the Order
- b) Sales Tax Clearance Certificate
- c) Test Certificate for the respective materials/equipments.

13.7 The supplier should give a schedule of dispatches to suit the programme of completion of the project and get the same approved by the purchaser fifteen days prior to the actual date of

dispatch. The supplier should dispatch each material/ equipment only after getting approval from the Chief Engineer/ Industrial Co-ordination, R&D for such dispatches. If the supplier dispatches the materials without the prior approval, the purchaser shall not be responsible of any damage or wharfage or both and only the supplier should bear any expenditure arising out of such unapproved dispatches.

- 13.8 The supplier shall bear any expenditure arising out of unapproved dispatches.
- 13.9 The payments shall only be made on receipt of invoices in duplicate along with dispatch documents and on approval of test certificates.

14.0 SECURITY DEPOSIT CUM PERFORMANCE GUARANTEE:

- 14.1. 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 :
- 14.2. 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.
- 14.3. 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) shall be 19%** in the first year with an allowance of maximum of 1% annual reduction on previous year's CUF from the second year onwards for the entire guarantee period of 60 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.
- 14.4. 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.

14.5. 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.

14.6. The Security Deposit cum Performance BG shall be valid for a continuous guarantee period of 60 months (Sixty 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.

15.0 INTERCHANGEABILITY

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

16.0 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.

16.2 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.

16.3 The successful tenderer shall furnish every fortnight three copies of the programme of work to Chief Engineer, Industrial Co-ordination, R&D, TANGEDCO, Anna Salai, Chennai-2 starting from fifteen days from the commencement of contract.

17.0 LOSS OR DAMAGE :

17.1 External damages and / or shortages that are prime facie, the results of rough handling in transit or due to defective packing will be intimated within a fortnight of the receipt of the materials at site. Internal defects, damages or shortages of integral parts which cannot ordinarily be detected on a superficial visual examination, though due to bad handling in transit or defective packing, would be intimated, after inspection. In either case, the defective materials shall be replaced by the supplier, free of cost to the TANGEDCO. If during erection, any part is found not suitable for the particular location, it should be replaced free of cost.

- 17.2 Notwithstanding anything mentioned in liquidated damages clause of the contract where the whole or part of the materials supplied by the Supplier, are found to be defective or damaged or are not in conformity with the specification such defects or damages in materials supplied shall be rectified either at the point of destination or at the Supplier's works at the cost of Supplier.
- 17.3 In the alternative, the defective or damaged materials shall be replaced free of cost within one week from receipt of intimation from the Purchaser of such defects or damages. However, the time limit noted as one week should not be taken as a dead line, as in the opinion of the Purchaser the commissioning is delayed because of the defective part, the Supplier should immediately air freight at his cost so that the commissioning date will not be postponed.
- 17.4 If the defects or damages are not rectified or replaced within this period the Contractor shall pay the liquidated damages as per clause 21.0 for the delay from the date of receipt of intimation of the defects or damages.
- 17.5 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 contractor to replace the defective goods, free of cost.
- 17.6 Similarly, if during the guarantee period stipulated under guarantee clause subsequent to the date of receipt of goods, any of the goods be 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 contractor to replace the balance or to claim compensation for the entire loss sustained by the purchaser on that account.
- 17.7 In the event of supplies being received damaged or short at the site, the cost of materials with ED, 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.
- 17.8 For all legal purposes, the materials shall be deemed to pass into the TANGEDCO's ownership at the destination site on handing over of the project, where they are delivered and accepted.

18.0. COMPLETENESS OF TENDER:

The tender should be complete with all details of illustrative and descriptive literature and drawings. The Tenderers shall furnish the complete technical details of the equipment information regarding the country of manufacture or origin of materials used in the manufacture of the articles. The tenders should include all minor accessories even though not specifically mentioned in this specification but which are essential for the completeness of the materials / works ordered. The tenderer shall not be eligible for any extra charges in respect of such minor accessories though not included in the tender.

19.0 REPLACEMENT OF DEFECTIVE / DAMAGED MATERIALS :

- 19.1 The defective / shortage of materials shall be replaced / made good free of cost within a week on receipt of the intimation from the Purchaser of such defects or shortages. If the defects or shortages are not rectified or made good within this period, the Contractor shall pay liquidated damages at 0.5% of the total contract value, for every completed week of delay. The above LD condition is in addition to the LD for the items specified in clause 21.0. However the total LD for the contract shall not exceed 10% of the total all inclusive contract price.
- 19.2 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.
- 19.3 In the event of supplies being received damaged or short at the destination stores, the cost of such materials will be paid only proportionate to the value of the materials received in good condition unless the damaged goods or short supplies are made good free of cost to the TANGEDCO by the supplier.
- 19.4 If during the period of supply, it is found that goods already supplied are defective in materials or workmanship or do not conform to the rate contract or are unsuitable for the purpose for which they are purchased then it will be open to the purchaser either to reject the goods and 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.
- 19.5 Similarly, if during the guarantee period stipulated under guarantee clause subsequent to the date of receipt of the goods, any of the good be found defective in materials or workmanship, or do not conform to the rate contract or are unsuitable will be open to the purchaser either to repudiate the entire contract and claim damages or accept such part of the goods that are satisfactory and require the supplier to replace the balance or pay

compensation to the extent of the loss sustained by the purchaser on that account.

- 19.6 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 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 etc as may be determined by the purchaser.

20.0 COMPLETION PERIOD :

The completion time is deemed to be essence of the Contract and shall be firm and binding. The Bidder shall complete the design, engineering, supply, storage, civil work, erection, testing & commissioning of the 20 KWp roof top solar power plant at MLDC building within **three months of date of issue of clear work order** (Letter of award). In case of delay beyond scheduled commissioning period, the contractor shall be liable for penalty as per the liquidated damages clause.

21.0 LIQUIDATED DAMAGES:

- 21.1 The delivery/ erection/commissioning of plant should be guaranteed under liquidated damages clause given below:

Should the delivery /erection / commissioning of plant be delayed by strikes, lockouts, fire accidents or any cause whatsoever beyond the reasonable control of the Contractor, as stated in Force Majeure clause and whether such delay or impediment occurs before or after the time or extended time for despatch or completion, a reasonable extension of time shall be granted.

If the Contractor fails to deliver and / or to erect, test, commission, Performance Test and hand over the equipment/ materials within the time specified in the Contract or any extension thereof, the Purchaser shall recover from the Contractor as liquidated damages a sum of **HALF PERCENT 0.5%** per completed week of delay on the entire value of contract. The liquidated damages shall not exceed **TEN PERCENT (10%)** of the entire value of contract. If certain components are not delivered in time, the equipments and materials shall be considered as delayed till the missing parts are also delivered.

- 21.2 The actual date of delivery in good condition at project site shall be reckoned for the purposes of deciding "Liquidated Damages" for delay in supply.

- 21.3 If supplies rendered against contract are made by the Contractor beyond the period of delivery and they are accepted without prejudice to TANGEDCO's rights to levy liquidated damages for the delay in supply. Liquidated Damages will also be made applicable for non-supply of items.
- 21.4 The TANGEDCO will also be at liberty to cancel the order if the supply is not completed within the above accepted delivery period notwithstanding the liquidated damages clause applicable for the belated supplies. Any charges for cancelling the order will not be accepted under any circumstances.
- 21.5 In the event of cancellations of this order or non-completion of supply by the Supplier, then the short supplied items may be ordered afresh. 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.
- 21.6 In respect of this Contract when supply effected in part or works executed in part could not be beneficially used by the TANGEDCO (due to such incomplete supply/erection) Liquidated damages should be worked out on the basis of entire Contract price only and not on the value of delayed portion.
- 21.7 The defaulting Contractor should be made liable to pay to the TANGEDCO, in addition to liquidated damages for delay, the actual difference in price wherever TANGEDCO orders the delayed quantity to be supplied/ executed by other agencies at a higher rate besides forfeiture of Security Deposit. Tenders not giving clear and specific acceptance to this clause are liable to be rejected.

22.0 FAILURE TO EXECUTE THE CONTRACT :

- 22.1 Contractor failing to execute the order placed on them to the satisfaction of the Purchaser 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. In the event of such failure, the difference between the price accepted in the Contract already entered into and the price at which fresh orders have been placed at a later date, consequent to non-fulfilment of the Contract will have to be made good to the TANGEDCO by the Contractor.
- 22.2 This is without prejudice to the imposition of the LD under clause liquidated damages.

23.0 MATERIALS AND WORKMANSHIP:

- 23.1 All the materials shall be of the best class and capable of satisfactory operation in ³tropics with humid atmospheric conditions,

without distortion or deterioration. No welding, filling or plugging of defective parts will be permitted without sanction in writing of the Engineer. Unless otherwise specified, they shall conform to the requirement of the appropriate British or Indian Standards.

23.2 The workmanship shall be of the highest grade and the entire construction in accordance within best modern practices.

24.0 FREIGHT AND INSURANCE :

24.1 The accepted prices shall be inclusive of Freight and Insurance and shall cover the following:

- i) Insurance cover for the transit period from Supplier's works to sites.
- ii) Insurance cover during storage at site.
- iii) Insurance cover for erection, testing, commissioning, performance testing until handing over of the system to TANGEDCO.

24.2 It is the Supplier's responsibility to deliver the equipments/materials safely and in time and to arrange to unload the equipments/materials at stores or project site and transport them to site for erection. The equipments / materials are to be dispatched, freight paid and duly insured at Supplier risk and cost.

24.3 It will be the responsibility of the Supplier to replace the defective/ damaged equipments/materials to make good the shortages and other losses in transit free of cost and to lodge and settle the insurance claims with the insurance under writers/ carriers.

24.4 If there is undue delay in receipt of the equipments/materials due to the delay caused by the carrier, the Supplier is responsible for such delay in all respects. The freight and insurance charges will be firm throughout the Contract period.

25.0 JURISDICTION FOR LEGAL PROCEEDINGS :

No suit or any proceedings in regard to any matter arising out in any respect under this Contract shall be instituted in any court save in the City Civil Court of Madras or the Court of Small Causes at Madras. It is agreed that no other Court shall have jurisdiction to entertain any suit or proceedings, even though 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 the jurisdiction of courts outside Tamil Nadu, then it is agreed to between parties that such suits or proceedings shall be instituted in a court within Tamil Nadu and no other court outside Tamil Nadu shall have jurisdiction even though any part of the cause of action might arise within the

jurisdiction of such courts. The successful tenderer shall furnish an undertaking as per the Annexure II in a non judicial stamp paper of Rs.80/- agreeing to the above condition.

26.0 INSPECTION:

The Purchaser's representative shall have free access to the Contractor's or sub-contractor's works at any time during the working hours for the purpose of inspection and testing of the materials covered by this enquiry. The companies shall provide necessary facilities for such inspection. The tests shall be conducted in the presence of TANGEDCO's Engineer only. Materials should be despatched only after the approval of the inspection report, Test Certificate and despatch clearance from Competent Authority. The purchaser shall be given intimation 2 weeks in advance about the quantity of materials that will be ready for inspection.

TANGEDCO reserves the right to waive any inspections.

27.0 DEPARTURE FROM SPECIFICATION :

If the tenderer wishes to depart from the specification clauses in any respect, he shall draw the attention to such points of departure explaining fully the reasons thereof. Unless this is done, the requirement of this specification clauses will be deemed to have been accepted in every respect.

28.0 TEST CERTIFICATES :

Tests as per I.S.S / IEC / Equivalent (with its latest editions and amendments and as per the mandatory requirement of MNRE) shall be conducted and the test results (in quadruplicate) should be furnished to The Chief Engineer, Industrial Co-ordination, R&D, TANGEDCO, 4th Floor/Eastern Wing/NPKRR Maaligai, 144 Anna Salai, Chennai 600 002, and got approved before despatching the materials to site. In addition to the tests called for in this specification, the tenderer reserves the right of having such tests carried out at his own expenses to satisfy himself that the materials / equipment conform to the requirement of this specification.

29.0 PACKING AND FORWARDING :

29.1 The equipment and all its accessories shall be securely packed and dispatched, freight paid, duly insured, at supplier's risk and cost.

The packing may be in accordance with the manufacturer's standard practice. The contractor 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, the nett weight etc., The contractor is solely responsible for any loss or damage during transport and safe delivery of the equipments at site in good condition. The dispatch of materials shall be only after the approval of test certification by the TANGEDCO.

- 29.2 The scope of supply includes unloading the equipment at site /stores. Only packages constructed out of sound materials and of dimensions proportional to the site and weight of contents shall be used. Loose materials eg. Bolts, nuts etc., shall be packed in gunny bags and sealed in polythene bags with proper tagging. Components containing glass fragile materials shall be carefully covered with shock absorbing protective materials such as expanded polystyrene (Thermocole).
- 29.3 All opening of the equipments shall be tightly covered, plugged or capped to prevent foreign material from entering. In the case of large and bulk equipment, the vendor shall be responsible for ascertaining transport limitations and supply the equipments in the minimum number of components or sub-assemblies with the frame work of transport limitation.
- 29.4 Where necessary proper arrangements for attaching hinges for lifting shall be provided. The contents of the packages shall be sealed in thick polythene sheets and all the inside walls of the packages shall be lined with waterproof paper to protect the equipment from damages due to dust or moisture.
- 29.5 All equipment shall be protected for the entire period of dispatch, storage and erection against corrosion, incidental damage due to vermin, sunlight, rain, high temperature, humid atmosphere, rough handling in transit and storage in the open including possible delays in transit. Silicagel or approved equivalent moisture absorbing materials in small cotton bags shall be placed and tied at various points on the equipment, wherever necessary.
- 29.6 Adequate provision of skids or pellets shall be made to keep the packages above the collecting drainage. Crates and other large containers shall have drain holes in the bottom to prevent collection of water within the packing. Each crate or package shall contain a packing list, in a water proof envelope. Copies of the packing list, in triplicate shall be clearly marked for easy identification against the packing list.
- 29.7 All spare parts shall be packed and treated for long storage conditions at Site. Any materials found short inside the intact pack up cases shall be supplied by the vendor at no extra cost to the purchaser, including transportation up to the stores. All packing

cover and packing material shall become the property of the PURCHASER.

- 29.8 All packages shall be clearly, legibly and durably marked with uniform block letters (preferably with water proof paint) on at least three sides with:-
- a) Destination address as communicated
 - b) Contract reference
 - c) Dimensions
 - d) Nett and Gross weights
 - e) Sign showing Side-up
 - f) Sign showing fragile marks in case of delicate equipments
 - g) Sign showing slinging and slinging position.
 - h) Any handling and unpacking instructions, if considered necessary.

30.0 FORCE MAJEURE :

- 30.1 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, act of civil commotion, strikes, lockouts, sabotages, floods, explosions epidemics quarantine restrictions or other acts of God (therein after referred to as eventualities then, provided notice of the happening of any such eventuality is given by the tenderer to the TANGEDCO within 15days from the date of occurrence thereof neither party shall, by reasons of such eventuality, be entitled to terminate this contract nor shall have 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.
- 30.2 Provided that if 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. Power cut will not be considered under force Majeure condition. The period of extension shall be decided only by the authority who placed the order, after verifying the evidence for the cause of delay.
- 30.3 It is hereby specifically agreed that time is the essence of the contract. The termination of the contract as aforesaid shall not absolve the supplier/contractor of his liability to pay damages to the TANGEDCO for the breach of contract to delivery the goods or complete the contract within the time fixed by the Contract or extension thereof.

31.0 DUES TO THE TANGEDCO

Amount due from the Tenderer to the TANGEDCO for default in any other purchase will be adjusted against Security Deposit or balance amount in the event of an order placed against this enquiry.

To recover any dues against the Contract in any bills/ Security Deposit/ EMD due to the Supplier either in this Contract or other Contract with the TANGEDCO.

To recover any dues against any other Contract of the Supplier with TANGEDCO, with the available amount due to the Supplier against this Contract.

32.0 GUARANTEE :

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.

- 32.1 The entire works inclusive of the materials supplied by the contractor should be guaranteed for satisfactory operation at least for a period of 60 months from the date of commissioning and handing over of the plant to the TANGEDCO.
- 32.2 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.
- 32.3. A written guarantee guaranteeing the TANGEDCO 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 Sixty (60) months from the date of commissioning and handing over of the solar power plant to TANGEDCO
- 32.4. 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.

- 32.5. 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.
- 32.6 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 60 months.
- 32.7 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
- 32.8 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.
- 32.9 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 Sixty (60) 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.
- 32.10 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.
- 32.11 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.
- 32.12 The acceptance of the equipment by the Engineer shall in no way relieve the Contractor of his obligations under this clause.

32.13 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.

33.0 GUARANTEED TECHNICAL 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.

34.0 DESPATCH OF EQUIPMENTS :

It is the contractors responsibility to take the materials/equipments to site. All the materials/equipments should be despatched only after getting despatch clearance from Chief Engineer/IC R&D, No.144 Anna Salai, Chennai - 600 002.

35.0 TRANSPORT :

It is the responsibility of the Contractor to inform himself of the transport conditions by rail and road and arrange for size and weight of the heaviest / largest packages accordingly.

36.0 INTEREST ON OVERDUE PAYMENTS

Any interest on overdue payments is not acceptable, under any circumstances.

37.0 DISCREPANCIES BETWEEN DRAWING AND SPECIFICATION:

Should there be any discrepancy between the specification and / or drawings or any inconsistency error or omission on either of them, reference must be made to the Engineer for an explanation and the contractor will be held responsible for any errors that may occur in the work through neglect of this precaution. The contractor shall be responsible for and shall pay for any alterations of the work done due to any discrepancies, error or omissions, in the drawings or particulars supplied to him, whether such drawings or particulars have been approved by the Engineer or not, provided that such discrepancies, errors or omission be not due to inaccurate information or particulars furnished to the contractor by the Engineer, but the purchaser shall be responsible for drawing and information supplied by the Engineer and the Purchaser shall pay for any alterations of the work necessitated by reason of inaccurate information supplied by the Engineer to the Contractor.

38.0 EXECUTION OF WORKS IN CONFORMITY WITH THE CONTRACT DOCUMENTS:

The whole of the works shall be executed in perfect conformity with the contract documents, and such explanatory and detail drawings and directions as may be furnished from time to time by the ENGINEER for the guidance of the CONTRACTOR.

39.0 DOCUMENTS CONFIDENTIAL :

The TENDERER (Whether his tender is considered or not) shall treat the details of the tender specification and other documents attached hereto as private and confidential.

40.0 ENGINEER'S SUPERVISION :

The Work shall be performed under the direction and supervision of the ENGINEER. The scope of the duties of the ENGINEER pursuant to the "Contract" will include but not limited to the following:

- a) Interpretation of all the terms and conditions of these documents and specifications,
- b) Review and interpretation of all the CONTRACTOR's drawings, engineering data, etc.,
- c) Witness or authorise his representative to witness tests and trials either at the manufacturer's works or at site, or at any place where work is performed under the Contract,
- d) Inspect, accept or reject any equipment, materials and work under the Contract,
- e) Issue certificate of acceptance and / or progressive payment and final payment certificate.

41.0 TESTING & INSPECTION CERTIFICATES

41.1 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.

41.2 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.

42.0 INSPECTION OF SITE BY BIDDERS :

- a) 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.
- b) 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.

43.0 FACILITIES TO BE PROVIDED BY TANGEDCO FOR TURNKEY ERECTION, TESTING AND COMMISSIONING:

- a. Dwelling
The Contractor has to make his own arrangement for dwelling of the Engineer and workmen.
- b. Building for office and workshop
The Contractor shall provide temporary sheds for his office and workshop at his cost on TANGEDCO's Land. The Land will be allowed free of cost subject to availability. Dismantling of Shed or stores erected by the Contractor will be done at his own cost on completion of work within two months from the date of handing over of site to TANGEDCO. Storage rent will be charged in case of delay on part of the Contractor beyond two months from the date of handing over.

- c. Medical aid
Medical Aid for staff and labour will be rendered free to the extent available excluding dieting charges of patients in the nearest TANGEDCO's Dispensary.
- d. First aid
At the work site, there shall be maintained in a readily accessible place, first aid appliances and medicines including adequate supply of sterilized dressing and sterilized cotton wool. The appliances should be kept in good order. They shall be placed under the charge of a responsible person who shall be readily available during working hours.

44.0 SUSPENSION OF WORK :

The ENGINEER may from time to time by direction in writing for any valid reasons, without in any way vitiating this contract, direct the CONTRACTOR to suspend the work or any part thereof at such time or times and for so long as the ENGINEER may deem desirable, and the CONTRACTOR shall not, after receiving such written notice proceed with the works therein ordered to be suspended until the shall have received written notice or authority to the effect from the ENGINEER. The CONTRACTOR shall not be entitled to claim from the PURCHASER compensation for any loss or damage sustained by him by reason of the suspension of works as aforesaid. No compensation shall be payable for idle labour staff and machinery(hired or otherwise) due to occasional power failure or any causes beyond the control of TANGEDCO and for the arranged shut down in Electricity supply for which prior notice may be given.

45.0 CLEANING UP :

Upon completion of the work, the CONTRACTOR shall remove from the vicinity of the work all plant, buildings, rubbish unused materials, concrete forms and other materials, belonging to him or used under his discretion, during construction and in the event of his failure to do so, the same will be removed by the PURCHASER, and the relevant expenditure recovered from the CONTRACTOR.

46.0 WASTE MATERIALS:

All waste materials as decided by the site ENGINEER should be let out of the compound at CONTRACTOR's cost and the CONTRACTOR should keep the site always clean during progress of work.

47.0 REGULATION OF LOCAL AUTHORITIES:

The Purchaser shall throughout the continuance of the contract and in respect of all matters arising in the performances thereof, serve all notices and obtain consents, way-leaves, approvals and permissions required in connection with the regulations and bye-laws of the local or other authority which shall be applicable to the works.

48.0 NOTICES: HOW TO BE GIVEN:

Wherever legal or other notice or any other documents is to be given to or served up to the CONTRACTOR it shall be deemed to be duly given or served, if it shall have been either delivered to him personally or to his recognised agent (including in the case of the company the Secretary of such company) or delivered at, or , sent, through the post addressed to the contractor at the contractor's office in the site or sent through the post addressed to the last known place of business or abode of the CONTRACTOR or in the case of a company to its Registered Office and in the case of a firm of contractor notice or other documents, which shall be so given to or so served on any one of the partners in such firm, shall be deemed to have been given to or served on all of them.

49.0 INCIDENTAL WORKS

All the works such as cleaning, checking, leveling, assembling, temporary erection for alignment, dismantling of certain equipments for checking and cleaning, preparation , fabrication of plates/ sheets, tubes and pipes as per general engineering practice at site, cutting, gauging, grinding, straightening, filling, chipping, drilling, reaming, lapping, shaping, fitting, heat treatment cable laying, etc. and minor civil works as incidental to the erection and necessary to complete the work satisfactorily shall be carried out by the Contractor's workers at no extra cost. The rates for current consumption as applicable for the appropriate LT tariff will be charged at the rates as ruling at the time of execution of works.

50.0 LIABILITY FOR ACCIDENTS AND DAMAGE:

50.1 The CONTRACTOR shall be entirely responsible for all loss, damage or depreciation to the plant until the plant has been delivered at the site on the plinth/ structure or as decided by the Engineer.

50.2 The CONTRACTOR shall be entirely responsible for all loss, damage or depreciation to the plant until the plant is " taken over". Until the plant shall be or deemed to be taken over as aforesaid, the CONTRACTOR shall also be liable for and shall be deemed to have indemnified the PURCHASER in respect of all damage or injury to any person or to any property of the PURCHASER or of others occasioned by the negligence of the CONTRACTOR or his workmen or SUB-CONTRACTORS or by defective design, work or material, but not otherwise.

- 50.3 The Contractor shall indemnify and save harm to the TANGEDCO against all actions, suits, claims, demands, costs or expenses arising in connection with injuries suffered prior to the date when the works or plant shall have been taken over by the persons employed by the Contractor or his sub-Contractor, the works whether under the Central Law or under the Workmen's Compensation Act VIII of 1923 or any other statutory law in force at the date of the Contract dealing with the question of the liability of employees for injuries suffered by employees and to have taken steps properly to insure against any claims there under.
- 50.4 On the occurrences of an accident which results in the death of the workmen employed by the Contractor or which is due to the Contract work and or so serious as to be likely to result in the death of any such workmen, the Contractor shall within 24 hours of happening of such accident intimate in writing to the concerned Engineer and such officers required by the provision of the workmen's compensation Act, the fact of such accident. The Contractor shall indemnify TANGEDCO against all loss or damage sustained by TANGEDCO resulting directly or indirectly from his failure to give intimation in the manner aforesaid, including the penalties or fines, if any payable by TANGEDCO as a consequence of TANGEDCO's failure to give notice under the workmen's Compensation Act or otherwise to confirm to the provisions of the said act in regard to such accident.
- 50.5 In the event of any claim being made, or action brought against the TANGEDCO involving the Contractor and arising out of the matters referred to and in respect of which the Contractor is liable under the clause, the Contractor shall be immediately notified thereof and he shall with the assistance, if he so requires, of the TANGEDCO but at the sole expenses of the Contractor, conduct all negotiations for the settlement of the same or of any litigation that may arise there from. In such cases, the TANGEDCO shall at the expenses of the Contractor, afford all available assistance for any such purpose.
- 50.6 In the event of an accident in respect of which compensation may become payable under workmen's Compensation Act VIII of 1923 and any subsequent amendment thereof whether by the Contractor or by the Government as principle, it shall be lawful for the Engineer to retain out money due and payable to the Contractor such sum or sums of money as may be in the opinion of the said Engineer be sufficient to meet such liability. The opinion of the Engineer shall be final in this regard to all matters arising under this clause and will not be subjected to any Arbitration.
- 50.7 Liability for damages or loss to third party including inspecting officers due to acts of the Contractor or his plant, or such Contractor connected with the execution of this Contract shall be fully borne by the Contractor. The Contractor shall maintain such detailed records to furnish information regarding entitlement and discharge of all workmen employed under this Contract as to be adequate for the timely and full settlement of claims under the Workmen's Compensation

Act. All cases of accident or injuries shall be reported to the Engineer with all the details required for the settlement under the Workmen's Compensation Act.

- 50.8 The Contractor should report about all accidents within twenty four(24) hours to the TANGEDCO in the preliminary accidents form. He should furnish other particulars such as Medical Certificates, Wages particulars, Fitness Certificate, proof for having paid the compensation fixed by the TANGEDCO, etc. in due course without delay.

51.0 SAFETY:

The Contractor shall indemnify the TANGEDCO against all claims for injury or damage to any person or any property whatsoever which may arise out of or in consequence of the works and against all claims, damages expenses whatsoever in respect of or in relation thereof. The Contractor shall at all times indemnify the TANGEDCO against all claims, damages or compensation the provision of the workman compensation act (viii) of 1923 Form, Factories Act (1948) or any other Law Act Regulations of Government, Local Authority or of the TANGEDCO for the time being in force as a consequent of any accident or injury to workmen or other persons whether in employment of the Contract except an accident or injury resulting from any act or default of the TANGEDCO or their servants.

The Contractor is solely responsible for arranging the following for his workmen.

- a) Safety during the dismantling and erection work at spot. The Contractor's workers should wear necessary safety appliances during the work.
- b) Insurance of workman and other personnel working under him. The Contractor should cover his employees under Accident Insurance Plans of General Insurance Company of India to cater for the workmen's Compensation Act, 1923, with all later amendments.
- c) Compensation to workmen as per Workman Compensation Act in case of accidents or injuries.

52.0 LIABILITY FOR ACCIDENTS TO PERSON

52.1 The Contractor shall during the progress of the work properly cover up and protect the work and plant from injury by exposure to the weather and shall take every reasonable, proper, timely and usual precaution against accident of injury to the persons from any cause. The Contractor shall be and remain answerable and liable for all accidents or injuries there to which until the same, be or deemed to be taken over, may arise or be occasioned by the acts or omissions of the Contractor or his workmen or his sub-Contractors and all losses and damages to the works or plant arising from

such injuries as aforesaid shall be made good in the most complete and substantial manner by and at the sole cost of the Contractor and to the reasonable satisfaction of the Engineer. Should such loss or damage happen to units of works, plant or materials falling outside the scope of this Contract and the Contractor, due to these shall be placed or compensated by the Contractor to the satisfaction of the Engineer.

- 52.2 In the case of losses or damages to any portion of the work occasioned by other causes, the same shall, if required by the TANGEDCO be made good by the Contractor in like manner but at the cost of the TANGEDCO, at a price to be agreed between the Contractor and the TANGEDCO and the TANGEDCO shall pay to the Contractor the Contract value of the portion of the work so lost or damages or any balance of such Contract value remaining unpaid as the case may be.
- 52.3 Until the work shall be or deemed to be taken over as aforesaid the Contractor shall also be liable for and shall indemnify the TANGEDCO in respect of all damage or injury to any person or to any property of the TANGEDCO or of others occasioned by the act of Contractor, his workmen or his sub-Contractors or by the defective design, or materials and not due to cause beyond his control. If due to Contractor's carelessness, negligence or non-observance of safety precautions, damage to generating machineries of TANGEDCO should occur, the full cost will be recovered from the Contractor.

53.0 NIGHT WORK:

The time of completion as defined in delivery clause herein above, shall be deemed to exclude working during night hours. However, ENGINEER may consider granting permission for working during night hours, if he considers it essential in order to complete the work in the stipulated time, on a specific request by the CONTRACTOR. Night work shall not entitle the contractor to any extra payment. Where night work is in progress sufficient lights shall be provided by the contractor at his cost, to safeguard the workmen and the public and he shall take suitable precautions to prevent accidents. Excavated areas shall be barricaded and provided with red lights as a caution to prevent accidental falls.

54.0 PROTECTION OF EQUIPMENT AND SAFETY:

The Contractor shall take all reasonable care to protect the materials handed over to him. Wherever necessary, suitable temporary fencing shall have to be provided by the Contractor as a safety measure against accident and damage of property of TANGEDCO. Suitable caution notices shall be displayed where access to any part may be deemed to be unsafe and hazardous.

55.0 SECURITY ARRANGEMENTS:

The Contractor shall provide sufficient number of Security Personnel/ Watchmen to ensure that the equipments, tools and consumables

under his charge are not lost due to theft. Inadequate provision in this regard will result in TANGEDCO's Engineer making similar arrangements at Contractor's cost.

56.0 CONTRACTOR'S REPRESENTATIVE AND WORKMEN:

56.1 The Contractor shall employ at least one competent representative whose name or names shall be communicated in writing to the TANGEDCO's Engineer and is to be given full responsibility as representative of the Contractor to enter in to negotiations at site in regard to execution of Contract. The said representative or if more than one shall be always present at site during working hours and any written orders or instruction which the TANGEDCO's Engineer may give to the said representative of the Contractor shall be deemed to have been given to the Contractor. The name, address, qualification of Engineer and other technical staff shall be given.

56.2 The Contractor shall provide, skilled, semi-skilled and unskilled workers for the execution of Contract. The TANGEDCO's Engineer shall be at liberty to object to any representative or person employed by the Contractor in the execution or otherwise about the works who in the Engineer's opinion shall misconduct himself or by incompetent objected to forthwith, upon receipt of notice from the Engineer requiring him to do so.

57.0 INCOME TAX :

Income Tax payable on the erection portion of contract amount at the appropriate rate levied from time to time will be deducted from and out of the payments to be made to the CONTRACTORS in accordance with the provision of Income Tax Act 1961 as amended from time to time.

58.0 BLACK LISTING :

The firm or the bidder will be black listed if the particulars produced by the bidders such as Sales Tax Clearance Certificate & experience etc. are found to be false.

59.0 NON-ASSIGNMENT:

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

60.0 TERMINATION OF THE CONTRACT:

60.1 TANGEDCO may terminate this Contract in whole or in part by giving the qualifying bidder prior and written notice indicating its

intention to terminate the Contract under the following circumstances:

- 1) Where it comes to the TANGEDCO's attention that the qualifying bidder (or the Implementation Agency's Team) is in a position of actual conflict of interest with the interests of the TANGEDCO in relation to any of terms of the Implementation Agency's Bid, the Tender or this Contract
- 2) Where the Implementation Agency's ability to survive as an independent corporate entity is threatened or is lost owing to any reason whatsoever including inter alia the filing of any bankruptcy proceedings against the Implementation Agency, any failure by the qualifying bidder to pay any of its dues to its creditors, the institution of any winding up proceedings against the qualifying bidder or the happening of any such events that are adverse to the commercial viability of the Implementation Agency. In the event of the happening of any events of the above nature, the TANGEDCO shall reserve the right to take any steps as are necessary to ensure the effective transition of the project to a successor Implementation Agency/service provider, and to ensure business continuity.
- 3) Termination for Default: Where there has been an occurrence of such defaults inter alia as stated above, the TANGEDCO shall issue a notice of default to the Implementation Agency, setting out specific defaults / deviances / omissions and providing a notice of Thirty (30) days to enable such defaulting party to remedy the default committed.
- 4) Termination for Insolvency: The TANGEDCO may at any time terminate the Contract by giving written notice to the Implementation Agency without compensation to the Implementation Agency, if the qualifying bidder becomes bankrupt or otherwise insolvent, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the TANGEDCO.
- 5) Termination for Convenience: The TANGEDCO may by prior written notice sent to the qualifying bidder at least 30 days in advance for terminating the Contract in whole or in part at any time for its convenience. The notice of termination shall specify that termination is for the TANGEDCO's convenience, the extent to which performance of work under the Contract is terminated and the date upon which such termination becomes effective.

60.2 TANGEDCO may retain such amounts from the payment due and payable by the TANGEDCO to the qualifying bidder of overall contract value for five years as may be required to offset any losses caused to the TANGEDCO as a result of such event of

default and the qualifying bidder shall compensate the TANGEDCO for any such loss, damages or other costs, incurred by the TANGEDCO in this regard. Nothing herein shall effect the continued obligation of the sub qualifying bidder / other members of its Team to perform all their obligations and responsibilities under this Contract in an identical manner as were being performed before the occurrence of the default.

60.3 TANGEDCO may invoke the Performance Bank Guarantee and other Guarantees furnished hereunder, enforce the Deed of Indemnity, recover such other costs/losses and other amounts from the qualifying bidder may have resulted from such default and pursue such other rights and/or remedies that may be available to the TANGEDCO under law.

60.4 CONSEQUENCES OF TERMINATION :

60.4.1 In the event of termination of this contract due to any cause whatsoever except termination for TANGEDCO's convenience, the qualifying bidder shall be blacklisted and the empanelment will stand cancelled effective from the date of termination of this contract.

60.4.2 In the event of termination of this Contract due to any cause whatsoever, whether consequent to the stipulated Term of the Contract or otherwise the TANGEDCO shall be entitled to impose any such obligations and conditions and issue any clarifications as may be necessary to ensure an efficient transition and effective business continuity of the project which the qualifying bidder shall be obliged to comply with and take all available steps to minimize loss resulting from that termination/breach and further allow and provide all such assistance to the TANGEDCO and/or the successor Implementation Agency/service provider, as may be required to take over the obligations of the erstwhile qualifying bidder in relation to the execution/continued execution of the scope of this Contract.

60.4.3 Where the termination of the Contract is prior to its stipulated term on account of a Default on the part of the qualifying bidder or due to the fact that the survival of the qualifying bidder as an independent corporate entity is threatened / has ceased or for any other reason whatsoever the TANGEDCO through unilateral re-determination of the consideration payable to the qualifying bidder shall pay the qualifying bidder for that part of the Services which have been authorized by the TANGEDCO and satisfactorily performed by the qualifying bidder up to the date of termination. Without prejudice to any other rights, the TANGEDCO may retain such amounts from the

payment due and payable by the TANGEDCO to the qualifying bidder as may be required to offset any losses caused to the TANGEDCO as a result of any act/omissions of the Implementation Agency. In case of any loss or damage due to default on the part of the qualifying bidder in performing any of its obligations with regard to executing the scope of work under this Contract, the qualifying bidder shall compensate the TANGEDCO for any such loss, damages or other costs incurred by the TANGEDCO. Additionally the sub qualifying bidder / other members of its team shall perform all its obligations and responsibilities under this Contract in an identical manner as were being performed before the collapse of the qualifying bidder as described above in order to execute an effective transition and to maintain business continuity. All third parties shall continue to perform all/any functions as stipulated by the TANGEDCO and as may be proper and necessary to execute the scope of work under the Contract in terms of the Implementation Agency's Bid, the Tender and this Contract.

60.4.4 Nothing herein shall restrict the right of the TANGEDCO to invoke the Bank Guarantee and other Guarantees furnished hereunder, enforce the Deed of Indemnity and pursue such other rights and/or remedies that may be available to the TANGEDCO under law.

60.4.5 The termination hereof shall not affect any accrued right or liability of either Party nor affect the operation of the provisions of this Contract that are expressly or by implication intended to come into or continue in force on or after such termination.

61.0 COMPLETION OF WORKS:

If in the opinion of the Engineer, the completion of work shall be delayed by the order of the Engineer or any altered, modified, substituted or additional works or materials or by the order of the works or materials to be omitted by any strike or lock out of any workmen employed by the CONTRACTOR or by causes directly due to him or by the CONTRACTOR not being given the possession of the site or any part thereof, whether under the power herein contained or otherwise or by any non-performance of work or non-supply of materials to be performed or supplied by the PURCHASER or by the CONTRACTOR not receiving any orders, drawings, instructions or directions in time or by the suspension of the works or by fire, flood, exceptionally bad weather, storm or by or from unforeseen circumstances (and whether the same shall be due to any action or omission of the PURCHASER or his agents or those in their respective service or not), the ENGINEER shall, if in his uncontrolled discretion shall think whether forthwith or at any later time

and from time to time notwithstanding that the prescribed or extended time for completion has expired or that the works have been completed, by writing under his hand extend the time for the completion of works to such date as he shall appoint. Provided always, that unless the CONTRACTOR makes a written application to the ENGINEER on or before the time when the cause of delay is occurring or about to occur and unless the time is extended by the ENGINEER, the prescribed time shall not be extended notwithstanding delays from the forgoing or any other causes or whatsoever kind.

62.0 PASSING ON THE BENEFITS TO TANGEDCO IN CASE OF ACCEPTING LOWER PRICE ELSEWHERE

The successful tenderer has to give an undertaking to the effect that the tenderer will pass on the benefits of lower price, if any, offered to anyone else during the period of one year from the date of receipt of the order for supply of materials and services covered in this specification without any claim from TANGEDCO.

63.0 EXIT MANAGEMENT :

63.1 Exit Management Purpose

This Schedule sets out the provisions, which will apply on expiry of the O&M period of five years from the date of commissioning.

63.2 Exit Management Plan

After the expiry of term & extension of term as the case may be, bidder shall hand over the plant to the TANGEDCO in excellent condition. The bidder shall demonstrate performance test of all the major & critical equipment to ensure Generation from the Solar Photovoltaic Power Plant. While handing over the plant bidder shall hand over all technical documents, literature, instruction manuals, lists of spare part & tools & tackles. Bidder will also hand over all the relevant record/documents, spares and consumable required for five year's Operation & Maintenance.

On completion of O&M term the bidder will apply to the Engineer in-charge for the issue of Handing Over Certificate and the same will be issued within one month of the Handing Over in all respects, after verifying from the documents & tests and satisfying himself that the Operation & Maintenance has been completed in accordance with details set out in the control documents & prudent Utility Practices. All the aforesaid safeguards / rights of TANGEDCO shall not prejudice its other rights / remedies elsewhere provided herein and / or under law.

64.0 ARBITRATION :

The TANGEDCO will not accept any arbitration in case of dispute 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.

65.0 GENERAL CONDITIONS:

- 65.1 The Tenderers are requested to procure the equipments/ materials only from reputed suppliers to SEB's/Power Utilities for the equipments/ materials purchased within India.
- 65.2 The Type test for all the equipments/materials used for this project should have been conducted in any approved Government/ Govt. recognized laboratories conforming to latest IS/IEC. The above type test certificates should accompany the drawings of the materials/ equipments, duly signed under seal by the Institution, who have issued the type test certificate.
The purchaser reserves the right to demand repetition of some or all the type tests in the presence of purchaser's representative at no extra cost.
- 65.3 All the intending Tenderers are informed that in the event of documents furnished with the offer being found to be bogus or the documents containing false particulars, the EMD paid by such Tenderers will be forfeited in addition to blacklisting them for future orders/contracts in TANGEDCO.
- 65.4 Any other items not specifically mentioned in the specification but which are required for erection, testing, commissioning and satisfactory operation of the solar power plant are deemed to be included in the scope of the specification.
- 65.5 Any tax concessions or benefits in accordance with Clause: 22.4 of Tamil Nadu Solar Energy Policy 2012 shall be passed on to TANGEDCO by the successful bidder.
- 65.6 In general, the Solar Energy Policy of the Government of Tamil Nadu would be adhered to and such terms and conditions as TANGEDCO feels right would be modified, added or deleted with intimation to the bidders.

66.0 EXECUTION OF CONTRACT AGREEMENT

The successful bidder shall agree to the terms and conditions of the contract and shall execute an agreement in a Non-Judicial stamp paper to a value of Rs.80/- as per proforma given in Annexure – III.

Sd/xx.. 19.12.2015
Chief Engineer/IC,R&D

SECTION – IV – TECHNICAL SPECIFICATION

1. SCOPE :

Supply, Installation, Testing, Commissioning and Maintenance of LT Grid connected 20 KWp Solar Power Plant with inverter capable of Reactive power supply during night hours or non active power supply period, at the Roof-top of the MLDC building of TANGEDCO Head Quarters complex, Chennai.

2. GENERAL REQUIREMENTS :

The Solar PV Power plant shall have capacity of 20 KWp. The string inverter shall be capable of supplying Reactive power during day time (along with the active power generation) and night time (during sleep mode / non active generation period). The power plant shall provide the following general requirements.

- The project should fulfil all the conditions necessary for availing the MNRE subsidy for such plants. The various components of the SPV system must conform to relevant standards as mentioned in **MNRE No. 30/11/2012-13 /NSM dated 26.06.2014** operational guidelines for implementation of Off-grid and decentralised solar applications sub scheme "Grid connected rooftop and small power plants programme. The bidder should ensure the full requirements of MNRE for obtaining the grant under CFA as the entire CFA would be considered only upon satisfactory installation, testing and commissioning of the Solar Power Plant and submission of SOE, completion report and verification of these systems at site.
- The plant should meet the Capacity Utilisation Factor (CUF) of not less than 19% in the first year with an allowance of maximum of 1% annual reduction on previous year's CUF from the second year onwards.
- Supply of adequate capacity of SPV modules, inverters, etc to ensure maximum generation.
- Use of equipment and systems with proven design and performance that have a high availability track record under similar service conditions.
- The plant instrumentation and control system should be designed to ensure high availability and reliability of the plant for safe and efficient operation of the plant.
- The power plant has to operate in parallel with the grid system which is a n 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.
- The plant and machinery including accessories and other materials should be new and complying with international standards, and approved either by the MNRE (or) by approved test centers in India/International test houses.
- To ensure building safety, weight acting on any part of the roof shall not be more than 150kg/m². This aspect has to be ensured by the detailed load calculations to be submitted by the contractor.

- Only indigenously manufactured PV modules should be used in the project.
- Proper metering arrangements to be incorporated for the availability of generation data from the solar power plant.

3. SOLAR PHOTOVOLTAIC MODULES

The total solar PV array capacity should not be less than 20KWp and should comprise of solar mono/poly crystalline modules of minimum 275 Wp and above wattage. The module shall be tested as per IEC 61215 latest edition and manufactured in India and also type tested by any one of the accredited test laboratories under Ministry of New & Renewable Energy, Government of India. Also modules must qualify to IEC 61730 Part I and II for safety qualification testing. The type test certificate for solar module shall be submitted as part of the bid offer. Further a self undertaking from manufacturer of the modules has to be obtained and furnished to TANGEDCO stating that the modules are supplied as per above along with the supply of materials.

The PV module shall perform satisfactorily in humidity conditions up to 100% with temperature between 10°C to 85°C. Since the modules would be used in a high voltage circuit, the high voltage insulation test shall be carried out on each module and a test certificate to that effect should be provided along with the supply of materials.

Solar PV module array shall consist of high efficiency Solar Modules utilizing crystalline Silicon Solar PV cells. Power output Guarantee Certificate offered for the SPV Module shall not be less than 25 years. Individual Solar Module rating shall not be less than 275 Wp at Standard test conditions.

The PV modules shall be supplied using a RF identification tag (RFID), which must contain the following information. The RFID can be inside or outside the module laminate, but must be able to withstand harsh environmental conditions.

- (i) Name of the manufacturer of PV Modules
- (ii) Name of the Manufacturer of Solar cells
- (iii) Month and year of the manufacture (separately for solar cells and module)
- (iv) Country of origin (separately for solar cells and module)
- (v) I-V curve for the module
- (vi) Peak Wattage, I_m , V_m and Fill Factor (FF) for the module
- (vii) Unique Serial No and Model No of the module
- (viii) Date and year of obtaining IEC PV module qualification certificate
- (ix) Name of the test lab issuing IEC certificate
- (x) Other relevant information on traceability of solar cells and module.

Other general requirements for the PV modules and subsystems shall be as follows.

- a. Raw materials(Solar cells) and technology employed in the module production processes shall have to be certified and a certificate giving details of major materials i.e. cells, Glass, back sheet, their makes and data sheets to be submitted for the modules at the time of supply of materials by the bidder.
- b. The rated output power of any supplied module in single string shall have tolerance of +/- 3% to avoid array mismatch losses.
- c. The peak-power point voltage of any supplied module and/or any module string (series connected modules) shall not vary more than 3 (three) per cent from the respective arithmetic means for all modules and/or for all module strings, as the case may be.
- d. The front module surface shall consist of impact resistant, low-iron tempered glass for strength with anodized Aluminium frame.
- e. Crystalline high power cells shall be used in the Solar Photovoltaic module. Solar module shall be laminated by lamination technology using stabilized polymer Ethyl Vinyl Acetate (EVA) and Tedlar / Polyester laminate.
- f. The solar modules shall have suitable encapsulation and sealing arrangements to protect the silicon cells from the environment. The arrangement and the material of encapsulation shall be compatible with the thermal expansion properties of the Silicon cells and the module framing arrangement/ material. The encapsulation arrangement shall ensure complete moisture proofing during life of the solar modules.
- g. All materials used shall have a proven history of reliable, light weight and stable operation in external outdoor applications and shall have service life of more than 25 years.
- h. Weatherproof DC rated MC 4 connector and a connecting cable coming out as a part of the module, making connections easier and secure, not allowing for any loose connections.
- i. The module shall be resistant to water, abrasion, hail impact, humidity & other environmental factors for the worst situation during its service period.
- j. The offered module shall have a Power warranty of 25 years with degradation of power generated not exceeding 20% of the minimum rated power over the 25 years period and not more than 10% after ten years period. Necessary certificate to this effect shall be furnished.

4. ARRAY STRUCTURE

The array structure shall be so designed that it will occupy minimum space without sacrificing the output from SPV panels. Suitable

clearance within the array shall be maintained for access for maintenance. The structure shall be designed to allow easy replacement of any module and shall be in line with site requirements. **The solar power plant shall be designed in such a way that the actual load of entire system acting on the roof top of the high rise building shall not exceed 150kg/sqm. Detailed calculations for ensuring this, has to be submitted by the contractor.**

Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts and bolts. All fasteners shall be of stainless steel of grade SS 304. Mounting structure steel shall be as per IS: 2062:1992 with latest amendments and galvanization of the structure shall be hot dipped galvanized or equivalent and in compliance to IS: 4759 with latest amendments. Aluminium frame structures with adequate strength and in accordance with relevant BIS/ international standards can also be used.

Structures shall be supplied complete with all members to be compatible for allowing easy installation at the rooftop site. The structure should be capable of withstanding a wind load for the worst condition of Wind storms encountered in Chennai. **The module mounting structure shall be rested on the roof top floor and should not be grouted to the floor. No damage should occur to the weather proof tiles on the roof top floor during the erection of the structures.** The array structure shall support SPV modules at a given orientation and absorb and transfer the mechanical loads to the rooftop columns properly. The module alignment & tilt angle shall be calculated to provide the maximum annual energy output. This shall be decided based on the location of array installation and the bidder shall clearly indicate the details in the Technical bid.

The structures shall be designed for simple mechanical and electrical installation. There shall be no requirement of welding or complex machinery at the installation site.

The bidder shall specify installation details of the PV modules and the support structures with appropriate diagrams and drawings. Such details shall include, but not limited to, the following;

- a. Determination of true south at the site;
- b. Array tilt angle to the horizontal, with permitted tolerance;
- c. Details with drawings for fixing the modules;
- d. Details with drawings of fixing the junction/terminal boxes;
- e. Interconnection details inside the junction/terminal boxes;
- f. Structure installation details and drawings;
- g. Electrical grounding (earthing);
- h. Lighting protection;

- i. Inter-panel/Inter-row distances with allowed tolerances; and j. Safety precautions to be taken.

5. STRING INVERTER :

The String inverter should convert DC power produced by SPV modules into 3 phase, 415 Volts AC power operating at 50 Hz. The inverter should work within the acceptable range of voltage and frequency variations present at the local grid connection points.

The string inverter shall be capable of supplying Reactive power during day time (along with the active power generation) and night time (during sleep mode / non active generation period). During reactive power supply mode the string inverter shall not draw excessive amount of real power from grid.

TECHNICAL SPECIFICATION FOR STRING INVERTER:

Output voltage	:3 phase,415Vac
Output Frequency	:50 Hz
Dc link voltage range	:up to 1000V
Operating temperatures Range	:-25°C to +60°C
Inverter Max. efficiency	:98% and above
Protection of Enclosure	:IP65 for outdoor installation
Rating of string Inverter	:1No. of 20KWp with capability to supply reactive power during day time (along with the active power generation) and night time (during sleep mode/non active generation period).
Operating Power Factor	:User settable during active power generation mode.
Total Harmonics Distortion (Voltage)	: Less than 3% (certificate to be Furnished at the time of supply of materials)

Other important features /protections required in the inverter are detailed below.

- Mains (Grid) over/under voltage and frequency protection, Lightning and transient protection.
- Fool proof protection against Islanding.
- Continuous Maximum Power Point Tracking (MPPT) to ensure the highest yield from the installed PV capacity.
- Array ground fault Monitoring

- Automatic reconnection after recovery from the fault conditions and /or black outs on the grid side
- Type II DC surge protectors should be integrated inside the inverter.
- All parameters should be accessible through an industry standard communication link.
- A disconnection device should be present on the DC input side for additional protection.
- The inverter shall be self-commuted and shall utilize a circuit topology and components suitable for meeting the specifications listed above at high conversion efficiency and with high reliability.
- The inverter shall be capable of operating in parallel with the LT grid and shall be capable of interrupting line-to-line fault currents and line- to ground fault currents including multiple line and Grid faults.
- The inverter shall include appropriate self protective and self diagnostic features to protect itself and the PV array from damage in the event of safe operating range due to internal or external causes. Faults due to malfunctioning within the inverter, including commutation failure, shall be cleared by the inverter protective devices and not by the existing site utility grid service circuit breaker.
- Inverter shall provide full active power at unity power factor. Inverter shall provide the reactive power if utility demands for it. Inverter should be able to handle both static and dynamic reactive power control. Inverter shall provide reactive power support to the grid at night when no PV power is available.
- The internal copper wiring of the inverter shall have flame resistant insulation. Use of PVC is not acceptable. All conductors shall be made of standard copper.
- The inverter shall withstand a high voltage test of 2000 V rms, between the input / output terminals and the cabinet (chassis).
- Full protection against accidental open circuit and reverse polarity at the input shall be provided.
- The inverter shall not produce Electromagnetic Interference (EMI) which may cause malfunctioning of electronic and electrical instruments including communication equipment, which are located within the facility in which the inverter is housed. Certificate to this effect to be furnished.
- A communication device should be integrated in the inverter to enable the local and remote monitoring of the inverter parameters. Following parameters should be available for the monitoring: Status of the inverter, instantaneous AC voltage and current, Power factor, power output, DC voltage, current and DC power. Along with above parameters any alarms, faults, event logs should be available for monitoring.

- The inverter shall go to shutdown/standby mode, with its contacts open, under the following conditions before attempting an automatic restart after an appropriate time delay
 - In sufficient Solar Power Input. When the power available from the PV array is insufficient to supply the losses of the inverter, the inverter shall go to a standby/shutdown mode. The inverter control shall prevent excessive cycling during night shut down or extended period of insufficient solar radiation.
 - Utility- Grid Over or Under Voltage. The inverter shall restart after an over or under voltage shutdown when the utility grid voltage has returned to within limits for minimum of two minutes.
 - Utility- Grid Over or Under Frequency. The inverter shall restart after an over or under frequency shutdown when the utility grid frequency has returned to within limits for minimum of two minutes.

Also the following operating modes are to be made available:

- Operational or MPP tracking mode: Maximum power point tracker shall be integrated in the Inverter to maximize energy drawn from the array. The MPPT should be micro processor based to minimize power losses. The details of the working mechanism of MPPT shall be mentioned. The control system shall continuously adjust the voltage of the generator to optimize the power available. The power conditioner must automatically re-enter stand-by mode when input power reduces below the standby mode threshold.
- Electrical safety ,earthing and protection
 - Internal Faults: Inbuilt protection for internal faults including short circuits, over loads, single phasing, two phasing, excess temperature, commutation failure, over load and cooling fan failure (iffitted) is obligatory.
 - Over Voltage Protection : Over Voltage Protection against atmospheric lightning discharge to the PV array is required. Protection is to be provided against voltage fluctuations in the grid itself and internal faults in the power conditioner, operational errors and switching transients.
 - Earth fault supervision: An integrated earth fault device shall have to be provided to detect earth fault on DC side and shall send message to the supervisory system.
 - DC reverse polarity protection.
 - The Inverter shall have the feature of built-in isolation to avoid transfer of surges from AC to DC and Vice versa.

6. AC DISTRIBUTION PANEL BOARDS :

AC Distribution Panel Board shall control the AC power from Inverter and should have necessary surge arrestors. The output from the string inverters shall be combined at the ACDB. Also Isolator and Metering arrangement shall be provided at the roof top and a MCCB shall be provided at the ground floor where it will be connected to the LT bus. The energy meter shall be static meter of class 0.5., with RS232 and optical port communication, DLMS compatibility and able to record both import and export energy. The requirements / specifications of isolator, MCCB are given below.

SPECIFICATION OF MCCB PANEL:

Sl.No	Description	Specification
1	Type	Wall mounted type panel made of 2mm thick CRCA sheet along with necessary mounting accessories.
2	MCCB Specification	60 A, Triple Pole, MCCB Suitable for 400V. The MCCB shall be suitable for fault level of 25 KA, 1 Sec. The MCCB shall be provided with in-built O/C, S/C & E/F release.
3	Cable Suitability	3.5 Cx25 Sq.mm copper cable for both incoming and outgoing Feeders.

SPECIFICATION OF ACDB :

Sl.No	Description	Specification
1	Type	Wall mounted type panel made of 2mm thick CRCA sheet along with necessary mounting accessories, with locking arrangement.
2	Number of incoming & Outgoing Feeders	60A TPN Fuse switch unit for connecting string inverter (Incoming Feeder) 60A TPN Fuse Switch Unit for Outgoing Feeder.
3	Cable Suitability	Incoming: 3.5Cx25 Sq.mm Cu Cable Outgoing : 3.5Cx25 Sq.mm Cu Cable.

SPECIFICATION OF ISOLATOR CUM METERING PANEL:

Sl.No	Description	Specification
1	Type	Wall mounted type panel made of 2mm thick CRCA sheet along with necessary mounting accessories
2	Specification of Isolator	60A, TP Isolator
3	Metering Requirement	Digital Bi-Directional, static Net Energy meter with communication port (optical and RS232) and 0.5 accuracy class along with necessary Current transformer shall be provided. The voltage input for the meter shall be directly tapped from the 415V bus through fuse.
4	Cable Suitability	3.5 Cx 25 Sq.mm. Cu Cable

7. SOLAR DC CABLES & AC POWER CABLES:

SOLAR DC CABLE SPECIFICATION:

(FROM MODULES TO HARNESS & FROM HARNESS TO STRING INVERTER)

Size	:	To be decided based on power loss & voltage drop
Temperature Range	:	+10 °C to +120° C
Nominal Voltage	:	600/1000 V DC
AC Test Voltage	:	4000V, 50 Hz.
Type	:	Annealed Tinned Copper Flexible type conductor Class-5
Properties	:	UV Resistive, Ozone & Flame resistant, Weather & abrasion resistant
Colour Codes	:	Positive : Red Negative : Black
Applicable standard	:	EN 50618 , IEC 60228 or equivalent.

AC POWER CABLES:

- All AC power cables shall be heavy duty type, 1100 V grade of 3.5 Cx 25 Sq.mm. with copper conductor, PVC insulated, inner sheathed, armoured and overall PVC sheathed. The construction of the conductors shall be 'stranded' for all cables. The core insulation shall be with PVC compound applied over the conductor by extrusion and shall conform to the requirement of Type 'A' compound of IS: 5831. The inner sheath shall be

applied over the laid-up cores by extrusion and shall be of PVC conforming to the requirement of Type ST1 PVC compound of IS:5831. The extruded inner sheath shall be of uniform thickness of size not less than those specified in IS. The outer sheath for the cables shall be applied by extrusion and shall be PVC compound conforming to the requirement of type ST1 compound of IS:5831. To protect the cables against rodent and termite attack, suitable chemicals shall be added into the PVC compound of the outer sheath.

- All connections should be properly terminated, soldered and/or sealed from outdoor and indoor elements. Relevant codes and operating manuals must be followed. All connections are to be made through suitable cable/lug/terminals crimped properly & with use of cable glands.
- All cable/wires are to be marked in proper manner by good quality ferrule or by other means so that the cable can be easily identified. All cable schedules / layout drawings have to be got approved from TANGEDCO prior to installation.
- The permissible voltage drop from the SPV Generator to the inverter shall not be more than 2% of peak power voltage of the SPV power source (generating system). In the light of this fact the cross-sectional area of the cable chosen is such that the voltage drop introduced by it shall be within 2% of the system voltage at peak power.

8. PLANT METERING AND DATA LOGGING :

- PV array energy production : LT 415V energy meter shall be incorporated in the system.
 - PV module temperature sensor (Platinum RTD)
 - Ambient temperature sensor (Platinum RTD)
- Solar Irradiance : The pyranometer shall be provided with the sensor mounted in the plane of the array. The readings shall be integrated with data logging system.
- Temperature Sensor: Integrated temp sensors for measuring the module surface temp., inverter inside enclosure temp, and ambient temp to be provided with readings integrated with the data logging system.
- Software and communication compatibility :The project envisages a communication interface which shall be able to support
 - Real time data logging
 - Event logging
 - Supervisory control
 - Operational modes
 - Set point editing

The communication interface shall be an integral part of inverter and shall be suitable to be connected to local computer/ Web integrated using a standard modem.

One number Computer : i5 Intel processor with 500GB HDD, 4GB DDR4 RAM, 1 Parallel & 1 Serial Port, Wi-Fi LAN Card, DVD RW Drive, 20" LED, USB Scroll Mouse, along with 1 KVA UPS and one Laser Printer shall be supplied for plant data monitoring.

SPV MONITORING SOFTWARE

The Supplier shall supply necessary Software required. The supplier shall also provide training for the use of software. The software should be compatible to Microsoft windows systems (Windows-7 or Higher Version system).

- Data logging system: A data logging system (Hardware and software) for plant control and monitoring shall be provided such that the following parameters shall be measured and displayed continuously.
 - a. PV module temperature
 - b. Ambient temperature
 - c. Solar irradiation/insolation
 - d. DC current and Voltages
 - e. Efficiency of the inverter
 - f. Solar system efficiency
 - g. Display of I-V curve of the solar system
 - h. Any other parameter considered necessary by supplier of the solar PV system based on prudent practice.
 - i. KW reading DC/AC i.e. input output (instantaneous power)
 - j. KWh Energy reading
 - k. KVAR reading

Data logger/PC based monitoring system must record these parameters for study of effect of various environmental & grid parameters on energy generated by the solar system and various analysis would be required to be provided through bar charts, curves and tables.

9. EARTHING PROTECTION & FIRE PROTECTION:

The earthing terminal of all PV modules shall be interconnected by using 2.5 Sq.mm PVC insulated copper wire, which shall be interconnected to the module mounting structure at least at 2 points in each row of the PV module. The earth mesh so formed shall be interconnected with 50x6 mm Cu. Bar mounted on the wall of the inverter room, through 25 Sq. mm PVC insulated copper cables at minimum two points. All other equipment in the inverter room like ACDB, Inverter and Isolator shall be interconnected to this copper bar through 10 Sq. mm PVC insulated copper cables. The copper bar shall be connected to two number earth pits through 25 Sq. mm PVC insulated, through separate copper cables. Separate earthing should be adopted for DC network, AC Networks and Lighting arrester.

FIRE PROTECTION:

All the necessary fire fighting equipments required for the solar power plant should be provided as per the standard conditions.

DANGER BOARDS

Danger boards should be provided as and where necessary as per IE Act./IE rules as amended up to date. These signages shall be provided wherever considered necessary especially in solar array area.

10. TOLERANCE FOR MODULES

The bidder shall guarantee by photoflash certificates from the module manufacturer that the peak power of the PV Plant modules is equal to that contracted with a tolerance of plus/minus five percent ($\pm 5\%$) during the supply of materials.

11. GUARANTEE FOR EQUIPMENTS

The bidder shall guarantee that the design, the components and the assembly of the PV Plant, including the Modules and Inverters, shall be free of Defects (both hidden or evident) for a period of three years from the date of commissioning for the DC side Equipments and materials (i.e. from the Modules to the Inverters, both included ("DC Equipment") and AC side Equipment and materials (i.e. after the Inverter and up to the interconnection point at the LT Grid ("AC Equipment") the respective periods being the "Guarantee Period" and the respective guaranties being the "Guaranty for Defects").

12. TOOLS , TACKLES AND SPARES:

After completion of installation & commissioning of the power plant, necessary tools & tackles are to be provided free of cost by the contractor for maintenance purpose. A list of requisite spares in case of Inverter comprising of a set of control logic cards, IGBT driver cards etc., Junction Boxes, Fuses, MCCBs etc along with spare set of PV modules shall be supplied along with the system. A minimum set of spares shall be maintained in the plant itself for the entire period of warranty and Operation & Maintenance which upon its use shall be replenished. In addition the following instruments may also be supplied free of cost.

- (i) Hand held portable infrared temperature Indicator
- (ii) Digital voltmeter.

13. DRAWINGS & MANUALS

Two copies of Engineering, electrical drawings, installation and O&M manuals are to be supplied. Bidders shall provide complete technical data sheets for each equipment giving details of the specifications along with makes in their bid along with basic design of the power plant & power evacuation, synchronization and distribution.

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

Sd/xx.. 19.12.2015
Chief Engineer/IC,R&D
TANGEDCO

SECTION V

OPERATION & MAINTENANCE OF THE PLANT :

SCOPE :

The bidder shall be responsible for operation and maintenance of the Solar Power Plant for a period of five (5) years (guarantee period) from the date of handing over of the Solar Photovoltaic Power Plant to TANGEDCO.

The services rendered by the bidder shall include but not limited to the following necessary services

- 1) Operation and maintenance period : Five years (5)
- Provide all operation and maintenance services necessary or advisable to efficiently operate and maintain the plant, keeping in view the objectives set forth herein.
 - The bidder shall be responsible for supply of all spare parts as required from time to time for scheduled and preventive maintenance, major overhauling of the plant, replacement of defective modules, inverters etc. and maintaining log sheets for operation details, deployment of staff and qualified Engineer for supervision of O&M works, complaint logging and its attending.
 - The bidder shall use all reasonable and practical efforts to maximize the plant capacity utilization, reduce plant downtime and optimize the useful life of the equipments of the power plant. Periodical cleaning of the Solar panel shall form part of this O&M service.
 - Maintain the plant with accurate and up-to-date operation logs, records and monthly reports regarding the operation and maintenance of the plant which shall include details of power output, other operating data, repairs performed and status of equipment. TANGEDCO shall have access to all such records at any time.
 - Regularly update and perform periodic overhauls and preventive maintenance program that meets the specifications of the equipment manufacturers in accordance with the recommendations of equipment manufacturers. Also attend break down, equipment repair and other maintenance in the plant.
 - Provide Technical and Engineering support for solving operation and maintenance problems.
 - Perform the service required to procure all spare parts, overhaul parts, tools and equipment, required to operate and maintain the plant in accordance with the recommendations of individual original equipment manufacturer.

- On completion of the five years period the bidder shall hand over the plant in fully operational/functional condition to TANGEDCO upon which TANGEDCO would further undertake the O&M of the plant.
- The Operation & Maintenance work costs shall be quoted separately and shall not be included in the total cost of establishing the Power Plant. The bids shall be evaluated including the cost of O&M for 5 years.
- The successful bidder should provide the 'Schedule of O&M activity' to TANGEDCO and get it approved from the concerned authorities.
- For the guarantee period of five years from the date of passing the Facility Acceptance Test, the O&M contract shall be covered by the SD cum Performance Bank Guarantee to be furnished by the bidder for the performance of the plant.
- In the entire span of five years of O&M contract, in case of any fault, the fault must be attended and rectified within 48hours of reporting, under normal conditions failing which a penalty of Rs. 100/- for every 24 hours per inoperative string will be charged. In case of any part to be imported the maximum period for repair should not be more than 10 days from reporting. However, under Force Majeure circumstances penalty can be waived off.

Sd/xx.. 19.12.2015
Chief Engineer/IC,R&D
TANGEDCO

SECTION VI
Guaranteed Technical Particulars

(To be filled by the bidder)

	<u>Solar PV Module</u>	
1.	PV Module manufacturer name	
2.	PV Module type (Crystalline-Mono/Poly)	
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 & type	
2.	<u>AC side</u> Nominal AC power and reactive power	
3.	Output reactive power 1. During normal operation 2. During VAR generation mode	
4.	Frequency	
5.	Total Harmonic Distortion (Voltage)	
6.	AC over /under voltage over/ under frequency protection	
7.	Active Power consumption during sleep mode (with out reactive power generation mode)	
	Active Power consumption during sleep mode (with reactive power generation mode)	
8.	<u>DC side</u> PV power	
9.	Maximum DC voltage	
10.	MPPT voltage range	
11.	Maximum DC current	
12.	DC over voltage protection	
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 armouring (if any)	
	<u>Others</u>	
1.	Capacity Utilisation Factor	
2.	Data logging System	
3.	Software requirements	
4.	Computer and Printer	
5.	Earthing and fire Protection	
6.	Communication details	

MOUNTING STRUCTURE

1.	Type	
2.	Material	
3.	Overall dimensions	
4.	Coating	
5.	Wind rating	
6.	Tilt angle with mechanical provision for adjustment	
7.	Number of Module structure	
8.	Fixing type. The scheme/ dimensioned drawing shall be provided.	

SECTION - VII

Name of the Work : Supply, Erection, Testing, Commissioning and Maintenance of 20 KWp LT Grid connected solar power plant at roof top of MLDC building of TANGEDCO head quarters complex located at 144, Annasalai, Chennai 600002.

Price Schedule I

Sl.No	Item	Qty	Basic Price	Excise Duty		Basic Price + ED	ST (CST/ VAT) *			Freight and Insurance	Any other levies	Total Cost (per unit)	Total cost
				In %	Amount		In %	Amount					
1	2	3	4	5	6	7	8	9	10	11	12=7+8+10+11	13=3*12	
1.	Supply Installation and commissioning of 20 KWp Roof Top Solar power plant as per specification comprising the following equipments.												
a)	SPV Modules for a total capacity of 20 KWp												
b)	SPV Module roof top mounting structure suitable for accommodating 20KWp SPV modules												
c)	String inverter as per specification for 20KWp complete with all features												
d)	AC distribution boxes as per the specification												

e)	Data Logging system with remote monitoring as per specification											
f)	Isolator with meter as per the specification.											
g)	Cables requirement as per design											
	AC cables (Cost/Meter)											
	DC cables (cost/Meter)											
h)	Fire extinguisher in accordance with BIS codes for electrical short circuit fires											
2.	Earthing arrangement with Lighting arrester system as per the specification											
3.	Erection, Testing and Commissioning Works											

*CST/TN VAT not applicable for freight and insurance

Price Schedule II

Price schedule for Operation & Maintenance Cost (Period for 5 Years)

Sl.No	Description	Year	Maintenance Cost in Rs	Service Tax in %	Service Tax in Rs	Education cess on ST in %	Education cess on ST in Rs	Any other levies	Total Cost in Rs
1	2	3	4	5	6	7	8	9	10= 4+6+8+9
1	Operation and Maintenance cost	First							
2		Second							
3		Third							
4		Forth							
5		Fifth							
6	Total								
7	Total amount in words								

Total Project cost

Sl.No	Item	Cost
1	Schedule I - Total plant infrastructure cost	
2	Schedule II – Total Operation and Maintenance cost	
	Total	
	Total amount in words	

SECTION VIII
SCHEDULES AND ANNEXURE

SCHEDULE – I DEVIATIONS FROM TECHNICAL SPECIFICATION

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

SECTION	CLAUSE NO.	DEVIATION
---------	------------	-----------

Note : Deviation if not listed in this list will not be considered and it will be assumed that there are no deviation.

The Tenderer hereby certifies that the above mentioned are the only deviations from the Technical Specification and the tender conforms to the specification in all other respects without any reservations.

COMPANY SEAL

SIGNATURE :
DESIGNATION :
COMPANY :
DATE :

SCHEDULE - II
DEVIATION FROM COMMERCIAL CONDITIONS

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

SECTION	CLAUSE NO.	DEVIATION
---------	------------	-----------

Note : Deviation if not listed in this list will not be considered and it will be assumed that there are no deviation.

The Tenderer hereby certifies that the above mentioned are the only deviations from the commercial Specification and the tender conforms to the specification in all other respects without any reservations.

COMPANY SEAL

SIGNATURE :
DESIGNATION :
COMPANY :
DATE :

SCHEDULE – III

STATEMENT OF ORDERS EXECUTED / UNDER EXECUTION AS ON THE DATE OF TENDER

Name of tenderer :

Date of Tender :

Sl.No.	Name and address of the purchase/party on whom supply order /works contract placed/under execution	Details of works executed/under execution	Details of P.O.s		Actual / Scheduled date of completion	Remarks of the tenderer if any
			Purchase order No. & date	Value of orders		
1	2	3	4	5	6	7

COMPANY SEAL :

SIGNATURE :
 DESIGNATION :
 COMPANY :
 DATE:

ANNEXURE - I :

UNDERTAKING IN LIEU OF PAYMENT OF EMD.

(To be furnished in non-judicial stamp paper of value not less than Rs. 80.00)

THIS DEED OF UNDERTAKING EXECUTED AT
_____ ON THIS THE _____ DAY OF
_____ TWO THOUSAND By M/s.
hereinafter called "Tenderer" (which expression shall where the context
so admits mean and include their Agents, Representative, Successors-in-
office and Assigns). TO AND IN FAVOUR OF
TANGEDCO, a Body Corporate constituted under Companies Act, 1956
having its office at 10th Floor, NPKRR Maaligai, 144, Anna Salai, Chennai -
600 002, herein called the "TANGEDCO" (which expression shall where the
context so admits mean and include its successors in office and Assigns).

WHEREOF AS 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-fulfilment or 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 convenient 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. _____ (Rupees
only) in the event of

- (i) Withdrawing his tender before the expiry of the validity period (OR)
- (ii) Withdrawing his tender after acceptance, OR
- (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 than 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 WHEREOF THIRU _____ acting for and on behalf of the Tenderer has signed this deed on the day, month and year herein before first mentioned.

In the presence of Witnesses:

1.

2.

SIGNED AND DELIVERED ON
BEHALF OF TENDERER.

ANNEXURE – II

UNDERTAKING TOWARDS JURISDICTION OF LEGAL PROCEEDINGS.

This undertaking executed at on this.....(date).....(month) two thousand by M/s.....a company registered under Companies Act, 1956 having its registered Office at.....hereinafter called the Contractor (which expression shall where the context so admits mean and include its successors in office and assigns) with the TANGEDCO a statutory authority created under the powers vested with Companies Act, 1956 having its registered Office at No.144, Anna Salai, NPKRR Maaligai, Chennai 600 002 hereinafter called the purchaser (which expression shall where the contest so admits means and includes its successors in Office and assigns).

WHEREAS the contract is for the supply, erection, testing, commissioning and maintenance ofin terms of the contract No.....dated.....

AND WHEREAS in accordance with Clause.....of the above said contract certain terms were stipulated for the above supply.

AND WHEREAS in accordance with clause.....of the above mentioned contract the contractor has to furnish an undertaking that no suit or any proceedings in regard to any matter arising in any respect under this contract shall be instituted in any court other than in the City Civil Court of Chennai or other court of small causes, at Chennai.

IN CONSIDERATION of the TANGEDCO having agreed to accept the undertaking from the Contractor undertakes that no suit or any proceedings in regard to any matter arising in any respect under this contract shall be instituted in any court other than in the City Civil Court of Chennai or other court of small causes, at Chennai. It is also agreed that no other court shall have jurisdiction to any suit or proceedings even though part of the cause of

action might arise within their jurisdiction. In case any part of the action arises within the jurisdiction of any of the courts in Chennai City, then it is agreed to between the parties that such suits or proceedings shall be instituted in court within Tamil Nadu and no other court out-side Tamil Nadu shall have jurisdiction even though any part of the cause might arise within the jurisdiction of such Courts

IN WITNESS WHEREOF of Thiru.....of the contractor hereby put his hand and seal for due observe of the Undertaking in the presence of the following witnesses.

SIGNATURE WITH SEAL

WITNESS:

- 1.
- 2.

ANNEXURE – III
PROFORMA OF CONTRACT AGREEMENT
(To be on Non – Judicial stamp paper of value Rs 80/-)

This Agreement made this day of
Two Thousand and Six between Tamil Nadu Generation and Distribution Corporation Ltd (TANGEDCO) having its Registered Office at 144 Anna Salai, Chennai 600 002 (India) (hereinafter referred to as the "Purchaser" which expression shall include its administrators, executors, assigns) of the one part and , a company incorporated under the Companies Act, having its registered office at (hereinafter referred to as the "Contractor" or "X" (brief name of contracting company), which expression shall include its administrators, successors, executors and permitted assigns) of the other part.

WHEREAS TANGEDCO desirous of Design, supply, installation, commissioning and maintenance of 20KWp LT Grid connected Roof top solar power plant at High rise building of TANGEDCO as per its Bid Specification No.

AND WHEREAS "x" had participated in the above referred bidding vide their proposal No. Dated and awarded the Contract to "x" on terms and conditions contained in its Letter of Intent No. therein, which have been accepted by "x" resulting into a "Contract".

NOW THEREFORE THIS DEED WITNESSETH AS UNDER

1.0 AWARD OF CONTRACT

1.1 TANGEDCO has awarded the Contract to "x" for the work on the terms and conditions contained in its Letter of Award No. dated and the documents referred to therein. The award has taken effect from i.e. the date of issue of the aforesaid Letter of Award. The terms and expressions used in this Agreement shall have the same meaning as are assigned to them in the "Contract Documents" referred to in the succeeding Article.

2.0 CONTRACT DOCUMENTS

2.1 The Contract shall be performed strictly as per the terms and conditions stipulated herein and in the following documents attached herewith (hereinafter referred to as "Contract Documents").

i. TNEBs Bidding Documents in respect of Specification No. issued vide its Letter No. Dated consisting of Domestic competitive bidding, Instructions to Bidders, General Terms and Conditions of Contract and all other sections entitled "Conditions of Contract" including all

amendments/dated(Volume-I)

ii. Technical Specification (including Amendments issued vide its Letter No.dated) (Volume -II)

iii. Bidders Proposal No. dated along with proposal sheets, Data Requirements, payment terms and Work Schedules submitted by "x" entitled as (Volume- IV)

iv. Agreed minutes of the meeting held on Between TANGEDCO and "x" (Volume-V)

v. TANGEDCOs Letter of Intent No. dated Duly accepted (Volume- VI)

2.2 All the aforesaid Contract Documents shall form an Integral part of this Agreement, in so far as the same or any part thereof conform to the Bidding documents (Vol. I & II) and what has been specifically agreed to by the Purchaser in its Letter of Intent. Any matter inconsistent therewith, contrary or repugnant thereto or any deviations taken by the Contractor in its "Proposal" (Vol. I & II) but not agreed to specifically by the Purchaser in its Letter of Intent shall be deemed to have been withdrawn by the Contractor. For the sake of brevity, this Agreement along with its aforesaid Contract Documents shall be referred to as the „Agreement“.

3.0 **CONDITIONS & COVENANTS**

3.1 The Scope of Contract, Consideration, Terms of Payment, Price Adjustment, Taxes wherever applicable, Insurance, Liquidated Damages, Performance Guarantee and all other terms and conditions are contained in TANGEDCOs Letter of Intent No. Dated read in conjunction with other aforesaid Contract Documents. The Contract shall be duly performed by the Contractor strictly and faithfully in accordance with the terms of the Agreement.

3.2 The Scope of Work shall also include supply and installation of all such items which are not specifically mentioned in the Contract Documents, but which are needed for successful, efficient, safe and reliable operation of the equipment unless otherwise specifically excluded in the specifications under "exclusions" or Letter of Intent.

3.3 **Time Schedule**

3.3.1 Time is the essence of the contract and schedules shall be strictly adhered to. The Contractor shall perform the work in accordance with the agreed schedule in Volume --.

3.4 **Quality Plans**

3.4.1 The Contractor is responsible for the proper execution of the Quality Plans. The Work beyond the customers hold points will progress only with the purchaser's consent. The purchaser will also undertake quality surveillance and quality audit of the contractors/sub-contractors works, systems and procedures and quality control activities. The contractor further agrees that any change in the Quality Plans will be made only with the purchasers approval. The contractor

shall also perform all quality control activities, inspection and tests agreed with the purchaser to demonstrate full compliance with the contract requirements.

3.4.2 The Contractor also agrees to provide the Purchaser with the necessary facilities for carrying out inspection, quality audit and quality surveillance of Contractor's and its sub-contractors quality Assurance Systems and manufacturing activities.

3.4.3 It is expressly agreed to by the Contractor that the Quality tests and Inspection by the Purchaser shall not in any way relieve the Contractor of its responsibilities for quality standards, and performance guarantee and their other obligations under the Agreement.

3.4.4 "X" agrees to submit Quality Assurance Documents package to TANGEDCO for review and record after completion and within three weeks of despatch of material.

The package will include the following

i. Factory test result / inspection reports for testing required by this Contract or applicable codes and standards.

ii. Two copies of Inspection reports duly signed by Quality Assurance personnel of both TANGEDCO and "X" for the agreed customer hold points.

iii. Report of the rectification works where and if applicable.

3.5 It is expressly agreed to by the Contractor that notwithstanding the fact that the Contract indicates the break-up of the Contract consideration, for convenience of operation and for payment of Sales Tax on supply portion, it is in fact one composite contract on single source responsibility basis and the Contractor is bound to perform the total contract in its entirety and non performance of any part or portion of the contract shall be deemed to be a breach of the entire contract.

3.6 The contract guarantees that the equipment package under the contract shall meet the ratings and performance parameters, as stipulated in the Technical Specifications and in the event of any deficiencies found in the requisite performance figures , the purchaser may at its option reject the equipment package in accordance with the Contract Documents .

3.7 Contract Performance Guarantee(s)

"X" agrees to submit security deposit and Performance Guarantee as per the terms of the contract.

3.7.1 It is further agreed by the contractor that the contract performance guarantee shall in no way be construed to limit or restrict the purchaser's right to recover the damages / compensation due to short fall in the equipment performance . The amount of damages / compensation shall be recoverable either by way of deduction from the Contract Price, Security deposit/performance guarantee or Bank Guarantee in lieu of security deposit/performance guarantee

for delay in timely completion of the contract and performance bank guarantee and / or otherwise. The security deposit for performance guarantee, bank guarantee in lieu of security deposit for delay in timely completion of the contract and performance guarantee furnished by the contractor are irrevocable and unconditional and the purchaser shall have the powers to invoke it notwithstanding any dispute or difference between the purchaser and the contractor pending before any court, tribunal, arbitrator or any other authority.

3.8 This Agreement constitutes full and complete understanding between the parties and terms of the presents. It shall supersede all prior correspondence to the extent of inconsistency or repugnance to the terms and conditions contained in the Agreement. Any modification of the agreement shall be effected only by a written instrument signed by the authorized representative of both the parties.

4.0 NOTICE OF DEFAULT

4.1 Notice of default given by either party to the other party under agreement shall be in writing and shall be deemed to have been duly and properly served upon the parties hereto if delivered against acknowledgement and addressed to the signatories at the addresses mentioned herein above.

IN WITNESS WHEREOF, the parties through their duly authorized representatives have executed these presents (execution whereof has been approved by the competent authorities of both the parties) on the day, month and year first above mentioned at Chennai.

(Contractors Signature)
(Printed Name)
(Designation)
(Company's Stamp)

(Purchasers Signature)
(Printed Name)
(Designation)
(Company's Stamp)

WITNESS

1.

2.